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Office politics: Video display terminals and the fight for occupational safety and health in the postindustrial age

Mogensen, Vernon Lee, Ph.D.

City University of New York, 1994

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OFFICE POLITICS: VIDEO DISPLAY TERMINALS AND THE FIGHT FOR OCCUPATIONAL SAFETY AND HEALTH IN THE POSTINDUSTRIAL AGE

by

VERNON L. MOGENSEN

A dissertation submitted to the Graduate Faculty in Political Science in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

1994

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Abstract

OFFICE POLITICS: VIDEO DISPLAY TERMINALS AND THE FIGHT FOR OCCUPATIONAL SAFETY AND HEALTH IN THE POSTINDUSTRIAL AGE.

by

Vernon L. Mogensen

Adviser: Professor Frances Fox Piven

This is a study about power and the fight by office workers using video display terminals (VDTs) to secure occupational safety and health protection in the face of opposition from capital and the state. The widespread use of VDTs by business to increase productivity and control over the work process contributed to the introduction of occupational safety and health hazards to the office, including cancer, and reproductive health problems thought to be linked to the nonionizing radiation emitted by VDTs; repetitive motion injuries, such as carpal tunnel syndrome; vision problems; and stress-related illnesses, which have been linked to work speed-ups and lack of worker control over the work process. This study analyzes the efforts by office workers and their unions to secure protective regulation at the federal, state and local levels of government from the late 1970s to the early 1990s. It argues that business interests' superior mobilization of pressure,

supported by structural constraints on the state's ability to address occupational safety and health problems, resulted in the defeat of VDT regulations. The state's response to the problems of VDT workers was constrained because recessionary economic pressures and increased global competition compelled it to keep business costs low in order to foster economic growth and expand tax revenues. The federal government, working with the corporate sector, has blocked scientific inquiry into the VDT problem, ignored women's health concerns, and misled the public regarding the extent of the VDT health problem.

The structural constraint on the state made it more sympathetic to business interests' argument that the costs of social regulation (e.g., OSHA), was stifling America's economic growth, and that the addition of VDT regulations-- which in their view were unwarranted-- to protect office workers would further exacerbate the problem. Finally, organized labor's industrial orientation, preoccupation with defending its declining blue collar membership, and patriarchal perspective, limited its interest in organizing and supporting the predominantly female, unorganized VDT office workforce.

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CHAPTER 1

INTRODUCTION

This is a study about power and the political distribution of social costs in postindustrial society. Its focus is on the occupational safety and health problems faced by office workers using video display terminals (VDTs) and their efforts to secure protective regulations in the face of opposition from capital and the state. Although many studies have discussed management's use of computer-networked VDTs to automate and control the office labor process,[1] and the attendant occupational safety and health problems that affect those who work with these machines,[2] little scholarly attention has been paid to the efforts of VDT workers to address these problems in the political arena.[3] This is the first public policy study to examine the political dynamics surrounding the efforts of VDT workers to secure occupational safety and health protection.[4]

The widespread use of VDTs by business to increase productivity and control over the work process introduced occupational safety and health hazards to the office on an unprecedented scale. The most commonly cited problems experienced by VDT workers are vision-related ailments, which affect 10 million workers and account for 14% of all eye exams in the U.S.[5] Although office work is not usually thought of as being stressful, the National Institute of

Occupational Safety and Health (NIOSH) has found that VDT workers experience high rates of stress, higher than that experienced by air traffic controllers, stemming from their lack of control over the fast and routinized pace of automated office work.[6] Medical studies have documented that occupational stress contributes to psychiatric and heart-related illnesses in VDT workers. Musculoskeletal illnesses, such as cumulative trauma disorders (CTD) are also experienced by many VDT workers. CTDs, such as tendonitis and carpal tunnel syndrome, are caused by repetitive motions of VDT workers. CTDs account for 61% of all reported occupational illnesses in the U.S.,[7] and have become such a pervasive problem among VDT workers that the Occupational Safety and Health Administration (OSHA) has called it the "occupational illness of the decade."[8] Tendonitis affects 4 million VDT workers, and carpal tunnel syndrome, a painful injury of the wrists' carpal tunnel that can lead to the severe loss of hand strength, afflicts 1.89 million computer operators.[9] Workers also report problems associated with the non-ionizing radiation emitted by the flyback transformer of the VDT. These problems include premature eye cataracts, skin rashes, angina, and reproductive problems, such as infertility, birth defects, still births and higher than normal incidences of miscarriages.[10]

Moreover, workers in the computer-automated office report an ongoing deterioration in safety and health conditions and the quality of work. A 1991 Louis Harris poll of full-time office workers found that 47% considered eyestrain to be a serious concern, up from 44% in 1989; 36% thought that nonionizing radiation emissions from the VDT were a problem, up from 27% in 1989; and 33% cited CTDs as a serious health risk.[11] Another result of the introduction of computer-automated office systems has been a dramatic decline in job satisfaction among office workers: only 44% of office workers said the quality of work life improved in 1991, down from 70% in 1978.[12] The stressful, speeded-up, working conditions, and resultant occupational safety and health problems, faced by many VDT workers have become so pervasive that observers have likened their situation to an "electronic sweatshop."[13]

Unions petitioned OSHA and other public officials to establish protective regulations governing the workplace use of this new technology on numerous occasions during the 1980s. Organized labor was opposed by a corporate coalition of computer manufacturers-- represented by the Computer and Business Equipment Manufacturer's Association (CBEMA)-- and 23 trade associations representing business users of computerized office automation systems, intent on keeping the VDT issue out of the political arena. The corporate coalition argued that employees, encouraged by union

organizers and working women's groups, were reacting irrationally to a new and unfamiliar technology, and therefore, the VDT issue was actually an employee comfort issue that was best handled by employers on a voluntary basis, not an occupational safety and health problem requiring regulation by OSHA.[14]

Although its Congressionally-mandated mission is "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions,"[15] OSHA's focus has been on the industrial workplace, where imminent safety hazards are prevalent. However, the advent of the postindustrial economy has broadened the scope of hazards to include office workers using VDTs. Men were mainly at risk in the blue collar sector, but women are increasingly at risk in the white collar sector. The VDT issue is significant because it tests whether the OSH Act covers office, as well as industrial, workers.[16] It also questions whether the federal government will commit the resources necessary to extend OSHAs jurisdiction to cover office workers in the face of corporate opposition to regulation.

OSHA's decision not to protect the safety and health conditions of VDT workers raises the question of how power will be distributed between business, labor, and the state in the postindustrial era. Is OSHA powerful enough to regulate the business sector, or, does its failure to respond to VDT workers' problems indicate that real power to

make occupational safety and health policy is to be found in factors beyond the reach of OSHA administrators and the Occupational Safety and Health Act (OSH Act)?

The decision not to regulate the safety and health conditions of VDT workers was due to the dominance in policymaking circles of forces opposed to VDT regulation on political grounds, rather than a technical assessment that the issue was unworthy of government regulation. This study will argue that business interests' superior mobilization of pressure, supported by structural constraints on the state's ability to address occupational safety and health problems, resulted in the defeat of VDT regulations. The state's response to the problems of VDT workers was constrained because recessionary economic pressures and increased global competition compelled it to keep business costs low in order to foster economic growth and expand tax revenues.

This structural constraint served to give business interests an important political advantage over organized labor on the VDT issue. Over the past two decades business and conservative interests have mobilized around the argument that the growth of the social welfare state-- with its emphasis on social regulation (e.g., OSHA), welfare, and prolabor policies-- was stifling America's economic growth and could also be blamed for the increase in social problems.[17] While their influence was felt in the Carter administration, the anti-union conservative-business

alliance came to power with the election of Ronald Reagan in 1980-- concurrent with the rise of the VDT safety and health issue. Meanwhile, organized labor's industrial orientation, preoccupation with defending its declining blue collar membership, and patriarchal perspective, limited its interest in organizing and supporting the predominantly female, unorganized VDT office workforce.

Computers, Work, and Society.

The desktop computer, or VDT, is an integral part of the workplace. VDTs include "dummy terminals" that must be linked to a central computer processor in order to work, and stand-alone-- or personal computers-- which have their own computer processor; the latter are growing in popularity because they can be linked to other VDTs in the workplace.[18] Today's desktop VDTs are capable of processing many tasks as quickly as the larger mainframes and at a much cheaper cost. Increasing numbers of businesses are replacing their mainframes with personal computers linked together in local area networks.[19]

The VDT is used anywhere that information is processed, analyzed, or disseminated. It is to the office what the assembly line is to the factory: the technology that management uses to organize and rationalize the work process. Today, an estimated 25 million computer terminals are being used in American workplaces.[20] In addition,

millions of personal computers are also being used in America's workplaces.[21] Approximately 50 million Americans used computers in some capacity on the job in 1991, or 43% of the workforce.[22] Half of the entire workforce is expected to be using VDTs by 1997.[23] VDT use is concentrated in white collar occupations where 85% percent used computers in 1991, up from 66% in 1986.[24]

The computer industry has risen to a position of central importance in the postindustrial economy, facilitating the growth of the white collar service sector.[25] It is one of the U.S.'s relatively few encouraging spots in a highly competitive, global economy. Desktop computers have come to symbolize the post industrial economy the way the smokestack represented the productive capacity of industrial society. Computer manufacturers and business users alike hail the VDT as the central component of "the Office of the Future."[26] The desktop computer's importance to postindustrial society was illustrated in 1982 by Time magazine's decision to name it the "machine of the year," in its annual "man of the year" issue-- the first nonhuman entity to be so honored.[27]

Women, Work, and VDTs.

As with the sweatshops of the past, women workers are the mainstay of the "electronic sweatshop." The post-industrial economy perpetuates the gender-based two-tier

employment pattern with women filling most of the lower-paid positions as a steady source of inexpensive labor.[28] It is on the lower-rung that women's work is most closely linked with VDT work. The largest group of working women (27.5%) is concentrated in lower-paid clerical occupations. Four out of five clerical workers are women.[29] Nationally, women workers earn only 75 cents for each dollar a man makes, which helps keep employer's labor costs artificially low.[30] Although other opportunities have opened up in recent decades, the U.S. Department to Labor expects the bulk of these routinized, low wage positions to be continued to be filled by women.[31] Women working in these low-wage occupations, especially VDT workers, are more likely to suffer from occupational safety and health problems than their counterparts in the salaried professions.[32] However, employers and government officials have long failed to recognize the severity of the safety and health problems faced by female VDT workers. It was only under pressure from Congress in 1990 that the National Institute of Health found it pertinent to include women in its research studies and to establish a women's health institute.[33]

The disadvantaged situation of the predominantly female VDT workforce is the latest chapter in long pattern of segregating women in the workplace. From the beginning of the industrial revolution, employers sex-typed women by steering them into marginal occupations-- such as typist,

telephone operator, and clerical worker-- that were low paid and offered little, if any, chance for advancement.[34] As Ruth Milkman writes, the situation remains the same today:[35]

> Most of the pay gap is due to the concentration of women in poorly paid, low status occupations. Pervasive stereotypes designate such jobs as "women's work," while more desirable positions are reserved for men. The specific jobs performed by men and women sometimes change, because the occupational structure is always in motion, with new positions constantly being created and old ones destroyed. But job segregation itself has been continually maintained and reproduced throughout the history of capitalism.

Until the 1980s unions showed little interest in organizing women office workers in the private sector. With its organizing focus on the industrial sector, labor unions lost an important opportunity to develop a foothold in the rapidly growing nongovernmental, white collar clerical occupations.[36] As a result, there was little structure of support in place within organized labor to champion the VDT issue when it arose.

Social Costs and Social Regulation.

At the center of the VDT controversy is the question of who will bear the burden of social costs generated during the economic transition to a postindustrial society. Social costs refer to the harmful effects of the productive system suffered by people for which the owner does not have to pay.[37] Market economists refer to these social costs as "externalities," since neither the producer nor the

purchaser has to pay for them; instead, they are borne by third parties (e.g., workers). In the workplace, social costs take the form of injury, illness, and death, and result in lost earnings, medical expenses and hardship on dependents, and even on whole communities.[38] Both labor and capital ultimately take their fight over the proper allocation of burdens and benefits to the political arena.

Growing public awareness of the inequities generated by the social costs of production during the 1960s resulted in a political movement to force the federal government to address this structural imbalance in the economic system's distribution of benefits and burdens. As a result, the federal government established a number of social regulatory agencies; besides OSHA, they included the Environmental Protection Agency, the National Highway Transportation Safety Commission and the Consumer Product Safety Commission.[39] The establishment of these social regulatory agencies represents political recognition of the fact that the market system is too narrowly focused to realistically assess or self-regulate the destructive aspects of private enterprise.

The OSH Act of 1970 established OSHA and gave it the power to promulgate regulations and enforce them with inspections and the assessment of fines for noncompliance. Its passage was an important victory for working Americans because it established the principle that safe and healthful

working conditions were an employee's right. In theory, workers could use the OSH Act as an instrument to insure that working conditions would no longer be solely determined by market forces.

But two important political developments have limited OSHA's effectiveness and labor's right to safe and healthful working conditions. First, much of the business community was quick to mobilize its power against OSHA.[40] The effect of OSHA regulation was to redistribute some of the burden of social costs back to industry, which business saw as an infringement on its autonomy and prerogatives. Unlike regulatory commissions, which regulate certain industries, the mission of the new social regulation was to address problems of social costs which cut across industry lines. This distinctive feature had the effect of unifying much of the business community against OSHA. Faced with a common foe that symbolized what was wrong with regulation in general, corporate America was able to overcome much of the internal conflict that usually frustrates business unity. Its campaign to eviscerate OSHA reached an apex during the Reagan administration which was more than cooperative in constraining the agency's regulatory activity.

Second, the OSH Act was passed at the end of the industrial era. OSHA still focuses most of its scarce resources on industrial hazards. However, America has undergone a transition to a postindustrial economy, with

most people working in information and service sector occupations. With OSHA constrained by business and political pressures, the safety and health problems suffered by VDT workers have gone unaddressed by OSHA. By not regulating the workplace hazards of the postindustrial economy, OSHA, in effect, exempts much of business from complying with the OSH Act's requirement that it internalize the costs of providing safe and healthful workplaces.

The stakes in the struggle between business and labor over the VDT issue are high. "The central political question...," Fred Block, Richard Cloward, Barbara Ehrenreich and Frances Fox Piven write, "is who will bear the hardships associated with the transition to a postindustrial economy."[41] A decision by OSHA to regulate VDTs would strengthen labor's ability to bargain with management over the issue of office working conditions. It would also bolster organized labor's effort to organize the 87 percent of clerical workers who are not union members.[42]

On the other hand, maintaining the structural inequities of the economic status quo is in the business community's immediate self interest. By forcing the worker to carry the burden of unaddressed social costs, the political economic system in effect gives the employer a social subsidy equivalent to the money that would be otherwise spent to improve working conditions and pay the injured workers' expenses. As a result, there is little

incentive for the employer to change the system and strong incentive for him to maintain it.

Perspectives on Power and Public Policy.

The dynamics of the VDT case study are best explained by a synthesis of elements of the pluralist, neopluralist and capitalist state models of power. The advantage to this approach is that it recognizes the interplay between decision-making processes emphasized by the pluralists and neopluralists and the structural aspects of power stressed by capitalist state theorists.

Pluralism is the dominant model of power and public policymaking in the U.S. Writing in the 1950s and 1960s to refute the elite theorists' argument that power was located in the private sector, stratified in nature, and could be examined by using the reputational approach,[43] pluralists argued that power was dispersed, and could only be observed by examining the process of decision-making in the public sector.

Pluralism maintains that the competition between numerous organized interests over issues, which do not overlap with other issue networks, works to insure that no one group dominates public policymaking.[44] The state is seen as being neutral and its decisions reflects the outcome of any given issue conflict. The diffusion and fluidity of power encourages participants to bargain and compromise

according to the rules of the game and to peacefully accept the outcome. This process, in turn, helps to maintain the consensus that the rules of the game are legitimate and neutral. The dynamics of the interest group process keep the political system open to the opinions of virtually all organized interests, even the weakest. Robert A. Dahl described "the 'normal' American political process as one in which there is a high probability that an active and legitimate group in the population can make itself heard effectively at some crucial stage in the process of decision."[45]

David Truman recognizes that business dominates over other groups in the economic arena, but argues that it does not directly translate into dominance in the political arena.[46] He states that business is not a monolithic force that acts with unity in either the economic or the political spheres; intra-business strife, divergent goals, and the countervailing power of opposing groups negate the business community's initial superiority of resources and erode its capacity for unified action. Business's superior economic and lobbying resources do not automatically prevent legislators from passing legislation, such as the OSH Act, that they oppose. The state plays a role in setting macroeconomic policy, but it leaves other details to business.[47] Pluralists do not view this arrangement as giving business any significant structural advantage over

other groups. As Edwin M. Epstein put it in his study, The Corporation in American Politics:[48]

> The mere possession of political resources does not, in and of itself, constitute political power. There are several limitations upon the exercise of corporate political power, among them: numerous constraints upon the effective capacity to utilize power resources, the political power of other social interests, public commitment to a pluralistic society, and internal constraints within the business system.

The question that pluralists fail to ask, says Andrew Hacker, "is not whether businessmen feel hamstrung, for they have protested their powerlessness since they were first told to buy safety-devices for their dangerous machines. The point is whether or not these limiting factors take on much significance when weighed against the areas of unrestricted action open to the corporate elite."[49]

Many of the "areas of unrestricted action" open to business are outside the political arena, yet affect what goes on inside it. These include: control over capital, ability to administer prices, the power to move-- or threaten to move-- plants to more business-friendly states and countries, use of tactics to bust unions or harass organizers, refusal to fully comply with OSHA and National Labor Relations Board (NLRB) regulations, threats to cut investments, reporting "lower" profits, laying off workers, cutting wages and benefits, as well as charitable contributions to the community.[50] Business can engage in economic blackmail by blaming any of these actions on onerous governmental regulations and greedy unions.[51] By

playing to its central importance as the creator of prosperity in our nation's economy, business can generally count on its viewpoint being reported in the nation's corporately-owned media. There are numerous media outlets devoted solely to their activities and viewpoint, but there are no daily "labor sections" in the nation's newspapers.[52] In sum, pluralists tend to overlook nonpolitical (i.e., socio-economic) sources of power since they assume that all significant decisionmaking takes places within the open political arena.

While the VDT case study presents an example of interest group conflict between labor and capital, its dynamics can't be entirely explained using the pluralist model. The factors that Truman and Epstein refer to that erode business unity in the political arena weren't prevalent in the VDT case study. There were few constraints upon the ability of the corporate coalition of CBEMA and business users of office automation systems to act in concert to oppose and defeat labor's campaign for VDT safety and health regulations. Nor did the state act according to the umpire version of pluralism,[53] by invoking the provisions of the OSH Act or the NLRB to provide VDT workers with something approximating a level playing field in their struggle against business interests. In fact, the state was not neutral as pluralists posit, it actively sided with business interests in opposition to labor. The political

power of "other social interests," that might act as countervailing powers to business influence (i.e., organized labor, 9 to 5: the National Organization of Working Women, and the committees for occupational safety and health), was relatively weak and fragmented. Nor was there much evidence of internal conflict within the corporate coalition opposed to VDT regulations which might act to erode business unity. While Chapter 5 describes an incident of tension involving business users of VDTs' suspicions of the computer manufacturers dominance of the corporate coalition's umbrella group, the Coalition for Office Technology (COT), the dispute was relatively brief and was smoothed over by a reorganization of COT's membership to give business users a greater say. In sum, the corporate coalition against VDT regulations operated with remarkable unity and wasn't constrained by the factors usually cited by pluralists.

E.E. Schattschneider points out that factors such as the "mobilization of bias" and the "definition of the alternatives" limit the ability of less powerful groups to challenge the status quo. The pluralists, he writes, have:[54]

> overestimated the strength and universality of the self-generated impulse of people to participate in the life of the political community. It has been assumed that only legal barriers inhibited the disenfranchised. We know better now. The exclusion of people by extralegal processes, by social processes, by the way the political system is organized and structured may be far more effective than the law.

In theory, previous gains that labor won in the political arena, namely the OSH and National Labor Relations Acts, should have protected the participatory rights of VDTs workers. But extralegal and extrapolitical means used by corporate opponents of VDT regulations, and the state's failure to enforce the NLRB and OSH Acts, worked to keep the VDT issue from getting a full hearing in the public arena. To make a fuller account of the VDT case study we must consider the neopluralist and the capitalist state theories.

According to Peter Bachrach and Morton Baratz, neopluralism posits that political systems generate:[55]

> a 'mobilization of bias,' a set of predominant values, beliefs, rituals, and institutional procedures ('rules of the game') that operate systematically and consistently to the benefit of certain persons and groups at the expense of others. Those who benefit are placed in a preferred position to defend and promote their vested interests.

The "mobilization of bias" is sustained by a "second face of power" (i.e, nondecisions) -- beyond the pluralists' "first face of power" (i.e., decision making)-- which operates to block challenges to those in positions of authority.[56] Nondecisions, write Bachrach and Baratz, are:[57]

> a means by which demands for change in the existing allocation of benefits and privileges in the community can be suffocated before they are even voiced; or kept covert; or killed before they gain access to the relevant decision-making arena; or, failing all these things, maimed or destroyed in the decision-implementing stage of the policy process.

Daniel M. Berman argues that a network of corporations, insurance companies, safety associations (such as the

National Safety Council), and standard-setting organizations (such as the American National Standards Institute), which he calls the "compensation-safety apparatus," dominates occupational safety and health policy making, with the acquiescence of Congress and the Presidency.[58] This pattern of business dominance of occupational safety and health policymaking has its origins in corporate America's Progressive era response to the public's call for protective legislation to limit the carnage that was occurring in the nation's workplaces.[59] Since the compensation-safety apparatus dominated occupational safety and health policy-making, much of OSHA's implementation was based on its work. For example, many of the OSHA rules were taken directly from guidelines established by the American National Standards Institute (ANSI), a private organization that sets voluntary industry standards. As a result, capital's compensation-safety apparatus has served as a constraint on the OSHA administrators freedom of action. Also, OSHA was grafted onto a patchwork system of state laws that were so weak and uncoordinated that industry was able to dominate occupational safety and health policymaking. Although the purpose in establishing OSHA was to set national standards, the OSH Act permitted states to maintain their own plans (and about half do). "Since the passage of the OSHA law in 1970," Berman writes, "the compensation-safety apparatus, backed by the large corporations and a compliant

administration, has been able to absorb and neutralize most threats to its dominance of the new federal regulatory apparatus."[60]

This study presents evidence that the mobilization of bias supporting the compensation-safety apparatus was sustained by both governmental and corporate uses of non-decisionmaking tactics. This was particularly true at the federal level where labor had a difficult time getting a hearing, although less so at the state and local levels where conflict was more overt and intense. The Reagan and Bush administration's appointments of ideological loyalists at OSHA, the Food and Drug Administration (FDA), and the Office of Management and Budget (OMB), to carry out its anti-union, deregulatory policies meant that organized labor could not get a fair hearing on the VDT issue. As Geri Palast of the SEIU states in Chapter 9, there was no point in approaching OSHA to discuss the promulgation of a VDT standard given the Reagan administration's intense hostility to unions and regulation. The Reagan administration's nondecision-making tactic barring action on the VDT problem was effective in forcing organized labor to retreat to the state and local levels of government.

Corporate opponents of VDT regulations used non-decision making tactics to keeping the issue out of the political arena on the two issues (involving the possibility of federal regulation) where it counted most: the computer

industry's establishment of a voluntary ergonomics standard in cooperation with ANSI which preempted the prospect of a federal ergonomics standard for VDTs; and-- perhaps the most effective tactic was-- the corporate manipulation of the prevailing scientific theory that the nonionizing radiation emitted by VDTs was insufficient to harm humans, which persuaded public officials that research was unnecessary when its own privately-conducted research (as well as that from abroad) pointed to the need for further study of the problem.

Additional uses of nondecisionmaking tactics by corporate opponents of VDT regulations to keep labor from getting a full public hearing were partially successful. While none of these tactics can be singled out as keeping aspects of the VDT issue from being discussed in the political arena, they did have a contributory effect in the ultimate defeat of the VDT issue. These included: redefining the VDT safety and health problem as merely a question of employee "comfort" best dealt with by employers on a voluntary basis, not by government regulators; efforts by mass media corporations (major users of VDTs) to censor, ignore, and/or distort the VDT story (especially on the nonionizing radiation issue) in the effort to keep the VDT issue out of the public arena; the use of union-busting tactics to discourage office workers from organizing and turning the VDT issue into a political problem; efforts to

paint proponents of VDT regulations as postindustrial luddites with an irrational fear of new technology, thereby discrediting their arguments in the eyes of public opinion and public officials. "Tactics such as these," Bachrach and Baratz remark, "... are particularly effective when employed against weakly organized groups [e.g., office workers using VDTs] ... which have difficulty withstanding delay."[61]

Furthermore, the VDT case study provides evidence that, contrary to the pluralist view, issues are interconnected. As Chapters 6-9 discuss, state and federal policymakers considered the VDT issue to be intimately connected to the issue of high tech development, as in a zero-sum game. That is, public policymakers opposed the passage of VDT regulations, believing that it would hamper business development in their jurisdictions, making it more difficult to keep the business they had and attract new investments. As Schattschneider says:[62]

> All legislative procedure is loaded with devices for controlling the flow of explosive materials into the governmental apparatus. All forms of political organization have a bias in favor of the exploitation of some kinds of conflicts and the suppression of others because organization is the mobilization of bias. Some issues are organized into politics while others are organized out.

The relatively independent role that public officials played in managing the policymaking process, and the interconnected nature of economic and political issues, leads us to the consideration of the capitalist state theory.

The capitalist state perspective sheds light on the structural relationship between the state and capital.[63] In general, this position holds that the state is relatively autonomous from capitalism in the dual sense that it mediates between short-term business interests with the goal of promoting the long-term needs of the capitalist system, while at the same time, addressing public demands for social and economic justice (i.e., legitimation). Failure to keep the latter subordinated to the former can lead to a "legitimation crisis,"[64] threatening the state's ability to maintain conditions for the maximization of capital accumulation.

The capitalist state position stresses that there is a structural pattern to power in society, that it is not dispersed as the pluralists assert. Every society operates in accordance with a hierarchy of values that gives order to the political system's treatment of issues. Adherents of this view would agree with Robert S. Lynd's statement that "the social structure of a given society conditions and controls the structure and uses of the society [sic] institutions. A social structure is itself a structure of power."[65] As Claus Offe explains, economic imperatives act as a structural constraint, although not necessarily a determinant on public policymaking:[66]

> Every interest the State (or the personnel of the State apparatus, its various branches and agencies) may have in their own stability and development can be pursued only if it is in accordance with the imperative of

> maintaining accumulation; this fundamental dependency upon accumulation functions as a selective principle upon state policies. The criterion of stability of accumulation is thus incorporated in the pursuit of interests and policies that, considered by themselves, may have little to do with accumulation. Accumulation, in other words, acts as the most powerful constraint criterion, but not necessarily the determinant of content, of the policy making process.

The dependence of government officials on a prosperous economy for tax revenues and continued public support at the polls means that they must give special consideration to business interests when making policy. During times of recession government officials do not need to be told by business lobbyists that business confidence must be secured; they depend upon it for their own political survival as well as for economic development.

The state's dependence on capital acts as a structural constraint on its capability to address the public's calls for social and economic justice (e.g., occupational safety and health protection for VDT workers). In addition, the state's dependence on capital is an asymmetrical relationship, giving business interests a structural advantage over other groups in public policy arenas. As Offe writes:[67]

> The dependency of the state apparatus upon the performance of capital (which incudes the indirect dependence upon capital of all those interests which, in turn, depend upon the state and the goods and services delivered by it) is unparalleled by any reciprocal dependency relationship of the capitalist class upon the state. This structural asymmetry is exploited and fine-tuned by the operation of business associations, but it is by no means constituted or created by them. Their success is not accomplished by or because of the organization itself; rather, it derives from a power relationship that is logically and

> historically prior to the fact of any collective action of businessmen.

If OSHA regulation becomes too costly to business, it may respond with an "investment strike," which, in turn, threatens the conditions by which economic prosperity and the health of the state prevails.[68] Even liberal, pro-labor governments-- such as when the British Labor Party is in power-- must be sure to fulfil the state function of maintaining business confidence, lest the latter conduct an investment strike that imperils the former's chances for reelection.[69]

As a result, capital holds an important "veto power" over the state's capacity to adequately address occupational safety and health problems. Charles Noble, who has conducted the only published study of OSHA from the capitalist state perspective, describes this constraint:[70]

> whereas the limits of reform originate in capitalist economic structures, they are sustained only to the degree that political strategies fail to confront those structures most important to the private control of investment and the exclusion of workers from participation in the organization of work and the implementation of policy. To the extent that these structures are left in place by reformers, social policies that depend for their success on radical political action by workers, or on anticapitalist political action by public officials are likely to fail.

The capitalist state perspective helps to explain the federal and state government's refusal to study the VDT issue and promulgate regulations in accordance with the OSH Act. The state was not neutral; rather, in its role as manager of the capitalist system, it played an active, but

relatively independent, role in supporting business opposition to VDT regulation. As Chapter 8 documents, Reagan's Office of Management and Budget continued to oppose NIOSH's plan to ask female telephone operators questions that might link their use of VDTs to reproductive health hazards (e.g., miscarriages and birth defects), even after the BellSouth Corporation relented. The establishment of a link would have given a strong impetus to labor's call for VDT safety and health regulations. Such a finding would support organized labor's calls for VDT safety and health regulation and impose substantial financial burdens on business. It also explains the state's interference in and suppression of VDT research efforts at the Bureau of Radiological Health, and Environmental Protection Agency. This supports the capitalist state view that the state is interested in promoting conditions which it views as fostering the long-term health of the economy rather than the short-term interests of particular businesses.

Moreover, federal and state government officials acted independently of business pressure to oppose VDT regulation. The corporate coalition applied tremendous pressure on the state to defeat VDT regulations at various stages of the decision-making process, but the state did not always wait for such pressure to be applied; it responded to the structural pressures of a declining economy. The pressure on public officials to oppose VDT regulations came from the

state's need to promote conditions for economic growth upon which its own fortunes depended. Given that the computer industry and the VDT-using service sector were among the few bright spots in the economy during the 1980s, public officials were especially loathe to support VDT regulations that might stifle the economic growth of these sectors. President Carter began to use OMB as a cost/benefit check on OSHA's standard setting procedure, an assignment that President Reagan would expand. As part of its deregulatory, supply-side policy to stimulate the economy, the Reagan administration severely cut OSHAs and NIOSHs budgets. As a result, OSHA's regulation of industry, never strong to begin with, was loosened. Thus, an eviscerated OSHA and NIOSH were ill-prepared to deal with the VDT issue which arose simultaneously with their decline.

In sum, this case study combines aspects of the pluralist, neopluralist, and capitalist state perspectives to explain the failure of the state to regulate the safety and health conditions of VDT workers. The pluralist perspective stresses that the VDT case study involved interest group conflict between labor and capital in the political arena. The neopluralist model adds to this an explanation of governmental and corporate uses of extrapolitical barriers that organized labor had to overcome in order to get its voice heard in the political arena. The capitalist state model provides a structural explanation for

the ultimate suppression of the VDT issue by federal government officials. It also explains the reluctance of state governments to enact VDT regulations in the face of fierce competition with other states to lure high tech investments. This study will argue that business interests' superior mobilization of pressure, supported by structural constraints on the state's ability to address occupational safety and health problems, accounts for the defeat of VDT regulations.

Plan of the Study.

Chapter 2 discusses the development and scope of occupational illnesses associated with VDT work. Chapter 3 analyzes the power relationship between labor and capital in the office that produced the hazards of VDT work. Chapter 4 looks at labor's attempts to organize and negotiate with capital to protect themselves. Chapter 5 discusses the corporate community's countermobilization to stop labor's attempts to socialize the conflict. Chapters 6 and 7 deal with the conflict over ergonomic and nonionizing radiation issues at the Federal level. Chapter 8 explains the Reagan administration's use of OMB to subordinate the VDT safety and health issue to its need to maximize capital accumulation in the postindustrial era. Chapter 9 looks at how the restricting of the scope of conflict to the state and local level had the effect of marginalizing the VDT

issue from the national agenda. Chapter 10 presents my conclusions.

Notes.

1. A selected list follows: Barbara Hilkert Andolsen, Good Work at the Video Display Terminal: A Feminist Ethical Analysis of Changes in Clerical Work (Knoxville: University of Tennessee Press, 1989); Barbara Baran and Suzanne Teegarden, "Women's Labor in the Office of the Future," paper presented at the conference on "Women and Structural Transformation: The Crisis of Work and Family Life," Rutgers University, New Brunswick, N.J., November 18-19, 1983; Margaret Lowe Benston, "For Women, The Chips Are Down," in The Technological Woman, ed. Jan Zimmerman (New York: Praeger, 1983), 44-54; Valerie J. Carter, "Office Technology and Relations of Control in Clerical Work," in Women, Work and Technology: Transformations ed. Barbara D. Wright (Ann Arbor: University of Michigan Press, 1987), 202-19; Rosemary Crompton and Gareth Jones, White-Collar Proletariat: Deskilling and Gender in Clerical Work (Philadelphia: Temple University Press, 1984); Roselyn L. Feldberg and Evelyn N. Glenn, "Proletarianizing Clerical Work: Technology and Organizational Control in the Office," in Case Studies on the Labor Process, ed. Andrew Zimbalist, (New York: Monthly Review Press, 1979), 51-72, and "Technology and Work Degradation: Effects of Office Automation on Women Clerical Workers," in Machina Ex Dea: Feminist Perspectives on Technology, ed. Joan Rothschild, (Elmsford, N.Y.: Pergammon Press, 1983), 59-78; Barbara Gutek, "Women's Work in the Office of the Future," in The Technological Woman, ed. Jan Zimmerman (New York: Praeger, 1983), 159-68; Robert Howard, Brave New Workplace (New York: Viking Books, 1986); Anne Machung, "Word Processing: Forward for Business, Backward for Women," in My Troubles Are Going to Have Trouble With Me: Everyday Trials and Triumphs of Women Workers, eds. Karen Sacks and Dorothy Remy (New Brunswick, N.J.: Rutgers University Press, 1984), 124-39; Mary Murphree "Brave New Office: The Changing World of the Legal Secretary," in My Troubles Are Going to Have Trouble With Me: Everyday Trials and Triumphs of Women Workers, eds. Karen Sacks and Dorothy Remy (New Brunswick, N.J.: Rutgers University Press, 1984), 140-59; Sally Otos and Ellen Levy, "Word Processing: 'This is Not a Final Draft,'" in The Technological Woman, ed. Jan Zimmerman (New York: Praeger, 1983), 149-57; Jackie West, "New Technology and Women's Office Work," in Work, Women and the Labour Market (London: Routledge & Kegan Paul, 1982), 61-79.

2. The literature is voluminous; a selected sample follows: Congress, House, Committee on Education and Labor, OSHA Oversight-- Video Display Terminals in the Workplace: Hearings before the Subcommittee on Health and Safety, 98th Cong., 2nd sess., 1984; American Medical Association, Council on Scientific Affairs, "Council Report: Health Effects of Video Display Terminals," JAMA 257 (March 20, 1987): 1508-12, and "Health Effects of Video Display Terminals: An Update," presented by George H. Bohigian, M.D., April 1989; Barbara Bolsen, "VDTs Still Beleaguered by Worker Complaints," JAMA 246 (October 9, 1981): 1634, 1639; Paul Brodeur, "Annals of Radiation: Part III-- Video Display Terminals," The New Yorker, June 20, 1989, 39-68, David Charron, Health Hazards of Radiation From Video Display Terminals: Questions and Answers (Hamilton, Ontario: Canadian Centre for Occupational Health and Safety, 1988); Bob DeMatteo, Terminal Shock: The Health Hazards of Video Display Terminal Workers, 2nd ed. (Toronto: NC Press Limited, 1986); Suzanne G. Haynes, "The Effect of Job Demands, Job Control, and New Technologies on the Health of Employed Women," in Women, Work, and Health: Stress and Opportunities, eds. Marianne Frankenhaeuser, Ulf Lundberg and Margaret Chesney (New York: Plenum Press, 1991), 157-69; Mary Sue Henifin, "The Particular Problems of Video Display Terminals," in Double Exposure: Women's Health Hazards on the Job and at Home, ed. Wendy Chavkin (New York: Monthly Review Press, 1984), 69-80; Joel Makower, Office Hazards (Washington, D.C.: Tilden Press, 1981); Karel Marha, Barry Spinner, and Jim Purdham, The Case for Concern about Very Low Frequency Fields From Visual Display Terminals: The Need for Further Research and Shielding of VDTs (Hamilton, Ontario: Canadian Centre for Occupational Health and Safety, 1983); National Academy of Sciences, National Research Council, Committee on Vision, Video Displays, Work, and Vision, (Washington, D.C.: National Academy Press, 1983); Potential Health Hazards of Video Display Terminals (Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1980); Steven L. Sauter, Lawrence M. Schleifer, and Sheri J. Knutson, "Musculoskeletal Discomfort and Ergonomic Predictors in VDT Data-Entry Work," in Trends in Ergonomics/Human Factors IV: Proceedings of the Annual International Industrial Ergonomics and Safety Conference Held in Miami, Florida, U.S.A., 9-12 June, 1987, ed. Shihab S. Asfour, 175-185 (Amsterdam: North-Holland Publishing Company, 1987); Lawrence M. Schleifer and Steven L. Sauter, "A Questionnaire Survey To Assess Ratings of Physical Workplace Conditions, Somatic Discomfort, and Work Inefficiency Among VDT Users," in Ergonomics and Human Factors: Recent Research, eds. L. Mark, J. Warm, and R. Huston (New York: Springer-Verlag, 1987); Michael J. Smith, et al, Electronic Performance Monitoring and Job Stress in Telecommunications Jobs, (Madison, WI.: University of Wisconsin, Department of Industrial Engineering and the Communications Workers of America, October 5, 1990; Jeanne M.

Stellman and Mary Sue Henifin, Office Work Can Be Dangerous to Your Health (New York: Pantheon Books, 1983); The VDT Book: A Computer User's Guide to Health and Safety (New York: New York Committee for Occupational Safety and Health, 1987).

3. A few law articles have dealt with the issue of VDT workers' rights. See Sheryl Gordon McCloud, "VDTs in the Workplace," Southern California Law Review 58 (1985): 1493-1499; Sara Rapport, "Health Rights of Video Display Terminal Operators," Harvard Women's Law Journal 8 (1985): 247-264; and Charles Wallach, "Employer Liability in Video Display Operators' Health Complaints," Glendale Law Review 6 (1985): 1-14.

4. A search of dissertation abstracts revealed 30 works dealing with VDTs, but none in political science.

5. Shari Roan, "When it's a Blur: New Developments in Equipment, Lighting and Prescriptions May Help Ease Strain of Staring at VDTs," Los Angeles Times, January 19, 1993, E1.

6. Department of Human Services, National Institute for Occupational Safety and Health, Michael J. Smith, Barbara G. F. Cohen, Lambert W. Stammerjohn and Alan Happ, An Investigation of Health Complaints and Job Stress in Video Display Operations (Cincinnati: National Institute of Occupational Safety and Health, 1981).

7. Department of Labor, Bureau of Labor Statistics, Occupational Injuries and Illnesses in the United States by Industry, 1991, Bulletin 2424 (Washington, D.C.: Government Printing Office, May 1993), 5.

8. Quoted in Marvin J. Dainoff, "The Illness of the Decade," Computerworld, April 13, 1992, 27.

9. Doug Bartholomew, "RSI: Is it Your Problem?" Information Week, November 9, 1992, 33.

10. See references in endnote 2.

11. From a national survey of 1,008 full-time office workers by Louis Harris and Associates, Inc. for "Office Environment Index: Summary Report: United States," 1991 Steelcase Worldwide Office Environment Index (Grand Rapids, MI., 1991), 13. The CTD question was not part of the 1989 poll.

12. Ibid., 5.

13. Barbara Garson, The Electronic Sweatshop: How Computers are Transforming the Office of the Future into the Factory of the Past (New York: Simon and Schuster, 1988); "VDTs: Sweatshops of the Future?" The Public Sector, July 12, 1985, 10-11. Employers have even farmed out VDT work on a piecework basis to those working at home. See Dennis Chamot, and John L. Zalusky, "The Electronic Sweatshop: The Use and Misuse of Work Stations in the Home," Presented at a National Executive Forum: Office Work Stations in the Home, National Academy of Sciences, Washington, D.C.: November 9-10, 1983; Philip Mattera, "High-Tech Cottage Industry: Home Computer Sweatshops," The Nation 236 (April 2, 1983): 390-392; Richard Moore and Elizabeth Marsis, "Telecommuting: Sweatshop at Home Sweet Home?" In These Times, April 18-24, 1984.

14. See the testimony before the House Committee on Education and Labor of Vico Henriques, President of the Computer, Business Equipment Manufacturers Association and other business representatives opposed to VDT regulation in OSHA Oversight-- Video Display Terminals in the Workplace. See also, Renee S. Ross, president of the Center for Office Technology, an industry supported organization, "It's Finally Time To Debunk the Myth That VDTs Are Harmful to Health," PC Week, April 15, 1986, 41. For a business study arguing that the VDT issue arose out of irrational employee fears of new technology rather than legitimate occupational safety and health issues, see Adia Personnel Services, The Impact of Office Automation: 84/85 International Survey (Menlo Park, CA.: Adia Personnel Services, n.d., circa 1985), 18. For the testimony and opinion of a researcher closely aligned with the VDT industry see Myron L. Wolbarsht, Congress, House, Committee on Science and Technology, Potential Health Effects of Video Display Terminals and Radio Frequency Heaters and Sealers: Hearings Before the Subcommittee on Science and Technology, 97th Cong., 1st sess., May 12, 1981, 400-401; and Myron L. Wolbarsht, et al., "Electromagnetic Emission From Visual Display Units: A Non-Hazard," in Ocular Effects of Non-ionizing Radiation: Proceedings of the Society of Photo-Optical Instrumentation Engineers, Vol. 229, ed. M.L. Wolbarsht and D.H. Sliney (Bellingham, WA.: Society of Photo-Optical Instrumentation Engineers, 1980), 187-195.

15. Public Law 91-596. The law provides that states may submit plans to regulate occupational safety and health conditions, but they must be approved by the Occupational Safety and Health Administration and conform to federal standards. At present, 24 states have their own plans. Domestics, the self-employed, firms and farms with less than ten employees (which have the highest injury, illness and death rates) are exempt from the law.

16. The OSH Act omits companies with less than 10 employees from its provisions.

17. This argument can be found in Michael J. Crozier, Samuel P. Huntington, and Joji Watanuki, The Crisis of Democracy (New York: New York University Press, 1975). For a critique of this view, see Frances Fox Piven and Richard A. Cloward, The New Class War: Reagan's Attack on the Welfare State and Its Consequences (New York: Pantheon Books, 1982); Joan Claybrook, et al. Retreat From Safety: Reagan's Attack on America's Health (New York: Pantheon Books, 1984); Michael Pertschuk, Revolt Against Regulation (Berkeley: University of California Press, 1982); Thomas Byrne Edsall, The New Politics of Inequality (New York: W. W. Norton, 1984); Thomas Ferguson and Joel Rogers, Right Turn: The Decline of the Democrats and the Future of American Politics (New York: Hill and Wang, 1986).

18. As I have indicated, there is a technical distinction to be made between VDTs and PCs. However, both present the same occupational safety and health problems for users. Therefore, for purposes of this dissertation, I will use the term VDT to denote both types of terminals. VDTs are occasionally referred to as CRTs (Cathode Ray Tubes) in the earlier literature, or VDUs (Visual/ Video Display Units) in the foreign literature. I will use the term VDT, except when the other terms are used in quoted passages.

19. William M. Bulkeley, "PC Networks Begin To Oust Mainframes In Some Companies," Wall Street Journal, May 23, 1990, A1.

20. "Computers in the Office," in Department of Commerce, Bureau of the Census, Statistical Abstracts of the U.S. 110th ed. (Washington, D.C.: Government Printing Office, 1990), 944-45.

21. There are no reliable figures on the number of PC's being used in the office, but there are an estimated 55.7 million PCs
being used for both work and personal purposes. Figures cited in J.A. Savage, "Further Study of VDTs Needed, EPA Reports," Computerworld, December 17, 1990, 96.

22. Bob Baker, "Assembly Line Stress in Offices," Los Angeles Times, June 13, 1991, A1.

23. Robert Yeager and Weylin Eng, "Confronting the Computer: Help for Eyes," 1987 Medical and Health Annual (Chicago: Encyclo- pedia Britannica, 1986), cited in VDT News, May/June 1987, 2.

24. Cited in "Office Environment Index," 1991 Steelcase Worldwide Office Environment Index, 10.

25. Library of Congress, Office of Technology Assessment, Automation of America's Offices (Washington, D.C.: Government Printing Office, 1985).

26. "The Office of the Future," Business Week, June 30, 1975, 48-70; "Computers Are Changing Newsrooms Across Nation," New York Times, February 19, 1976, 50; Richard Matteis, "The New Back Office Focuses on Customer Service," Harvard Business Review, (March-April 1979), 146-159; Michael D. Zisman, "Office Automation: Revolution or Evolution?" Sloan Management Review, 19 (Spring 1978): 1-17; "The 'Automated Office' Is Thriving," Office Management, May 1983, 13; John J. Connell, "The Future Office: New Technologies, New Career Paths," Personnel, July-August 1983, 23-32; William Synott, "Boston Bank Takes Office Automation Via Well-Travelled Word Processing Route," Computerworld, September 28, 1981, SR12-14; Evelyn Wilk, "Survey Sees Integrated Information Systems An Industry Reality For Users By Mid-80s," Computerworld, September 28, 1981, SR 58-59; Amy D. Wohl, "'Office of Tomorrow': What to Expect," Computerworld, September 28, 1981, SR5; Nancy B. Finn, "Office of Future Seen Answer to Paper Blizzard," Computerworld, September 28, 1981, SR71-72; "Previewing Office of Future," Industrial Union Department Digest 6 (November/December 1984).

27. "Machine of the Year," Time, January 3, 1983, 3, 12-32.

28. On the two-tier economy, see American Federation of Labor-Congress of Industrial Organizations, The Future of Work, A Report by the Committee on the Evolution of Work. (Washington, D.C.: AFL-CIO, August 1983). For postindustrial economy's dependence on low-paid women workers, see Aaron Bernstein, "What's Dragging Productivity Down? Women's Low Wages," Business Week, November 27, 1989, 171.

29. Department of Labor, Bureau of Labor Statistics, "20. Employed Civilians by occupation, sex, and age," Employment and Earnings, January 1993, 193. Percentages calculated by the author.

30. BLS, "56. Median weekly earnings of full-time wage and salary workers by detailed occupation and sex," Employment and Earnings, January 1993, 233. Percentage calculated by the author.

31. Department of Labor, Women's Bureau, "Women and Workforce 2000," Fact Sheet No. 88-1, January 1988, 4.

32. Wendy Chavkin, ed. Double Exposure: Women's Health Hazards on the Job and at Home (New York: Monthly Review Press, 1984).

33. See Philip J. Hilts, "N.I.H. Starts Women's Health Office," New York Times, September 11, 1990, C9.

34. For more on this point see Barbara Mayer Wertheimer, We Were There: The Story of Working Women in America (New York: Pantheon Books, 1977); Alice Kessler-Harris, Out to Work: A History of Wage-Earning Women in the United States (New York: Oxford University Press, 1982).

35. Ruth Milkman, Gender at Work: The Dynamics of Job Segregation by Sex during World War II (Urbana: University of Illinois Press, 1987), 3.

36. See two essays on the subject in Women, Work and Protest: A Century of Women's Labor History, ed. Ruth Milkman. 206-34. New York: Routledge and Kegan Paul, 1985: Deborah Bell, "Unionized Women in State and Local Government," 206-34; and Sharon Hartman Strom, "'We're No Kitty Foyles': Organizing Office Workers for the Congress of Industrial Organizations, 1937-1950," 280-99. Also, see another essay by Strom, "'Light Manufacturing': The Feminization of American Office Work, 1900-1930," Industrial and Labor Relations Review 44 (October 1989): 53-71.

37. Definition of social costs adapted from K. William Kapp's seminal treatment of the subject, The Social Costs of Private Enterprise (New York: Schocken Books, 1971), 13-14.

38. Other policy areas where social costs arise are environmental pollution and depletion of our natural resources, consumer product safety, and transportation safety. For more on the social costs of modern economic dislocation, see Michael H. Best and William E. Connolly, The Politicized Economy, 2d ed. (Lexington, MA.: D.C. Heath and Co., 1982), Chapter 3, "Nature and Its Largest Parasite;" Barry Bluestone and Bennett Harrison, The Deindustrialization of America: Plant Closings, Community Abandonment, and the Dismantling of Basic Industry (New York: Basic Books, 1982) 63-66; and, Joshua Cohen and Joel Rogers, On Democracy: Toward a Transformation of American Society (New York: Penguin Books, 1983), 24-30.

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Regulation in Perspective, ed. Thomas K. McCraw, (Cambridge, MA.: Harvard University Press, 1981), 155-186.

40. For example, see Susan J. Tolchin and Martin Tolchin, Dismantling America: The Rush to Deregulate (Boston: Houghton Mifflin Co., 1983); Thomas Byrne Edsall, The New Politics of Inequality (New York: W.W. Norton, 1984); Thomas Ferguson and Joel Rogers, Right Turn: The Decline of the Democrats and the Future of American Politics (New York: Hill and Wang, 1986); and Patricia Cayo Sexton, The War on Labor and the Left: Understanding America's Unique Conservatism (Boulder, CO.: Westview Press, 1991).

41. Fred Block, Richard A. Cloward, Barbara Ehrenreich, and Frances Fox Piven, The Mean Season: The Attack on the Welfare State (New York: Pantheon, 1987), xii.

42. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, "58. Employed Wage and salary workers by occupation, industry, and union affiliation," 239.

43. For example, see Floyd Hunter, Community Power Structure (Garden City, N.Y.: Anchor Books, 1963), and C. Wright Mills, The Power Elite (New York: Oxford University Press, 1956).

44. See Robert A. Dahl, Who Governs? Democracy and Power in an American City (New Haven: Yale University Press, 1961), especially 85ff, 228; and Nelson Polsby, Community Power and Political Theory (New Haven: Yale University Press, 1980).

45. Robert A. Dahl, A Preface to Democratic Theory (Chicago: University of Chicago Press, 1956), 145. Dahl has moved away from this position, placing greater emphasis on the problem of barriers to democratic participation, especially economic inequalities. See his "On Removing Certain Impediments to Democracy in the United States," Political Science Quarterly 92 (Spring 1977), 1-20. For example, on page 16 Dahl says "a country committed to procedural democracy must either place effective limits on the extent to which economic resources can be converted into political resources, or else ensure that economic resources are much more equally distributed than they are in the United States at the present." Also, see his A Preface to Economic Democracy (Berkeley: University of California Press, 1985).

46. David B. Truman, The Governmental Process (New York: Alfred A. Knopf, 1965), 256-61; Edwin M. Epstein, The Corporation in American Politics (Englewood Cliffs, N.J.: Prentice-Hall, 1969), especially Chapter 8.

47. A typical pluralist text on business and politics describes the state's role in the U.S. as follows: "The role of the state is to maintain conditions conducive to business's success by maintaining the institutional infrastructure needed for commercial activity (such as a system of law) and by steering the economy at the macro level in order to avoid recession or inflation. Decisions about the allocation of investment and the co-ordination of different factors of production are left to market forces." Wilson explicitly denies that their is a structural bias in favor of business the political system. Graham K. Wilson, Business and Politics: A Comparative Introduction 2nd ed. (Chatham, N.J.: Chatham House, 1990), 17.

48. Epstein, The Corporation in American Politics, 240.

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55. Peter Bachrach and Morton S. Baratz, Power and Poverty: Theory and Practice (New York: Oxford University Press, 1970), 43.

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58. Daniel M. Berman, Death on the Job: Occupational Health and Safety Struggles in the United States (New York: Monthly Review Press, 1978).

59. See James Weinstein, "Leadership in Social Reform: Workmen's Compensation," in The Corporate Ideal in the Liberal State, 40-61.

60. Ibid., 34.

61. Bachrach and Baratz, Power and Poverty, 45.

62. Schattschneider, The Semisovereign People, 69. Italics in original.

63. Ralph Miliband, The State in Capitalist Society: An Analysis of the Western System of Power (New York: Basic Books, 1969), 1-7. Three summaries of the literature are Bob Jessop, The Capitalist State (New York: New York University Press, 1982); Martin Carnoy, The State and Political Theory (Princeton: Princeton University Press, 1984); and Clyde W. Barrow, Critical Theories of the State (Madison: University of Wisconsin Press, 1992). For the evolution of one theorist's views on the relative autonomy of the state, see Fred Block, Revising State Theory: Essays in Politics and Postindustrialism (Philadelphia: Temple University Press, 1987).

64. Jurgen Habermas, Legitimation Crisis (Boston: Beacon Press, 1975), James O'Connor, The Fiscal Crisis of the State (New York: St. Martin's Press, 1973).

65. Robert S. Lynd, "Power in American Society as Resource and Problem," in Problems of Power in American Democracy, ed. Arthur Kornhauser (Detroit: Wayne State University Press, 1957), 23.

66. Claus Offe, "The Theory of the Capitalist State and the Problem of Policy Formation," in Stress and Contradiction in Modern Capitalism, eds. Leon Lindberg, et al. (Lexington, MA.: D.C. Heath, 1975), 126.

67. Claus Offe, "Two Logics of Collective Action," in Disorganized Capitalism (Cambridge, MA.: MIT Press, 1985), 192.

68. See Offe's discussion of the private sector's ultimate weapon, the withdrawal of investment capital, Contradictions of the Welfare State, 244. Also, Habermas, Legitimation Crisis, 62.

69. See Claus Offe, Contradictions of the Welfare State, ed. John Keane (Cambridge: MIT Press, 1984) 119-129; Fred Block, "The Ruling Class Does Not Rule: Notes on the Marxist Theory of the State," Socialist Revolution, 6-18; and Ralph Miliband, Capitalist Democracy in Britain (Oxford, U.K.: Oxford University Press, 1984), 94ff.

70. Charles Noble, Liberalism at Work: The Rise and Fall of OSHA (Philadelphia: Temple University Press, 1986), 9.

CHAPTER 2

VIDEO DISPLAY TERMINALS AND SAFETY AND HEALTH HAZARDS IN "THE OFFICE OF THE FUTURE."

> [T]he electronic office... makes much more efficient use of the current labor force. It gives more satisfaction to people who work in the electronic office, except for some poor person who has to sit in front of a C.R.T. eight hours a day.
>
> Charles A. Jortberg, President, Jortberg Associates, an office automation consulting firm.[1]

Introduction.

Advocates of the "office of the future" claimed that the VDT would empower workers and relieve them of much of the drudgery involved in office work.[2] However, workers have experienced a broad array of serious safety and health problems linked to the use of VDTs. This chapter discusses the ailments that afflict VDT workers, under the general headings of ergonomic and nonionizing radiation problems. It cites evidence that many of these hazards, which are preventable with the proper education and purchase of ergonomically-correct equipment, are caused by workplace practices geared towards Taylorist, assembly-line, notions of productivity.

In 1975, a Business Week "special executive briefing" predicted how computer automation would bring about the "Office of the Future."[3] This article, and the many others that it inspired, held that workers should not fear the

coming of the video display terminal (VDT).[4] Advocates argued that the VDT would not only be "user friendly," but improve the quality of work. Routine tasks would be automated, freeing the employee to learn new skills that would upgrade and enrich his or her job. A report by Adia Personnel Services claimed that "As the office becomes increasingly automated, routine tasks will become the province of these machines [i.e., computers] which extend human intellect, freeing staff and managers alike to expand their personal and professional roles."[5] Writing in the Sloan Management Review in 1978, Michael D. Zisman stated that the VDT "will relieve workers of the mundane and routine functions and turn these over to computer control."[6] "New gadgetry, better jobs, less monotony-- all are part of the office of the future," proclaimed U.S. News & World Report in 1978.[7] The Adia report went so far as to suggest that the VDT would empower the office worker and threaten corporate control of the workplace:[8]

> Today's machines require much more human input and are capable of much more than merely performing a repetitive task. The person at the keyboard can input data, control, interpret and creat [sic] patterns. If knowledge is power, then today's office workers have the ability to shape a very powerful system. And, the acquired ability to use these machines can lead to changes in the balance of power within an organization.

While the VDT had a tremendous advantage in processing capability over the typewriter, its versaltility enabled managers to create new "mundane and routine tasks" that were in many instances just as bad, or worse, than the ones they

replaced. The Business Week article that optimistically proclaimed the coming of the "office of the future" also contained intimations that the transition would not be smooth and painless. In Taylorist fashion, the office worker would have to be adapted to the needs of the task. The issue of control provoked a debate in data processing circles over the question of whether or not VDTs would enhance the quality of office work. Jon E. Seidel, President of EDP Consulting, Inc., of Oakland, CA., argued that office automation was leading to more monotonous work. "It is a very, very significant issue," he said. "It is the issue of control, the ability of the machine to dictate the pace of work that the human does."[9] F.G. Rodgers, IBM's vice president of marketing retorted that the issue of deskilling was all a myth. But Rogers' denial ran counter to his own company's vision of the office of the future. IBM Vice President William F. Laughlin put it bluntly: "People will adapt nicely to office systems-- if their arms are broken ... and we're in the twisting stage now."[10] Ironically, he presaged the development of serious safety and health hazards associated with VDT use, an event unprecedented in the history of the office.

The Safety and Health Hazards of Working With Video Display Terminals.

In light of the corporate claims that VDTs would liberate the worker from drudgery, the appearance of occupational safety and health problems in the office is an ironic development.[11] Studies show that workers who use VDTs report more safety and health problems than control groups of workers not using the machines.[12] According to the National Institute of Occupational Safety and Health (NIOSH), "the VDT imposes physical stressors that other office machines or hand work do not."[13] A study of Quebec women doing data entry work with VDTs supports NIOSH's assessment. It found that they experienced more psychiatric problems and were more dependent on prescription and over-the-counter drugs than other working women. These problems were due, the investigators found, to their highly repetitious tasks and stress from work speed-ups. These VDT workers were more dissatisfied with their jobs than auto assembly line workers. The authors of the report concluded that VDT data entry work is a "high-risk occupation."[14]

Ailments reported by VDT workers fall into two general categories; the problems that can readily be dealt with by the science of ergonomics and those that are attributed to the low level, non-ionizing radiation that is emitted by the VDT. VDT-related occupational safety and health problems are a low priority for the U.S. and state governments, which do not keep statistics on most of these ailments.[15] But the VDT safety and health problem is an issue of major magni-

tude. As NIOSH official Steven Sauter said, "We have millions of people using VDTs... and when you have even a small proportion of millions of people complaining, then you've got a public health problem."[16]

Ergonomic Problems.

Ergonomics, sometimes called "human factors," is the study of designing and adapting the workplace to meet the needs of the worker, rather than scientific management's practice of adapting the worker to the requirements of the task. Most ergonomic-related problems result from introducing VDTs to the workplace without regard to the physiological needs of the individual worker. VDT are more frequently used by a greater variety of workers for longer hours and at a closer range than typewriters. Managers usually introduce VDTs into the office without taking this, and the physiological differences between the workers into account. Standard-issue, non-ergonomically designed chairs and desks force VDT operators to contort their bodies to the dictates of the furniture and the VDTs, many of which do not have adjustable screens, or detached keyboards. Failure to address ergonomic-related problems virtually assures that workers will experience stress and cumulative trauma disorders.

Stress, one of the most dangerous health hazards associated with VDT work, is the scourge of the information age.

Since the VDT can process information much quicker than a typewriter, many managers expect employees to work faster. When it conducted a survey of office workers for Steelcase, Inc., one of the nation's largest manufacturers of office furniture, Louis Harris and Associates, Inc., concluded that "the speed and efficiency of computers have no doubt raised productivity pressures for everyone."[17] NIOSH observed that the number and severity of safety and health problems, such as visual and musculoskeletal ailments increases, rises along with the heightened stress resulting from increased production pressures.[18] Another NIOSH study concluded that "VDT operators reported higher levels of job stress and health complaints" than those who didn't use the machines, and that "The job stressors showing the greatest impact on the clerical [VDT] operators dealt with workload, workplace, lack of control over job activities, boredom and concerns about career development."[19]

All these factors contribute to increased levels of psychological stress, which has been linked to heart attacks,[20] angina, and psychosomatic disorders. Studies show that working at a VDT for more than four hours a day, or twenty hours a week, greatly increases the number of health complaints.[21] For example, secretaries have reported higher rates of stress after switching from typewriters to VDTs.[22] NIOSH investigators were surprised to find that VDT operators experienced the highest levels of stress they had ever

measured, including air traffic controllers.[23]

In 1980, NIOSH examined the job stressors that affected three groups of workers, clerical workers who used VDT's, those who didn't and professionals who used VDTs. What they found was that clerical workers who used VDTs had highly routinized, high pressure jobs, which required less independent thought than the other two groups. The result of this high pressure, mechanized job, NIOSH reported, was increased stress:[24]

> When the job features of the various groups are examined we see that the clerical VDT operators held jobs involving rigid work procedures with high production standards, constant pressure for performance, very little operator control over job tasks, and little identification with and satisfaction from the end-product of their work activity. In contrast to the clerical VDT operators, the professionals using VDTs held jobs that allowed for flexibility, control over job tasks, utilization of their education and a great deal of satisfaction and pride in their end-product.

The problem of occupational stress is compounded by the computer monitoring of VDT workers. It is especially stressful when done on a continuous basis. Employers use computer monitoring to keep track of productivity, and to control and discipline the workforce. Often, jobs are simplified in order to make computer monitoring easier.[25] Medical researchers have observed a correlation between stress and the degree of control an employee has over the job; as control over the job decreases, stress increases. They conclude that workers performing repetitive, assembly-line tasks suffer

more job-related stress than the peasant of preindustrial era. Workers with repetitive jobs report higher incidences of high blood pressure, nervous tension, depression, dissatisfaction with their jobs, sleep disturbances, and cardiovascular disorders.[26]

Vision problems, such as eyestrain, visual fatigue and headaches, are the most commonly reported complaints of VDT workers. Approximately 10 million Americans experience VDT-related vision problems, which accounts for 14% of the people who get eye exams annually.[27] Overly bright office light, and sunlight from windows, create screen glare and reflections which cause vision problems. It also contributes to musculoskeletal problems by forcing workers to twist and turn in the attempt to see the screen clearly. The monotonous and repetitious nature of VDT data entry work is another cause of vision problems.[28] The American Optometric Association estimates that anywhere from 50-75% of VDT workers complain of vision problems,[29] and has urged VDT workers to get eye examinations since 1983.[30] A 1983 survey of 2,000 secretaries by Minolta Corporation's Business Equipment Division found that 52% suffered from eye strain.[31] The prevention of glare on VDT screens requires light levels that are two to three times lower than in other offices.

Inflexible and poorly designed VDTs, furniture and lighting contribute to musculoskeletal aches and pains of

the lower back, shoulders, neck, arm, wrist, arm, fingers and nervous system. Cumulative trauma disorders (CTDs), also known as repetitive strain injuries (RSIs), include approximately 20 musculoskeletal disorders such as carpal tunnel syndrome, epicondylitis, ganglion, tendinitis and tenosynovitis. CTDs are caused by the continuous unnatural bending movement of the arms, wrists, neck and back in the workers effort to adapt his body to compensate for the inflexible design of the VDT, chair, desk and lighting.

Prior to the VDT, office workers were more likely to have performed a variety of tasks either manually or on different machines in the course of a day's work: typing, filing, taking dictation, doing mathematical calculations, and sending messages to others. But the VDT's ability to perform these tasks, which eliminates spontaneous work breaks (e.g., the need to stop typing in order to change paper, or make corrections is eliminated), often works to the employees' disadvantage. The lack of spontaneous work breaks, coupled with the speeded-up pace of VDT work, contributes to the repetitive motions that cause CTDs. Those who are afflicted with CTDs can experience severe pain in the arms and wrists which may leave them unable to lift light objects or open drawers.

Carpal tunnel syndrome is the most common type of cumulative trauma disorder suffered by VDT workers. A 1989 study conducted for NIOSH by Ambulatory Sentinel Practices

Network of Denver, revealed that VDT workers had the highest percentage (21%) of cases of carpal tunnel syndrome of all occupational groups.[32] It occurs from the repeated bending of the tendons and the median nerve, which travel through the wrist to the hand. Symptoms include numbness, weakness, and a tingling sensation in hands, wrists, forearms and fingers. If left untreated, surgery of the wrist ligament may be needed. At this stage "it is important that the worker is not returned to the same job or tasks that precipitated" the problem.[33] Besides VDT workers, cumulative trauma disorders afflict meat and poultry packers, letter sorters in the postal service, supermarket checkout clerks, underlying what is common to these disparate occupations--repetitive motions due to simplified, routinized tasks.[34]

CTDs are the fastest growing category of occupational illness, and have risen dramatically for the past decade.[35] In 1981, CTDs accounted for only 18% of all reported occupational illnesses, but skyrocketed to 61% of all cases in 1991.[36] The dramatic rise in CTD cases is an even more striking development considering that its growth has outpaced the explosion in the total number of reported illnesses over the past 10 years (339% to 292%). In 1981, only 23,000 out of a total of 126,100 cases were attributable to CTDs, but by 1991, the number had grown to 223,600 out of 368,300 cases.[37]

The Bureau of Labor Statistics (BLS) does not keep figures on the number of CTDs resulting from VDT work, which serves to mask the scope and severity of the problem.[38] But OSHA administrator Gerard F. Scannel attributed much of the sharp rise in CTDs during the past decade to the increase in computer work.[39] Scannel's assessment is supported by a number of studies. Analyses conducted by the Newspaper Guild and Communications Workers of America indicate that as many as 50% of the workers in the newspaper and telecommunications industries suffer from CTDs.[40] The Minolta study found that 46% of the 2,000 secretaries interviewed complained of back or neck problems.[41] In 1989, the Massachusetts Coalition of New Office Technology, an organization of over 40 unions and community groups, surveyed 314 full time VDT operators at NYNEX and found that 29% experienced the symptoms of cumulative trauma disorders.[42]

"The rise [in cumulative trauma disorders] is due in part to new, high-tech workstations," said Daniel Habes, an industrial engineer with NIOSH.[43] Reporters developed CTD problems after they switched from typewriters to VDT workstations. NIOSH and a team from the University of Michigan conducted a health hazard evaluation at Newsday and found that "working as a reporter was significantly associated with hand/wrist, elbow/forearm, and neck symptoms." Of the 834 employees studied, 40% suffered from CTDs: of these, 23% were afflicted with hand and wrist problems; 17% experienced

neck pains; 13% suffered from elbow and forearm pains; and 11% had shoulder problems. Their report concluded that the "percent of time typing or typing speed was significantly associated with symptoms in each of the four upper extremity joint areas."[44]

Many of these ailments can be prevented, or alleviated, by implementing current levels of ergonomic knowledge; for example, lower levels of ambient lighting which eliminates screen glare, ergonomically-designed furniture, periodic rest breaks, alternative work after long stretches at the VDT and redesign of the work process. Purchasers should take anthropometry-variations in body measurement into account when buying VDT workstations. Anthropometry is the science of studying human body measurements and their variations. "The value of adjustable work stations is not to make everybody fit," says Roger Stevens, OSHA's ergonomist, but to allow workers to change their positions during the day. He adds that workers are more likely to follow ergonomic recommendations if they are included in their preparation.[45]

But prevention is often hampered by the fact that the workers who need the ergonomically designed furniture the most (e.g., secretaries and clerical workers using VDTs), are last to get it. As one ergonomist put it, "executives get the best chairs, and secretaries get the worst, which is too bad, because secretaries spend more time in them."[46]

The Nonionizing Radiation Problem.

The second and more controversial category of VDT-related safety and health hazards are problems associated with non-ionizing radiation emitted by the machine's display terminal.[47] Problems include allergic reactions to the electromagnetic fields emitted by VDTs, such as nausea, fatigue, hyperactivity, and headaches;[48] skin rashes on the face and upper extremities;[49] angina, a sign of heart disease;[50] premature eye cataracts;[51] and reproductive hazards, such as infertility, birth defects, still births and higher than normal incidences of miscarriages.

Seventeen clusters of miscarriages among VDT workers have been reported in the U.S., Canada and Europe since 1980. Given the fact that many workers are unaware of the potential dangers of VDTs, it is likely that other clusters have gone unreported. A "cluster" is an epidemiological term designating the higher than normal coincidence of medical ailments in concentrated groups. A 1988 epidemiological study of 1,583 pregnant women conducted by the Kaiser-Permanente Medical Care Program of California found that those who worked more than 20 hours a week on VDTs during the first three months of pregnancy had statistically significant increases (80%) in miscarriages.[52]

Two types of non-ionizing radiation on the electromagnetic spectrum are involved: very low frequency (VLF) waves emitted by the flyback transformer and horizontal deflection

coil and extremely low frequency (ELF) waves produced by the vertical deflection coil. VLF and ELF radiation produce both electric and magnetic fields. Scientists have traditionally thought that electromagnetic fields were too weak to heat and damage the cells of human or animal organisms. However, a slow but steadily accumulating body of scientific literature indicates that there is some risk to human health and safety associated with the non-ionizing radiation that VDTs emit.[53] Studies show that 60 Hertz pulsed ELF waves, like those emitted by VDTs, can interfere with the immune system's defenses, altering cell structure, and promoting leukemia, lymphoma and brain cancer.[54]

Further studies are needed to learn more about how, and to what extent, non-ionizing radiation poses a threat to humans. But as Chapters 7 and 8 will demonstrate, the computer industry-- which has conducted its own secret studies pointing to the need for further research-- has combined with industries using office automation systems, and public officials, to block any meaningful public investigation.

In the meanwhile, precautionary shielding to block VLF magnetic waves emitted by display terminals could be accomplished at little expense to the manufacturers; only a minor alteration of the assembly process at little cost would be required. By law, U.S. manufacturers must shield the terminals they sell in Denmark and Sweden to block VLF magnetic wave emissions, but only IBM and Digital have offered these

models on the domestic market. IBM quietly test-marketed an expensively priced model in the Fall of 1989.[55] Since only a few machines have made there way to the market, the vast majority of VLF magnetic waves emitted by display terminals remain unshielded and all VLF electric waves and ELF electromagnetic waves remain unshielded.

Conclusion.

As this chapter has discussed, the scope and severity of the safety and health hazards associated with video display terminals presents a serious public health problem. Many of the problems, which are preventable through education and the purchase of ergonomically-correct equipment, are caused by workplace practices geared towards Taylorist, assembly-line notions of production. The reproductive health problems associated with the nonionizing radiation emitted by VDTs presents a more controversial issue. The issue is controversial because an open and thorough scientific investigation of the problem has been blocked by industry and government officials. The next chapter will discuss how did the VDT, which was supposed to improve working conditions, came to be the means by which so many safety and health problems beset the once hazard-free office.

Notes.

1. William Serrin, "Electronic Office Conjuring Wonders, Loneliness and Tedium," New York Times, March 28, 1984, A16.

2. See, for example, "The Office of the Future," Business Week, June 30, 1975, 48-70; "Computers Are Changing Newsrooms Across Nation," New York Times, Febraury 19, 1976, 50; Richard Matteis, "The New Back Office Focuses on Customer Service," Harvard Business Review, (March-April 1979), 146-159; Michael D. Zisman, "Office Automation: Revolution or Evolution?" Sloan Management Review (Spring 1978): 9; "The 'Automated Office' Is Thriving," Office Management, May 1983, 13; John J. Connell, "The Future Office: New Technologies, New Career Paths," Personnel, July-August 1983, 23-32; William Synott, "Boston Bank Takes Office Automation Via Well-Travelled Word Processing Route," Computerworld, September 28, 1981, SR12-14; Evelyn Wilk, "Survey Sees Integrated Information Systems An Industry Reality For Users By Mid-80s," Computerworld, September 28, 1981, SR 58-59; Amy D. Wohl, "'Office of Tomorrow': What to Expect," Computerworld, September 28, 1981, SR5; Nancy B. Finn, "Office of Future Seen Answer to Paper Blizzard," Computerworld, September 28, 1981, SR71-72; "Previewing Office of Future," Industrial Union Department Digest 6 (November/December 1984).

3. "The Office of the Future," Business Week, June 30, 1975, 50, 53.

4. An older, disappearing, term for the video display terminal is Cathode Ray Tube (CRT). Sometimes VDTs are also referred to as microprocessors or personal computers (PCs). In Europe the term Visual Display Units (VDUs) is commonly used. Although "visual" more accurately describes the process than "video," the latter term--which is widely used in the U.S.--is used to avoid confusion.

5. Adia Personnel Services, The Impact of Office Automation: 84/ 85 International Survey (Menlo Park, CA.: Adia Personnel Services, n.d., circa 1985), 22.

6. Zisman, "Office Automation: Revolution or Evolution?", 9.

7. "Office 'Miracles' That Electronics Is Bringing," U.S. News & World Report, September 18, 1978, 76-78.

8. Adia, Office Automation, 12.

9. "Consultants Question Computer's Impact on Workplace," Computerworld, May 28, 1984, 18.

10. "The Office of the Future," Business Week, 50, 53.

11. There is a vast amount of literature on the safety and health problems associated with VDT's. A good place to start are the hearings chaired by Congressman Gaydos. U.S., Congress, House, Committee on Education and Labor, OSHA Oversight-- Video Display Terminals in the Workplace, before the Subcommittee on Health and Safety, House of Representatives, 98th Cong., 2nd sess., 1984, 59. See also, Potential Health Hazards of Video Display Terminals (Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1980).

The best overall summary from a labor standpoint is Bob DeMatteo, Terminal Shock: The Health Hazards of Video Display Terminals (Toronto: NC Press Limited, 1986); and the best pamphlet-length treatment is New York Committee for Occupational Safety and Health, The VDT Book: A Computer User's Guide to Health and Safety (New York: New York Committee for Occupational Safety and Health, 1987). A brief summary of international research is in International Labour Office, Working With Visual Display Units; a useful compendium of articles is contained in Labor Occupational Health Program VDTs Can Be Hazardous to Your Health, prepared by the VDT Coalition (Berkeley, CA.: Labor Occupational Health Program, 1987).

12. National Research Council, Panel on Impact of Video Viewing on Vision of Workers, Video Displays, Work, and Vision (Washington, D.C.: National Academy Press, 1983), 1.

13. Department of Human Services, National Institute for Occupational Safety and Health, Michael J. Smith, Barbara G. F. Cohen, Lambert W. Stammerjohn and Alan Happ, An Investigation of Health Complaints and Job Stress in Video Display Operations (Cincinnati: National Institute of Occupational Safety and Health, 1981), 11.

14. Andre and Jacques Piche, "Health Problems of Data Entry Clerks and Related Job Stressors," Journal of Occupational Medicine 29 (December 1987): 942-48. See also, "Health Risks for Data Entry Clerks," VDT News, March/April 1988, 7.

15. Verified by telephone interviews with officials at NIOSH and OSHA, July 23, 1990.

16. Cathy Trost, "The Price of Progress: Computers, While Increasing Productivity, Have Spawned New Occupational Ailments," Wall Street Journal, September 16, 1985, 34C.

17. Steelcase, Inc., Office Environment Index: 1989 Detailed Findings (Grand Rapids, MI.: Steelcase, Inc., 1989), 65. The survey of included 1,041 full-time office workers.

18. Lawrence M. Scheifer, "Effects of VDT/Computer System Response Delays and Incentive Pay on Mood Disturbances and Somatic Discomfort," (Cincinnati: National Institute of Occupational Safety and Health, 1986); also "Full-time VDT Use Increases Stress; Job Content and Design Play Key Roles," VDT News, September/October 1986, 4-7.

19. NIOSH, An Investigation of Health Complaints, abstract page.

20. Peter Schnall et al., "The Relationship Between 'Job Strain,' Workplace Diastolic Blood Pressure and Left Ventricular Mass Index," Journal of the American Medical Association, Vol. 263, No. 14, April 11, 1990, 1929-1935.

21. Researchers at the University of Bologna reported an increase of hormones called catecholamines, a known sign of stress, in VDT operators who worked for more than 4 hours a day. See "Vision, RSIs & Stress Issues Dominate WWDU 89," VDT News, November/December 1989, 2-5; and Ellis Booker, "VDT Forces Unfazed by Setbacks in N.Y." Computerworld, January 8, 1990, 1.

22. "Survey of secretaries finds greater stress with VDT's than memory typewriters," The Secretary, March 1986.

23. NIOSH, An Investigation of Health Complaints. Ann Dooley, "Stress, Health Hazards Linked to CRT Use," Computerworld, February 16, 1981, 1; and David Moberg, "Terminal Boredom and Higher Stress," In These Times, November 10-16, 1982, 2.

24. NIOSH, "An Investigation of Health Complaints," 12.

25. Congress, Library of Congress, Office of Technology Assessment, The Electronic Supervisor: New Technology, New Tensions (Washington, D.C.: Government Printing Office, September 1987); Michael J. Smith, et al. Electronic Performance Monitoring and Job Stress in Telecommunications Jobs (Madison, WI.: University of Wisconsin, Department of Industrial Engineering and the Communications Workers of America, October 5, 1990); 9 to 5, National Association of Working Women, Computer Monitoring and Other Dirty Tricks (Cleveland: 9 to 5, 1986); Robert Dobbs, "Stress, Health Hazards Linked to CRT Use," Computerworld, February 16, 1981, 1; "Stress, Work Hazards Increasing Among Office Workers, Study Asserts," Occupational Safety & Health Reporter, April 30, 1981, 1503; David Moberg, "Terminal Boredom and Higher Stress," In These Times, November 10-16, 1982; "Stress Symptoms Among VDT Workers Could Signal Health Hazards, ILO Is Told," Occupational Safety & Health Reporter, September 8, 1983, 356-57; Paul

E. Greenfield and Larry Raskin, "High Price of Stress Taking Its Toll on Your DP Staff?" Computerworld, June 11, 1984, 23-24; "Occupational Stress Insurance Claims Grow As Workers Confront More Office Technology," Occupational Safety & Health Reporter, October 26, 1988, 1071; Frank Swoboda, "Study Links Electronic Monitoring, Stress," Washington Post, October 14, 1990; "Survey of VDT Users Indicates Link Between Health Problems, Monitoring," Occupational Safety & Health Reporter, December 5, 1985, 560. "Monitoring Compounds Worker Stress from VDT Units, Researcher Tells Meeting," Occupational Safety & Health Reporter, April 8, 1987.

26. "Relationship Between Stress, Degree of Job Control Seen In Research Findings," Occupational Safety & Health Reporter, May 27, 1987, 1461; "Worker Stress Linked to High Blood Pressure in Medical Journal Study by New York Doctor," Occupational Safety & Health Reporter, April 18, 1990, 2054-55.

27. Shari Roan, "When it's a Blur: New Developments in Equipment, Lighting and Prescriptions May Help Ease Strain of Staring at VDTs," Los Angeles Times, January 19, 1993, E1.

28. "Vision and VDTs Discussed at Optometrists' Meeting," VDT News, May/June 1985, 5; "Data Entry Operators Report Eye Problems," VDT News, July/August 1989, 3-4.

29. VDT User's Guide to Better Vision (St. Louis, MO.: American Optometric Association, 1989); National Research Council, Video Displays, 1; and California, Assembly Committee on Labor and Employment and the Senate Committee on Industrial Relations, Video Display Terminal Safety: Problems Relating To Vision, A Joint Interim Hearing, December 17, 1985.

30. "Optometric Association Urges VDT Workers to get Annual Eye Exams to Protect Vision," Occupational Safety & Health Reporter, October 27, 1983.

31. Anne-Marie Schiro, "Secretaries' Poll on Computers," New York Times, March 14, 1983, 18.

32. "Who Gets RSIs?" VDT News, July/August 1989, 4.

33. Dr. Vern Putz-Anderson (ed.) Cumulative Trauma Disorders (Philadelphia: Taylor & Francis, 1988), quoted in Peter T. Kilborn, "Automation: Pain Replaces the Old Drudgery," New York Times, June 24, 1990, Sec. I, 1.

34. Ibid., 1.

35. For example, see Mitch Betts, "Repetitive Stress Claims Soar," Computerworld, November 11, 1990, 1; and "Repetitive Motion Disorders Lead Increase in Job Illnesses," New York Times, November 16, 1990, A26.

36. Department of Labor, Bureau of Labor Statistics, Occupational Injuries and Illnesses in the United States by Industry, 1991, Bulletin 2424 (Washington, D.C.: Government Printing Office, May 1993), 5.

37. Ibid., 6. Department of Labor, Bureau of Labor Statistics, Occupational Injuries and Illnesses in the United States by Industry, 1981 (Washington, D.C.: Government Printing Office, May 1983)., 46. 5. Percentages calculated by the author.

38. For lack of VDT related CTD statistics see testimony of Lawrence J. Fine, M.D., Director, Division of Surveillance, Hazard Evaluations, and Field Studies, NIOSH, in House, Dramatic Rise in Repetitive Motion Injuries, 116. Also the BLS' Larry Drake verified that they do not keep data on VDT-related CTDs, telephone interview, July 19, 1990.

39. Peter T. Kilborn, "Rise in Worker Injuries Is Laid to the Computer," New York Times, November 16, 1989, A24.

40. For lack of VDT related CTD statistics see testimony of Lawrence J. Fine, M.D., Director, Division of Surveillance, Hazard Evaluations, and Field Studies, NIOSH, in Congress, House of Representatives, Committee on Government Operations, Dramatic Rise in Repetitive Motion Injuries and OSHA's Response: Hearing before the Employment and Housing Subcommittee, 101st Cong., 1st sess., June 6, 1989, 116. Also the BLS verified that they do not keep data on VDT-related CTDs, telephone interview with Larry Drake, July 19, 1990. For Newspaper industry accounts, see "Vision, RSIs & Stress Issues," VDT News, 2-5.

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42. "Study Spots High RSIs at NYNEX," VDT News, January/-February 1990, 4.

43. Trost, "The Price of Progress," 34C.

44. U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, Health Hazard Evaluation Report: Newsday, Inc., Melville, New York, HETA 89-250-2046 (Cincinnati: NIOSH, 1990), 1; Roel, "Computer Typing, Injuries," 19.

45. "Adapt Work Stations to Workers' Needs, Experts Encourage Industrial Hygienists," Occupational Safety & Health Reporter, November 5, 1986, 599-600.

46. Quoted in Ellen Cassedy and Karen Nussbaum, 9 To 5: The Working Women's Guide to Office Survival (New York: Penguin Books, 1983), 68.

47. Ionizing radiation is also emitted, but (except for some poorly manufactured terminals in the 1970s and early 1980s) is absorbed by the inside of the phosphor-coated screen.

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51. See Milton Zaret, Testimony presented before Congress, Committee on Science and Technology, Potential Health Effects of Video Display Terminals and Radio Frequency Heaters and Sealers, Hearings Before the Subcommittee on Investigations and Oversight, 97th Cong., 1st sess., May 12, 1981, 18-19, 104-114.

52. Marilyn K. Goldhaber, Michael R. Polen and Robert A. Hiatt, "The Risk of Miscarriage and Birth Defects Among Women Who Use Visual Display Terminals During Pregnancy," American Journal of Industrial Medicine 13 (June 1988). See also Tamar Lewin, "Pregnant Women Increasingly Fearful of VDT's," New York Times, July 10, 1988, 19, and "Protecting the Baby: Work in Pregnancy Poses Legal Frontier," New York Times, August 2, 1988, A1; Laura Stock, "Kaiser Study Finds High Miscarriage Rate in VDT Workers," Monitor, Summer 1988, 13; Philip Shabecoff, "U.S. Sees Possible Cancer Tie to Electromagnetism," New York Times, May 23, 1990, A22; and William K. Stevens, "Scientists Debate Health Hazards of Electromagnetic Fields," New York Times, July 11, 1989, C1; "VDT Use Linked to Increased Miscarriage Risk," VDT News, July/August 1988, 1.

53. Congress, Office Of Technology Assessment, Biological Effects of Power Frequency Electric and Magnetic Fields, Background paper by Indira Nair, M. Granger Morgan and H. Keith Florig (Washington, D.C.: Government Printing Office, 1989). Dr. Morgan stated that while this background study did not specifically deal with VDTs, he recommends that the same caution and prudence be taken, since there is considerable overlap with radio frequency fields they emit. For example, he cited the findings of the Project Henhouse study (41), which verified previous reports that very weak magnetic fields, like those emitted from VDTs, can alter the cell structure chick embryos, as the basis of his recommendation to women who use VDTs that other arrangements be made if they are planning pregnancies. Telephone interview, July 2, 1990. See also, "Very Weak Magnetic Fields Cause Chick Abnormalities," VDT News, March/April 1988, 1.

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CHAPTER 3

THE "OFFICE OF THE FUTURE" MERGES WITH THE FACTORY OF THE PAST.

> The industrial revolution now comes to the office much faster than it did to the factory, for it has been able to draw upon the factory as a model.
>
> -- C. Wright Mills[1]

Introduction.

Office managers have long sought to emulate the factory's assembly-line work process through office automation. With the arrival of the VDT during the 1970s, they have been able to more closely approximate this goal than ever before. But management's use of the VDT to exert greater control over the clerical work process resulted in the development of widespread occupational safety and health ailments, a problem previously associated with blue collar work.

This chapter examines the rise of the "information age," postindustrial economy that prompted the VDT's proliferation; the influx of women workers who constitute the vast majority of VDT workers in the most routinized clerical occupations; the application of the principles of scientific management to office work and its consequences for workers; the automation of the office along industrial lines; and the increasing use of contingent, home, and offshore workers in

how the VDT has enabled management to exert greater control over work procedures at the cost to office workers of occupational safety and health hazards and less rewarding work.

From the Industrial Age to the Information Age.

The United States has entered the information age. Just as millions of Americans followed the flow of jobs from the farms to the industrializing cities after the Civil War, in the post World War II era they shifted from factories to offices. From 1979 to 1987 alone, 90% of all new job creation occurred in the white collar sector of the economy.[2] Scientific American publisher Gerard Piel writes that many observers did not realize the significance of the change that was taking place:[3]

> While the country's smokestack industries stand in need of considerable capital investment... the call for reindustrialization betrays failure to recognize the most important product of our economy. It is, of course, knowledge... As the principle commodity in circulation, it is called information. If the principal commodity is information, then the principal technology must be communication. That technology, it is now increasingly recognized, comprehends the computer as its switchboard.

However, the importance of the "information" age's arrival didn't go unappreciated by everyone. The coming of postindustrial society was heralded by Daniel Bell in the early 1970s, while others, such as futurists Alvin Toffler and John Naisbitt spoke glowingly of the arrival of the new "information society."[4] The American Federation of Labor-Congress of Industrial Organization's report on The Future

of Work called the change "revolutionary."[5] The VDT has supplanted the smokestack as the symbol of economic progress in the public's imagination, and a sure sign of the information age's arrival came when Time, in its annual search for its "man of the year," chose the computer as the "machine of the year" for 1982.[6]

Today, most American workers produce information and services, not manufactured commodities. In 1992, the white collar sector employed 57.8 percent of all workers. As Table 1 indicates, the U.S. is increasingly becoming a nation of white collar workers, while the percentage of blue collar workers continues to decline.

Table 1: THE CHANGING DISTRIBUTION OF THE U.S. WORKFORCE.[7]

Sector:	1900	1940	1980	1992
White Collar	17.6%	31.1%	52.2%	57.8%
Blue Collar	35.8	39.8	31.7	25.6
Service	9.1	11.7	13.3	13.7
Agriculture	37.5	17.4	2.8	2.9

A study by Massachusetts Institute of Technology economist David L. Birch illustrates this trend. He found that 89 percent of the 19 million new jobs created during the 1970s came from information related industries, while only 11 percent came from the manufacturing sector.[8] Birch states, "We are moving from manufacturing to services, from hardware to 'thoughtware,' from large-scale capital-intensive compa-

nies to smaller-scale labor-intensive companies, and from a dependence on physical capital to a dependence on human capital."[9] The VDT will play an important role in continuing this trend into the 1990s.

Video Display Terminals Automate the Office.

In 1982, Vincent E. Giuliano, an office automation consultant at Arthur D. Little, Inc., reported that "[t]he highest cost activities in manual correspondence are making multiple copies, filing them and retrieving them."[10] The VDT enabled corporations to manipulate and analyze large, complex data bases and perform data and word processing tasks in a fraction of the time and at less expense than by clerical and mechanical methods. A large shipping firm that used to sift through 1,500 pages of marketing data, now uses VDTs to scan the data and produce one page reports,[11] complete with interpretations of alternative strategies.[12] Using VDTs instead of paperwork methods, the commercial banking industry cut the cost of international fund transfers from $10-12 to $2.[13] The cost of generating a multi-draft document went from $7 per letter using secretarial labor to $2 or less using word processing.[14] The following table reveals some of the areas where savings have been achieved:[15]

Table 2: PERCENTAGE OF COMPANIES REPORTING AT LEAST 10% SAVINGS DUE TO OFFICE AUTOMATION.

Area of Savings	Companies with 100-999 Employees	Companies with 1,000 or more Employees
I. Task:		
Communications	36.5%	39.3%
Photocopying	33.5	33.3
Storage	27.0	26.4
Paper	31.5	25.4
Printing	27.5	25.4
II. Personnel:		
Clerical Workers	34.5%	29.9%
Professionals	6.0	5.5
Middle-Level Managers	6.5	5.0
Top-Level Managers	1.5	1.0

But office automation has not been an unqualified success. Despite the VDTs advantages, the average business cost of producing a letter jumped from $6.07 in 1980 to $10.26 in 1989.[16]

As the above table indicates, business is using VDTs to automate much of the work previously performed by secretaries and clerical workers. IBM advises its corporate clients that "centralizing and automating [VDT] network operations help eliminate routine operator tasks and errors, freeing skilled operators and programmers for more productive tasks."[17]

Has VDT-based automation "freed" skilled workers, or made many of them and their less-skilled clerical counterparts more expendable? For all the "office of the future's" promise, there are strong indications that the clerical workplace may more closely resemble the factory of the

past.[18] Computer automation is helping to produce a two-tier labor force, an upper tier of highly skilled, educated and privileged workers, and a lower tier of unskilled, poorly educated and the underprivileged.[19] The two-tier thesis is supported by a Senate study of new job creation from 1979 to 1987. It estimated that 90% of all new jobs were created in the white collar sector where VDTs are in widespread use, but over 50% of the new jobs paid less than the U.S. government's 1987 poverty threshold of $11,611.[20]

The VDT's ability to perform complex tasks has even led to a streamlining of the management hierarchy, whose salaries and benefits account for 80% of the typical office payroll.[21] This process has occurred mostly at the mid-level manager and professional level positions (See Table 2). Upper-level executives can exert greater command and control over the work process via VDT-networks, bypassing the mid-level manager. The automation of many mid-level management duties means that, as with clerical workers, less employees are expected to do more work.[22]

However, the biggest impact in terms of job loss will be on the lower-tier, clerical workers. The economic boom in the information industries made clerical work the fastest growing occupation during the 1970s, but this sector's growtn rate declined during the 1980s and this trend is expected to continue in the 1990s. The Congressional Office of Technology Assessment (OTA) projects that the "<u>most</u>

likely outcome" of increased office automation is "slowing growth in the number of office jobs, and eventually, an absolute reduction in the number of jobs in offices from some peak in the 1990s."[23]

Corporate concern with labor and cost cutting measures did not begin with the "Office of the Future." Rather, its roots lie in the industrial management practices of the Progressive era. Business has historically relied on a three-pronged strategy to cut labor costs, boost productivity and maintain control over the office work process: employment of women who formed a less expensive but more reliable labor pool, utilization of the principles of scientific management and the automation of office work along industrial lines.

From Typewriter to VDT: Women and Office Automation.

The pattern of women's employment in the information age differs little from its industrial age predecessor. As with the typist of the past, the majority of female VDT workers in the "office of the future" have little chance for job enrichment or career advancement.[24]

The increasingly important but disadvantaged role that women play in the white collar workforce is confirmed by statistics. In 1992, 45.7% of all full-time workers were women with 71.2% of them employed in white collar occupations.[25] In 1900, only 18.6% of white collar workers were

women, but their numbers nearly doubled to 35.1% by 1940, and 56.3% in 1992.[26]

Table 3: THE GROWTH OF THE FEMALE WHITE COLLAR WORKFORCE.

(In thousands of persons 14 years old and over for 1900-1970, 16 years and over for 1980-1992.)

Year	Total W.C.	Male	% Total	Female	% Total
1900	5,115	4,166	81.4	949	18.6
1910	7,962	6,019	75.6	1,943	24.4
1920	10,529	7,176	68.2	3,353	31.8
1930	14,320	9,564	66.8	4,756	33.2
1940	16,082	10,434	64.9	5,648	35.1
1950	21,601	12,974	60.1	8,627	39.9
1960	27,244	15,413	56.6	11,831	43.4
1970	36,131	18,693	51.7	17,438	48.3
1980	52,360	24,362	46.5	27,998	53.5
1992	67,961	29,686	43.7	38,275	56.3

Clerical work has long been defined by management as women's work. In 1930, women constituted a majority (51.8%) of clerks for the first time.[27] More women are employed in clerical occupations in 1992 (27.5%) than in any other. 80% of the nation's 14,788,000 clerical workers are women-- the largest single occupation in the labor force.[28] Despite declining growth rates, the Bureau of Labor Statistics (BLS) projects that approximately 462,000 new clerical jobs will be created between 1986 and 2000, and the Labor Department's Women's Bureau expects employers to continue to direct women into these routinized, low wage positions.[29] Women earn only 75 cents for each dollar a man makes which helps keep employer's labor costs artificially low.[30]

Women were first hired as office workers when manpower shortages during the Civil War forced Treasury Department

officials to employ them as clerks. But it wasn't until the 1880s, when industrialization created a rapidly expanding demand for clerical services, that large numbers of women were hired. Their higher educational skills, lower pay scales, perceived domesticity (many managers treated the office as an extension of the home with the secretary as an "office wife") proven Civil War track record and manpower shortages encouraged employers to hire women to fill clerical positions that were once male bastions.[31]

The policy of employing women in low wage, non-career ladder, clerical occupations has been a constant throughout their history in the office. A look at occupational figures from 1870 to 1992 supports this statement. While a mere 4.5 percent of all stenographers were women in 1870, 75% were by 1900 and over 95 percent in 1930. Women's employment as bookkeepers, cashiers, and accountants proceeded at a slower, but still, impressive pace: 6% in 1880, 29% in 1900 and 52% in 1930. By 1992, 98.4% of secretaries, stenographers and typists; 90.7% of bookkeepers, accounting, and auditing clerks; and 79.3% of cashiers were women.[32]

A good example of sex-typing of women is provided by the introduction of the typewriter to office work. The positions of typist and secretary were male-dominated occupations until the 1880s. But as demand increased, the position of typist became a mass occupation considered by managers to be more suitable to the "dexterity" of women's fin-

gers. As typewriting became more of a low pay, dead end position, it became increasingly sex typed as women's work.[33] In 1910, one third of the 2 million typewriters in use were operated by women.[34] By 1930, women constituted 95.6 percent of all stenographers and typists. Have VDTs been used to offer women workers new opportunities for advancement, or to further the status quo?

Women are increasingly becoming the production workers of the new information age. A 1985 poll conducted for Honeywell, Inc., revealed that women were twice as likely as men to be assigned to jobs requiring them to spend more than half their work time at the VDT.[35] The extent to which women's work and VDT work are intertwined is revealed by examining the occupations where this new technology is most widely used.[36]

Table 4: OCCUPATIONS WHERE VDTs ARE IN WIDESPREAD USE.

Occupation: 1992 Figures	Number, in thousands	Percentage of Women	Median Annual Earnings	% Men's Pay Made By Women
Bank Tellers	314	92.4	14,820	n/a
Data Entry Keyers	478	86.6	17,992	95.0
Editors and Reporters	197	46.7	30,212	81.6
Finan. Records Clerks	1,634	90.1	19,136	82.7
General Office Clerks	483	84.1	18,512	83.1
Records Clerks*	635	80.0	18,460	90.4
Secretaries	2,948	99.0	19,396	n/a
Telephone Operators	172	89.0	20,020	n/a
Transportation Ticket & Reservation Agents	190	74.7	20,956	n/a

* includes order, personnel, library, file & records clerks.
n/a= not available.

Besides being heavily dependent on women workers, all the above named VDT-based occupations have several things in common. First, all the occupations where women predominate had median anual earnings well below the national median annual earnings of $23,140 for 1992.[37] Conversely, women are least represented in the highest paid occupation--editors and reporters.

Second, despite the fact that women constitute the overwhelming majority of workers in these occupations, all were paid less than men in 1992. This illustrates the pervasiveness of the practice of paying men more than women. While men's earnings were not available for transportation ticket and reservation agents, bank tellers, telephone operators and data entry keyers, the fact that women's median was below the total median for each occupation suggests that men are paid considerably more than them.[38]

Third, all these jobs, which are heavily automated, involve routinized procedures with increased workloads, that provide the employee little room for creativity or variation. For example, some directory assistance telephone operators are expected to take no more than 24 seconds per call. At this rate, they may handle as many as 1,200 calls a day. This involves a continuous process of repetitive motions at the VDT which creates physiological stress and can lead to the development of painful cumulative trauma disorders (CTD), such as carpal tunnel syndrome.[39]

VDTs are billed as labor-saving devices compared to typewriters, but their superior capabilities and processing speed permits employers to increase employee workloads, which leads to CTDs. When typewriters were used at the New York Times the workday started slowly and increased as the paper's publishing deadline approached. Reporters would type a page of copy approximately every two minutes, followed by a pause in wrist and arm motions to take out and put in paper, and do other tasks that the typewriter--unlike the VDT-- was incapable of doing such as, go to the filing or supply cabinets, or use the telephone. VDTs are capable of doing these functions, doing them faster, and others without the reporter or editor ever leaving their seat. Moreover, the Times exacerbated the repetitive motion problem by eliminating the 5 PM break. As a result, the Times introduced new features, such as the Home, Living, Science, and Sports sections. Thus, VDT work was characterized by repetitive motions at a constant, speeded-up pace, compared to the less stressful pace using a typewriter. The increased VDT work pace led to the development of CTDs. By 1991, between 50-100 employees out of 600 in the Times newsroom were wearing protective wrist splints, 15 were out on CTD disability, and 10 were on reduced duty.[40]

Acknowledgement that computerization has led to the deskilling and routinization of office work came from OSHA's administrator, Gerard F. Scannel, who said: "We seem to be

asking people to do their jobs faster and in smaller, more finely defined tasks."[41] This increases the probability that VDT workers will suffer from stress and CTD disorders.

Ironically, the deskilling of much of white collar work is occurring at a time when more Americans are going to college to increase their occupational skills. The lack of occupations requiring college level skills means that those with inferior educational credentials are being pushed out of jobs they otherwise would be capable of doing. As the New York Times reports, the U.S. Department of Labor has found that "hundreds of thousands of jobs," including secretarial, bookkeeping, clerical, data and word processing positions, "once creditably performed without a college degree, are going to college graduates as employers take advantage of an oversupply of them."[42] Performing jobs that require little skill is another source of occupational stress. A 1983 survey of 2,000 secretaries by Minolta Corporation found that 50 percent were frustrated by a lack of responsibility on the job and 40 percent felt overqualified for the work they were doing.[43] Kelly Services, Incorporated, the nation's largest supplier of temporary secretarial and office workers, polled 504 corporate secretaries in 1984 and found that:[44]

> Level of education also influences stress. Those secretaries with the highest education reported the least amount of job satisfaction and were the least capable of preventing work-related stress from affecting their personal lives. People who are

disturbed by stress are less likely than others to recommend secretarial work to their daughters.

For some, such as executive secretaries, time saved by automation has been filled with more rewarding tasks, but for most it has been filled by heavier work loads. Substantiating this trend was the survey of office workers conducted by Louis Harris and Associates for Steelcase, Inc., one of the nation's largest manufacturers of office furniture, which found that the percentage of office workers who feel they are being overworked has increased from 42 percent in 1978 to 49% in 1989.[45] It also reported a 28% increase in the percentage of office workers who used VDTs for more than 5 hours a day from 25% in 1988 to 32% in 1989.[46] Additional evidence that workloads have been increased came from the Data Entry Management Association (DEMA), which reports that the average VDT operator hit 11,934 keystrokes per hour in 1988, a jump of almost 500 keystrokes from the year before.[47] These findings contradict the claim that VDTs free office workers to do more meaningful work.

Office automation has not resulted in new opportunities for advancement to management positions for office workers. IBM said that secretaries and clerical employees would have "their job status raised," as a result of the computerization of office work.[48] But after more than a decade of office automation, secretarial and clerical earnings still lag behind (See Table 4). The Louis Harris survey also belied IBM's claims. It found that those who use VDTs for

more than 5 hours a day:[49]

> tend to be less educated than office workers overall (37% are college graduates compared with 46% overall). They are more likely than average to be women (61% to 53%), and show distinctly lower levels of personal income (73% report their own income as falling in the $35,000-- or-- less category, compared with 62% of office workers overall in this income group).

Nor was IBM's rosy prognostication true for data entry workers. John Maxwell Hamilton, a World Bank official, explains why: "In the data-entry business, one of the essential ingredients is a dependable supply of low-wage workers."[50] The result, says Faye Duchin, director of New York University's Institute for Economic Analysis, is that "it remains a dead-end job where the worker is even more specialized" than before the VDT's introduction.[51]

The Minolta survey found that two-thirds of the 2,000 secretaries interviewed doubted they stood a fair chance of career advancement and commensurate salary increases.[52] The Kelly Services survey of corporate secretaries found that there was very little room for career advancement to management positions. "When asked what new positions or careers open up as a result of word processing, very few name positions which could be considered middle level management or higher," the Kelly survey reported. The survey added, "When asked to identify new decision-making responsibilities that they see as a result of word processing, most name duties which are essentially the same as the traditional tasks done before the introduction of automated equipment."[53] T.E.

Adderley, the President of Kelly Services, admitted that "secretaries' career expectations in the automated office have not all been fulfilled," but countered that "they are beginning to see real benefits in terms of increased productivity and reduced stress."[54]

However, Adderley's comments were belied by his own survey which found that secretaries under 25 suffered "more stress and a low level of job satisfaction" and were "inclined to find meeting deadlines and being overworked to be very stressful."[55] The Kelly Survey highlighted the fact that 63% agreed with the statement that "word processing alleviates the amount of work-related stress," but its impact must be minimal since the Survey also found that, "Stress is a very real problem for many secretaries, as indicated by the large number (80%) who claim that their job is stressful."[56]

The high levels of occupational stress suffered by secretaries and clerical workers is due in large part to the fact that VDTs have not lessened their work burdens as office automation advocates expected. The Kelly Services survey found increasing numbers of secretaries spending more time tied to their VDTs. 58% spent more than half their time using VDTs during any given work week. 40% of the under 25 secretaries were using their VDTs for 70% of the day, and 30% said that "all" the secretaries did word processing. Most of the secretaries interviewed said "that word pro-

cessing equipment is in use for a large portion of each day."[57]

Automation has altered the secretarial work pattern. Managers can either dictate messages via the telephone or the VDTs electronic mail network to the word processing pool. As a result, the days of one secretary per manager are disappearing. According to Sylvia Kurop, the director of placement for the Katherine Gibbs School of New York, "It is very seldom now that you have a one-on-one situation." Now most corporate secretaries are expected to work for anywhere from 3 to as many as 13 superiors.[58] But the decline in the demand for personal secretaries has been more than compensated for by the information sector's growing demand for them. BLS projects that the number of secretaries will increase by anywhere from 6% to 20% between 1988 and 2000, making it the 7th largest growing occupation in the workforce.[59]

The job requirements of secretaries who use VDTs have been increased without commensurate pay raises. They are now expected to be experienced with an increasing variety of software programs, but many secretaries, whose jobs "have been upgraded," are not paid more.[60] The Kelly Services report found that while 88% believed that their new computer skills would merit pay increases, only 30% had actually received one as a result.[61] The BLS reports that the 1992 median annual earnings for secretaries was only $19,396,

almost $4,000 below the median for all full-time workers.[62]

Perhaps the most telling commentary on being a secretary came from those who were polled in the Kelly Services survey: 93% said they were "satisfied" with their jobs, but 55% would not recommend it to their daughters.[63] Another management method of cutting costs and exerting control over the work process was scientific management.

Scientific Management and the Automation of the Office Along Industrial Lines.

The desire of office managers to exert greater control over the work process by emulating mass production and efficiency techniques dates back to the turn of the century movement called "scientific management." The expanding volume of paperwork forced firms to take a closer look at controlling costs and work flow. But the search for increased office productivity has always been hampered by the fact that clerical work is more difficult to gauge than industrial output. Unlike the factory, where the assembly line and automation rationalized the work process, the office relied primarily on random patterns of work organization and pre-industrial employee customs. Assembly line production techniques made the measurement of industrial sector output possible, but the problem of how to automate the decisions, delivery of services and information

that constitute the finished product of office work remained an unsolved challenge.

William H. Leffingwell, a management consultant and president of the National Office Management Association, pioneered the field of standardization of the office work process. Impressed by Frederick W. Taylor's principles of "scientific management," which broke down industrial work to its simplest parts and redesigned it in a more mechanical manner, Leffingwell and his followers sought to do the same in the office. Dr. Harlow S. Person, the Managing Director of the Taylor Society, neatly summed up this approach as follows:[64]

> The mental attitude of scientific management... must govern the management of clerical as well as of processing operations; in fact, desk activities <u>are</u> processing operations as surely as are activities at machine and bench.

Leffingwell applied Taylor's system of time and motion studies to eliminate superfluous steps and standardize tasks. Preaching "simplification" of work, he regarded no task as too insignificant for scrutiny, not even the "correct" method for opening an envelope and removing its contents, or the proper amount of time it should take a worker to cut a piece of paper.

From management's standpoint, one of "Taylorism's" most important benefits was that standardized production procedures increased it's command over the work process. As Leffingwell made clear: "Effective management implies con-

trol. The terms are in a sense interchangeable, as management without control is not conceivable...."[65] Implying that too much was left to the worker's discretion in the non-scientifically managed office, Leffingwell stated that the purpose of scientific management "is that the balance shall be very much in favor of the manager, and not against him."[66]

Leffingwell's work has had a lasting impact on the way office work is organized, but the mechanization of the office is the development that really permitted managers to start emulating the industrial work process. Like their industrial counterparts, office managers used assembly line techniques to decrease their dependence on worker's knowledge of the work process. Machines for taking dictation and simulating stenography; for punching, sorting and tabulating data on cards; for bookkeeping, accounting, addressing and billing; photocopying and data processing, all have contributed to the creation of office factories.[67] Writing at mid-century, C. Wright Mills observed the effects of Leffingwell's legacy in what he referred to as the "managerial demiurge":[68]

> The introduction of office machinery and sales devices has been mechanizing the office... Since the 'twenties it has increased the division of white-collar labor, recomposed personnel, and lowered skill levels. Routine operations in minutely subdivided organizations have replaced the bustling interest of work in well-known groups. Even on managerial and professional levels, the growth of rational bureaucracies has made work more like factory production. The managerial demiurge is

> constantly furthering all these trends: mechanization, more minute division of labor, the use of less skilled and less expensive workers.

From his vantage point in the early 1970s Harry Braverman reported that the process of the mechanization of clerical made it possible for managers to train clerical workers more quickly, thereby making them more interchangeable and expendable:[69]

> The recording of everything in mechanical form, and the movement of everything in a mechanical way, is thus the ideal of the office manager. But this conversion of the office flow into a high-speed industrial process requires the conversion of the great mass of office workers into more or less helpless attendants of that process.

Despite these efforts to mechanize office work, productivity remained a seemingly intractable problem that corporations ignored. The capabilities of business machines were not adequate to process the increasing volume of paperwork being produced by the emerging information economy. During the 1970s office costs increased from 20%-30% of expenses to 40%-50% of expenses.[70] 1980 Automation investment figures showed that U.S. businesses spent an average of $12.50 per factory worker for each dollar invested per office worker.[71] While factory productivity increased 85% during the 1970s, the small gains in office productivity (only 4%) were overshadowed by the doubling of operating costs.[72] The pressure on business to resolve this impasse was made more acute by the economy's rapid shift from a primary reliance on manufacturing to the delivery of information and servic-

es. Peter Drucker, the dean of America's industrial age management consultants, summed up the significance of this shift as follows:[73]

> The productivity of knowledge has already become the key to productivity, competitive strength, and economic achievement. Knowledge has already become the primary industry, the industry that supplies the economy the essential and central resources of production.

By the early 1980s office expenses accounted for as much as 40-50 percent of all business costs. With the total cost of U.S. business operations hitting the one trillion dollar mark in 1981,[74] that amounted to 400-500 billion dollars spent annually on office expenses. A Fortune magazine advertorial on office automation stated capital's problem succinctly: "The office [is] the jugular of the low productivity problem that faces business today."[75]

As the crisis of office productivity deepened the business community came to see the VDT as the answer to its dilemma of how to manage the burgeoning flow of paper and cut labor costs. Its introduction during the early 1970s marked a turning point in the history of management's efforts to control and rationalize the office work process along the lines of factory work. IBM told employers that VDT-based automation would bring "manufacturing and production lines into the office," by having clerical "work divided [and] specialization introduced."[76] John Naisbitt also notes the information age's debt to its predecessor:[77]

> We now mass-produce information the way we used to mass-produce cars. In the information society, we have

> systematized the production of knowledge and amplified our brain power. To use an industrial metaphor, we now mass-produce knowledge and this knowledge is the driving force of our economy.

Corporate America's reliance on what Naisbitt refers to as the "industrial metaphor" to achieve its automation goals was best exemplified in an influential Harvard Business Review article by Richard J. Matteis, a Citibank Senior Vice President.[78] He wrote that America's largest bank, like many of its labor-intensive competitors in the banking, finance, real estate, and insurance industries, was faced with an overwhelming paperwork crisis in the 1960s and early 1970s. Labor accounted for 70 percent of Citibank's costs, expenditures on computers and their programs amounted to a mere 10 percent, and the remaining 20 percent was due to "other expenditures." Matteis said Citibank's solution to the paperwork crisis was "to flip the ratio entirely ... until labor and other operations costs constituted only 30%, while [computer] hardware and software made up the rest."[79]

Matteis states that the "management program of controls, forecasting, and accountability" were "borrowed from production management." Even the idea for the development of VDT-based computer technology was inspired by the concept of assembly line manufacturing. He writes:[80]

> ...the recognition that a new technology was needed was also borrowed from the manufacturing industries. The production management disciplines that ensure the smooth running of mass production plants had been born alongside the introduction of machine tools that could produce more at less cost. In the Industrial Revolution, machinery and the development of modern

> management techniques were two strands of the same thread. In banking, however, the equivalent of the machine tool is the computer.

In short, with VDT-based office automation, office managers could realize its goal of exerting the extent of control over the work process that their industrial counterparts did.[81] But automation of the office without regards for the human factor, just like the assembly line in the factory, created new job hazards. As NIOSH reported:[82]

> This is a serious concern since the persons who design systems such as these, and thereby the work activities of VDT operators, are typically computer scientists and systems analysts who have no concept of the human element in such a work process. This leads to a dehumanization of the work activity that is similar to that produced by the introduction of assembly lines in manufacturing industries. In fact, such offices become "paper factories" with clerical assembly lines in which the work content is simplified to increase "thru-put" and capitalize on computer capabilities. This leads to jobs that produce boredom and job dissatisfaction. As, such the machinery becomes a source of misery rather than a helpful tool as it is for the professionals using the VDTs.

NIOSH's findings were corroborated by Eleanor Wynn, a social scientist at Bell Northern Research, Inc, who said:[83]

> Many people involved in the automation of office work continue to hold an implicit model of the office work environment as consisting of objects to be assembled (documents to be produced, messages to be delivered, informational 'paths' and 'nodes' to be reproduced) as if these were the same kinds of objects that are manipulated in the factory environment.

The increased versatility of VDT-based technology has permitted corporate managers to disregard the human factor in another way. By hiring more contingent workers, and by parcelling out tasks to those working at home and abroad,

corporations are lessening their dependence on permanent employees.

Reinventing the Office: Contingent, Home & Offshore Workers.

VDT-based automation has so simplified and deskilled office work that employers can easily increase their use of contingent workers; that is, part time and temporary workers.[84] As the OTA put it, "When back-office work (the routine processing of standardized data or text) is rationalized and deskilled, investment in training is minimal, and the value of experience and continuity is also minimal."[85] This development has made it possible for the employer to conceive of office personnel as interchangeable parts for which he has only the minimum responsibility.

The permanent labor bill (i.e., salary and benefits) is the single largest component in the cost of doing business for information industries. The automating ability of VDTs, coupled with slow economic growth, have prompted the corporate trend towards "lean staffing" in an effort to maintain profit margins. The effort to reduce labor costs means that cheaper contingent workers will be hired to perform automated, routinized tasks that were previously done by permanent workers. "Even if temporary and contract workers receive higher wages than permanent employees doing the same work...", though this is not the case for "lower level clerical workers," OTA noted, they "are usually a bargain

for the employer... because [he] pays only for actual productive work hours."[86] In other words, in a laissez faire environment, VDT-based office automation enables employers to avoid paying for such overhead items as social security, workers compensation, medical and dental benefits, or pension plans. These economic advantages resulted in 20% annual growth rates for the temporary service business during the mid to later 1980s, with 60% of its business came in the clerical occupations.[87]

The trend towards contingent work is likely to have a "drag" effect on efforts to close the wage and career advancement opportunity gap between men and women. This is because women, who constitute 82.1% of the nation's 496,000 part time clerical workers and 75% of temporary workers, will be hired to fill the vast majority of these low wage, dead-end jobs.[88]

Although contingent workers using VDTs are being employed throughout the white collar world, they are most likely to be found in the banking, insurance, real estate, and financial sectors. The financial industry's reliance on part time workers is now one of the fastest growing in the nation.[89] As Merrill Lynch analyst Jerry Levine explained in the wake of the October 1987 stock market crash, "In a tentative economic environment there is a tendency not to want to increase permanent help, so the use of temps increases."[90] William Olsten, chairman and chief executive

officer of the Olsten Corporation, one of the nation's largest suppliers of temporary secretarial and office help, was poised and ready to seize the opportunity presented by the business slump, "It's regrettable that the market collapsed the way it did, but from our perspective, I feel that it could be beneficial to the temporary service business."[91]

The flexibility of VDTs has enabled managers to reinvent and expand the office's locale. Employers, such as Blue Cross/Blue Shield, Control Data Corporation, Mountain Bell, and even the State of California are farming out data entry tasks to part time workers in pilot projects. 45,000 workers, or 25% of all clerical homeworkers, were estimated to be telecommuting in 1986.[92] If telecommuting's potential is realized an estimated 10 million workers could become homeworkers.[93] Employers tout the advantage of working at home: the time, money and aggravation saved by not having to commute, working in the friendly confines of one's home, and being able to adjust one's work schedule to take care of personal matters. Young women are told that they can be both homemaker and homeworker.

Homework also saves the employer office expenses-- since these employees are part-timers they do not qualify for benefits packages such as health and dental care and pension plans-- and relieves them from any day care responsibilities. Moreover, these homeworkers, or "telecommuters"

as they are sometimes called, must lease their terminals from their employer and take personal responsibility for any health hazards that might arise. Homework also presents management with the possibility of doing away with the informal organization of the office that the employee work culture presents.[94]

VDTs are giving corporations a truly global reach. With the aide of satellite signals, employers are now beaming work to "offshore" offices in the Caribbean, Ireland, India, Hong Kong, South Korea, Taiwan, China and Singapore. At least 40 companies involved in banking, insurance, publishing and transportation in the U.S., Japan and the United Kingdom are engaged in the practice.[95] Companies, like Kansas City, Missouri based Saztec International, Inc., with $21.9 million in 1992 revenues, act as service bureaus for corporate clients by electronically shipping their data entry work to both home and offshore workers.[96] Wages, as low as 10% of the U.S. rate, still make it far cheaper for American employers to have two data processors do the same job overseas in order to catch mistakes than to do the work in the U.S. with one worker.[97] Moreover, there are no unions to push wage rates up or protest against poor working conditions.

The offshore office, just like its on-shore counterpart, is modeled on the industrial work pattern. As the New York Times proclaimed, the "New technology lets services

follow the route taken by manufacturing."[98] In business parlance the offshore office is referred to by the euphemistic phrase "office sharing." Office sharing, which was adapted from the industrial practice of "production sharing," "combines," in the words of Kevin P. Power, a Washington-based international business consultant, "the higher labor skills and technology available in the developed countries for the manufacture of materials and components with lower-cost labor available in developing countries for processing and assembly operations to produce finished goods for the market."[99] Now Power advises his reading audience in the pages of the Wall Street Journal, office executives can emulate their industrial counterparts by moving jobs overseas: "Application of the office sharing concept in developing countries can revitalize companies in banking, insurance, publishing and other industries facing rising operating costs and increasing competition."[100]

Power argues that it also is beneficial for the developing countries. "The application of office sharing to these economies can provide employment within a relatively short period of time, diversifying the skills of the labor force and familiarizing it with computer technology."[101] But "employment within a relatively short period of time" is made possible only by virtue of the fact that word and data processing jobs that are being provided are deskilled, simplified occupations, not the sophisticated programming

jobs that would truly familiarize this new labor force "with computer technology." They are even less likely to have the opportunity to learn programming and systems analysis skills than their American counterparts, given the fact that these functions are largely performed in the U.S., not in offshore offices.

At about the same time Power's piece appeared in the Wall Street Journal, a different version of the offshore office was unfolding in the Caribbean. Business Week reported that Satellite Data Corporation had set up offshore office operations in Barbados to take advantage of its cheap and plentiful labor supply. Based on an interview with Satellite Data's chairman, George R. Simpson, Business Week stated that "The average pay for Caribbean data-entry personnel is about $1.50 an hour... compared with up to $9 an hour in New York. This low-cost labor will more than offset the $10,000 monthly charge for the satellite channel, he says, and allow him to realize a 50% aftertax profit-three times the domestic industry average."[102] Simpson was so ecstatic about the low labor bill and high profit margins that he exclaimed, "We can do the work in Barbados... for less than it costs in New York to pay for floor space."[103]

In 1983, American Airlines moved its 200 ticket processing jobs from Tulsa, Oklahoma to Barbados. A corporate official gave the reason for the move: "With technology where it is now... we had no reason to keep this operation

in America."[104] But that was just part of the reason. American also found that the same work could be performed in Barbados by non-union women for one-third the pay of their U.S. counterparts, and that the Government was willing to include generous tax incentives to ensure the move.[105] The new subsidiary, named AMR Caribbean Data Services, soon branched out to do work for insurance and medical companies. One of the reasons AMR Caribbean was successful at attracting outside business was their policy of keeping client's names confidential. As an executive explained: "If you were an insurance company and were firing data-entry people in the States, would you want anyone to know you were hiring them in the Caribbean?"[106]

Meanwhile, Power's article concluded with the opinion that "Office sharing holds the potential to be a powerful development tool in bridging the technological gap that exists between industrialized and developing nations."[107] But the more likely prospect is the diversification and strengthening of corporate domination over the third world.[108] The ability to disperse computer-based work beyond local and national borders via satellite is an enormous aid to multinational corporations in their efforts to find the cheapest labor markets and foil union organizing attempts. Telecommunications analyst Joseph N. Pelton writes:[109]

> If more and more jobs in a developing country are those held by electronic immigrants working for a wealthier

> If more and more jobs in a developing country are those held by electronic immigrants working for a wealthier country, there could come a time when the economic ties begin to dictate political relationships... if the trend continues unchecked, we could see the creation of 'telecolonies' whose local finances and politics are largely controlled from an overseas capital.

Back in the U.S., sophisticated computer technology gives employers the power to create their own telecolonies where employees behavior and productivity can be monitored.

Controlling Employees By Computer Monitoring.

VDTs have enabled employers to extend their command over the work process by electronically monitoring workers without their knowledge. Employee monitoring is not new. It has been a factor in the office since William H. Leffingwell adapted Frederick Taylor's system of work measurement to clerical work at the turn of the century. What is significant about the VDT is that it permits employee monitoring and work measurement on a scale unheard of before the age of computer technology. According to William R. McAlister, vice president of Xytec Corporation, a manufacturer of computer monitoring devices, they are "much more thorough 'than [the results] that used to be gotten by some guy with a clipboard jotting things down.'"[110].

The spread of VDTs in the workplace and the increasing availability of cheaper and more sophisticated computer technology has made employee monitoring a pervasive phenomenon. A 1987 estimate indicated that between 4 and 10 million

of the then 15 million VDT workers were being monitored. At this rate anywhere from 27 to 67 percent of the VDT workforce was being monitored. As many as 74 percent may be monitored as the technology becomes more widely disseminated and less expensive during the 1990s.[111] Among the companies monitoring their employees are Blue Cross/Blue Shield, Equitable Life Assurance, MCI Telecommunications, NYNEX, the New York Times and the Washington Post.

Basically, the process of computer monitoring works as follows. Specially programmed computer systems count and tabulate the keystrokes of all the employees who use a VDT. Operators are expected to keep pace with the fastest ten percent in the office. Employee productivity figures are posted at the end of each week on a bulletin board as a means of peer pressure to induce the slower operators to work faster. Those who can't are warned, exhorted to work faster, and are docked a percentage of their pay. Many VDT operators are piece workers whose pay is directly linked to their productivity. This has the effect of disciplining workers and speeding up the pace of the work, just as the assembly line does in the factory. "In the worst sites, centralized [word processing]... is designed as an industrial assembly line, emphasizing line counts and time spent on line."[112] "9 to 5" reports that VDT workers are more likely to be required to do more work per day than their counterparts in non-automated offices.[113]

In many offices VDT operators are not allowed to take breaks without management's permission. Employers not only count how many keystrokes a VDT operator makes, but how many mistakes, how long it took to do the assigned job and the amount of idle time between tasks. In addition, computer monitoring programs can alert supervisors to work stoppages and tell them how long an employee takes to go to the rest room.

More significantly, managers can stimulate workers with subliminal messages that instantaneously appear and disappear on the screen. Supervisors can send an electronic messages to employees, such as "work faster" to their less productive operators, or "I love my job" to those who dislike their work.[114] Computer programs can also monitor employees' telephone conversations for key words and phrases that indicate signs of union or political activities, drugs, and personal problems.[115] Directory assistance operators are monitored to insure that they spend no more than 24 seconds answering each caller's inquiry.[116] Airline reservations operators are monitored in a similar fashion.

Professionals are also being monitored, a sign that the extension of management's control of the workplace is not limited to lowly word and data operators. According to the OTA's report, The Electronic Supervisor, management's surveillance of VDT work:[117]

> ... is increasingly being directed to higher level, more skilled technical, professional, and managerial

> positions. Even the most complex work has its routine elements, and given sufficient analysis, those elements can be identified, grouped together, and counted. The jobs of commodities broker, computer programmer, and bank loan officer ... could lend themselves to monitoring.

Another example is that of newspaper reporters and journalists. The newsroom was one of the first work locales to switch from the typewriter to the VDT. A profession which requires superior writing ability, resourcefulness and creativity, journalism doesn't seem to be a likely candidate for computer monitoring, job pacing, and piece work. But journalists' copy productivity is now being monitored, and some newspapers have started using the results to force reporters to produce more and even to pay them on a piece work basis.[118] The effect of the automation and monitoring of many professional tasks is to level out the work hierarchy, making the job characteristics of many professional groups less distinct from the semi-skilled workers.

Corporate management argues that computer monitoring is essential to the running of an efficient and productive office. They maintain that it gives managers more data on employees from which they can make better-informed decisions as to how production goals are being met. Managers also say that the data collected on an employee's work and personal life helps them determine if he is the right person for the job and guards against employee theft of corporate services.[119]

Employers claim that these monitoring systems are "objective," that is, they judge all employees by the same standard of measurement. But the criteria on how the data will be collected and evaluated is a human, and, hence, subjective, decision. The American Civil Liberties Union reports that employers have subjectively used and distorted data to harass employees, especially those engaged in union activity and those with alternative lifestyles. Employees and their unions insist that a system in which employers have exclusive use of the data is unfair.[120]

Realizing that computer monitoring is an unpopular and controversial practice, corporate managers have attempted to redefine what the political debate is about by arguing that the issue is productivity, not invasion of privacy. Understanding that how issues are defined determines how they are debated, they prefer euphemisms, such as "work measurement," for the more onerous sounding computer monitoring, "incentives," for piecework and "service observation" for surveillance of employee telephone conversations.[121] If corporate officials at the Equitable Life Assurance Company are to believed "workers like the objectivity" of computer monitoring, and "any stress" they feel "is self-imposed," not the result of an omnipresent electronic surveillance.[122]

Monitoring is an invasion of privacy that reminds one that the computer can be used just as readily to do the work of George Orwell's Big Brother as to liberate the worker

from repetitive, mundane tasks. Its unstated value to employers seems to be to constantly remind employees that they might be watched at anytime. The irony of computer monitoring and its attendant piecework/incentive pay system is that it usually doesn't achieve its stated goal-- increased productivity. On the contrary, computer monitoring increases employee stress, anxiety, and turnover, which lowers morale and productivity.[123]

The pressure of being monitored increases stress levels which can lead to occupational illness, especially when it is used on a continuous basis, or for disciplinary purposes.[124] In a survey of its members at Southern New England Bell, the Connecticut Union of Telephone Workers found that 75% of VDT operators who were monitored suffered from muscle aches, headaches and dizziness.[125] At Bell Canada keystroke monitoring of individual's productivity resulted in high levels of job-related stress. Two-thirds of the operators studied reported "high" or "very high" stress levels. The results were so alarming that, under union pressure, management switched to group keystroke monitoring.[126] "Jobs are often simplified just so they can be monitored, just so productivity can be kept track of," reports Sharon Danann, research director for 9 to 5.[127] In fact, stress due to VDT work has become so prevalent that a new term, "technostress" has been dubbed to describe it.[128]

Data entry managers believe that "posting keystrokes... salary increases based on keystrokes, and incentives [are] key motivators," of employees. But a DEMA poll of data entry managers revealed that "statistical results showed that incentive programs do not necessarily improve employee performance." These surprising results moved DEMA President Norman Bodek to comment: "I guess if an incentive program is putting too much pressure on the operators it should be eliminated. Probably, good management is the answer."[129]

The rise of computer monitoring coincided with the Reagan administration's political support of the business community. At his White House Conference on Productivity in 1982, President Reagan exhorted corporate managers to be innovative in their efforts to boost productivity, reminding them that he and Vice President Bush "curbed the growth of Federal regulations and red tape."[130] Appearing on the MacNeil/Lehrer News Hour, James O'Brien, executive director of the MTM Association, a nonprofit group that advises businesses on how to monitor their employees, cited President Reagan's call for increased productivity as justification for computer monitoring.[131] Further justification was forthcoming when Reagan's Attorney General, Edwin Meese 3d, exhorted an assemblage of corporate executives to "take responsibility for surveillance" of employee wrongdoing.[132]

Conclusion.

The problems of computer monitoring and VDT-related occupational safety and health hazards bring us back to the question: how will this new technology be used? To enable employees to do more interesting work, or to further deskill them and create health hazards? Ultimately, questions of technology's use involves the issue of power. Computer monitoring and the VDT-related health hazards are not an aberration of the system, they are the logical outcome of management's desire to exert greater power over workers and the work process. Monitoring the stress levels of clerical workers, clerical workers using VDTs, and professionals using VDTs, NIOSH found that, "the comparison of the working conditions for the various groups demonstrates that those working conditions that led to the stress problems reported by the clerical VDT operators are not entirely related to the VDT use, but are also related to the entire work system that goes along with using VDTs."[133] Labor and technology analyst Harley Shaiken stated it best:[134]

> ... it's the way the system is structured that's the real problem... at stake is really a profound new way of ordering work. Now, the computer technology gives us a choice. We can have more autonomy or more authority in the workplace. And these systems when they're used to monitor and control and ultimately pace and discipline workers, are using computer technology to extend authority.

Management's choice has been more authority and autonomy. VDTs has enabled corporations to reorganize office work along the lines of industrial work on an unprecedented

scale. Keystroke counts and computer monitoring enable management to measure work performance along the assembly line model thereby giving them much greater ability to control the pace of the work process than was possible with the typewriter or any other piece of office machinery. VDTs enable management to reinvent the office's organizational structure by farming it out to contingent, home and offshore workers at great savings.

Ironically, greater management control over the work process did not automatically translate into greater office productivity. The BLS reports that while factory productivity increased by 51% from 1973 to 1990, office productivity during the same period fell by 7%. Since there are approximately three times as many office workers to factory workers (60 million to 20 million), the decline in office productivity has been a drag on total productivity.[135]

Moreover, the social cost of this system of management has been the rise of health hazards associated with the way VDT technology has been utilized. But this state of affairs need not be inevitable. As the work of Shoshana Zuboff indicates, information based computer work in postindustrial society requires that management take a new approach to the organization of work. Rather than emulating the assembly-line model of industrial work which regiments employees and limits discretion, a better use of office computers' potential requires that companies utilize the creative talents of

workers by giving them more responsibility.[136] It also makes for a healthier and more productive workforce. However, as the next chapter will show, management's failure to address these safety and health complaints at the office level, led office workers and their unions to socialize the conflict by petitioning the Federal government, namely OSHA, to address the problem. This situation, like the development of safety and health hazards, was unprecedented in the history of office work.

Notes.

1. White Collar: The American Middle Classes (New York: Oxford University Press, 1951), 194.

2. "Study of New Jobs Since '79 Says Half Pay Poverty Wage," New York Times, September 27, 1988, A22.

3. Gerard Piel, "The Mechanization of Work," paper presented at the ITT Advanced and Applied Technology Conference, Bolton, Massachusetts, May 25, 1983, 14-15.

4. Daniel Bell, The Coming of Post-Industrial Society: A Venture in Social Forecasting (New York: Harper Torchbooks, 1973) and "The Social Framework of the Information Society," in Michael L. Dertouzas and Joel Moses, eds., The Computer Age: A Twenty-Year View (Cambridge, MA.: MIT Press, 1979); Alvin Toffler, The Third Wave (New York: Morrow, 1980); John Naisbitt, Megatrends (New York: Warner Books, 1982).

5. The American Federation of Labor-Congress of Industrial Organization, The Future of Work (Washington, D.C.: AFL-CIO, 1983), 7.

6. "Machine of the Year," Time, January 3, 1983, 3, 12-32.

7. Sources: For 1900, 1940, 1980, U.S. Congress, Office of Technology Assessment, Automation of America's Offices (Washington, D.C.: Government Printing Office, 1985), 3. For 1992 figures see U.S. Department of Labor, Bureau of Labor

Statistics, "20. Employed Civilians by occupation, sex, and age," Employment and Earnings, January 1993, 193. 1992 percentages calculated by the author.

Note: The U.S. Bureau of Labor Statistics occupational classifications of the four economic sectors will be followed throughout this essay. The White Collar Sector includes "Managerial and professional specialty" and "Technical, sales, and administrative support;" the Blue Collar Sector includes "Precision production, craft & repair" and "Operators, fabricators, and laborers;" the Service Sector includes "Service Occupations; and the Agricultural Sector includes "Farming, Forestry & Fishing."

8. David L. Birch, "Who Creates Jobs?" The Public Interest, Winter 1981, 9.

9. Ibid., 10.

10. Vincent E. Giuliano, "The Mechanization of Office Work," Scientific American, September 1982, 164.

11. Despite predictions that VDTs would bring about the ecologically-beneficial paperless office, the computer's ability to process and print data more quickly than ever before has led to a surfeit of paper in the office. OTA, Automation of America's Offices, 6; Lawrence M. Fisher, "Paper, Once Written Off, Keeps a Place in the Office," New York Times, July 7, 1990, 1.

12. "Office Automation: Making It Pay Off," Business Week, October 12, 1987, 142.

13. Ibid., 142.

14. Giuliano, "Office Work," 163.

15. The survey was conducted by Dataquest, Inc., a computer market research firm. Quoted in "Office Automation," Business Week, 142.

16. Darnell Institute for Business Research, cited in Computer and Business Equipment Manufacturers Association, The Information Technology Industry Data Book, 1960-1920 (Washington, D.C.: Computer and Business Equipment Manufacturers Association, 1990), 31.

17. International Business Machines Corporation, 1987 Annual Report (Armonk, N.Y.: International Business Machines Corporation, 1988), 17.

18. Barbara Garson, The Electronic Sweatshop: How Computers Are Transforming the Office of the Future into the Factory of the Past (New York: Simon and Schuster, 1988).

19. See the AFL-CIO's report on the implications of the two-tier economy for the American workforce, The Future of Work: A Report by the AFL-CIO Committee on the Evolution of Work (Washington, D.C.: AFL-CIO, 1983), 8.

20. "Study of New Jobs Since '79 Says Half Pay Poverty Wage," New York Times, A22; William Serrin, "A Great American Job Machine? The Myth of the 'New Work,'" The Nation, Sept. 18, 1989, 269-71.

21. "Changing 45 Million Jobs: The Speedup in Automation," Business Week, August 3, 1981, 62; Sally Cusack, "Is Automation Turning Managers Into Clerks?" Computerworld, October 15, 1990, 83.

22. Philip Kraft, "Mid-Level Managers: Will They Fade Out As Automation Changes the Office?" Computerworld, September 28, 1981, SR 29; Trish Hall, "A Changing World for Secretaries," New York Times, April 27, 1988, D1.

23. OTA, Automation of America's Offices, 33, 55. Emphasis in original.

24. Margery W. Davies, Women's Place Is At The Typewriter (Philadelphia: Temple University Press, 1982), 51-52.

25. U.S. Department of Labor, Bureau of Labor Statistics, "20. Employed Civilians by occupation, sex, and age," Employment and Earnings, January 1993, 193. Percentages calculated by the author.

26. For 1900-1970, see U.S. Department of Commerce, Bureau of the Census, Historical Statistics: From Colonial Times to the Present (Washington, D.C.: Government Printing Office, 1971); for 1980, see U.S. Department of Labor, Bureau of Labor Statistics, Labor Force Statistics Derived From the Current Population Survey, 1948-1987, Bulletin 2307 (Washington, D.C.: Government Printing Office, 1988), "B-14. Employed Civilians by Occupation and Sex, 1972-82," 664; for 1989, see BLS, Employment and Earnings,

27. Davies, Woman's Place, 52-53.

28. Bureau of Labor Statistics, "20. Employed Civilians by occupation, sex, and age," Employment and Earnings, January 1993, 193. Percentages calculated by the author.

29. U.S. Department of Labor, Women's Bureau, "Women and Workforce 2000," Fact Sheet No. 88-1, January 1988, 4.

30. BLS, "56. Median weekly earnings of full-time wage and salary workers by detailed occupation and sex," Employment and Earnings, January 1993, 233. Percentage calculated by the author.

31. Davies, Women's Place, 51-52. In 1870, women were 12 percent of all government clerks, but only 3.1 percent of the entire white collar workforce. U.S. Census Reports, Ninth Census (1870) Reports, vol. I, table XXIX.

32. BLS, "22. Employed civilians by detailed occupation, sex, race, and Hispanic origin," Employment and Earnings, January 1993, 195-200.

33. Davies, Women's Place, 53. However, some observers have argued that the typewriter and office work have liberated women from dependence on their bosses. For example, Bruce Bliven, Jr. The Wonderful Writing Machine (New York: Random House, 1954), asserts that "the female typewriter operator is a terrific power ... she has got the average business office, not to mention the average businessman, lawyer, doctor and government official, under fairly good control. The basic tool of business communication is in her hands." (5) Bliven sees the 1950s as the time of political triumph for working women: "her political, economic and social status is unparalleled in the stormy history of the fight for women's rights. Her competence has won her nearly all the political equality that the suffragettes ... thought only militant action could achieve." (5) Dismissing a poll which clearly indicated that secretaries were frustrated in their jobs, as well as the problems of low pay, lack of career advancement and sexual harassment, Bliven preferred to describe their situation as follows: "Considering her vast power, her far-reaching influence, and her strong bargaining position, today's typewriter operator is entitled to a measure of smug self-satisfaction. She belongs to the largest, strongest group of working women in the world ...." (14)

34. Ibid., 102.

35. Indoor Air Quality: A National Survey of Office Worker Attitudes, public opinion poll for Honeywell, Inc., 1985, cited in "Numbers Worth Knowing," VDT News, May/June 1987, 2. Despite the computer's widespread use throughout American society, the BLS does not maintain statistics on the number of women who use VDTs. This point was verified in telephone conversations with two Department of Labor officials: Mary Murphree, New York office of the Women's

Bureau; and Larry Drake, Occupational Outlook section, Bureau of Labor Statistics, Washington, D.C., July 19, 1990.

36. BLS, "56. Median Weekly Earnings of Full-Time Wage and Salary Workers by Detailed Occupation and Sex," Employment and Earnings, 233-37. Percentages calculated by the author.

37. Ibid, 233; calculated by the author.

38. While men's earnings were not available for transportation ticket and reservation agents, bank tellers, telephone operators and data entry keyers, the fact that women's median was below the total median for each occupation suggests that men are paid considerably more than them.

39. Testimony of Morton Bahr, President, Communications Workers of America, in Congress, U.S. House of Representatives, Committee on Government Operations, Dramatic Rise in Repetitive Motion Injuries and OSHA's Response: Hearing before the Employment and Housing Subcommittee, 101st Cong., 1st sess., June 6, 1989, 36.

40. Interview with Don Bacheller, copy editor and shop steward, the Newspaper Guild, New York, April 26, 1992.

41. Peter T. Kilborn, "Rise in Worker Injuries Is Laid to the Computer," New York Times, November 16, 1989, A24.

42. Louis Uchitelle, "Surplus of College Graduates Dims Job Outlook for Others," New York Times, June 18, 1990, A1. See also, Elizabeth M. Fowler, "Graduates Find Tighter Job Market," New York Times, July 10, 1990, D19.

43. Anne-Marie Schiro, "Secretaries' Poll on Computers," New York Times, March 14, 1983, 18.

44. Kelly Services, "Poll Says Secretaries Think Automation Makes Work Less Stressful," Press release, Troy, Michigan, 2.

45. Steelcase, Inc., Office Environment Index: 1989 Detailed Findings (Grand Rapids, MI.: Steelcase, Inc., 1989), 65.

46. Ibid., 63.

47. "DEMA Tenth Annual Member Statistical Compensation Survey," DEMA, June 1989, 4. Some VDT operators punch over 20,000 keystrokes per hour. See Kilborn, "Automation," 1.

48. Quoted in Craig Brod, Technostress: The Human Cost of the Computer Revolution (Reading, Mass.: Addison-Wesley, 1984), 45-46.

49. Steelcase, Office Environment Index, 63.

50. John Maxwell Hamilton, "A Bit Player Buys into the Computer Age," The New York Times, "Business World," December 3, 1989, 24.

51. Hall, "Secretaries," D1.

52. Schiro, "Secretaries' Poll," 18.

53. Kelly Services, "American Secretaries Say They are Satisfied with Current Jobs: Yet Less Than Half Would Advise Daughter to Pursue Secretarial Career," Press Release, Troy, Michigan, 1984, 2.

54. Ibid., 3.

55. Kelly Services, "Tomorrow's Secretary: Computer-Wise and Ambitious," Press Release, Troy, Michigan, 1984, 2.

56. Kelly Services, "Poll Says Secretaries," 1.

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102. "The Instant Offshore Office," Business Week, March 15, 1982, 136E.

103. Ibid., 136E.

104. "Work Sent Overseas," Monitor, 5.

105. Ibid., 5.

106. Hamilton, "A Bit Player," 24.

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CHAPTER 4

ORGANIZING OFFICE WORKERS FOR OCCUPATIONAL SAFETY AND HEALTH.

Introduction.

The proliferation of safety and health problems among workers using VDTs led organized labor to mobilize their members behind a political campaign for protective regulations, and provided unions with a compelling issue around which they could attempt to enlist the 87 percent of administrative and clerical workers that were unorganized.[1] Both campaigns were unprecedented in the annals of office work.

This chapter discusses efforts by VDT workers in the U.S. and other countries to secure safety and health regulations. It begins by examining the relative success that workers have achieved in other countries, then discusses the problems U.S. workers have faced. Labor's longstanding disregard for women office workers and the issues they face meant that there was little structure of support for working women when the VDT issue arose in the late 1970s. The AFL-CIO did not direct its attention and resources toward women until the 1980s. As a result, the earliest supporting efforts came from women's groups, Committees for Occupational Safety and Health, and unionized women themselves. Finally, labor's efforts to unite around the VDT issue as a vehicle for organizing women office workers and for securing safety

at Equitable and the subsequent failure at Blue Cross.

Foreign Efforts to Regulate VDTs in the Workplace.

Workers in other industrialized countries have had greater success at gaining protective measures than American unionists. This is due, in part, to the presence of labor/-left parties, higher rates of unionization (especially among white collar workers), and a stronger tradition of state intervention in the economy.[2] Although Sweden is the only country with mandatory government regulation of VDTs in the workplace at present (covering both ergonomics and very low frequency non-ionizing radiation), the European Economic Community (EEC) mandated in 1990 that its 12 members adopt regulations covering both ergonomic and radiation aspects of VDT health and safety by 1993.[3]

The regulations will cover the 80% of office workers in EEC member countries who use VDTs: Belgium, Denmark, France, Germany, Great Britain, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal and Spain.[4] The EEC regulations are the most comprehensive in scope ever mandated, and are bound to have a tremendous impact that reaches beyond the European community. The proposed EEC regulations include: free vision exams before starting work at the VDT and periodically thereafter, and free corrective lens if needed; training workers to use VDTs in an ergonomically manner; and mandated that workers had the right to know about the con-

tent of EEC regulations. It also directs that newly purchased computer terminals and chairs be adjustable for height. VDTs must be equipped with detachable keyboards and have glare-free screens that can be tilted up and down and turned from side to side to suit the user's needs. The EEC standards require that nonionizing radiation levels be "reduced to negligible levels," and will also cover such work environment factors as worksurfaces, noise, lighting and glare.[5]

Swedish VDT workers reported increasing incidences of musculoskeletal and vision problems in the early 1970s, and they led the call for more ergonomically designed work stations in the early 1970s.[6] This was soon followed by union calls for that terminals be shielded to prevent the leakage of non-ionizing radiation.[7] Sweden also imposed limits on the daily monitoring of individual VDT workers: productivity can only be measured monthly (not daily), and it must be done on a department-wide (not individual) basis. Norway's Worker Environment Act calls for employers to include workers' input during the planning stages of VDT installation, calls upon them to use VDTs to redesign the work process to limit repetitive tasks to the greatest extent possible, and requires that terminals be grounded to prevent skin rash caused by electrostatic charge build-up in front of the screen.[8]

Canadian workers called for alternative work, and other

safety and health provisions after a group of VDT operators at the Toronto Star experienced adverse pregnancy outcomes in 1979-1980. In 1979, 75 translation workers walked off their jobs at the United Nations in New York in protest over VDT related work speed-ups and uncertainties regarding the radiation emitted by the machines.[9]

VDT workers at the French Post and Telephone Office (PTT) charged management with disregarding their safety and health problems. They summed up the PTT's attitude as: "Give us your health-- in return you will get a modern word processing machine, a bonus and a pair of spectacles."[10] VDT workers in France have been included on the government's list of jobs that are monitored for safety and health problems.[11] Fears that computer automation would eliminate printers jobs and turn journalists into word processors brought the International Federation of Journalists and Graphic Trade Unions together in November 1978 to plot strategy. They resolved that VDT work be limited to 4 hours a day, punctuated by periodic breaks, and that they not be used to do printers' jobs.[12]

The West German government included VDTs on its list of products that must meet its federal technical (Deutsche Industrie Norm) ergonomic standards, but denied unions the institutionalized right to co-determination on questions of implementation.[13] In Austria, VDT operators who work overnight, are given breaks and other benefits required under

the government's "strenuous" work laws.[14] Some Austrian unions have negotiated collective bargaining agreements that put a 4 hour limit to continuous work on the VDT.[15]

In the United Kingdom, the Printing Industries Committee of the Trade Union Council reported in 1978 that their members were suffering from stress, vision and musculoskeletal problems, and called for a half hour of alternative work after two hours of continuous work at the visual display unit (VDU), rest breaks, and limits to the amount of time a worker could spend working on VDUs each day.[16] But their claims were met with skepticism on the part of employers, the Conservative-led government and members of the medical community. Writing in the New Scientist, Robert Weale, professor of visual science at the Institute of Ophthalmology in London, said: "If VDUs were not thought to threaten job reductions no one would be ululating about eyestrain which they are specifically claimed to cause."[17]

In 1985, British trade unions organized the "VDU Workers' Rights Campaign" in an attempt to have the vaguely worded Health and Safety at Work Act (1974) amended to protect VDU workers. They criticized the Health and Safety Executive's laissez faire approach for assuming "that employers would seek to minimize the harmful effects of prolonged VDU usage without Government or Trade Union intervention."[18] Blocked by Conservative Party Government opposition to the workplace regulation of VDUs, the campaign

focused its lobbying on the Labour Party in the "hope that a future Labour government in this country will take up our cause."[19]

Some of the earliest reports of cumulative trauma disorders (also known as repetitive strain injuries), especially carpal tunnel syndrome, came from Australia.[20] In March 1983, the Australian Trade Union Council issued model contract language for VDT work.[21] In August, Australian journalists won the right to have a ten minute rest break after two hours of continuous VDT work.[22] An arbitrator's agreement that the introduction of VDTs had increased the workload of the Australian government's clerical workers resulted in an 8 percent pay increase.[23] Insurance workers in New Zealand won, through industry-wide arbitration, the right to be notified in advance of, and to play a part in the VDT implementation process, including making provisions for those who lose their jobs in the automation process.[24] In December 1987, the New Zealand journalists' union negotiated ten minute work breaks once an hour, limitations on computer monitoring of VDT workers, and eye exams and employer provided lens when needed. Putting the agreement in international perspective, a union spokesman said: "The health and safety code, work breaks and guarantees of continued employment were better than anything negotiated in Australia, the U.S. or Britain."[25]

U.S. Labor and Women Office Workers.

Championing the VDT safety and health issue gave organized labor the opportunity to solicit new members in two overlapping areas where it had been very weak: office workers and women workers. At the beginning of the VDT campaign, in 1979, only 6.5% (or 1.2 million out of 18.5 million) office workers were organized.[26] Thus, pursuing safety and health regulations for the 85% of American office workers who use VDTs provided organized labor with an excellent opportunity to expand union membership among women, as well.[27]

The tremendous surge of women into the workforce provided a potential source of new members that organized labor could no longer afford to overlook. Women constituted 45.7% of the workforce by 1992, and Bureau of Labor Statistics' projections show that they will be 65% of the new entrants into the labor pool between 1985 and 2000.[28] Many women are (and will be) employed in the relatively low wage, clerical and service occupations where it is highly likely that they will be working with VDTs. Already, 90% of all VDT workers were women.[29]

Since the 1880s employers have steered women into marginal white collar occupations, characterized by lower-pay, noncareer-path, and routinized work. As Margery W. Davies has documented, the job of secretary was originally a male dominated field with management opportunities, but

diminished in importance when the typewriter was introduced and employers hired women to operate them. Designated as women's work, neither the position of secretary or typist was a career path to management.[30] Alice Kessler-Harris explains the lure to employers of a well-educated, lower paid female workforce:[31]

> Initially reluctant to hire women... employers succumbed to the lure of higher profits- for the jobs offered to women paid about half of what a comparable man might get. Explaining his preference for women workers, one businessman said that young men wanted to be promoted and to get higher salaries as they courted girls and then began to raise families. 'That kind of a clerk is not a good investment... because in certain jobs you must have girls, as girls do not have these demands made upon them.'

The educational system trained men to be managers and administrators and young women to be clerical workers and secretaries.[32] Linda Valli notes that today, as in the past, sex-typing in education continues to steer many women into clerical positions.[33] Like its predecessor, typing, VDT work has been sex-typed as women's work.

Despite its egalitarian rhetoric, the labor movement also reflected patriarchal norms and discriminated against women workers. Many working men saw women as a potential threat to their jobs and male unionists became avid supporters of protective labor legislation aimed at limiting the hours and conditions of women's work.[34] For most of the century, the labor movement, like employers, viewed working women as being marginal to the labor force.[35] Labor unions focused their organizing efforts on the male-dominated

industrial workplaces, leaving the vast majority of the predominantly female office workforce unorganized.[36] In addition, working in closer proximity to management created a shared sense of social status between office workers and their employers, and their anti-union values, thereby discouraging organizing drives.[37] In the few instances where white collar workers were organized, as Sharon Hartman Strom notes, it was not uncommon to find locals established along gender lines. In the insurance industry, there were separate locals for the male dominated sales force and the predominately female clerical workforce.[38] Even the International Ladies Garment Workers Union was led by men, who refused to advance women to leadership positions.[39] In sum, writes Alice Kessler-Harris: "Limited labor-force opportunities, protective labor legislation and virtual exclusion from labor unions institutionalized women's isolation from the mainstream of labor. Not accidentally, these tendencies confirmed traditional women's roles, already nurtured by many ethnic groups and sustained by prevailing American norms."[40]

Labor unions continued to view women office workers in the post World War II economy as unworthy of organizing because they assumed that most women were temporary participants in the workforce. Women, so the rationale went, were a more fluid pool of workers who would be more difficult to organize due to high turnover and greater employee reluc-

tance to take risks for a job they did not intend to hold for long. Added to this was women's lower salaries, which led many union officials to conclude that not enough union dues would be generated to make an organizing effort worthwhile.[41] Women have made advances in low and mid-level leadership positions since the 1960s,[42] but lead only 2 of the 58 AFL-CIO affiliated unions.[43] As a result, there was little or no structure of support for working women's concern's in place within the labor movement when the VDT issue arose.

Not surprisingly, unions have had a poor organizing record among office workers. When unions did organize clerical workers, it was usually those who were located in sites nearby industrial workers. Thus, many railroad clerical workers were organized by the brotherhoods, and the United Auto Workers had some success at organizing the Big Three's office workers.[44] But these efforts were the exception. As a rule, organizing efforts of clerical workplaces were few and far between.

However, for the past several decades, the U.S. has undergone a transformation from a highly unionized, manufacturing economy to one based on the white collar and service sectors, which are largely unorganized. During the 1970s and 1980s the information and service sectors experienced tremendous growth in employment while the industrial sector shrank. The transformation to a postindustrial econo-

my eroded labor's traditional organizing base, resulted in the loss of tens of thousands of members from its industrial unions, and put the labor movement on the defensive. Membership declined from a high point of 35 percent of the workforce in 1954 to only 15.8 percent in 1992.[45] Moreover, organized labor represents only 11.4 percent of private-sector employees.[46] That labor's political clout has also been declining since the 1970s is reflected by its increasing inability to get labor legislation through Congress or stop probusiness measures.[47]

Although many women's groups, such as 9 to 5: the National Organization of Working Women, the Coalition of Labor Union Women (CLUW) and others had been calling for an organizing drive of the predominantly female clerical workforce since the 1970s, organized labor's male leadership was slow to focus on the need for a white collar organizing initiative. However, by the mid-1980s, the AFL-CIO began to emphasize that its member unions could no longer afford to overlook the office, where half of all working Americans were employed, but less than 10 percent were organized.[48] At an AFL-CIO conference in 1984, secretary-treasurer Thomas Donahue stressed the need to organize white collar workers, especially women.[49] The next year the AFL-CIO issued its report, The Changing Situation of Workers and Their Unions, which emphasized the need to organize women workers in white collar occupations.[50]

Although the AFL-CIO was slow in responding to issues affecting women office workers, it must be noted that they were taking up the challenge for millions of workers they did not represent. While it is true that unions hoped to organize many of these workers, the fact remains that labor, often portrayed as a narrow special interest, is the one organized group in the U.S. that fights for benefits-- such as VDT regulations-- for all working people whether they are organized or not.

Labor's greatest success at organizing white collar workers has come in the public sector. In 1992, 36.7% of government employees were organized.[51] But gains in the unionization of government employees are more attributable to factors that are peculiar to the public sector, than to labor's persistence and organizing acumen. These factors were: President Kennedy's 1962 executive order permitting federal employees to organize,[52] similar reforms at the state and local levels of government which were experiencing a boom in job growth, a tradition of employee associations, and a more-favorable negotiating climate than could be found in the private sector. In the process of organizing public sector workers many women were organized. As Deborah Bell notes, this opened the door for the treatment of women's issues such as pay equity, child care and the VDT issue. However, as she adds, the public sector experience is not a good model for organizing the private sector where employer

resistance to unions is much stronger.[53]

If organized labor was to revive itself, an organizing drive among clerical workers reminiscent of the Committee for Industrial Organization's efforts among unskilled and semi-skilled industrial workers during the 1930s was needed. Unions, such as the International Association of Machinists, International Brotherhood of Electrical Workers, International Brotherhood of Teamsters, the United Steel Workers of America (USWA), and the United Auto Workers (UAW) all launched campaigns during the late 1970s and 1980s to organize office workers and push for collective bargaining agreements that included VDT safety and health provisions.

In doing so, they joined unions such as the American Federation of State, County, and Municipal Employees (AFSCME), the Communications Workers of America (CWA), the Office and Professional Employees International Union (OPEIU)[54] and the Service Employees International Union (SEIU), which had traditionally represented office and service sector workers. In 1981, 9 to 5, joined forces with the SEIU, the nation's fifth largest union, to form District 925, a union affiliate established to organize office workers.[55] For the first time, traditional unionists and women's rights activists came together to organize women clerical workers, a group whom conventional labor wisdom had regarded as unorganizable. In a 1979 merger that symbolized the coming together of industrial and service sector unions,

the Amalgamated Meat Cutters Union and the Retail Clerks merged to form the United Food and Commercial Workers (UFCW) and began organizing bank workers.

U.S. Labor's Efforts to Organize Around the VDT Issue.

During the mid-to-late 1970s, unions began to press employers for collective bargaining language that included periodic eye exams; regularly scheduled rest breaks; time limits on daily VDT use; shields to block the non-ionizing radiation emitted by the display unit's cathode ray tube (CRT); alternative work assignments for pregnant women concerned about the possible harmful effects on the fetus; and ergonomically designed furniture and equipment, and glare-reducing screens and lighting.

The Newspaper Guild (TNG) was the first union to actively address VDT-related safety and health problems experienced by its members. This was a reaction to the newspaper industry's pioneering switch to VDTs in 1970, and the resultant workplace problems. The most commonly cited problems VDT workers faced were vision impairment and musculoskeletal strain. Screen glare from lighting and windows, and fuzzy characters created eye strain and headaches. Straining to read the characters on the screen, in turn, produced neck and arm pains. In 1976, a TNG survey found that 50 percent of its VDT using members at the Associated Press and 33 percent at United Press International suffered from vision

and musculoskeletal problems. In 1977, the National Institute of Occupational Safety and Health (NIOSH) reported that "complaints of eyestrain ... often are voiced. And, with the many VDTs in use, the number of complaints could be quite large."[56]

Subsequently, the Newspaper Guild's annual convention took up the issue, adopting a resolution calling for regular employer provided eye exams for VDT operators.[57] By 1980, TNG had negotiated deals for paid eye exams with seventeen newspapers, paid eye glass prescriptions with seven others and rest breaks with four Minneapolis/St. Paul dailies.[58]

By 1984, vision-related ailments had become a pervasive problem in the newspaper industry. Association Trends, a publication of the American Newspaper Publishers Association (ANPA), remarked that the "latest employee benefit in many newspapers is yearly eye exams and free prescription glasses for those working at video display terminals." It attributed this development to a combination of employee fear and employer compassion, saying: "Lingering but probably irrational fears about radiation from VDTs make computer jobs a morale problem, and several newspapers have countered with the added benefits."[59] Omitted was any mention that these benefits were due in large part to concerted union pressure to rectify the most widely documented problem facing VDT workers.

By 1979, the growing volume of worker complaints

reached the point where TNG and OPEIU asked NIOSH to investigate VDT working conditions at the San Francisco Chronicle, the San Francisco Examiner, the Oakland Tribune and Blue Cross/Blue Shield of California.[60] NIOSH issued its report in June 1980 finding that VDT clerical workers suffered from the highest levels of workplace stress they'd ever recorded, blurred vision, loss of color perception, musculoskeletal ailments, numbness in hands and loss of strength in their arms. But the Examiner's systems editor, David Cole, was not impressed by NIOSH's documentation of VDT workers' complaints. "I recall that there were complaints when you had pencils and paste pots too," he said.[61] But by 1981, working conditions at Blue Cross/Blue Shield worsened to the point that OPEIU workers went out on strike.[62]

Commenting on the weakness of American unions, labor analyst Harley Shaiken observed that, "In the U.S., it is only management which decides on technological changes." He charged that safety and health problems created by office automation were "being buried to speed up technological change," and that for management, the "bottom line is return on investment."[63]

In November 1979, TNG and OPIEU formed organized labor's first VDT coalition and were soon joined by four other unions: the CWA, the Graphic Arts International Union (GAIU), the IAM, and the Transport Workers Union (TWU) and

25 AFSCME locals. They were later joined by the International Typographical Union (ITU) and the National Association of Broadcast Employees and Technicians (NABET). The coalition's plan was to publicize the problems surrounding the workplace use of VDTs, promote the inclusion of VDT safety and health provisions in collective bargaining agreements and launch a national campaign for federal enactment of VDT regulations.[64]

The Role of COSH and Women's Groups in Organizing VDT Workers.

Besides unions, committees on occupational safety and health (COSH) and women's groups play important roles in organizing and educating VDT workers. Both groups are products of 1960s' political activism within the labor and women's movements.

During the 1960s increasing environmental awareness produced a growing concern among workers over safety and health issues in the workplace. This concern manifested itself in the form of a safety and health movement that helped produce the landmark Occupational Safety and Health Act of 1970.

Subsequently, the occupational safety and health movement was institutionalized in labor unions which broadened, or created, their own units, and in the formation of COSH groups. COSH groups-- coalitions of labor unions, industrial

hygienists, activists and academics-- were started in New York, Boston, Chicago, Philadelphia and many other locales across the nation in order to advise labor and lawmakers about on-the-job dangers and to advocate corrective and preventative measures. For example, the New York Committee on Occupational Safety and Health (NYCOSH) established a VDT action committee during the late 1970s, held the first conference on VDT-related workplace ailments in January 1980 and has lobbied for passage of laws at the city, county and state levels of government ever since.

The women's movement profoundly altered the way many working women viewed their jobs during the 1970s and 1980s. Emphasizing equality with men, it gave female clerical workers the conceptual basis around which to organize and protest their subservience in the office hierarchy. Discriminatory practices, such as paying women less than men for the same work performed (on average, women earned only 60 cents for each dollar a man earned); sexual harassment; promoting men over more experienced women; and fighting the conception of the secretary as office wife/mother expected to fetch coffee and run domestic errands-- as well as type and take dictation-- were routine, institutionalized management practices in many offices. These injustices gave rise to support groups which strove to educate, organize and empower women office workers in order to overcome their disadvantaged situation compared to management and male

employees.[65]

Some of the more successful support groups formed during the 1970s were the Municipal Women's Project in Boston; Women Employed in Chicago; Women Organized for Employment in San Francisco; Women Office Workers and the Women's Action Alliance in New York City; and Working Women in Cleveland.[66] The National Organization for Women (NOW) established a Committee on Women in Office Work to help coordinate these efforts on a nationwide basis. CLUW, organized in 1974, and Union WAGE were also instrumental in raising women's issues in labor circles.[67] In 1984, CLUW established a task force to address the safety and health and worker retraining problems that arose with the VDTs introduction.[68]

The most important group to emerge from the women's movement was 9 to 5. Founded in Boston in 1973, 9 to 5 later merged with Working Women of Cleveland to form the present day organization. Headquartered in Cleveland, it had 13,000 members in 25 chapters in 1992.[69] Co-founder and executive director, Karen Nussbaum, has become the leading spokesperson on the VDT issue, writing articles, appearing on television and radio, and giving speeches at demonstrations and academic conferences. In 1985, the Wall Street Journal cited her as "part of a small but growing nucleus of women wielding real power."[70]

9 to 5 has taken a leading role in educating women

office workers about the safety and health hazards associated with VDT use. It has prepared a book and numerous reports on VDTs, ranging from its health effects to the employment prospects in face of computer automation,[71] and established a "VDT hotline" for VDT operators concerned about their reproductive health.[72] On National Secretaries' Day, when managers are encouraged to give flowers to their secretaries, 9 to 5 has held demonstrations and letter writing campaigns in business districts emphasizing the point that working women want "Raises and Roses!"[73] They also drew up a "Bill of Rights for the Safe Use of VDTs," which called for greater say in decisions on how new technologies are introduced and used in the workplace, 15 minute rest breaks every 2 hours (every one hour for intense work), a limit of 4 consecutive hours per day of VDT work, the elimination of stress creating keystroke pacing and computer monitoring, alternative work for pregnant employees, shielding of terminals to protect operators from non-ionizing radiation, ergonomically designed workplaces and VDTs, and worker input on the pace of the work.[74]

9 to 5 received nationwide publicity when Jane Fonda became interested in its work on the VDT issue. She included a four page section on VDT and other office safety and health problems in her bestselling Jane Fonda's Workout Book (1981); starred in the 1980 motion picture, entitled 9 to 5 (which became the basis for a television series); and inter-

ested her then husband, Assemblyman Tom Hayden, in sponsoring VDT legislation in the California state assembly.[75] Despite 9 to 5's small membership, it has succeeded in attracting employee and public attention to the VDT issue. Even corporate interests acknowledged the initial success of their efforts. Charlotte LeGates, the Computer and Business Equipment Manufacturer Association's (CBEMA) Director of Communications commented that 9 to 5 is "tiny, minute, compared with any one of our member companies, but they have generated enormous attention."[76]

Getting Equity at Equitable.

District 925 faced its biggest challenge when it received a call from some workers at the Equitable Life Assurance Company's claims office in Syracuse, New York, who said they wanted to form a union. Working conditions at Equitable's Syracuse office made it a prime candidate for an organizing drive. One VDT worker said it "looks and operates like a factory."[77] Excepting a 15 minute morning break and the lunch hour, workers were confined to their computer screens for 8 to 10 hours a day processing medical and dental insurance claims. Management ignored their complaints of glare-induced headaches, musculoskeletal aches and skin rashes. In addition, they used computer monitoring to keep track of every keystroke, set the pace of work and determine wages (which averaged only $12,000 in 1984) accordingly.

Besides productivity, wages were determined according to management's assessment of each employee's "attitude" towards the job.[78]

Like many employers, Equitable introduced VDTs to the office without consideration of the social costs that accompany the computerization of office work. As one of the VDT workers, Rebecca Alford, told a House Subcommittee:[79]

> ... we were left to master it ourselves. Made to work on a system that determined the pace and content of our work, we were stripped of any autonomy or job satisfaction. We asked for information on safety and health risks and were assured there were none.

When its employees petitioned the National Labor Relations Board (NLRB) for a union representation election in February 1982, Equitable responded by bringing in Ray Mickus Associates, a consulting firm which specialized in defeating union organizing efforts. Management then threatened to close the Syracuse office, layoff employees and electronically reroute work to other locations.[80] Although the union won the election, Equitable dragged its feet by challenging the validity of the results before the NLRB. Despite the NLRB's conclusion that the election had been fairly won and that Equitable had filed a frivolous challenge, the insurance giant refused to bargain with District 925. The NLRB failed to compel Equitable to negotiate with the union in a timely manner. Vice President John H. Goddard defended Equitable's stalling tactics, saying that the company was "merely following a course set by hundreds of employers."[81]

The SEIU responded to Equitable's intransigence by calling a national boycott. NOW endorsed the boycott, as did the AFL-CIO, whose member unions were asked not to invest their $1 billion worth of pension funds with Equitable. Boycotts thrive on publicity and District 925's effort to get Equitable's attention was no exception. It succeeded in focusing public attention (including a Congressional hearing) on the conflict. Embarrassed by the negative publicity (its advertising campaign portrayed it as an insurer that cared about women's issues), Equitable agreed to enter into collective bargaining negotiations with the union in September 1983.[82]

Still, another 14 months went by before a settlement was reached.[83] The agreement called for rest breaks every two hours, eye exams and anti-glare screens. It gave pregnant employees a limited right to alternative work, established a grievance procedure for soliciting employee input on the extent of computer monitoring, included a wage increase and guaranteed that the office would remain open for the duration of the three year contract.[84]

Although only 54 workers were covered by the contract, union observers saw the Equitable victory as a major breakthrough.[85] Charles McDonald, the AFL-CIO's assistant director of organizing hailed it as "a tremendous step for unions." District 925's success marked the first time that office workers at any insurance company in the United States

had been organized around the issues of monotonous work, speed-ups, computer monitoring and safety and health hazards. Historically, the insurance industry had been an anti-union stronghold with only 3% of its workers (mostly salesmen) organized.[86] This stood in stark contrast with Scandinavian countries, where 95 percent, and most African, Asian, European and Latin American countries, where well over 50 percent, of the finance and insurance workers were organized.[87]

The Failure of the Blue Cross Campaign.

The Syracuse victory produced a spate of collective bargaining activity, but unions failed to generate and maintain a consistent organizing momentum on a national basis. Nor did the Syracuse victory attract the major commitment from the AFL-CIO, that the organizers expected.[88] Although the occupational shift from industrial to service sector was well established by 1984 (the year the drive for VDT protection was in full swing), and the advantages of organizing white collar workers were well known (labor's success rate was 52% compared to only 40% among industrial workers), only 25 percent of all organizing efforts were directed towards white collar workers.[89] As Business Week commented in 1984, "... only about 10% of service-industry and office workers have been organized, in part because major unions have not concentrated on signing them up."[90]

Despite its million dollar war chest and the favorable publicity generated by its victory at Equitable, District 925 had organized only 6,000 workers from 1981 to 1986.[91]

The AFL-CIO's one broadly coordinated attempt to organize clerical workers was an abject failure. In 1985, AFL-CIO president Lane Kirkland announced an ambitious plan to organize Blue Cross/Blue Shield's 98,000 workers. Inspired by the success at Equitable the year before, it seemed as though the AFL-CIO was ready to commit the time and resources necessary to organize private sector clerical workers after years of neglect. The effort was led by the CWA, OPEIU, SEIU, UAW, and UFCW, which pledged to coordinate their resources and lead the organizing drive. Their effort was supported by the AFSCME, the International Union of Electrical Workers, and USWA. However, union activity was uncoordinated, poorly planned (e.g., male organizers used tactics more familiar to the industrial workplace than to female clerical workers), and lacked a maximum effort by the participating unions (e.g., although the campaign was chaired by the SEIU's John J. Sweeney, his union continued to place its organizing emphasis elsewhere). The campaign relied on public relations and top-down leadership rather than grass roots organizing focused around employee grievances.[92] When the campaign was met by corporate intransigence, the unions failed to counter with additional rank and file organizing attempts.[93]

Moreover, there were serious limits to labor's collective bargaining efforts. Although some unions won VDT provisions through the collective bargaining process, there was no guarantee of victories in all union shops. As the Newspaper Guild reported in 1986: "Guild bargaining for VDT contract provisions continued to encounter strong publisher resistance."[94] The situation at the Newspaper Guild was typical for most unions. Moreover, collective bargaining agreements-- which, at best could only cover the minority of VDT workers who were organized-- were no substitute for OSHA regulations.

Conclusion.

The weakness of American labor is in stark contrast to the power of their better-organized corporate opponents. The lack of strong interest in organizing women office workers and in meeting their concerns left the AFL-CIO unprepared to exploit the VDT issue. Still, it is remarkable, that U.S. unions depicted as narrow special interests by many American commentators, have been willing to fight to win benefits (e.g., VDT regulations) for workers they don't represent. Moreover, labor has been fighting against business on an unlevel playing field; the VDT issue arose at a time when the anti-union Reagan administration deregulated OSHA and tilted the NLRB in favor of business. American labor is also more isolated from white collar workers and political par-

ties than their European counterparts. In Europe, Australia, and New Zealand, which have higher rates of organization of white collar workers and labor/left parties, workers have been able to apply greater pressure on business and the state and win more VDT protections than their U.S. counterparts.

Given these handicaps, American labor might make greater use of associational unionism. Generally, associational unionism provides services, benefits, and professional support for its members, encourages more flexible work rules, and greater workers' participation in the labor process, but doesn't collectively bargain for workers.[95] Associational unionism might be better applicable to the unique characteristics of white collar workers who are less likely to be receptive to the concept of unions, than their blue collar counterparts, to solve their workplace problems. As Charles C. Heckscher writes, associational unionism applies to the situation of VDT workers: "the problem of worker representation extends far beyond... [the domain of traditional unionism to]... issues faced by all levels of employees-- and especially by the white collar and professional employees who are increasingly seen as the leading edge of economic growth."[96] Moreover, as Casey Ichniowski and Jeffrey S. Zax have shown, associations often prove to be breeding grounds for the development of unions.[97] Bell has also found that the presence of employee associations in

state and local governments helped unions organize workers.[98]

As the next chapter will indicate, labor was opposed by a highly mobilized and impressive array of corporate America, including computer manufacturers, business users of office automation systems, and the major media. Labor's weakness at the collective bargaining table would force it to take its campaign for national investigations and universal protective regulations to the federal government, despite the hostile political atmosphere awaiting them.

Notes.

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4. Cited in "Summary Report," Steelcase Worldwide Office Environment Index, 1991 (Grand Rapids, MI., 1991), 14.

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11. "Few VDT Rules Around World," WOHRC News, 6.

12. Ibid., 6.

13. Ibid., 6.

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15. 9 to 5 Campaign on VDT Risks, 3.

16. Ibid. 3. Visual Display Units is the British terminology for video display terminals.

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21. Australian Council of Trade Unions, "ACTU Health and Safety Policy: Screen-Based Equipment," Health and Safety Bulletin, March 1983, 1-10.

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23. "Few VDT Rules Around World," WOHRC News, 6.

24. Ibid., 6.

25. "NZ Journalists Win Benefits," VDT News, May/June 1988, 8.

26. John G. Kilgour, "Office Unions: Keeping the Threat Small," Administrative Management, November 1982, 23.

27. Cited in "Summary Report," Steelcase Worldwide Office Environment Index, 1991, 14.

28. Department of Labor, Bureau of Labor Statistics, "20. Employed Civilians by occupation, sex, and age," Employment and Earnings, January 1993, 193. Percentages calculated by the author. "Needed: Human Capital," Business Week, September 19, 1988, 102-03.

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38. See Sharon Hartman Strom, "'We're No Kitty Foyles': Organizing Office Workers for the Congress of Industrial Organizations, 1937-1950," in Women, Work and Protest: A Century of Women's Labor History. ed. Ruth Milkman (New York: Routledge and Kegan Paul, 1985), 206-34.

39. Kessler-Harris, "'Where Are the Organized Workers?'" 348-349.

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41. Ibid.; and Everett M. Kassalow, "White-Collar Unionism in the United States," in Sturmthal, ed. White-Collar Trade Unions, 339, 356.

42. Deborah Bell, "Unionized Women in State and Local Government," In Women, Work and Protest, ed. Milkman, 287-288. Dale Melcher, Jennifer L. Eichstedt, Shelley Eriksen, and Dan Clawson, "Women's Participation in Local Union Leadership: The Massachusetts Experience," Industrial and Labor Relations Review 45 (January 1992): 267-280.

43. U.S., Bureau of Labor Statistics.

44. Mills, White Collar, 303-04; Kassalow, "White Collar Unionism in the United States," 305-364; "Unleashing the White Collar: How UAW White-Collar Workers Have Been Making Their Own History For Nearly 50 Years," Solidarity, January 1985, 22. Exceptions to this rule included entertainment workers (including musicians, actors and stagehands); postal and other government workers.

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73. From "How to Use the 9to5 Working Women's Agenda," flyer inserted in March/April 1985 issue of the 9to5 Newsletter, emphasis in original.

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80. Serrin, "Computers in the Office," B2. Regina Canuso, a District 925 organizer is quoted as saying: "We can't strike Equitable... With this technology, they could flick a switch, and the work could be in Kansas City. This changes the whole nature of organizing." Equitable was also reported to be planning a nationwide reduction in claims staffing from 4,000 to 3,000. House, Video Display Terminals in the Workplace, 65-66.

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92. Herbert R. Northrup, "The AFL-CIO Blue Cross-Blue Shield Campaign: A Study of Organizational Failure," Industrial and Labor Relations Review 43 (July 1990): 525-41.

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96. Heckscher, The New Unionism, 4-5.

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CHAPTER 5

"A QUESTION OF BUSINESS."

Labor's organizing efforts around the VDT issue prompted computer manufacturers and business users of office automation systems to form a coalition and counterattack. This chapter describes the growth of the office automation industry, notes its autonomy from regulation, and examines the economic and political influence of IBM, the industry leader. It discusses the corporate coalition's mobilization of superior economic and political resources against labor in its effort to define the VDT debate to its advantage. Also described is the computer industry's close links with media corporations, which solidified the coalition. The media's extensive efforts to suppress the VDT story and how it helped the corporate coalition's political efforts to keep the issue off of the public policy agenda is also analyzed. Combined with business' superior economic status and prestige, these factors tilted the political playing field in the corporate coalition's favor.

The Stakes Involved for VDT Manufacturers and User Companies.

There is a community of interest in opposing VDT regulation between VDT manufacturers and users. Manufacturers opposed regulations that might force them to revise the way

might dictate purchasing standards and the way they are used.

Together, the computer manufacturers, corporate users and media corporations formed a powerful frontline of defense. With VDTs being used in virtually every major industry in the nation, a formidable coalition was mobilized against organized labor's drive for protective regulations. Certainly, the economic stakes involved were large enough to maintain a community of interest between computer manufacturers and users.

The economic stakes in staving off the union's drive for regulation are high for both VDT manufacturers and corporate users. Today, an estimated 25 million computer terminals are being used in American workplaces.[1] In addition, millions of personal and stand-alone computers are also being used for working purposes.[2] Approximately 50 million Americans use computers in some capacity on the job, mostly in white collar occupations,[3] and it is projected that 50% of the workforce will be using VDTs by 1997.[4]

Computer analysts note that many corporations are still in the early stages of VDT-mediated office automation. Firms that used VDTs as glorified typewriters when they were first purchased are just beginning to understand their potential use as "expert systems," that is, the computer's ability to perform intricate tasks and make decisions previously reserved for human attention. As a result, many firms did not

initially achieve the advertised gains in productivity. But analysts expect that, as more corporations overcome the technological lag and realize the productive potential of VDT-based office automation systems, the market, which stagnated in the mid-1980s, will continue to grow. The Administrative Management Society's Lou Pilla predicted that "by all indications, we are on the verge of one of the greatest periods of growth in office automation ever."[5]

Quick and efficient communication is a key aspect of competitiveness in the white collar economy today. Towards achieving this end, the business community is investing heavily in VDTs and computer-based office automation systems. In 1989, approximately 45% of all U.S. capital spending was devoted to information systems (up from 40 percent in 1987), and 40% of that was focused on computer equipment used in the office.[6] The total corporate investment in information systems surpassed the 500 billion dollar mark in 1987.[7] Rapid advances in computer processing chip technology have given the microcomputer, operated by one person, the computing power of yesterday's mainframe computers, attended by a team of two or more. Consequently, microcomputers are the fastest growing part of the computer industry. From negligible sales ten years ago, they now "account for 46 percent of all expenditures on computers and software" and analysts expect microcomputers to command 62% of the entire market by 1994.[8] Annual shipments of VDT-using microcom-

puters have been projected to jump from 6 million in 1988 to 8.3 million in 1992. Moreover, they are the computer industry's earnings leader, bringing in $14.4 billion in 1988 with sales expected to rise to 19.2 billion by 1992.[9]

IBM, AT&T, Apple, Compaq, Data General, Hewlett-Packard Company, Unisys and Wang Laboratories, are among the major U.S. producers of VDT-based office automation products. Computer-based products accounted for 79% of all office automation equipment sales in 1988.[10] With their functions incorporated into computer programs, traditional office machines, such as typewriters, calculators, cash registers, accounting machines, dictating machines, and photocopiers, are increasingly being crowded out of the market. VDTs now account for 12% of all office equipment sales, while typewriters have dwindled to only 2%.[11] U.S. sales ($109.2 billion) accounted for 42% the worldwide total in 1989, making it the world's largest market for computer equipment.[12] Data processing and network services, which utilize VDTs, accounted for $31.1 billion worth of business in the U.S. during 1990. Despite recessionary forecasts for the economy, the U.S. Department of Commerce expects data processing and networking to grow by 16 percent in 1991.[13] According to Commerce Department spokesman Jonathan C. Menes, the computer industry's "rapid growth is a strong indication of two important trends: increased use of automa-

tion to improve productivity and the expanded demand for information services."[14]

At first, VDT manufacturers downplayed ergonomic considerations out of fear that its added costs might scare away customers. The New Scientist described this attitude among VDT manufacturers: "One representative of a major manufacturer conceded that salesmen are reluctant to encourage buyers to design a better environment before plugging in their machines, because that would cost too much."[15] Ironically, it was organized labor's insistence that the poorly designed VDT workplace be improved that led manufacturers to introduce ergonomically designed, and more expensive, terminals into the market. Organized labor's efforts were crucial to generating public awareness of the need for ergonomically designed VDT workstations, which, in turn, generated greater sales-- and profits-- in this new and lucrative market. As CBEMA spokeswoman Charlotte LeGates explained.[16]

> There are positive aspects, monetary aspects ... the entire industry has benefitted. We are now able to sell better quality equipment now which translates into more expensive equipment, because of the level of awareness of ergonomics. We would have had to sell that concept from the ground up without this kind of public pressure to improve the ergonomic quality of our machines.

For VDT manufacturers it was the best of both worlds: greater demand for more expensive machines without regulations that might curtail their autonomy.

However, some corporate VDT users in the CWT eyed the computer manufacturers dominance of the group with suspi-

cion. With organized labor's drive for VDT legislation gaining momentum, they feared that VDT manufacturers "might find it beneficial to sell out" to proponents of VDT regulations and "stick the users with a whole bunch of rotten ergonomics proposals in exchange for having machine proposals."[17] In other words, they feared that if legislation came close to passing, VDT manufacturers might strike their own deal with proponents of VDT regulations. Such a deal, business users feared, might include office ergonomic guidelines that would add to users costs, but leave the design of VDTs untouched. To guard against this possibility, corporate users demanded a greater say in the affairs of the manufacturer-dominated Coalition for Workplace Technology. This crisis was resolved in 1985 by the creation of the Center for Office Technology (COT) which was governed by a board of directors weighted in favor of users. They were represented on the board by the Aetna Life and Casualty Insurance Company, Air Transport Association of America, American Council of Life Insurance, American Express Company, American Insurance Association, American Newspaper Publishers Association, American Telephone and Telegraph Company, CIGNA Corporation, the Prudential Insurance Company of America and the St. Paul Fire and Marine Insurance Company. VDT Manufacturers were represented by the American Electronics Association, CBEMA, Digital Equipment Corporation, Hewlett-Packard Company, and by the IBM, NCR and Xerox Corporations.

COT's information brochure does not mention its prior existence as the Center for Workplace Technology. Nor does it mention the role that the rift between manufacturers and users played in COT's creation. Instead, it states that COT was created to "fulfill" the "need" for "a national clearinghouse for authoritative information on issues related to video display terminals and office automation."[18] Still, COTs political function was the same as its predecessor: to coordinate corporate opposition in the effort to preempt the drive for VDT regulations.

The Corporations Counterattack.

District 925's small victory at Equitable's Syracuse office made a major impression on the business community. Corporate attorney Martin F. Payson, a prominent management consultant to business on office automation issues, told the Wall Street Journal that District 925's victory "sent a shock wave not only through the insurance community but every major white collar business."[19] He warned employers to "audit your policies and procedures before the union does."[20] Computer Decisions magazine warned its readers: "Let the manager beware. These working conditions promote the unrest that in turn causes low morale, high turnover, unionization fights, and worse. Your data-entry department could be a time bomb waiting to explode with serious consequences. And your management style could be at the root of

the problem."[21] Charlotte LeGates, director of communications for the Computer and Business Equipment Manufacturer's Association (CBEMA), was confident that union attempts to organize VDT workers could be defeated. "Most clerical workers do not want to belong to a union," she stated. Adding that secretaries and office workers in the U.S. aspire to become managers, LeGates declared: "That's not a union type of mentality."[22]

A cottage industry of consultants sprang up to advise managers on how to maintain a "union-free" work environment. One of its leading exponents, John G. Kilgour, advised managers attending a meeting of the International Information/Word Processing Association, that, with the flexibility offered by VDTs, work could now be divided up so that employees did not have the same manager, work location, wages and benefits. Thus, managers could prevent "communities of interest" from forming among workers who might seek to organize. If any managers harbored reservations about the social dislocation such a move might cause among their employees, he told them that: "You are in the middle of something that is of the same magnitude as the industrial revolution. It's really not a question of good guys and bad guys, it's a question of business."[23]

Business interests portrayed employee concerns about VDT safety and health hazards as an irrational fear of new technology. Vico E. Henriques, President of CBEMA, told a

House Subcommittee that "... while the safety of the equipment has not changed, there is an element in the workplace that has changed. Today we have fear, and it is fear that comes from a rapid change in the way of conducting our work and our lives. It also comes from some zealous and self-interested parties who create fear for their own advantage."[24] Writing in PC Week, Renee S. Ross, the executive director of the Center for Office Technology (COT), a public relations group created and funded by CBEMA and corporate users of VDTs, said that "myths and new technology seem to go hand in hand. People once thought railroad trains passing through fields would make cows go dry. They also feared the freon in frozen food cases would harm food.... Most of the anecdotes we hear today concerning possible hazards from video display terminals (VDTs) have the same roots."[25] Dr. Myron L. Wolbarsht, a professor of ophthalmology and biological engineering at Duke University and computer industry consultant,[26] explained that people were the problem, not VDTs: "When a person is put in a position where he feels uncomfortable, he gets tired and achy. If people thought rationally, they'd realize it's the way they're sitting and it's the glare coming off the screen. But most people aren't rational; it's easier to blame mysterious radiation."[27] A report by Adia Personnel Services even blamed dead writers for encouraging workers' resistance to office automation (OA): "The newness of this technology, coupled with negative

cultural impressions that have been perpetuated by such writers as H.G. Wells, Jules Verne, Aldous Huxley and George Orwell, have contributed to an underlying suspicion and mistrust of OA. The only real answer to this residual fear is education."[28]

Labor's efforts to organize office workers was met with a counter mobilization by computer manufacturers and corporate users. Corporate opposition to VDT regulation was spearheaded by CBEMA and the American Newspaper Publishers Association (ANPA). ANPA represents approximately 1,400 newspapers, accounting for over 90 percent of the nation's daily and Sunday circulation.[29] CBEMA is a trade association representing forty-two computer and business equipment companies (accounting for 85% of all industry revenues) operating in an oligopolistic economic setting.[30] Its members include the largest and most important VDT producers, such as International Business Machines (IBM), American Telephone and Telegraph (AT&T), Apple Computer, Inc., Compaq Computer Corporation, Harris-Lanier, Hewlett-Packard, Unisys, Control Data Corporation, Digital Equipment Corporation, Wang Laboratories, and the Xerox Corporation.[31] Based in Washington, D.C., CBEMA is the high profile lobbying arm of the computer industry. "Congress, federal agencies and the Administration know that when CBEMA speaks, it speaks for its members," proclaims a CBEMA pamphlet.[32]

The Media Connection.

ANPA's opposition to VDT regulation stemmed from its staunch conservatism and its dependence on the computer terminals.[33] During the 1970s, ANPA members across the country began to invest millions of dollars in the conversion to VDTs.[34] Starting with 23 terminals in 1970, the newspaper industry was using over 50,000 by 1984, and 60,000 by 1987.[35] ANPA's leadership position among corporate users grew out of its lengthy experience fighting the Newspaper Guild on the VDT issue. ANPA acted quickly to use its power to shape reportage of the VDT debate to its advantage-- both on and off the editorial page.[36] In June 1983, George Cashau, ANPA's Director of Technical Research, briefed members of the Newspaper Personnel Relations Association, a professional association closely linked to ANPA. He told them to be on the lookout for those who would exploit the VDT issue in their quest "for shorter work weeks, longer rest breaks, more people hired, or [those] who have something else to gain."[37]

In December 1983, ANPA brought its state publishers associations together at its headquarters in Reston, Virginia to discuss how to defeat organized labor's campaign for VDT legislation. ANPA instructed its state counterparts to closely monitor the content of stories on the VDT issue. In its attempts to defeat the 1984 state VDT bill, the Massachusetts Newspaper Publishers Association (MNPA) advised the

editors of its member papers to "carefully screen" all VDT stories for anti-employer or anti-computer industry bias before publication. As the following directive to editors and publishers indicates, it worried that callow young reporters might be doing organized labor's bidding:[38]

> Unions, particularly the 9 to 5 organization, have been distributing propaganda conjuring up all kinds of perils to safety of operators, and some of the information is being fed to young reporters who do not understand all the elements involved in the dispute.... The ambition of young reporters to achieve a page-one by-line by stretching or embellishing the facts is ever present and the consequences can cause serious damage.

Why did professional reporters who were presumably competent to cover any number of other stories objectively need to be put on a tight editorial leash when the subject shifted to VDTs? MNPA's sudden interest in maintaining the strictest standards of journalistic objectivity was motivated by two concerns. First, reporters had been suffering from ailments related to VDT use since 1970 and the Newspaper Guild was pressing publishers to include VDT regulations in its collective bargaining agreements. Publishers had good reason to fear that reporters might have more than a casual interest in the VDT story. Second, the newfound concern for objectivity was a smoke screen for its own economic interest in opposing an open inquiry into the VDT issue. Given the newspaper industry's massive investment in the installation of VDTs, MNPA did not have to belabor the point that the VDT safety and health coalition's "misinterpretation of facts

and statements is... dangerous, especially to business interests."[39]

But the MNPA's policy was doubly damaging to the public interest. The public was deprived of a full and accurate account of the pro's and con's of the VDT debate, without which it was unable to make a balanced determination of the issue. Moreover, the major media's control of VDT news content greatly aided the MNPA and other opponents in their successful bid to kill the VDT bill in the Massachusetts state house.[40] This pattern was repeated across the nation.

If MNPA was so distrustful of rookie reporters, why did editors assign them to cover the VDT story in the first place? Editors usually assign young, relatively inexperienced reporters to cover less heralded stories than their more seasoned colleagues. Once ANPA and MNPA realized that the way the VDT story was portrayed to the public could affect their economic interests, publishers were prompted to tell their editors that it was too important to be left to the discretion of young reporters.

The Massachusetts' publishers direct intervention in how the VDT story was reported was the exception to the rule. Normally, publishers did not need to remind editors and reporters that they, like any business enterprise, had economic interests, too. As media critic Ben H. Bagdikian put it: "Some intervention by owners is direct and blunt.

But most of the screening is subtle, some not even occurring at a conscious level, as when subordinates learn by habit to conform to owners' ideas."[41] As a result, the computer industry's perspective on the VDT issue was promoted by much of the mainstream and business press. When mainstream news media did cover the story, its accounts generally reflected the newspaper industry's position that there were no health hazards associated with the use of VDT's. Not even a letter written to Newsweek, the Wall Street Journal, and American Health by a Research Triangle Park-based IBM employee, implicating the company's model 3279 terminal as the cause of serious safety and health problems, stirred concern amongst the major media. Although it was covered by a local television station in Raleigh, the story was ignored by the major media.[42]

More commonly, the major news media did not report the VDT story at all. When the Columbia Journalism Review ran an article on the mystery of the missing VDT news coverage in 1981, it was aptly titled: "VDTs: The Overlooked Story Right in the Newsroom."[43] Three years later, it reviewed the situation and found that the VDT story was still not being covered by the major media. In its November/December 1984 issue, the Review editorialized that "... we have been troubled for years about indications that VDTs may cause health problems-- and equally troubled by the fact that the

press as a whole seems unwilling to report in any depth on the nagging questions about safety."[44]

The Columbia Journalism Review went on to charge the "major news media" with practicing a policy of "benign neglect,"[45] but the neglect was not always so benign. Although two of its young copy editors developed cataracts while working at VDTs in 1976, the New York Times refused to report the story. In fact, the Times even maintained its silence regarding the VDT controversy on its own premises in two articles (in 1977 and 1980) it published on the growing concern of some scientists that nonionizing radiation might be harmful to humans at levels lower than previously thought.[46] Its policy of silence was made conspicuous by a 1978 Wall Street Journal story on NIOSH's subsequent investigation of the Times' VDTs for radiation leakage.[47] The Times did not mention the VDT safety and health controversy for five years, and, then, it was only to say that its terminals had passed a test for radiation leakage.[48] Given that this article never mentioned the reason the VDTs were tested in the first place-- the reader was left to wonder why the Times' terminals being cleared of any danger was a newsworthy event? The Times did not run a story addressing office automation until nearly another 18 months had passed.[49] In all, over six years elapsed from when the Times first learned of the VDT controversy and when it first reported on it. The Times record of reporting on the VDT

safety and health issue showed little improvement during the 1980s. In 1990, Louis Slesin, founder and editor of the authoritative VDT News, wrote that: "The New York Times has a reputation for ignoring news items on VDT health risks, especially radiation effects."[50] Nor did the Times address the growing cumulative trauma disorder problem that affected one in 6 newsroom employees until senior executive editors, Max Frankel and John Kifner, were afflicted in 1991.[51]

The situation was similar at other major dailies. At the Baltimore Sun, where two journalists developed cataracts while working with VDTs, only one brief wire service story had been run on the safety and health issue as of early 1981. When Mary Knudson, the Sun's medical writer suggested writing a story on VDTs in February 1980, her editor told her not to do it. He cited Knudson's position as head of the local Newspaper Guild's health and new technology committee as a conflict of interest.[52] "'He said he would assign it to another reporter,' Knudson said, 'and that's the last I heard about it. The story hasn't been written.'"[53]

In March 1980, the Chicago Sun-Times ran a story on VDTs and vision problems which included an interview with Dr. Milton M. Zaret, the ophthalmologist who diagnosed the cataracts in the New York Times copy editors. The story was pulled by the Sun-Times' editor, Stuart Loory, after appearing once in the limited circulation early edition. Loory said that his reason for pulling the story was that Zaret's

views-- he believed that the cataracts might be caused by continuous exposure to non-ionizing radiation emitted by VDTs-- had been discredited by his peers.[54] The only local paper to cover this story was the alternative press weekly, the Chicago Reader.[55] These papers' aversion to reporting the VDT story on their premises came at the same time they were investing millions of dollars in converting their newsroom and business operations to these machines.[56]

By 1987, the situation hadn't changed much. "The media has been... neglectful in not focusing on this issue," said Mark Pinsky, who has followed the VDT issue since the early 1980s, first as associate editor of VDT News, then as executive director of Project Democracy, a New York based public interest group. He added: "As the evidence [of safety and health dangers] has built they sort of lost interest in this story. I'm hard pressed to understand that short of the fact that the [computer] industry has been effective at getting out its message" to the media.[57]

The effort by ANPA and its state affiliates to control the coverage of the VDT issue did not prevent stories from appearing in the nation's media. But it did limit the number (and skew the content) of VDT stories that otherwise would have appeared if the major media had been operating under its principles of "objective journalism." The VDT issue's scant coverage in the major media severely limited the public's knowledge of the VDT issue. Without broad public

awareness of the issue to worry about, computer manufacturers and corporate users were able to define the contours of the VDT debate to their political advantage.

Corporate Manufacturers and Users Unite.

Heavily dependent on VDTs, the newspaper industry maintains close ties with the computer industry. Following secret discussions held in 1983, CBEMA and the ANPA officially formed the Coalition for Workplace Technology (CWT) in early 1984 to coordinate and plan their lobbying campaign against VDT regulation.[58] ANPA's legal counsel, Claudia James said the CWT's job "would be to provide greater credibility for business positions in dealing with the media and state legislators." CBEMA's LeGates added that it would also serve "to correct the misinformation [about VDTs] being circulated by the press and word of mouth."[59]

Besides CBEMA and ANPA, the coalition included an impressive array of trade associations (22 in all)-- whose members were major VDT users-- from virtually every sector of the nation's economy. Among them were: The Air Transport Association of America, the American Bankers Association, the American Council on Life Insurance, the American Electronics Association, the Business and Institutional Furniture Manufacturers Association, the Information Industry Association, the Motor Vehicle Manufacturers Association of the U.S., the National Association of Manufacturers, the

North American Telephone Association, the Printing Industries of America and the U.S. Chamber of Commerce.

CBEMA members were also linked to VDT users in their role as suppliers of VDTs and office equipment, and by corporate interlocks. As the Senate's 1980 study on corporate concentration said: "the most important interconnections in the telecommunications, information processing and office equipment group lay in the seating of multiple competitors on the boards of the largest customers, suppliers, and financial institutions."[60]

The CWT opposed the workplace regulation of VDTs on three grounds. First, CWT cited the lack of scientific proof connecting non-ionizing radiation emitted by VDTs and miscarriages, birth defects and eye cataracts suffered by users. Thus, the CWT charged that union calls for alternative work during pregnancy and shielding of CRTs were unwarranted.

Second, while the CWT admitted the existence of ergonomic problems, they maintained that there was no proven link between VDT use and the occupational illnesses reported by workers that required regulation. They concluded that there was no occupational safety and health problem to be discussed, only a question of employee comfort. The CWT advocated a voluntary education campaign, where employers could utilize state-of-the-art ergonomic knowledge to meet the varying physical comfort needs of each particular em-

ployee. They argued that inflexible, uniform government standards promulgated by the Occupational Safety and Health Administration (OSHA) would be a hindrance to the flexibility employers required to meet the particular comfort needs of each employee. After all, CWT argued, who knew their employees better, the manager in the workplace, or OSHA bureaucrats in Washington?[61]

Finally, the CWT maintained that government regulation of VDT's would increase employer operating costs, impede new technological developments and thereby slow economic development in the rapidly growing computer and information industries. The result would place the United States at a competitive disadvantage with other countries at a time when both economic revitalization and national security depended on maintaining a comparative advantage in the fields of computers and information services.

The CWTs preference for the phrase "employee comfort problems" over "safety and health hazard" may seem like an exercise in semantics, but, as Schattschneider and Edelman have pointed out, those who succeed in defining the terms of debate have a political advantage over their opponents.[62] If the problem is defined as one of "comfort" rather than "hazards" then it becomes much more difficult, if not impossible, to justify regulation of VDTs as an occupational safety and health problem. For example, the National Council on Compensation Insurance (NCCI), the workers compensation

research and rate-making arm of the insurance industry, reported that there was "no statistically significant increase in workers compensation claims or payouts in the clerical sector" from 1981 to 1984. On this basis they concluded that "the workers compensation experience seems to add further support to the conclusion that most VDT problems are matters of comfort, rather than adverse health effects or disability."[63]

But the NCCI's weighty conclusion was based on little meaningful evidence. Despite the use of the word "national" in its title, the NCCI does not operate in 18 states, including California, which is the nation's largest workforce and user of VDTs. Data for the study came from only 13 states.[64] Furthermore, the VDT was still relatively new to the office during the years studied (1981-1984) by the NCCI: many offices had not yet converted to VDTs. Only 36 VDT disability claims had been identified by December 1984, 22 of which had been settled.[65] But this is explained by factors such as, the lag time between the introduction of VDTs and the development of safety and health problems; delays caused by management's opposition to, and contesting of employee claims; and the slow pace at which state workers' compensation systems add new occupational ailments to their lists of compensable illnesses and injuries. For example, in 1985, the Virginia Supreme Court ruled that illnesses, such as the repetitive motion injuries suffered by VDT workers,

did not qualify as a compensable illness under the state's workers compensation laws.[66] Although occupational stress is one of the chief problems in the information age workplace, Florida, Georgia, Louisiana, Minnesota and Ohio do not recognize worker claims of stress-related occupational diseases, known as "mental-mental" claims. "Mental-mental" claims are those where stress has an adverse psychological effect on the worker. For example, a VDT worker's fear of job loss due to automation can lead to depression.[67]

How one sees the VDT safety and health problem depends on the way the problem is defined. The aforementioned 36 cases dealt directly with VDT-induced illness. But if VDT-related stress cases are taken into account the severity and magnitude of the problem increases dramatically. The number of stress related occupational disease claims increased from less than 5% in 1980 to 14% of all claims in 1988. CNA Insurance Company reported to the National Safety Congress in 1988 that the rise in these stress-related occupational disease claims was largely attributable to VDT work where the operator experiences a lack of control over the work process, or fear that automation might put them out of work.[68] NCCI's conclusion was also contradicted by the Wall Street Journal, which reported in 1985 that, "increasingly, computer workers are winning disability claims, causing concern among companies about soaring insurance costs."[69]

The Bureau of National Affairs report on the issue came to the same conclusion:[70]

> In light of the successful claims filed to date, worker's compensation claims related to VDTs are likely to increase in the coming years. Although research on the terminals to injuries [sic] is incomplete, there now appears to be sufficient scientific and medical evidence to support some claims. Moreover, the legal and medical precedents being established in these early cases are likely to encourage other workers to file similar claims.

In 1991, the New York Times reported that the "soaring" cost of workers compensation insurance was due, in part, to the fact that "courts in some states have stretched the coverage to include treatments for stress, back pain and injuries from repetitive tasks at computers."[71]

IBM's Economic and Political Influence.

IBM is the undisputed leader of the computer coalition. With 34 percent of the market, it is the nation's leading manufacturer of personal computers (Pcs). IBM sells more than three times as many PCs (i.e., VDTs) as its next leading competitor, Compaq.[72] Its name is synonymous with computers and its economic and financial power is considerable. With 63 subsidiaries based in 47 countries, IBM ranks as one of the world's most important transnational corporations.[73]

During the 1980s, when the VDT debate was at its peak, IBM's economic power was virtually unsurpassed. IBM ranked as the world's most profitable corporation for 5 years in a row (1985-89) and, it would have been number one again in

1990 if it had not been for Royal Dutch Shell's Persian Gulf War-induced windfall profits. Still, it was the second most profitable corporation ($6.02 billion), with worldwide sales of $69 billion.[74] IBM's total market value of $74,996 billion made it the top U.S. corporation in 1990.[75] Considered by many analysts and traders to be the bluest of all the blue chip stocks, IBM's impact is so massive that fluctuations in its economic fortunes influence market direction. The New York Times called IBM the one stock that "dozens of traders check even before checking the Dow to see where the market is going...."[76]

The computer giant maintains close relationships with many businesses through numerous corporate interlocks. The Senate's 1980 study on corporate concentration found that IBM had 20 direct and 733 indirect interlocks with 99 corporations, second at the time only to AT&T. The study also noted the tight relationship between IBM and the banking industry. In rank order, the top four institutional shareholders in IBM were all banks: J.P. Morgan, Manufacturers Hanover, Bankers Trust, and Citicorp; all had seats on its Board of Directors.[77]

IBM spends considerable time and resources in utilizing its enormous economic prestige in order to influence public policy. Towards this end, it employs many important former federal government officials, including several former cabinet secretaries. IBM's board of directors includes

former Secretary of Defense Harold Brown (Carter administration), former Secretary of Transportation William T. Coleman, Jr. (Ford administration), and former Attorney General (and retired IBM vice president) Nicholas deb. Katzenbach (Johnson administration), who represented IBM in its successful effort to stave off the Justice Department's 8 year anti-trust prosecution. Its advisory board includes such political luminaries as former Secretary of State Cyrus R. Vance (Carter administration), former Federal Reserve Board Chairman William McChesney Martin, Jr. (Truman to Nixon administrations), and William W. Scranton, former Governor of Pennsylvania and Ambassador to the United Nations (Ford administration).[78] Coming up in the ranks is former Undersecretary of State Kenneth W. Dam (Reagan administration), IBM's Vice President for Law and External Relations.[79]

Despite three anti-trust suits, both Thomas J. Watson, Sr. and Thomas J. Watson Jr. (each in his capacity as chief executive officer) maintained open and cordial relations with Washington for more than 50 years.[80] Watson, Sr. kept personal contacts with every president from Coolidge through Eisenhower.[81] He was appointed by President Franklin D. Roosevelt to serve on the newly created Business Council in 1933. Composed of the nation's top corporate executives, the Business Council served "as a clearing house for industrial views on governmental matters which affect business."[82] His son and successor, Thomas J. Watson, Jr., was instrumental

in establishing closer links between the Business Council and the Kennedy and Johnson White Houses.[83] In 1979, President Carter rewarded Watson, Jr. for his long and generous financial support of the Democratic Party by making him ambassador to the U.S.S.R., the most important post in the diplomatic corps.[84]

Through interlocking directorates, IBM also maintains close links with major media firms that shape the news and share its opposition to VDT regulations. Of its current politically connected directors and advisors Scranton was a longtime New York Times Company board member and Vance, a former member of the Washington Post's board, is now one of the New York Times's directors. Besides its power as the nation's paper of record, the Times influences news coverage from its 26 daily and 9 nondaily newspapers, 5 television stations, 2 radio stations and numerous magazines.[85] Katzenbach sits on the Washington Post's board and served as one of Time Inc.'s directors before that. Martin served on the board of the Times Mirror Co. which publishes the Los Angeles Times, Newsday, the Baltimore Sun, the Hartford Courant, numerous magazines, owns 4 televisions stations and a cable network.[86] Former Chairman Watson, Jr. served on the board of Time Inc. for many years and then Dow Jones and Co., Inc., which includes the Wall Street Journal and Barron's among its many business publications and 23 smaller daily newspapers.[87]

IBM's relationship with the Washington Post is particularly close, giving it another avenue of influence in the seat of government. Four of the Post's 9 outside directors have ties to IBM. Joining Katzenbach are IBM board member James E. Burke, former IBM executive Ralph E. Gomory, and IBM World Trade Americas/Far East board member Donald Keough. A national institution in its own right, the Washington Post Company also publishes a national weekly edition, owns Newsweek, co-owns a national wire service with the Los Angeles Times and holds large shares in the Minneapolis Star Tribune and the International Herald Tribune. It also owns four television stations and is involved in cable television.[88] As a member of the ANPA with an anti-labor attitude regarding its own employees, the Post shared CBEMA's concern that the VDT safety and health issue remain privatized.[89]

The computer industry also has close connections to the nation's two other leading newspapers. John F. Akers, IBM Chairman of the Board and Chief Executive Officer is one of the New York Times Co.'s directors,[90] while Hewlett-Packard board member, Donald E. Petersen, and Xerox board member, Vernon E. Jordan Jr., sits on Dow Jones' board of directors.[91]

IBM maintains an elite relationship with two other media giants-- Time Warner Inc. and Capital Cities/ABC Inc.-- through one-for-one exchanges of inside directors. Both the products of media mergers, Time Warner Inc. bills itself

as "the world's leading direct marketer of information and entertainment," and Capital Cities' American Broadcasting Company is the leading source of network news for American television viewers.[92] Former IBM Chairman of the Board, Frank T. Cary, and Capital Cities/ABC Inc.'s Chairman of the Board (and recently retired Chief Executive Officer), Thomas S. Murphy, serve on each other's board; and IBM's Chairman of the Executive Committee, John R. Opel, and Time Warner Inc.'s Chairman of the Board/Chief Executive Officer, J. Richard Munro, do likewise.[93]

Media corporations and the computer industry were also linked in opposition to VDT regulations by virtue of their business relationship concerning the buying and selling of this new office technology.[94] ANPA members more than doubled their investment in the newsroom use of VDTs (to more than 50,000) from 1981 to 1984, at the same time labor's campaign for VDT regulations was heating up.[95] Besides the many computers and VDTs needed for their numerous newsrooms and bureaus, media giants, such as Dow Jones, also purchase them for use in their many information service subsidiaries, including television and radio, computer data base news retrieval, financial newswires, and customer interactive services.[96]

Conclusion.

Despite the intra-business conflict, the corporate coalition against VDT regulation held. In fact, with the help of the major media's scant coverage of an issue of national importance, it grew stronger. Without adequate media coverage of the issue, and government research, the corporate call for "education" instead of regulation seemed to the relatively limited audience to be reasonable. As long as their coalition held, computer manufacturers and business users of VDTs had reason to believe that neither the federal, nor state, governments would intervene on behalf of workers. The next four chapters will examine the federal and state government's reasons for supporting the corporate coalition's position.

Notes.

1. "Computers in the Office," in Department of Commerce, Bureau of the Census, Statistical Abstracts of the U.S. 110th ed. (Washington, D.C.: Government Printing Office, 1990), 944-45.

2. There are no reliable figures on the number of PC's being used in the office, but there are an estimated 55.7 million PCs
being used for both work and personal purposes. Figures cited in J.A. Savage, "Further Study of VDTs Needed, EPA Reports," Computerworld, December 17, 1990, 96.

3. Bob Baker, "Assembly Line Stress in Offices," Los Angeles Times, June 13, 1991, A1.

4. Robert Yeager and Weylin Eng, "Confronting the Computer: Help for Eyes," 1987 Medical and Health Annual (Chicago: Encyclopedia Britannica, 1986). Cited in VDT News May/June 1987, 2.

5. Lou Pilla, ed. Automating Your Office: Pathways to Management Success (Willow Grove, PA.: Administrative Management Society), 11.

6. Ron Evans, "Reaping the Full Benefits of End-User Computing," Computerworld, August 21, 1989, 67. The 1987 percentage is from "Office Automation," Business Week, 134.

7. "Office Automation," Business Week, 134.

8. Geoff Lewis, "The Coming Sizzle in Computer Stocks," Business Week, October 16, 1989, 110.

9. "Trends: Industry Outlook," Computerworld, December 25, 1989-- January 1, 1990, 88.

10. "Financial Times Survey: Office Equipment," Financial Times, III, October 19, 1988, 1.

11. Ibid., 1.

12. "Trends," Computerworld, 88.

13. Gary H. Anthes, "Feds Say Industry to Fare Well," Computerworld, January 7, 1991, 4.

14. Ibid., 4.

15. "Troubles With VDUs Could Be in the Job," New Scientist, August 27, 1981, 513.

16. Charlotte LeGates, Director of Communications, CBEMA, interview by author, September 25, 1986, Washington, D.C., tape recording.

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21. Martin Lasden, "Unrest in the Data-Entry Department: Time Running Out?" Computer Decisions, May 1983, 167.

22. LeGates, CBEMA, interview by author.

23. Bruce Hoard, "Steps Outlined to Forestall Office Unions," Computerworld, February 15, 1982, 67.

24. U.S. House, Committee on Education and Labor, OSHA Oversight-- Video Display Terminals in the Workplace. Hearings, before the Subcommittee on Health and Safety, House of Representatives, 98th Cong., 2nd sess., 1984, 299.

25. Renee S. Ross, "It's Finally Time To Debunk the Myth That VDTs Are Harmful to Health," PC Week, April 15, 1986, 41.

26. For example, see U.S., Congress, House of Representatives, Committee on Science and Technology, Potential Health Effects of Video Display Terminals and Radio Frequency Heaters and Sealers: Hearings Before the Subcommittee on Science and Technology, 97th Cong., 1st sess., May 12, 1981, 400-401. When Congressman Gore asked Wolbarsht if he was testifying on behalf of the computer industry, his reply was: "just for this particular hearing." (401) This was misleading, Wolbarsht had done a vision and VDT study for IBM the year before, see Myron L. Wolbarsht, et al., "Electromagnetic Emission From Visual Display Units: A Non-Hazard," in Ocular Effects of Non-ionizing Radiation: Proceedings of the Society of Photo-Optical Instrumentation Engineers, Vol. 229, ed. M.L. Wolbarsht and D.H. Sliney (Bellingham, WA.: Society of Photo-Optical Instrumentation Engineers, 1980), 187-195. He later appeared in a CBEMA video reassuring the viewer that VDTs do not affect vision.

27. Paul Hyman, "NIOSH Widens Probe: Checks CRTs For Health Effects," Electronic Buyers' News, April 30, 1980, 1.

28. Adia Personnel Services, The Impact of Office Automation: 84/85 International Survey (Menlo Park, CA.: Adia Personnel Services, n.d., circa 1985), 18.

29. Prepared Statement of Dr. Howard R. Brown, M.D., Medical Director, The New York Times and George Cashau, ANPA Director/
Technical Research, American Newspaper Publishers Association, in U.S., Congress, House of Representatives, Committee on Education and Labor, OSHA Oversight-- Video Display Terminals in the Workplace: Hearings Before the Subcommittee on Health and Safety, 98th Cong., 2nd sess., June 5, 1984, 233.

30. Revenue figure cited in a CBEMA membership pamphlet, circa 1986. In his study for the Twentieth Century Fund, Corporate Control, Corporate Power (New York: Cambridge University Press, 1981), Edward S. Herman cited the computer industry as the primary example of a dynamic oligopoly, 2.

31. While CBEMA's total membership varies from year to year (it was 38 in 1986), but the large manufacturers like IBM, Apple, and Compaq form the permanent nucleus. Interview with Charlotte LeGates.

32. CBEMA membership pamphlet.

33. In his book, On Bended Knee: The Press and the Reagan Presidency (New York: Schocken Books, 1989), Mark Hertsgaard described ANPA as being "as conservative a grouping as existed within the journalism business....", 220.

34. Jeff Sorensen and Jon Swan, "VDT's: The Overlooked Story Right in the Newsroom," Columbia Journalism Review, January-February 1981, 32-38.

35. Loren Stein and Diana Hembree, "VDT Regulation: The Publishers Counterattack," Columbia Journalism Review, November/December 1984, 42; and "Then and Now," Columbia Journalism Review, November/December 1986.

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38. Ibid., 43.

39. Ibid., 43.

40. Major media is defined as newspapers and magazines with a national circulation and reputation, plus the national networks in the electronic media.

41. Ben H. Bagdikian, The Media Monopoly 4th ed. (Boston: Beacon Press, 1992), 47.

42. "The Inside Story: Big Blue Surprise...," VDT News, September/October 1986, 2-3.

43. Sorensen and Swan, "VDT's: The Overlooked Story," 32-38.

44. "The VDT Story: Why We Stick With It," Columbia Journalism Review, November/December 1984, 19.

45. Ibid., 19.

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came to mentioning the VDT safety and health controversy during this period was a passing reference in the 1977 article to Paul Brodeur's concern about VDTs and radiation.

47. Gail Bronson, "New York Times' Video-Display Devices Ruled Out by Study as Cause of Cataracts." Wall Street Journal, February 15, 1978, 12.

48. John Noble Wilford, "A Study of Computer Terminals Finds the Radiation Insignificant," New York Times, May 29, 1981, B6.

49. Sandra Salmons, "The Debate Over the Electronic Office." New York Times Magazine, November 14, 1982, 132ff.

50. "Editors' Notebook," VDT News, May/June 1990, 2.

51. Interview with Don Bacheller, copy editor and Newspaper Guild shop steward, New York, April 26, 1992.

52. Sorensen and Swan, "VDT's: The Overlooked Story," 32-38.

53. Ibid.

54. William Hines, "VDT's Can Hurt Vision: Expert," Chicago Sun-Times, March 11, 1980.

55. "The VDT Problem: Seeing No Evil," Chicago Reader, March 20, 1980, 4.

56. For example, see "Computers Are Changing Newsrooms Across Nation," and "The Times is Planning to Install Soon An 'Electronic Newsroom' by Harris," both in the New York Times, February 19, 1976, 50. See also, Sorensen and Swan, "VDT's: The Overlooked Story Right in the Newsroom," 32-38.

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61. Ibid., See OSHA Oversight Hearings for further discussion.

62. E.E. Schattschneider, The Semi-Sovereign People: A Realist's View of Democracy in America (Hinsdale, Il.: Dryden Press, 1975); Murray Edelman, The Symbolic Uses of Politics (Urbana: Il.: University of Illinois Press, 1964).

63. National Council on Compensation Insurance, VDTs and Office Safety: An Overview, Radiation, Stress, Vision and Ergonomics (New York: National Council on Compensation Insurance, 1986), 20-21, emphasis added.

64. Letter to author from David Durbin, research economist, National Council on Compensation Insurance, New York, December 15, 1988; National Council on Compensation Insurance, "No Significant Increase in VDT Claims Despite Rising Public Concern, NCCI Says," press release issued by the National Council on Compensation Insurance, New York, August 2, 1988, 3-4. The 13 states that served as the basis for data collection were not mentioned in the NCCI report, nor press release.

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66. The Washington Post, May 30, 1985,

67. "Occupational Stress Insurance Claims Grow As Workers Confront More Office Technology," Occupational Safety & Health Reporter, October 26, 1988, 1071.

68. Ibid., 1071.

69. Trost, "The Price of Progress," 34C.

70. VDTs in the Workplace: A Study of the Effects on Employment (Washington, D.C.: Bureau of National Affairs, 1984), 27.

71. Milt Freudenheim, "Costs Soar for On-the-Job Injuries," New York Times, April 11, 1991, D1.

72. Based on monthly sales data as of May 1991. Cited in "Dell Computer Plays Marketing Hardball," New York Times, July 21, 1991, III:1.

73. International Business Machines Corporation, Securities and Exchange Commission: Annual Report Form 10-K for the

Year Ended December 31, 1989 (Armonk, N.Y.: IBM, 1990), Exhibit II.

74. Based on record breaking Persian Gulf War oil price increases/profits during the fourth quarter of 1990, Royal Dutch Shell catapulted into first place. Otherwise, IBM would have held first place for the sixth year in a row. See "The Global 1000," Business Week, July 15, 1991, 52-53.

75. "The Business Week 1000: The Top 1000 U.S. Companies Ranked by Stock Market Value," Business Week, April 1991, 108-101.

76. Robert J. Cole, "Dow Slips 7.18 for Third Consecutive Loss," New York Times, February 22, 1991, D6.

77. Committee on Government Affairs, Structure of Corporate Concentration, 25.

78. International Business Machines Corporation, 1990 Annual Report, 63. Former IBM Chair and CEO Thomas J. Watson, Jr., who served as Carter's ambassador to the USSR, may also be included.

79. IBM, Form 10-K, 2-3.

80. The first suit, filed by the Justice Department in 1932, charged IBM with monopolizing the tabulating card market; IBM pleaded guilty in 1934. The second suit, filed in 1952, charged IBM with monopolizing the tabulating industry; the Justice Dept. negotiated a consent decree with IBM in 1956. The last and most important suit charged IBM with monopolizing the computer industry; IBM was able to stall until, for ideological reasons, the Reagan administration dropped the suit in 1982. "A Body Blow for IBM's Competitors," Business Week, February 10, 1975, 72.

81. Robert Sobel, IBM: Colossus in Transition (New York: Bantam Books, 1983), 84-85, 117, 136.

82. David Eakins, "Business Planners and America's Postwar Expansion," in David Horowitz, ed. Corporations and the Cold War (New York: Monthly Review Press, 1969), 145-46. The quoted passage comes from the United States Government Manual, 1936.

83. Kim McQuaid, Big Business and Presidential Power: From FDR to Reagan (New York: William Morrow and Company, Inc., 1982), 215, 219-220, 234-235, 254-255.

84. Philip M. Stern, The Best Congress Money Can Buy (New York: Pantheon, 1988), 162.

85. Doug Henwood, "Corporate Profile: The New York Times," Extra!, March/April 1989, 8.

86. Doug Henwood, "Times Mirror: Up From Manliness," Extra! January/February 1991, 10.

87. Richard Thomas DeLamarter, Big Blue: IBM's Use and Abuse of Power (New York: Dodd, Mead & Company, 1986), 329.

88. Doug Henwood, "The Washington Post: The Establishment's Paper," Extra! January/February 1990, 11.

89. See Dave Moberg, "Washington Post Labor Struggles," Extra! May/June 1989, 1. For example, "Peter Perl... decided to report on a firm which trained companies on how to get rid of unions. When Perl disclosed he was from the Post, the firm's founder, Francis T. Coleman, Jr., said admiringly, 'You're [the newspaper] considered a leader in this field.' Invited to attend one of Coleman's $325-a-day sessions, Perl discovered that of the 30 people there, four were vice presidents or managers of his own newspaper."

90. Henwood, "The New York Times," 9.

91. Doug Henwood, "Dow Jones: Going for the Glitz?", Extra! May/June 1990, 10.

92. Ben H. Bagdikian, "The Lords of the Global Village," Nation, June 12, 1989, 807-811.

93. IBM 1990 Annual Report, 62; Who's Who in America; Doug Henwood, "Capital Cities/ABC: No. 2, and Trying Harder," Extra!, March/April 1990, 8-9.

94. DeLamarter, Big Blue:, 329. As Herman states in Corporate Control, "The concern about interlocks has focused on their centralizing and anticompetitive potential-- their possible use as instruments of command and as means of communications between competitors and as devices making for community of interest among competitors and establishing privileged positions for suppliers, banks, and customers." 197-198.

95. Stein and Hembree, "VDT Regulation," 42.

96. Henwood, "Dow Jones," 10.

CHAPTER 6

THE FEDERAL POLITICS OF ERGONOMIC INACTION.

> OSHA is "one of the most pernicious of the watchdog agencies.... My idea of an OSHA would be if government set up an agency that would do research and study... [where industry can ask]: 'Would you come and look at our plant and then come back and give us a survey of what should be done?'"
>
> -- Ronald Reagan, 1979[1]

Introduction.

Ronald Reagan's statement was not idle campaign rhetoric. Reagan's statement was a clear indication of the new course that his administration would set for the Occupational Safety and Health Administration (OSHA) once he was in office. Under the Reagan administration, terms such as "consultant," "voluntary compliance" and "nonadversarial," replaced "mandatory compliance," "regulation" and "enforcement" to describe OSHA's new relationship with the industries it was Congressionally-mandated to regulate. As Perry D. Quick, a Washington-based business consultant, reported in 1984, "the clear direction of [OSHA's] new enforcement policy is to have personnel perform the role of 'consultant' rather than 'cops,' in an effort to create a new environment of cooperation between the agency and regulated firms."[2]

President Reagan's policy of an ineffectual OSHA, stripped of its power to enforce existing standards and promulgate new ones, virtually insured his administration's

the 1980s. In the regulatory vacuum created by both the Reagan and Bush administrations, computer manufacturers and user corporations were under no obligation to address the occupational safety and health needs of video display terminal (VDT) workers.

This chapter discusses the federal politics of ergonomic inaction in two parts. Part I discusses the rightward drift of occupational safety and health policymaking during the 1970s. It traces how presidents and members of Congress (Democrats and Republicans alike) eviscerated OSHA's powers in response to the growing protests of business interests and worsening economic conditions. The triumph of this probusiness, anti-union, anti-OSHA outlook in Washington, D.C.-- capped by Ronald Reagan's election to the presidency in 1980-- seriously impaired OSHA's regulatory mandate and significantly diminished labor's chances of persuading the federal government to address the growing VDT-related ergonomic crisis in the office.

Part II discusses the conflicts that arose over the various aspects of the VDT ergonomics (i.e., vision, musculoskeletal and cumulative trauma, psychosocial stress disorders) debate at the federal level of policymaking and emphasizes Congress' neglect and the Presidency's suppression of the issue. Simultaneously, the computer industry was drawing up its own voluntary ergonomics standard in order to stave off the possibility of federal regulation. This section also

illustrates the federal government's chronic disregard of VDT ergonomic issues by examining the federal government's decisions not to positively address: funding for NIOSH and independent research on VDT safety and health problems and the promulgation of OSHA regulations, especially the growing problems of cumulative trauma disorders (CTD); funding for research on women's health, especially the problem of working women such as VDT operators; and the need for the inclusion of data on office and VDT-related occupational illness in the Bureau of Labor Statistics' (BLS) system of record-keeping. The lack of funding of these three programs served, in effect, to make it more difficult for labor to substantiate the extent of the problem. Labor needed federal research and data in order to make its case and establish a public policy foothold for more detailed research and data collection. The lack of federal action left the computer industry and corporate users of office automation in an excellent position to dominate the debate and privatize the VDT issue.

Since the computer manufacturing and VDT-using service sectors were one of the few growth industries in an otherwise slow-growing economy during the 1980s, public officials viewed regulation as a measure that would hamper economic prosperity. In his 1983 State of the Union address, President Reagan, told the nation that "keeping America the technological leader of the world" through support for "the miracles of high technology," was one of his administra-

tion's highest priorities.[3] Since the state's fortunes (i.e., growth means greater tax revenues and job creation which helps public officials stay in office) are tied to business prosperity, it is motivated to manage the economy in ways that facilitate business enterprise. This focus on support for growth initiatives places a severe constraint on occupational safety and health funding (since they are perceived as adding to the cost of doing business and stifle growth), and meant that money was unlikely to be devoted to new, and possibly costly problems, such as the ergonomically-related ailments suffered by VDT workers.

In lieu of federal action, business interests dominated occupational safety and health policymaking on the VDT issue. The Computer and Business Equipment Manufacturers Association (CBEMA), which represents the nation's most important makers of VDTs, and the Center for Office Technology (COT), which represents a coalition of manufacturers and business users of office computers,[4] adamantly opposed the idea that VDTs presented an occupational safety and health problem. CBEMA president Vico E. Henriques admitted that working with VDTs could cause ergonomic "problems in what we call the comfort area,"[5] but denied that they were serious enough to warrant regulation by OSHA. Moreover, the computer industry's and corporate users' media campaign to suppress coverage and minimize the extent of VDT safety and health

problems also contributed to public officials' views that it was not an important priority.

Collectively, organized labor was not an effective voice for VDT workers. Its efforts to secure federal regulations protecting VDT workers were sporadic and disorganized. The membership of most unions was male, and in the industrial sector; that's where they and the AFL-CIO concentrated most of their political lobbying and organizing resources. With the exception of the Service Employees International Union, unions were not adequately prepared, nor inclined, to take advantage of the opportunity to organize the predominantly female clerical workforce around the VDT safety and health issue.

In addition, it was labor's misfortune to have the VDT issue gain momentum-- during the late 1970s, early 1980s-- just as the federal government's interest in protecting the safety and health of workers was waning and anti-OSHA sentiment in the business community was growing. To make matters worse, labor's efforts were handicapped by the widespread perception among policymakers and the public alike that the office was free of workplace hazards. Consequently, OSHA never issued regulations governing the office, nor paid it significant attention in terms of staff and budget allocations.

Part I: Eviscerating OSHA.

Setting the Stage: Business Mobilizes Against OSHA.

Business opposition to OSHA during the 1970s was led by the U.S. Chamber of Commerce, which represented small businesses; and the National Association of Manufacturers (NAM), which represented small to mid-sized industrial firms. Many small businessmen complained that OSHA was unfairly forcing them to comply with numerous "nitpicking" regulations ranging from the shape of a toilet seat to the number of rungs on a ladder.[6] They were joined by conservative ideologues like Ronald Reagan, mainly in the Republican party, who viewed OSHA as an extreme example of unwarranted government intrusion into the workplace. While most large, multinational corporations were "learning to live with OSHA"[7] as the Harvard Business Review put it, Reagan was articulating the vision of an overbearing OSHA to conservative and small business audiences across the nation.[8] Reagan's message that regulatory red tape was to blame for industry's ills resonated among a broadening business audience as the economy slowed and inflation increased during the late 1970s.

Despite business complaints of overzealous OSHA inspectors, the fact remained that OSHA was too understaffed and underfunded to do its job. What Andrew Hacker wrote in 1973 remains true today:[9]

> Why is it that the Occupational Safety and Health Administration can afford only four hundred inspectors

> to make the rounds of the country's four million business establishments?... The short answer of course is that the Congress keeps... OSHA... on [a] token budget... just enough to insure that [its name remains] on the organization charts,but not nearly the amounts necessary to hire personnel who might challenge corporate conduct in any serious way.

A 1976 study published by the American Enterprise Institute (AEI) found that there were so few OSHA inspectors that it would take 77 years-- "about as often as we see Halley's Comet"-- for them to visit all the nation's workplaces.[10] Moreover, the same study reported that fines averaged only $25 during OSHA's first 46 months of operation. Taken as a whole, these figures did not substantiate critics' claims that OSHA was too powerful. If anything, they indicated that OSHA, which has always had less inspectors than Oregon and Washington have park rangers-- was too weak and ineffectual to carry out its ambitious mission.[11]

OSHA Bashing in the Oval Office.

Since its inception in 1971, OSHA has been buffeted by presidential and congressional proposals that it be stripped of its regulatory powers. Faced with complaints and organized pressure from industry, every president who has had responsibility for implementing OSHA policy has used the agency as a means to secure business confidence and political support.

In 1972, President Richard M. Nixon impounded funds authorized by Congress for 200 additional inspectors and

arbitrarily imposed a hiring freeze on OSHA.[12] Most importantly, he compromised OSHA's mission by using the agency to aid his re-election effort in 1972. On June 14th-- three days before Nixon's "Plumbers" broke into Democratic National Committee headquarters at the Watergate office complex in Washington, D.C.-- OSHA director George C. Guenther wrote a confidential memo to Under Secretary for Labor Lawrence Silberman outlining ways that his agency could be used to relieve employers from regulatory burdens in exchange for their contributions to the Committee to Re-elect the President (CREEP). A former businessman himself, Guenther stressed "the great potential of OSHA as a sales point for fund raising and general support by employers," and assured Silberman that he had "assembled an informal group of seven staff members whose loyalty and political credentials are certain." Then he laid out his plan for action: "no highly controversial standards (i.e., cotton dust, etc.) will be proposed by OSHA or by NIOSH [the National Institute for Occupational Safety and Health] ... from now through November."[13] The textile industry quickly responded by giving $1 million to President Nixon's reelection campaign.[14]

Although inspections of firms employing less than 25 employees were few, the harshest criticism of OSHA came from small businesses and their representative in Washington, the U.S. Chamber of Commerce. To appease this vocal and potent faction of the Republican Party, Guenther promised that no

inspections would be carried out on "tiny establishments," despite the fact that they had the worst safety records.[15] Furthermore, he promised to submit, for the approval of the Republican National Committee and CREEP, lists of all employees OSHA planned to hire for the next six months, and review the political backgrounds of all the agency's regional and assistant directors. Guenther optimistically added that "there are undoubtedly other ideas for action which we will come up with." He closed his letter by asking Silberman for "suggestions as to how to promote the advantages of four more years of properly managed OSHA for use in the campaign."[16]

Although its policy towards OSHA was less cynical than the Nixon administration's, the Ford administration was not above exploiting the safety and health agency's unpopularity amongst the business community to garner political support. During the 1976 New Hampshire primary campaign President Gerald Ford told a receptive audience that "I'm sure you'd all like to see OSHA dumped in the ocean."[17] Paul W. MacAvoy, the chairman of Ford's Council of Economic Advisors (CEA), was of the opinion that "OSHA has gone too far while accomplishing too little."[18] While Ford and MacAvoy preferred a privatized, self-regulating system based on rates set by the insurance industry, Washington was not ready for that radical a reversal of OSHA's powers. Ford appointed MacAvoy to head a White House task force review of OSHA

safety standards. It recommended that cost/benefit analysis be applied to safety standards and that the paperwork burden on industry be reduced.[19]

As the scope of anti-OSHA sentiment broadened during the 1970s, Democrats increasingly vied with Republicans to ease industry's regulatory burdens. Besides his leading role in deregulating the airline and trucking industries, President Carter seriously considered stripping OSHA of its power to regulate safety hazards.[20] While the Reagan administration is often credited with giving the Office of Management and Budget (OMB) oversight of OSHA's standards-setting process to insure that industry's regulatory burdens were lessened, it was the Carter administration that paved the way.

In May 1977, with the Carter administration only a few months in office, Charles L. Schultze, Chairman of the CEA, Bert Lance, head of OMB, and Stuart Eizenstat, domestic policy advisor, sent the President a memorandum describing OSHA as "the leading national symbol of overregulation," and urging him to replace its safety powers "with some form of economic incentives."[21]

Their proposal illustrates how similar the thinking at the top of the Carter administration was to that of Nixon and Ford administration policymakers. Reminiscent of MacAvoy's proposal during the Ford administration, it was virtually identical to a plan proposed by Robert Stewart

Smith, an Assistant Secretary for Policy Evaluation in Nixon's Labor Department.[22] Published by the conservative American Enterprise Institute in 1976, a year before the Carter administration entertained the same idea, Smith's plan was espoused by many in the business community and the Republican Party.

Although the idea was dropped when the AFL-CIO learned of the Carter administration's plans, the internal memo documents the strength of anti-OSHA sentiments operating at the highest policy levels of an ostensively pro-labor, pro-OSHA administration. As Schultze, Lance and Eizenstat reminded the President, any failure to weaken OSHA's powers would be perceived by those in the business community as "a retreat from your commitment to major regulatory reform."[23]

Despite this setback, the Carter administration was determined to fulfil its commitment to the business community. With OSHA's cotton dust standard in mind, President Carter authorized the CEA in 1978 to conduct cost/benefit analyses of all proposed regulatory standards.[24] Cost/benefit analysis is a quantitative method which weighs the economic value of the costs that would be incurred by business if a new regulation were implemented against an estimated dollar value of the number of lives that would be saved plus the number of injuries and illness that would be prevented. If the estimated costs outweighed the benefits, then the proposed standard could be rejected.[25] Under

cost/benefit analysis, the burden of proof was now on OSHA to show that the benefits of its proposed new standards outweighed the costs it would impose on business.

Secretary of Labor Ray Marshall and OSHA director Dr. Eula Bingham maintained that the OSHAct did not permit cost/benefit analysis to be used as the chief criterion in the promulgation of workplace standards.[26] Backed by organized labor and their allies in Congress, Marshall and Bingham were able to fight Schultze and the CEA to a standstill on the cost/benefit analysis issue.[27] However, the Carter administration's deregulatory initiatives prepared a path for the incoming Reagan administration leading to the devolution of OSHA. As will be seen, the Reagan administration based a good part of its OSHA deregulatory policy on the Carter administration's "reforms."

2. OSHA Bashing in Congress:

With many more avenues of access available to business lobbyists, Congress was the scene of even greater anti-OSHA pressure than that which beset the presidency during the 1970s. Within a year of OSHA's beginning in 1971, U.S. Chamber of Commerce and NAM members were lobbying their senators and congressmen to reign in the agency's regulatory powers. In response to their complaints, Senator Carl Curtis (Republican, Nebraska) offered 13 amendments intended to weaken OSHA in 1972. His proposals included exempting firms

with less than 25 employees from OSHA regulation and giving firms with 26-100 workers a one year postponement regarding compliance with regulations.[28] The offering of similar amendments by Republican Senators Dewey Bartlett (Oklahoma) and Orrin G. Hatch (Utah), and their subsequent pigeonholing by OSHA's allies on the House Education and Labor Committee and the Senate Labor Committee, became an annual Congressional ritual during the 1970s.[29]

By 1979, the U.S. Chamber of Commerce, NAM and the National Federation of Independent Business had mobilized anti-OSHA sentiment to the point where not even the AFL-CIO's allies in the Senate could withstand the pressure. In July, Senator Richard S. Schweiker's (Republican, Pennsylvania) bill, exempting businesses with less than 10 employees from OSHA inspections if their injury rate was below 7 per 100 workers, became law.[30] Formerly a liberal Republican (he voted for the OSHAct in 1970), Schweiker became more receptive to conservative viewpoints during the mid 1970s. As Ronald Reagan's vice presidential candidate during the Republican Party presidential primary campaign of 1976, Schweiker shared his running mate's intense dislike of OSHA. In December 1979, he introduced the "Occupational Safety and Health Improvements" bill, which proposed exempting all businesses with less than 2 serious injuries per 100 workers (approximately 91% of all workplaces) from OSHA safety inspections.[31] Having just rebuffed an appropriations amend-

ment that would have exempted all small businesses from OSHA regulation, Senate Democratic leaders watched as Schweiker's alternative amendment passed by a 2 to 1 margin. Although the Schweiker amendment was killed during budget negotiations with the House, its broad margin of passage in the Senate forced the Labor Committee to hold hearings on the issue in 1980.[32]

During the winter and spring of 1980, the U.S. Chamber of Commerce mobilized anti-regulatory sentiment behind Schweiker's reintroduced bill. It argued that, by exempting the 91 percent of firms that did not have higher than average accident rates, OSHA would be better able to target its inspections on the remaining 9 percent of high risk firms. Thus, the U.S. Chamber of Commerce's Anthony J. Obadal, claimed, OSHA would have "greater, not less, power than it has now."[33] The AFL-CIO countered that without its trump card-- the threat of an inspection at any time-- OSHA would be powerless to deter would-be violators in 91 percent of worksites under its jurisdiction.

Charges that Schweiker introduced his bill in retaliation for OSHA's recent fining of his father's firm, American Olean Tile Company, circulated in labor and political circles.[34] Despite owning $465,000 worth of stock (two-thirds of his immediate family wealth) in its parent firm, the National Gypsum Company, Schweiker denied that he was motivated by self interest.[35] Still, it was clear-- as a former

businessman with strong ties to the U.S. Chamber of Commerce-- where his allegiances lay. As Dr. Anthony Robbins said of the man who fired him from his post as NIOSH director in 1981: "I wouldn't say Schweiker has exactly taken on an ultra-right wing, redneck attitude,... It is more of a big money, big business sort of political attitude."[36]

A look at the Schweiker bill's broad range of support reveals the extent to which the effort to weaken OSHA's statutory authority succeeded. Besides Schweiker, there were 5 original co-sponsors: Republican conservative Orrin Hatch was joined by Democratic liberals like Frank Church (Idaho), Alan Cranston (California), Gaylord Nelson (Wisconsin) and, most surprising of all, Harrison Williams (New Jersey), the sponsor of the 1970 OSHAct and close friend of labor. All-- except Church-- were Labor Committee members, thus insuring that the Schweiker bill would get a hearing.[37]

The status of occupational safety and health policy provided a good barometer of the AFL-CIO's declining influence on Capitol Hill during the 1970s. From its successful effort to mobilize support for the passage of the landmark Occupational Safety and Health Act in 1970, organized labor's lobbying clout declined during the decade to the point where the only liberal Democratic member of the Labor Committee it could convince to defend OSHA was Senator Nelson. In withdrawing his support for the Schweiker bill, Nelson stated his fear that "in many cases, hazardous workplaces

would be exempt."[38] Nelson's warning went unheeded by many of his colleagues, 21 of whom were co-sponsors to the Schweiker bill by the time that the Labor Committee held hearings on it in April 1980.[39]

It was both fortunate and unfortunate for organized labor that 1980 was a presidential election year. Cognizant of its electoral debt to organized labor, President Carter and the Democratic Party leadership dropped its efforts to enact OSHA "reform." But the political handwriting for OSHA was on the wall. As one business lobbyist said of Congress in the spring of 1980: "The mood is here, and the votes are here... It's no longer a question of whether we'll have real OSHA reform-- it's a matter of when."[40] He was right, with Republican candidate Ronald Reagan making the deregulation of business enterprise a major issue in his victorious presidential campaign, OSHA "reform" was soon in coming.

Reagan's OSHA: "Regulatory Relief" For Business.

Under President Reagan, OSHA became little more than the advisory body that he envisioned in 1979. In fact, OSHA was at the top of his list of federal agencies slated for evisceration. The Reagan administration's anti-OSHA viewpoint was shaped by its pro-business bias.[41] For the Reagan administration, industry, not labor, was OSHA's chief clientele group. Its rationale for weakening the power of the social regulatory agencies, such as OSHA and the Environmen-

tal Protection Agency, was that freed of the "costly" regulatory burdens, businesses would become more productive and profitable, thereby generating renewed economic investment and growth that would "trickle down" to all below, including labor.[42] A viable OSHA was not part of the equation: the best that it could do, in this view, was to advise industry or get out of its way. As a result, the Reagan administration's operating principle was to avoid making occupational safety and health policy that either it perceived to be contrary to industry's wishes or to which organized business interests strenuously objected.

President Reagan and his staff wasted little time in carrying out his campaign pledge. In June 1981, he said:[43]

> Excessive and inefficient Federal regulations place an undue burden on our society... During the Presidential campaign, I promised quick and decisive action. Since taking office, I have made regulatory relief a top priority. It is one of the cornerstones of my economic recovery program.

President Reagan delivered on his promise of "quick and decisive action," by appointing Raymond J. Donovan as Secretary of Labor and Thorne G. Auchter as his assistant secretary in charge of OSHA. The quintessential OSHA bashing businessmen, they were good choices to implement the Reagan administration's deregulation of the safety agency for two reasons. First, both were loyal Reagan Republicans who had worked hard for his election. A long time Reagan supporter, Donovan raised funds and chaired his 1980 New Jersey cam-

paign committee, while Auchter was in charge of special campaign events in Florida.[44]

Second, both came from the ranks of construction industry executives, some of OSHA's most vociferous critics. With the highest occupational injury rate in the nation, the construction industry was constantly running afoul of OSHA regulators.[45] This contact engendered deep feelings of bitterness among many industry executives who viewed OSHA as a limitation of their autonomy over the workplace. Donovan's company, Schiavone Construction, was cited 135 times from 1974 to 1978, and Auchter's was targeted 48 times from 1972 to 1980.[46]

Auchter's appointment marked a return to the Nixon administration's policy of appointing OSHA directors whose chief qualification was political loyalty to the president, not their occupational safety and health credentials. "We're here to do what the President was elected to do-- provide regulatory relief," he said.[47] The tone of the Reagan administration was set early on when Auchter ordered the withdrawal of an OSHA pamphlet informing textile workers that breathing cotton dust could cause byssinosis (brown lung), because it contained pictures and quotations of textile workers suffering from the disease.[48] "The fact that it put the industry on the defensive is absolutely inappropriate," Auchter said.[49] This was quickly followed by Auchter's removal from distribution of three education and training

films that he had not seen. Auchter's arbitrary action was taken on the instructions of the White House's OSHA Management Review Committee, which described two of the films--dealing with the history of labor's role in the struggle for occupational safety and health protection-- as "highly inflammatory."[50] Critics charged that he was censoring important information that was vital to OSHA's job in educating workers about the hazards they faced on the job. Auchter dismissed these charges, saying: "I don't think that fancy films and glossy pamphlets are necessary to get the health and safety message across."[51]

Although Schweiker's plan died in the Senate, the Heritage Foundation and AEI suggested to the Reagan administration that the same result could be achieved by the use of executive order.[52] On February 17th, 1981, President Reagan issued executive order 12291, which gave OMB the power to approve or disapprove all proposed regulatory standards, including those of OSHA.

Instructed by James C. Miller III, the head of OMB's Office of Information and Regulatory Affairs, Auchter implemented a tripartite plan on a pared down budget: an "exemption" plan, a "targeting" plan, and a "voluntary compliance" plan.[53] Under the "exemption" plan, worksites with very low injury rates would be virtually excluded from OSHA's jurisdiction. As a result, such office-based industries as finance, insurance, retail, and real estate would not be

inspected and employers would not be required to maintain safety and health records. Given that the vast majority of VDT operators work in these industries, the Reagan administration virtually insured that OSHA would not address the VDT problem.

The "targeting" plan involved extending the Schweiker Amendment's principle of exempting from inspections any small firm (10 or less employees) with below average injury rates to larger worksites in high risk industries with injury rates below the average for the manufacturing industry (5.7 lost work days per 100 workers). If an OSHA inspector found that the injury rate in the employer-maintained log book was below the manufacturing average, he would not conduct an inspection.[54] As a result, 86 percent of all manufacturing plants were routinely exempted from OSHA inspections.[55] OSHA's diminished resources would then be "targeted" on the remaining high risk industries, such as manufacturing establishments, construction sites, and oil and gas extraction facilities.[56] Union officials charged that the exemption and targeting plans weakened OSHA because employers would no longer fear that they might be inspected at any time. Auchter's denial that his policy might tempt employers to fabricate the figures in order to avoid being targeted for inspection was not reassuring to union leaders. As one asked: "If I were to tell you that you might be

exempt from an IRS audit for the next few years, wouldn't you fudge a little?"[57]

Under "voluntary compliance" plans OSHA would withdraw its presence leaving joint union/management committees to set standards at each worksite. But without OSHA's presence to referee the process, even organized workers could be pressured by threats of job loss into foregoing safer standards. A study conducted by Harvard University's School of Public Health in 1982 found that joint union/management committees made "little difference" in improving workplace safety conditions.[58] Finally, without the presence of an effective OSHA, what pressure would the more than 82% of unorganized workers be able to bring to bear on management?

The Reagan administration's deregulatory plan restricted OSHA's diminished resources to imminent safety problems at a time when the number and variety of health hazards was exploding. With only 1,200 inspectors OSHA was "supposed to cover more than three million workplaces," Auchter said. "Of course that was ridiculous. There was no point in sending them into doctors' offices or word-processing centers. We've stopped that and concentrated them on sites where a worker could get hurt if the proper safety procedures aren't followed."[59] The Reagan administration's disregard for the growing number of problems posed by occupational health hazards, was further demonstrated by OMB's cancellation of proposed Carter administration standards for 116 known and

potential carcinogens used in the workplace,[60] and its failure to adequately address the VDT issue. In effect, the Reagan administration unilaterally deleted "health" from OSHA's mission to protect occupational safety and health.

Fears that the Reagan administration's deregulatory plan would mean a weaker OSHA were borne out by the statistics. It cut the number of OSHA inspectors from 1,328 in December 1980 to 1,200 a year later and, then used the lack of inspectors as an excuse to cut the number of inspections conducted.[61] Monthly workplace inspections dropped from 5,680 during January-October 1980 to 4,703 during February-August 1981; monthly follow up inspections fell from 1,012 to only 326 for the same time period. Finally, citations against companies for serious violations were down 27 percent form January-October 1980 to February-September 1981.[62]

As for Senator Schweiker, President Reagan named him to be Secretary of Health and Human Services, the cabinet level post with jurisdiction over NIOSH. Although its mission-- to research potential occupational health hazards and make standards recommendations to OSHA-- requires it to work closely with OSHA, one of his first duties was to carry out the Reagan administration's plan to weaken NIOSH by dividing it in two and move both parts to different locations outside of Washington.[63] Consequently, Schweiker sent NIOSH's 100 administrators and staff to Atlanta where they could be more

closely supervised by its parent agency, the Centers for Disease Control (CDC). To insure that control, Schweiker fired Carter administration appointee Dr. Anthony Robbins, whom the U.S. Chamber of Commerce complained, had a "radical anti-business posture."[64] He was replaced by J. Donald Millar, a long-time CDC team player. To complete the dismantling process, the Reagan administration sent NIOSH's Criteria Documents Branch (CDB) to Cincinnati. There, it maintained, the CDB's 50 scientists, who are responsible for researching potential occupational health hazards and making regulatory recommendations to OSHA, would be more in the mainstream of research than in Washington, D.C.[65]

Although the Reagan administration denied the charge that the division and move was intended to weaken the agency, it was well known that one of its highest priorities was to curtail OSHA's and NIOSH's growing emphasis on occupational health hazards.[66] Furthermore, senior administrators and scientists were hard pressed to understand how dividing NIOSH in two could serve any purpose but to weaken its effectiveness. Former director Robbins commented that "the move is, in effect, obliterating NIOSH."[67] Paul Stredler, a senior scientist, said: "Rules get made in a social and political framework. We have to take the science and sell it [to the regulatory agencies and to legislators]. I'm not going to be able to do much good if I'm in Atlanta or Cincinnati."[68] Finally, the Reagan administration slated NIOSH

for a 33 percent budget cut-- hardly a show of confidence in the agency's mission.[69] Not surprisingly, the combined effects of the Reagan administration's actions was a sharp drop in morale at NIOSH. As a result, Science magazine observed, "science at the agency has been pretty much put on hold."[70]

Auchter sought industry's advice to such an extent that an OSHA staffer was moved to complain that he actively consulted industry trade associations more often than them.[71] "A lot of what Auchter is doing is what Mark deBernardo and the [U.S.] Chamber of Commerce have been advocating for a long time," deBernardo, the Chamber's chief labor lawyer exclaimed.[72] Auchter didn't deny his reliance on industry: "Anytime we can get donated expertise, we're dadgum [sic] going to use it," he said.[73] One firm that provided Auchter with plenty of "donated expertise" was Organization Resources Counselors, Inc. (ORC), an industrial relations firm founded by John D. Rockefeller. Today, it lobbies the federal government on industrial issues, including OSHA regulations, on behalf of 60 large corporations. Its list of clients reads like a who's who of corporate giants: American Telegraph & Telephone (AT&T), DuPont, Exxon, General Motors, International Business Machines Corporation (IBM), and Tenneco. As ORC Vice President, Richard Boggs, explained: "We try to help OSHA do a more accurate job of setting standards."[74] Specifically, ORC

advised Auchter of its objections to tighter lead and noise standards and a proposed rule granting construction workers the right to see their employer-controlled medical records. In a three month period during 1981, Auchter ordered that the lead standard be reconsidered, postponed the stricter noise standard and-- his conflict of interest as a construction executive notwithstanding-- exempted the construction industry from the worker right-to- know requirement.[75]

The Reagan administration's "nonadversarial" approach to occupational safety and health policy was a radical departure from the Carter years. Since fiscal year (FY) 1981 overlaps both administrations, the full scale of the Reagan administration's digression from the Carter administration's is best seen by comparing Reagan's first full fiscal year of administration (FY1982) to Carter's last full year (FY1980); OSHA inspections dropped 18%; violations were off 27%; penalties were down 69% and penalties per violation dropped by 58%.[76] Thorne Auchter attributed the drop off in figures to OSHA's more cooperative management style, not to any lack of enforcement. But the decline in enforcement activity was better explained by President Reagan's policy of "regulatory relief" for business. For instance, during FY 1982 (Reagan's first budget) OSHA's funding was cut from $209,376 million to $193,463 million. OSHA's funding level, (meager to begin with given the magnitude of its mission) never recovered from this cutback. Not until FY1989 ($247,746,000) did

OSHA's budget exceed the figure that the Carter administration had proposed for the agency in FY1982 ($242,608,000). As a consequence, OSHA's staffing levels were reduced. The number of full-time positions went from 3,009 in FY1981 to 2,352 in FY1988.[77] Reagan cut the number of OSHA inspectors from 1,328 in 1980 to 1,044 in 1987.[78] But the effects of Reagan's cuts in OSHA's inspector corps went even deeper. Senator Edward Kennedy (Democrat, Massachusetts) disclosed an OSHA internal document showing that, in effect, the agency was operating with the manpower equivalent of only 794 inspectors in 1988.[79] Moreover, Auchter established a policy of canceling penalties against many employers as a matter of "national policy." One employer was so grateful that Auchter canceled $12,600 worth of fines that he offered to make the OSHA director president of his construction company. Auchter's acceptance of the offer in 1984 raised charges that he had a conflict of interest, but no legal action was taken by the Reagan Justice Department.[80]

Reagan administration policies brought criticism from outside the government as well. In 1983, Ralph Nader charged that the Reagan administration "has shackled OSHA and changed it from an enforcement agency against industrial hazards to an industry-indentured, depolarized bureaucracy."[81] The following year, Dr. Irving Selikoff, the nation's most respected occupational health specialist, commented that OSHA is "under all sorts of pressure from the

Office of Management and Budget and from industry..." and "... one way of dealing with that pressure is to do very little."[82]

Part II. VDTS In a Political Vacuum.

Labor's Uphill Battle On Capitol Hill.

Organized labor's efforts to bring the VDT issue to Congress' attention peaked during the early 1980s when House subcommittees held 6 hearings addressing the issue of VDT safety and health in the span of four years. House subcommittee hearings were convened by Democrats Albert Gore, Jr. (Tennessee) in 1981 (twice) and 1983;[83] George Miller (California) in 1982;[84] and Joseph M. Gaydos (Pennsylvania) in 1983 and 1984.[85] No hearings were held in the Republican controlled Senate. Collectively, these hearings represented the highest level of governmental exposure for the VDT issue yet attained by organized labor, which was pushing for OSHA regulations covering ergonomics and for NIOSH studies of the possible link between low-level nonionizing radiation hazards and VDT use. Of the six Congressional hearings, those convened by Congressmen Albert Gore, Jr. in May 1981 and Joseph Gaydos in 1984 were the most important in determining the course of the VDT debate. Between these two Congressional hearings came the release of the National Academy of

Sciences' report on VDTs in 1983, which played an important role in defining the scope of debate at the Gaydos hearings.

The Gore Hearing.

In May 1981, Congressman Albert Gore, Jr., chairman of the House Committee on Science and Technology's Subcommittee on Investigations and Oversight convened the first Congressional hearing on the safety of VDTs. Organized labor faced an uphill battle from the start. As discussed in the previous chapter, advocates of VDT nonionizing radiation research were caught in a "Catch-22." Suspecting that their eye cataracts and miscarriages were linked to VDT use, workers and their unions petitioned both manufacturers and the federal government to conduct studies to determine if a connection existed. But industry and government officials exclaimed that research was unnecessary because theoretical models told them that it was virtually impossible for low level nonionizing fields to cause harm to humans. When asked how they could be so sure, given that there were no studies to prove their model's worth, industry and government officials reiterated their belief in the validity of the model.

The report released in April 1981, one month prior to the Gore hearing, by the Food and Drug Administration's Bureau of Radiological Health (BRH) is a case in point. Stating that VDTs posed no radiation hazard to users, the BRH report lent important support to the computer industry's

position that further research was unnecessary. Referring to the FDA's clean bill of health, John Rankine, the head of IBM's Division of Standards and Data Security told the Gore subcommittee: "We feel that recent Government reports add weight to the conclusion that radiation from VDT's is a fear without foundation."[86] Representatives of organized labor did not share Villforth's confidence in theoretical models, unproven by research. Charles Perlik, president of the Newspaper Guild, told the subcommittee that the only way to resolve the problem was to have NIOSH conduct "a full-fledged Government-funded study, unhampered by financial limitations, of a large population of VDT users."[87]

Since no studies of the effects of very low frequency nonionizing radiation on VDT operators had ever been done, Congressman Gore asked John C. Villforth, the BRH's director, how he could be so sure that the computer terminals were safe to use? "Because we don't <u>think</u> there is a problem," at that level of the electromagnetic spectrum, Villforth replied.[88] Officials like Villforth wanted to see some proof that there was a link, but since no comprehensive studies had been conducted to date, organized labor was unable to produce the "smoking gun," that is, documented scientific evidence that the eye cataracts and miscarriages its members were suffering were linked to VDT use.

The hearing proved to be a disappointment to organized labor, which hoped that the Gore subcommittee would pressure

the BRH to conduct research or recommend that Congress fund research. The growing anti-OSHA sentiment mobilized by Senator Schweiker and President Reagan helped create a climate that turned much of Congress against established workplace regulations, let alone the idea of funding research on VDTs. Gore subcommittee member Robert S. Walker's (Republican, Pennsylvania) opinion that "there is a growing belief within Congress that the individual citizen has... a basic right to live without the constant straitjacket of governmental regulation in every facet of his daily life" was prevalent in May 1981.[89] Without the "smoking gun," Gore's subcommittee was unwilling to call for further research in an anti-OSHA atmosphere. Despite Congressman Gore's promise to "encourage the Bureau of Radiological Health to set appropriate standards for VDTs and do more research on low frequency effects,"[90] no such federal efforts were forthcoming.[91]

To add to its difficulties, organized labor was up against the computer industry, one of the few promising sectors in the otherwise sluggish economy of the early 1980s. With manufacturing jobs on the decline and imports on the increase, Congress would want good reason to tinker with the booming computer industry which was creating new information sector jobs and prosperity in regions such as Massachusetts' Route 128 and California's Silicon Valley.

The computer industry carefully cultivated an image of information-age prosperity dependent on the continued non-regulation of VDTs. Playing to fears of the growing competitiveness of European and Japanese firms, Henriques warned Congress in 1984 that VDT legislation "simply raises the costs of the products, making U.S. companies less competitive with others around the world."[92] CBEMA's message was that VDTs were safe; the problem lying in workers' fear of the new technology. Their effort to stave off organized labor's call for VDT regulations was made easier by the popular perception that the office was a safe place to work and the computer as a "user-friendly" machine. As Congressman Tom Lantos (D-CA.) said regarding cumulative trauma disorders, a painful wrist and arm ailment caused by VDT workers' repetitive motions: "When we think of occupational illnesses, we usually think of problems that are easily visible. Most of these problems are not easily visible. When you walk into a comfortable-looking office with people sitting in front of video display terminals, you don't see the problem."[93]

Under these anti-OSHA, pro-computer industry conditions, Congress was not predisposed to regulate the workplace use of VDTs. These conditions made defending the status quo much easier for the computer industry. With an uphill battle before it, organized labor had to show compelling reasons why Congress should regulate VDTs. It needed

definitive proof that VDTs were unsafe, the medical equivalent of a "smoking gun."

The Voluntarist Vision.

Support for the computer industry's position that VDTs did not cause vision problems came from the prestigious National Academy of Sciences' National Research Council (NRC). In July 1983, its panel on the Impact of Video Viewing on the Vision of Workers issued a report stating that there was no scientific proof that VDT use caused vision damage, including eye cataracts.[94] The panel's conclusion--advising against legislating European-style regulatory standards that would "freeze" the new technology's development at a time when it was still evolving-- mirrored the computer industry and corporate users' position.

Overlooked by the NRC panel was a 1982 report by one of its own members, Harry L. Snyder, a VDT engineering specialist at the Virginia Polytechnic Institute. He stated that most cathode ray tubes (CRT) on the domestic market were poorly made, causing them to lose their brightness after approximately one year's use. The result for users who turned up the brightness level, was blurred characters that contributed to vision fatigue. Snyder recommended that VDT manufacturers, few of whom informed their customers of the problem, be pressed to bring their CRTs up to European stan-

dards.[95] Yet, Snyder did not dissent from the Panel's conclusions that European standards were unnecessary.

There was one dissenter on the NRC panel: Dr. Lawrence W. Stark of the University of California. While he agreed with the panel's findings regarding eye cataracts and radiation, Dr. Stark dissented on the issue of eye fatigue. He pointed out that much eye fatigue was due to the computer manufacturers' practice of adapting their visual displays from the CRTs used in televisions despite the differing display functions performed by the two electronic devices. He wrote:[96]

> Implicit in the appearance of video display terminals on the marketplace for office and clerical work is the manufacturers' claim that adequate legibility can be obtained from these terminals. I believe this not to be true. I have never seen a video display terminal that was nearly as legible as the ordinary pieces of typewritten paper or copied reports that circulate in our paper world.

Stark understood that scientific studies, such as the one he was involved with, were carried on in a political environment, not a vacuum. Scientific studies often served as the basis for important policy decisions as to whether or not to research and regulate technological devices and toxic substances that might be harmful to humankind and the environment. Scientific studies could be used by policymakers to legitimate or discredit an issue. The latter was more often the case on the VDT issue.

Stark made the case that while "adequate time and effort was spent" discussing each panelist's specialized perspective on the problem of VDTs and vision, "adequate time was not spent on consideration of policy questions by the group as a whole...."[97] As a result, Stark cautioned, his colleagues' conclusions could be misinterpreted "as supporting the status quo of no standards or guidelines for VDT work places and no clear concern with unacceptable levels of ocular discomfort and visual fatigue."[98] Union officials echoed his concerns. "The danger is that the study will be interpreted as saying that video display terminals pose no hazards to workers," said Charles Perlik of the Newspaper Guild.[99] Margaret Seminario, then associate director of occupational safety and health for the AFL-CIO feared that the NRC report would send a "signal to industry that there are no significant problems," which, in turn, could create "a false sense of security."[100]

Dr. Stark's and organized labor's fears about the uses to which the NRC report would be put proved to be well founded. The panel's report contributed little to a better understanding of the effects of VDTs on vision and much to the defense of the computer industry and corporate users' position that further VDT research and regulation were unnecessary. The NRC's prestige-- it was the most prominent body of the scientific establishment to study VDT issue to

date-- gave the report an aura of importance that overshadowed its shortcomings.

The damage to organized labor's position had been done. By downplaying the significance of the problems faced by VDT workers and advising against the promulgation of safety and health standards, the NRC report strengthened the computer industry position before Congress by legitimizing its claims that the regulation of VDTs was unwarranted on scientific grounds.

The Gaydos Hearings.

Held during the winter and spring of 1984, the Gaydos hearings represented the most important Congressional standoff between labor and management on the VDT issue. Joseph Gaydos, who chaired the House Education and Labor Committee, and its Subcommittee on Safety and Health, represented a blue collar, steelworking, district in western Pennsylvania.

Representatives from the Communications Workers of America (CWA); Service Employees International Union; 9to5, the National Association of Working Women (9to5); the Newspaper Guild; the American Federation of State, County, and Municipal Employees; the Office & Professional Employees International Union; and the Metal Trades Department of the AFL-CIO told the subcommittee that many of their members suffered from vision and musculoskeletal ailments.

Pointing out that the U.S. lagged behind the Europeans, labor urged Congress to enact VDT regulations based on NIOSH's recommendations: VDTs with detachable keyboards, chairs and desks designed for maximum flexibility; proper illumination of screen and work surface to control glare problems (i.e., less brighter than conventional office lighting); rest breaks every two hours of continuous work (unions also asked for rest breaks after one hour of intense work); and, vision tests before commencing VDT work and periodically thereafter.[101] David LeGrande, the CWA's director of occupational safety and health, noted that it should not be difficult for the computer industry to adjust to these recommendations, since IBM was already manufacturing computers to meet Sweden's stricter ergonomic regulations.[102]

Opposing VDT regulations were representatives from a cross section of corporate America, including CBEMA; the American Newspaper Publishers Association; the Business and Institutional Furniture Manufacturers Association (BIFMA); the American Electronics Association; the Air Transport Association of America; the American Society of Travel Agents, Inc.; the Printing Industries of America; AT&T; the Digital Equipment Corporation; and the New York Times. They were joined by representatives from the American College of Obstetricians and Gynecologists.[103]

CBEMA's Henriques warned the Gaydos Subcommittee that federally mandated VDT standards would freeze the technology's development in place, causing the U.S. computer industry to loose its competitive edge against its foreign competitors. He pictured his opponents as making irrational demands in order to discredit their case for VDT protective legislation, saying that they had a "lack of awareness of both the problems and their solutions."[104] Henriques said they:[105]

> would force people to sit in special chairs, even if they were satisfied and comfortable in the present model; mandate covering windows with blinds even if there were no glare problem, or even if the glare problem came from another source. They would force low light levels in all working places using visual displays, even though such light levels might pose serious problems, such as on the factory assemblyline, or might even be dangerous as in a hospital. They would reduce the number of hours people could work on displays to a maximum of four or five, ignoring the fact that millions of users would be forced out of full-time jobs and into half-time jobs, reducing their pay and, in many cases, removing many fringe [benefits]. They would force employers to pay for meaningless devices and activities, such as metal shielding for terminals and radiation inspections.

He summed up his argument by saying that "legislative mandates force citizens to conform to a legislator's best guesses about what will make them feel better."[106]

Omitted from Henriques' testimony was the fact that the vast majority of VDT workers (90 percent were unorganized) did not have a meaningful say in management's decision about how the technology would be used. Under such conditions, a pluralistic society offers occupational safety and health

legislation as one of the means by which the imbalance can be redressed. Moreover, VDT legislation had been enacted in Australia, Austria, New Zealand, Norway, Sweden and West Germany without "freezing" the technology's development in place.

Henriques promised Gaydos' Subcommittee that, in lieu of federal regulations, the computer industry would launch a publicity campaign to "educate people about the best use of visual displays in the workplace."[107] He asserted that "with education people have the freedom to choose solutions to problems that are best for them as individuals."[108] Henriques' argument that voluntary management-led "education" of office workers is superior to government regulation rests on the assumption that an open and trusting relationship exists between management and labor.

However, corporate-sponsored surveys of secretaries and office workers indicate that actual experience fell far short of Henriques' expectations. A 1986 survey of 4,000 American secretaries, co-sponsored by the Electronic Typewriter Division of the Panasonic Industrial Company and Professional Secretaries International (PSI), found that "many respondents feel isolated from their executives." It reported that a surprisingly high 70 percent of secretaries experienced "a lack of communication from their supervisor and almost as many (68%) believe that they have little input into the decisions affecting them."[109] "In the face of

fierce business competition," explained the PSI's Candace M. Louis, "managers are demanding even greater productivity from their secretaries. This expanded role is increasing the level of secretarial stress...."[110] The study linked much of the stress increase to poor communication on mangement's part. 41 percent of the secretaries attributed the increased work stress to "a lack of communication from their supervisors..."[111]

A 1988 survey conducted by Louis Harris and Associates, Inc., for Steelcase, Inc., found that American office workers had a widespread distrust of management. The survey revealed that while 89 percent of office workers highly valued "management that is honest, upright, and ethical in its dealings with employees and the community," only 41 percent believed that this actually described their experience with management.[112] Moreover, the fact that 72 percent of management felt that they had good relations with their employees indicated the extent to which they were isolated from, and ignorant of, their workers' feelings. The Harris survey found that, on average, management overestimated the contentment and satisfaction of their employees with working conditions by anywhere from 10 to 17 percentage points. In addition, 76 percent of office workers felt that "a free exchange of information among employees and departments" was essential, but only 35 percent of employees and 38 percent of employers said it existed in their workplace. Finally, 61

percent of office workers said "a participatory management style at all levels of decision-making" was "very important" to them, but only 28 percent of employees and 25 percent of employers said it described labor/management relations in their company.[113]

In addition, if a sound occupational safety and health "education" begins with management's acknowledgement of the problems their workers face, then Henriques argument that the VDT issue is merely a matter of "comfort" becomes untenable. As has been shown, CBEMA and corporate management consistently refused to acknowledge that VDT workers face real safety and health problems. By dismissing the VDT issue as a matter of "comfort," they trivialized the serious nature of the problem facing VDT workers. Together, these two factors cast doubt on Henriques' assertion that management alone, by virtue of its knowledge and authority-- was best suited to devise a solution to office workers' safety and health problems.

What Henriques really meant by "education" was public relations, not education based on further scientific investigation. "Allaying public fears usually doesn't come from adequately prepared scientific data," he said. "It takes public relations."[114] He knew that CBEMA's public relations campaign would be more persuasive if it were produced by someone else: the public might question the credibility of CBEMA produced messages absolving its VDT of any problems.

Recognizing that "our group is not an entirely appropriate group to sponsor public service announcements on this issue," he hired the American Council on Science and Health (ACSH) "to work with us on the campaign."[115]

ACSH's "public service announcement," entitled "VDT Health," gave the mistaken impression that all VDT problems were benign and correctable by the worker. It told viewers to "adjust the controls, move the screen to cut glare" and "have your vision checked," but said nothing about improper room lighting as the source of screen glare and the cause of eye strain, or the fact that much of the equipment in use was not adjustable. It advised the viewer to "adjust your chair and move around during the day," but mentioned nothing about the employer's responsibility to provide an ergonomically designed workstation, or NIOSH's recommendations that VDT workers be given periodic rest breaks and ergonomically-designed workstations. The "public service announcement" concluded by addressing concern over the non-ionizing radiation problem without mentioning it by name. With a visual showing a white-coated lab worker-- symbolizing scientific objectivity-- taking a reading from a gaussmeter held close to a VDT screen, the narrator declared "... and don't be concerned about scare stories. Extensive studies conclude that VDT's don't pose a health hazard."[116] The ACSH's ad failed to mention that these "extensive studies" were mainly literature reviews based on theoretical probabilities, not

actual laboratory studies of non-ionizing radiation's effects on cell structure.

With the ACSH's imprimatur, CBEMA's message was given the stamp of scientific legitimacy. However, the ACSH was not the "independent scientific organization" Henriques told Congress it was and its VDT announcement impled.[117] The ACSH is a private organization (not public as its name implies) that receives 70 percent of its funding from the corporate community (including the computer and VDT user corporations) and private foundations to provide it with scientific arguments against government regulation of business.[118] It was founded in 1978 by members of the scientific and corporate communities who objected to what they saw as the excessive influence that liberally-oriented public interest groups exerted on the public and government officials. As an ACSH brochure states: "many of the existing 'consumer advocate' groups weren't giving either policy makers or consumers the balanced, accurate, scientific information they needed."[119]

Short of government regulation, what would compel manufacturers and employers to incorporate the latest ergonomic advances into their computers, furniture and offices? Defenders of the market perspective maintain that corporate consumers' demands for the latest ergonomically-designed equipment will spur competition among manufacturers to provide the latest designs at the best prices. This argument

is based on two assumptions: that corporate consumers and manufacturers are ergonomically-informed and that manufacturers will mass produce ergonomically designed computers and furniture in quantities sufficient to make them competitive with cheaper, less ergonomically designed models.

Both assumptions are questionable. There is no guarantee, short of mandatory federal regulations, that corporate purchasers would prefer the safer, more expensive, VDT equipment, when their competitors could still purchase the cheaper, less safe, equipment. Likewise, without federal prohibitions, many, if not all, VDT manufacturers would be keen to meet the demand for the less expensive, less safe, equipment.

Despite their assurances to the federal government that the voluntarist approach is the best method to insure safe and healthful VDT workplaces, many employers have not seriously addressed the ergonomics crisis in their workplace. A 1984 survey, released shortly after the Gaydos Committee concluded that employers were best suited to resolve any occupational safety and health difficulties arising from computer use, a survey of workplaces found that 75 percent of VDT-related ergonomic problems were due to poor management.[120]

A 1985 survey conducted by the Wall Street Journal found that "only a few employers are concerned" about the VDT safety and health issue. It cited a handful of firms,

including CBEMA members IBM and Kodak, and Hoover Co., as having vision and glare guidelines, but added that "none think they're a health hazard." TRW Incorporated, permitted a female employee to take a pregnancy transfer, but declared that working with VDT's presents "no hazard." Several banking and financial sector firms, such as AmeriTrust Corporation, Chase Manhattan Bank, and the Security Pacific Corporation were studying and designing ergonomic programs for their VDT employees to follow.[121] But these companies were the exception to the rule. "Most companies resist official VDT policies," the Wall Street Journal reported.[122] As a case in point, a spokesman for NCR Corporation, a major computer manufacturer, dismissed the VDT problem outright, saying: "We don't have any guidelines whatsoever."[123]

According to Laura Punnett, a research fellow at the University of Michigan's Center for Ergonomics, business's voluntarist approach offered no guarantee that workers would benefit from the latest scientific advances in the field. She reported that many employers require that workers sit at the VDT for most of the working day in order to recoup their investment in the machines, but the human body was not meant to sit in one position for long periods of time. The resultant "static posture" problem causes musculoskeletal ailments. However, many manufacturers have not kept up with design changes in chairs to compensate for this problem. As a result, Punnett said: "ergonomics has become a buzzword

that can be used to sell furniture," rather than address the safety and health needs of office workers.[124].

The development of VDT-related ergonomic problems spawned a new market for computer software aimed at informing workers when to take breaks and how to do aerobic exercises, but slow sales to corporate VDT users undermined CBEMA's and COT's claims that employers were making VDT safety and health a high priority. "We haven't found a lot of big time excitement from customers," Christian Banes, a marketer of these products said. Ironically, Banes found that many employers saw these automated take-a-break programs as a threat to their control over the pace of work. "Top level executives say, 'I'm not going to pay you money in order to have my work force not work,'"he explained.[125]

In a 1989 editorial, the American Journal of Public Health criticized many companies (including those in the VDT using information producing sector) for promoting employee "wellness" programs, which focus on what the employee can do for himself (e.g., proper diet and exercise, getting regular checkups, stop smoking, etc.), in lieu of employer-supported occupational safety and health programs.[126] Jonathan Fielding, a doctor with Johnson & Johnson Company retorted that "wellness" programs were intended as a "supplement," not a "substitute" for occupational safety and health programs. This may have ben the case in the industrial sector, but millions of non-unionized office employees worked for infor-

mation-producing companies which, since they weren't traditionally regulated by OSHA, did not maintain occupational safety and health programs. Consequently, the introduction of employee wellness programs during the 1980s were not supplements to previously established occupational safety and health programs. The editorial's author, Dr. Charles Levenstein, wondered if "workers are being lulled into a false sense of security when occupational hazards are not mentioned or dealt with by work-site health educators."[127]

The policy of IBM, which Business Week described as "the leader in ergonomics," is indicative of the problems involved in coordinating education and implementation efforts between manufacturers and corporate users. "We offer a certain amount of guidance from a human factors [i.e., ergonomics] point of view," said Vice President Lewis M. Branscomb, IBM's chief scientist. "But we regard that as a decision for the customer to make. There is little that IBM can do about a facility's layout."[128] Stephen D. Channer, executive director of BIFMA, a trade association of companies controlling 90 percent of the U.S. office furniture market, allowed how the same problems existed between his industry and its corporate customers: "Ergonomic assistance on how to best fit the worker to the furniture of the work station is available from most of the major manufacturers of office furniture, but it is rarely asked for by companies buying such furniture."[129] Another problem is the lack of

communication between retailers of computers and office furniture. As the New York Times reported: "Part of the difficulty for shoppers is that computer dealers often know little about furniture, and furniture dealers often know nothing about computers."[130]

Finally, the CWA's David LeGrande, testified that many of the musculoskeletal ailments suffered by his union's members were caused by the daily use of chairs and desks that weren't adjustable to the height and reach needs of users, and VDTs without detachable keyboards and tiltable screens.[131] He added that "all too often, VDT equipment is installed in traditional offices with little or no redesign of the work place. In many cases, workers have witnessed the VDT's introduction into their work environments without proper consideration of ergonomic factors."[132] As a result, LeGrande stated that federal regulations were needed, especially since the vast majority of VDT workers weren't organized, and, therefore, were unable to avail themselves of the collective bargaining process. "It is the experience of the CWA and other concern organizations that employers of these workers have not and will not introduce ergonomic and protective VDT working conditions unless they are forced to do so," he remarked.[133]

Despite LeGrande's and other unionists' pleas for federal VDT regulations, organized labor was at a distinct disadvantage in the prevailing anti-OSHA climate. As the

hearings came to a close in June 1984, Gaydos stated that he would not introduce VDT legislation. "I'd like to see the industry regulate itself,"[134] he said. The final touch was the Gaydos subcommittee's staff report, issued in August 1985; it reflected the computer industry's contention that: "It is unlikely that the legislative action at any level will do more than provide contradictory and, perhaps, more restrictive limits rather than encouraging the flexibility that is both desirable and necessary for worker health and safety in offices and other locales where VDTs are in prevalent use."[135] The staff report advised against regulating VDTs. As the report rhetorically asked: "Is the Congress or any other legislative body prepared to tell an employer that an employee must be given other tasks to do as a form of respite from VDT work?"[136] The answer was a resounding no. The computer industry had succeeded in its Congressional battle to maintain the status quo.

The Invisible Majority.

Overlooked by the Gaydos subcommittee were the cautionary remarks of Congresswoman Mary Rose Oakar (D-Ohio) in September 1984. Although not a member of Gaydos' subcommittee, she took an interest in the problems of working women. She charged that the safety and health problems affecting VDT workers had not been fully appreciated by the members of the Gaydos committee. As Oakar said: "33 million Americans

work in office settings. More than 50 percent of all office workers are women. Every day, these employees are exposed to low-level radiation from viedo [sic] display terminals... We don't know if it's safe for pregnant women to sit near video display terminal[s] all day...."[137] Yet, Oakar added, "federally funded research into these hazards has been sparse. In addition, information about how to control their health effects is not readily available."[138] To reinforce her point, Oakar cited a report by the Office of Technology Assessment of the Congress (OTA) showing that NIOSH's budget for office health hazards research in 1984 was only $300,000, or "less than 1 penny per office worker."[139] Karen Nussbaum, the executive director of 9to5, commented that "the figure is outrageously small."[140] "Not only is this not a priority for this Administration, it is not a concern," Oakar said referring to President Reagan's veto of an appropriations bill containing funding for research into office hazards.[141] She added that "it is the responsibility of government-- and employers-- to undertake more serious research into office health and safety. Our health depends on it."[142]

The federal government's extensive record of inaction was illustrated by the paultry sums spent for VDT research by the Reagan administration. From 1981 to 1986 it spent only 7 cents per office worker researching the hazards they faced. The figures were even worse for VDT research, only 2

cents per worker.[143] In 1984, NIOSH spent only $150,000 for VDT research. The entire amount was allocated at the discretion of NIOSH director J. Donald Millar, and was not part of an ongoing program of VDT research. In effect, there were no permanent, ongoing, programs dedicated to VDT research.[144] This concerted policy of neglect led a frustrated David LeGrande to conclude that VDT regulations would never be promulgated by the Reagan administration.[145]

Oakar, Nussbaum and LeGrande were stating what prominent medical authorities, industry and government officials knew: that without adequate funding to collect accurate data and conduct thorough studies, it was impossible to determine the true extent to which workers suffer job related health problems.[146] Without such studies, the federal government made it more difficult to counter the computer industry claims that VDTs were safe to use.[147] In 1979, the U.S. Surgeon General, Julius B. Richmond, reported that, due to underreporting and lack of awareness of occupational illness among medical practitioners, the true extent of occupational disease probably exceeded NIOSH's estimates of 100,000 deaths from work-related diseases and 400,000 new cases of occupational disease per year.[148] In 1985, the OTA reported that U.S. record keeping was so inadequate that estimating the magnitude of occupational illness was virtually impossible.[149] The same year, the House Committee on Government Operations concluded that "federal occupational health

hazards surveillance is 72 years behind communicable disease surveillance," and "is decades behind... England, France, Germany, and Sweden."[150] Dr. Irving Selikoff, the nation's foremost authority on occupational illness put it bluntly: "'we cannot expect to rapidly increase our knowledge' of workplace disease if only epidemiological evidence-- 'in the vernacular, counting dead bodies on the street'-- is used to the exclusion of laboratory findings."[151] Lamenting the lack of worker surveillance studies, he added: "You talk about workers being guinea pigs, but at least guinea pigs are observed."[152]

The failure of the federal government to collect accurate statistics and epidemiological data on occupational illness is an example of a nondecision. It serves to understate the true magnitude of the problem in the U.S., denying VDT regulatory advocates and the public the information they need to challenge the status quo. As a result, the debate is skewed in favor of corporate interests who view occupational safety and health as a relatively unimportant problem that is best handled by employers, not government.

In addition, the federal government has demonstrated a pattern of bias against studying and regulating the health problems of women. OSHA's policy of targeting the highest risk workplaces, such as construction and manufacturing, which are male-dominated, means that female dominated workplaces, such as many offices, are neglected. Noting that

inspections of female-dominated workplaces are "rare," the Women's Occupational Health Committee of the National Association of Public Health Policy, protested OSHA's assumption that "women's work is safe."[153] Finally, they called upon OSHA to promulgate a standard addressing the ergonomic and radiation aspects of VDT use.[154]

Just as the federal government has failed to adequately research the problems of VDT workers (over 90 percent of whom are women), it has also failed to include women in its health studies.[155] As a case in point, the National Institute on Aging studied the aging process from 1958 to 1978 without including women in its study population. Its latest report, is called Normal Human Aging (1984), although it, too, excluded the majority sex from its "representative" sample.[156]. It routinely recommended that the results of its male studies be applied to women, despite their hormonal and physiological differences.[157] In an ongoing study started in 1981, the National Institutes of Health (NIH) employed 22,000 male doctors in a study of aspirin's ability to prevent heart attacks. When asked by the General Accounting Office (GAO) why women weren't included in the study population, NIH officials replied that doctors were chosen because they could be relied on to follow the requirement that they take an aspirin (or placebo) every other day for a long period of time. Dr. Claude Lenfant, Director of the National Heart, Lung and Blood Institute maintained that it

would be too costly to locate a sufficient quantity of women doctors for a study population that size.[158] However, if the NIH were more conscious of the need to include women in its studies, then it could have used registered nurses.[159]

In June 1990, the General Accounting Office (GAO) testified that the NIH routinely approved medical studies excluding women, despite its own 1986 directive to correct this glaring omission.[160] Admitting the NIH's failure to follow its own guidelines, acting director William F. Raub told the House Subcommittee on Health and the Environment: "Those who received the word about the policy don't all seem to understand it, and most distressing of all from this morning's testimony, some of those who have received this policy and understand it have demonstrated some arrogance or indifference with respect to it."[161]

ANSI's Ergonomic Action.

In 1982, CBEMA members and the Human Factors Society (HFS), an industry supported association of professionals engaged in ergonomic research, began work with the American National Standards Institute (ANSI) to develop ergonomic guidelines for the VDT industry and business users to follow.[162] ANSI is a private, industry dominated organization which develops voluntary workplace guidelines. ANSI has no regulatory power, but its name, reputation, and the fact that its guidelines are often used in lieu of (and provide

the basis for) OSHA regulations lends it a quasi-governmental air of authority.

Six years in the making, the HFS/ANSI VDT guidelines were released in 1988; they suggested that manufacturers follow uniform specifications for computer terminal and keyboard design, office lighting, temperature and noise levels.[163] Although the computer industry expected that it would become the standard that most manufacturers would follow, since the guidelines were voluntary, there were no penalties for noncompliance.

The development of an HFS/ANSI standard was important to

CBEMA and COT for two reasons. First, it enabled them to tell policymakers and the public that they were addressing the ergonomic problem-- and that, therefore, legislation was not needed. As Beth O'Neill, COT's executive director, explained: the HFS/ANSI guidelines provide the computer industry and corporate users with a "useful tool to show legislators that organized professional bodies are concerned about VDT ergonomics."[164] In fact, it helped to take the steam out of organized labor's drive for VDT regulations during the mid 1980s. Second, by preempting what CBEMA and COT considered to be the more onerous option of mandatory VDT regulation, the HFS/ANSI VDT guidelines helped to solidify the computer industry and corporate users' control over

the ergonomic aspects of the VDT occupational safety and health debate.

However, a hitch in the plan developed when CBEMA and COT learned that organized labor intended to use the HFS/-ANSI guidelines as the basis for state legislation. Although the HFS/ANSI standard was narrow in scope (e.g., it did not address labor's concerns about shielding and nonionizing radiation, work loads, rest breaks, and monitoring), some unions (such as the Newspaper Guild) and state legislators, (e.g., in California), saw it as a minimal basis for legislation.[165] They reasoned that if it was good enough to meet HFS's and ANSI's standards, why shouldn't its benefits be made available to all VDT workers rather than some on a voluntary, industry-determined, basis? Fearing this eventuality, CBEMA, COT, HFS and ANSI withheld release of the VDT guideline for 18 months. COT's O'Neill said legislation would be a "nightmare," and added that "ANSI works because the standard is voluntary and allows flexibility. Why would we try to turn that into law?"[166]

CBEMA's and COT's solution, endorsed by HFS and ANSI, was to include a vaguely-worded "escape" clause in the VDT guidelines, that reserved to manufacturers the right to deviate from the stated specifications "if it is empirically demonstrated by substantive research conducted under accepted scientific practice that the system yields equivalent or higher levels of human performance without a decrease in

comfort."[167] If organized labor attempted to enact ANSI guidelines into law, CBEMA and COT could insist that legislators include the "escape" clause. Since most VDT ergonomics research is carried out by the industry, in conjunction with the HFS and ANSI, they would effectively retain control over the interpretation of workstation standards even if legislation were enacted.

However, CBEMA and COT were able, through effective lobbying, to prevent the issue of enacting the ANSI guidelines into law from reaching a legislative showdown in California. With the failure of state ANSI-based legislative initiatives, CBEMA became a government unto itself regarding ergonomics standards for VDTs. Public and union officials might be invited to comment, but CBEMA, COT, HFS, and ANSI were, in effect, quasi-governmental policymakers with de facto veto power over the final result.

OSHA's Ergonomic Inaction.

In May 1984, after more than four years of study (and six months after they were scheduled to be released) NIOSH issued its recommendations for VDT ergonomic regulations.[168] They called for regular rest breaks, a four hour limit to daily use, periodic eye exams, proper ambient lighting and glare control. But NIOSH's action had little impact since it had no power to promulgate regulations, Reagan's OSHA simply ignored them. The low priority that the

Reagan administration attached to the growing problem of ergonomic-related VDT ailments was further exemplified by the fact that OSHA did not hire its first ergonomist until the fall of 1985. After two years of OSHA inaction on the NIOSH ergonomic recommendations, Dr. Roger L. Stephens, OSHA's only ergonomist, lamented that the agency "will never be able to force the needed job redesign or even lead the way."[169]

The Reagan and Bush administration's policy of inaction allowed the rise of cumulative trauma disorders in the workplace to go unabated. In 1981, CTDs accounted for only 18% of all reported occupational illnesses, but it mushroomed to 61% of all cases in 1991.[170] That amounts to a 34 percent annual growth rate for the ten year period. CTDs-- painful and often serious injuries-- are caused by the constant and unnatural process of twisting and turning of the arm, hand and wrist. CTDs, also known as repetitive strain injuries (RSIs), include approximately 20 musculoskeletal disorders such as carpal tunnel syndrome, epicondylitis, ganglion, tendinitis and tenosynovitis. CTDs commonly afflict workers in industrial, assembly-line type work processes which require the use of repetitive motions on the part of the worker, such as poultry and meatpacking, and automobile assembly, but have spread to letter sorters and supermarket checkout clerks as their jobs were automated.

CTD's also plague VDT workers, blurring the distinction between repetitive industrial work and office work. Congressman Tom Lantos recognized this convergence when he commented that: "cumulative trauma disorders [are] the industrial disease of the information age. It is occurring in offices where more than 28 million people work at video display terminals as well as on assembly lines using the most up-to-date technologies."[171]

Rather than requesting that Congress appropriate funds to increase OSHA's staff and budget in order to implement a comprehensive regulatory response to the CTD problem, the Reagan administration responded by targeting the meatpacking industry with large fines. OSHA proposed fines of 2.59 million dollars against IBP, Inc., the nation's largest meatpacker, for willful underreporting of injuries and illnesses in July 1987; and 3.1 million dollars for 620 CTD-related willful violations in May 1988.[172]

There were four advantages to this policy from the Reagan administration's deregulatory perspective. First, it did not require additional expenditures for a program to combat the burgeoning CTD problem. Thus, the Reagan administration was able to maintain that it was responding to the problem, while, at the same time, it continued to target OSHA for some of the largest cuts in the federal regulatory budget. A 1987 study conducted by Murray Weidenbaum's Center for the Study of Business at Washington University reported

that, of all the social regulatory agencies, the Reagan administration singled out OSHA for some of the deepest budget cuts. Weidenbaum, Reagan's first chairman of the Council of Economic Advisors and a staunch supporter of his administration's deregulatory policies, calculated that OSHA's budget declined 9 percent in real terms despite an overall 10 percent increase in total regulatory spending during the Reagan administration from fiscal year 1981 through 1988.[173]

Second, the large (and in some cases record-breaking) fines generated considerable publicity that would deter other violators and disarm critics who charged that the Reagan administration had subverted OSHA's mission. However, in virtually all cases the targeted firms were able to whittle down fines through a process of "nonadversarial" negotiations with OSHA. IBP's proposed fines of $5.4 million were reduced to $975,000 in this way.[174] While the Reagan administration maintained that large fines were reduced if employers showed signs of complying with OSHA rules, the evidence indicated that the Administration was more interested in the publicity that the initial assessment of large fines generated than in actual enforcement. "The big proposed fines that grab headlines are seldom paid in full," the New York Times reported in 1987.[175] Further evidence was derived by the fact that the Reagan administration did not even keep records of what portion of the proposed fines

were actually paid. "An OSHA spokesman," the Times related, "said the agency generally does not keep track of the amount of proposed fines that are actually paid each year."[176]

Third, by singling out worst-case firms for large proposed fines, the Reagan administration would avoid antagonizing the broader business community, and cause them to question OSHA's "nonadversarial" policy.

Finally, it deflected the public's attention away from the rapidly increasing and unregulated problem among VDT workers. NIOSH's statement that the rapid proliferation of VDTs is an "especially important factor"[177] in the increase of the CTD problem, and OSHA's pronouncement that the new technology has "generated new and pervasive sources of biomechanical stress to the musculoskeletal system,"[178] were lost in the publicity generated by the large fines policy.

However, the Reagan administration's large fines policy was not an effective deterrent. As previously indicated CTDs continued to rise. Ironically, the Reagan administration's virtual deregulation of federal occupational safety and health policy boxed OSHA into the large fines policy. Deprived of adequate funds, staff and will, Reagan's OSHA instituted a policy of relying on the good faith of employers to voluntarily report ergonomic (and other) injuries. As the IBP case (and numerous others) indicates, the system of voluntary employer self-regulation encouraged underreporting

and discouraged industry compliance with OSHA's voluntary ergonomic guidelines.[179] Untargeted corporations (the vast majority), such as those that use VDTs, were left to police themselves free of public scrutiny or supervision. This situation led to a second irony; deprived of an accurate injury and illness reporting system, OSHA had no reliable means to monitor and gauge the growing CTD problem. As a result, OSHA's institutional memory contained a significant blank space where VDT-related CTDs were concerned. Lacking the pertinent statistics, OSHA director Gerard F. Scannel was forced to resort to generalities when asked by the New York Times in 1989 what percentage of CTDs were attributable to VDT work. "I don't think you can associate it all with the computer," he said, but the Times added, paraphrasing his words: "the proliferation of computer technology in many industries was a significant cause of the increase in repetitive motion disorders."[180]

An added benefit from the Reagan administration's perspective was that without a record of the growing CTD crisis, it would be that much more difficult for the critics to document the administration's shortcomings. The BLS, for example, does not keep track of the number of CTDs that afflict VDT workers. Using worker compensation records instead of a sampling of employers, a recent study has revealed that the BLS reporting system underestimates the true rate of occupational injuries by a factor between four

and nine. They suggest that occupational illnesses are also underreported since the BLS uses the same reporting system.[181] Without an accurate BLS estimate, it is difficult for organized labor to substantiate its case that a crisis exists to either Congress or the White House.

The Bush administration has continued its predecessor's minimal response policy. Its complacent attitude towards the burgeoning ergonomic crisis is illustrated by the fact that in 1989 OSHA's staff of approximately 2,400 employees included 500 lawyers (21 percent of the total), but only one ergonomist.[182] The Bush administration's failure to address the ergonomics issue is all the more remarkable in light of the fact the number of CTDs reported jumped 28 percent from 115,000 reported cases in 1988 to 147,000 in 1989, its first year in office. CTDs now account for 61 percent of all reported occupational illnesses, a 339 percent increase from 1981.[183] Given the poor quality of the BLS's statistical data gathering for CTDs, it is safe to assume that these figures are underestimates of the real magnitude of the CTD problem.[184]

That Reagan and Bush administration policymakers were insensitive to the rapidly increasing CTD crisis is further illustrated by their collective failure to seek the authority to hire additional ergonomists in either the fiscal year 1989 or 1990 budget requests.[185] The question of how OSHA under the Reagan and Bush administrations could keep on top

of the exploding CTD crisis with only one ergonomist led Congressman Tom Lantos' subcommittee to hold a hearing.[186] Resultant public exposure forced the Bush administration to hire two new ergonomists in 1990, but this was a token response to the problem. OSHA's inability to handle the CTD problem with only 3 ergonomists was illustrated by Stephens' admission that the agency needed at least ten (one per region) ergonomists, plus a Washington-based team, just to start a rudimentary ergonomics program.[187] The Bush administration's insensitivity to the problem was illustrated by this exchange between Congressman Lantos and OSHA's only ergonomist, Dr. Roger Stephens, in 1989:[188]

> Stephens: I've been coached in what to say if this question came and--
> Lantos: Tell us what they coached to tell you [sic] and then tell us the truth.
> Stephens: That they're aware of the fact that we need more people, and it's a resource allocation problem. But I, of course, would welcome the help.

As a result of its "resource allocation problem" in the field of ergonomics, OSHA's influence over the private sector was limited to Stephens' lone efforts to exhort corporate industrial hygienists to voluntarily follow NIOSH's guidelines.[189]

That the Bush administration regarded the looming CTD crisis as a relatively low priority was further illustrated by OSHA's extremely slow pace in reacting to union calls for a comprehensive regulatory standard and the method it chose instead-- voluntary guidelines. In late May 1990, nearly a

year after acting director Alan C. McMillan promised Congressman Lantos' subcommittee and representatives of organized labor that OSHA would study their request for a regulatory standard, it announced plans to institute voluntary guidelines for the meatpacking industry, effective in September.[190]

The guidelines option held two advantages over regulatory standards for OSHA officials. First, it would give the impression that OSHA was taking quick action to deal with the escalating CTD crisis. Since guidelines were voluntary, they could be issued in a matter of months (3-4 in the case of its meatpacking guidelines), without legal challenge by unions or industry. In comparison, a proposed standard usually took 3-5 years (sometimes longer) to clear all the procedural and legal hurdles-- including OMB approval.[191] Second, voluntary guidelines gave the appearance that OSHA was addressing the problem without having to resort to mandatory standards, which ran counter to the Bush administration's pro-business philosophy.

Organized labor was critical on several accounts. It criticized both the Bush administration's extremely slow response and its preference for voluntary guidelines, which they feared, would be ignored by most industries.[192] Furthermore, the voluntary guidelines were narrow in scope; applied initially to the meatpacking industry, abuses in other industries would continue to go unchecked. OSHA re-

sponded to union criticism that voluntary guidelines were weak and ineffectual by saying that it would monitor the meatpacking industry to see that it complied and threatened the use of the "general duty" clause of the OSHAct to penalize recalcitrants.[193] In a second phase, OSHA officials were to study the meatpacking industry results, and apply them to other affected work processes, such as automobile assembly, and computerized office work. But the vagueness of OSHA's second phase plan, coupled with its limited resources and lack of influence within the Bush administration, left many unionists, especially those representing VDT workers, wondering if and when the guidelines would be expanded to include other industries.[194] In a surprise move, OSHA switched course in the fall of 1990 and announced that it would issue an Advanced Notice for Proposed Rulemaking (ANPR) in early 1991.[195] OSHA's change of heart was not a sign that it now saw things labor's way. The Reagan and Bush administrations long-term neglect of the CTD problem led organized labor to urge OSHA to issue an emergency temporary standard (which could be issued right away).[196] After a decade of inaction, unionists lacked confidence that OSHA would include VDT work in the ANPR.[197] Rather, OSHA's 180 degree turn was in response the meatpacking industry's fear that OSHA might use the general duty clause to make an example of it to other industries and agency critics.[198] Now, the meatpacking industry would be assured of its chance

to influence the process during the lengthy standards setting procedure through lobbying (both OSHA and OMB), public pressure, congressional and court challenges. Finally, it would be assured that years would pass before the final product could be applied in a relatively agreeable form to all affected industries. As a case in point, the ANPR (originally promised in early 1991), was not given go-ahead approval by OMB until May, and it was not certain that OSHA would issue it before 1992.[199] "We're not happy with OSHA's incredibly slow progress," Margaret Semanario, the AFL-CIO's director of health and safety said in July. "This does not appear to be a priority at OSHA and we think it should be," she added.[200] Despite Roger Stephens' assurances that the VDTs would be included during the rule-making process, there was no guarantee that his superiors at OSHA and OMB would agree.[201]

The Battle in the Bureaucracy: Brock vs. LaBrew.

In 1985, Secretary of Labor Donovan resigned his post, having become the first sitting cabinet member ever to be indicted.[202] Donovan's four years in office were marked by strained relations with the AFL-CIO, which looked forward to a better bond with his successor, William E. Brock III. While Brock's relations with organized labor were more cordial than Donovan's, his determination to carry out President Reagan's anti-OSHA policies was just as strong as

his predecessor. An heir to the Brock Candy Company (where he served as vice president in charge of marketing), Brock earned an "anti-labor reputation" while serving as a Republican Congressman (1963-70) and Senator (1971-76) from Tennessee.[203] Shortly after his appointment, political scientist Norman J. Ornstein called Brock a "'savvy political pro' who can 'neutralize' some contentious issues, like job safety, that are critical to labor's rank and file."[204] Time proved Ornstein's assessment to be correct.

One of the first reports released under Labor Secretary Brock's auspices was Women and Office Automation: Issues for the Decade Ahead. It included a preface by Brock, who wrote: "Although continuing research is still needed in order to fully assess the impact of new technology on office workers, much is already known about some problem areas where we need to look for solutions."[205] Despite his profession of concern for the problems faced by workers using VDTs, Brock, who owned more than $50,000 worth of stock in CBEMA members -- IBM and Xerox-- refused to take any substantive steps to direct OSHA to promulgate protective regulations.[206]

In fact, Brock's Labor Department was demonstrating its opposition to a policy of alleviating the problems that afflicted VDT workers by denying the request of one of its visually-impaired employee's for a transfer to a non-computer work assignment. The case involved Barbara LaBrew, a clerk/typist who had suffered deterioration in the vision of

her left eye due to the development of a brain tumor and its subsequent removal. Despite the medical opinion of LaBrew's doctors that continued computer-induced glare would cause further deterioration in her vision, the Labor Department, in the words of the arbitrator, "kept looking for a physician who could affirm that [Ms. LaBrew] could continue to use a VDT on a part-time basis."[207] However, the arbitrator ruled in LaBrew's favor. Citing the Rehabilitation Act of 1983, he wrote: "federal regulations require reasonable accommodation of a qualified handicapped person where it does not impose undue hardship on an agency." The Labor Department, he added, "is not that small or manpower-efficient that it could not restructure a position for the grievant at a GS-4 level without encompassing VDT work. Although the age of technology is upon us, especially in regard to more and more efficiency, this does not mean that we can require all human resources to adjust to this condition no matter what the effect."[208]

The Labor Department appealed the arbitrator's ruling to the Federal Labor Relations Authority (FLRA), arguing that he is "effectively creating a new position and is imposing it on management." Michael Urquhart, the president of Local 12 of the American Federation of Government Employees (AFGE) responded that: "The idea that a $27 billion Cabinet agency cannot find a typing job for a visually handicapped clerk without requiring her to violate her

doctor's wishes and risk the sight in her one good eye is ludicrous."[209] The FLRA upheld the arbitrator's ruling, but it proved to be a pyrrhic victory for federally-employed VDT workers. The Department of Labor complied by giving LaBrew, who had been out on unpaid leave, a "punitive assignment": she was assigned to lift heavy bags in the mail room. LaBrew's health and morale deteriorated to the point where she was forced to leave her job and file for workers compensation. Although AFGE had won what appeared to be a precedent-setting battle for its members, the Labor Department, in effect, set the ultimate precedent by having the final say on work assignments. It has been an effective deterrent to workers who would follow in Barbara LaBrew's footsteps.[210]

The Labor Department's harsh policy towards the occupational safety and health needs of its VDT workers goes well beyond the LaBrew case. Unlike other federal agencies, such as the Department of Justice, the Federal Aviation Administration, the General Services Administration, the Social Security Administration, the CDC, the EPA, NIOSH, the Air Force Logistics Center, the Defense Logistics Services Center, the Department of Labor (including OSHA) has not implemented the most basic voluntary purchasing guidelines--glare shields, detachable keyboards, eye exams and prescriptions, adjustable VDTs, tables and chairs-- for its employees.[211] The Labor Department's contentious policy towards

its own employees gave new meaning to Brock's statement that: "Wisdom prompts us to seek a better understanding of what the technology can do for people and to people."[212]

The Stress on Stress.

Federal policymaker's acceptance of the definition of ergonomic problems as merely matters of "comfort" rather than serious questions of "safety and health," reinforced CBEMA's and COT's inflexible position that VDT-related work problems didn't warrant serious attention. When the OTA released its report, Automation of America's Offices,[213] in December 1985, CBEMA Executive Vice President Oliver R. Smoot criticized its discussion on psychosocial stress and VDT work as being "out of proportion to problems reported."[214] The cautiously worded OTA report stated that "two recent [VDT] studies suggest that there is a potential for ... psychosomatic symptoms to develop into chronic conditions," but its overall conclusion was that "the evidence for a relationship between stress-related diseases and VDT work is still sparse."[215] Given the OTA's balanced treatment of the issue, it was difficult to understand Smoot's concern. However, Smoot's charges became easier to understand in light of CBEMA's stance that there were absolutely no stress-related problems unique to VDT use. As CBEMA put it: "preliminary research indicates that reported stress

[working with VDTs] is similar to the stress involved in hundreds of other jobs," and that "it is important to realize that the equipment, the display, is not the cause. Thus changing displays in some way will not reduce stress."[216]

One of the reports CBEMA cited as backing its position that VDTs do not cause stress problems was the National Academy of Science's Video Displays, Work, and Vision, which concluded that improperly used VDTs caused employee "comfort" problems but did not present safety and health problems.[217] However, Barry Johnson, director of NIOSH's biomedical and behavioral science division rejected the conclusion that VDTs were merely an "annoyance" to workers.[218] Michael J. Smith, NIOSH's chief occupational stress expert, and author of reports on VDTs and stress, also disagreed with the report's findings for dismissing the serious nature of problems facing workers in the automated office.[219]

CBEMA's position overlooked existing NIOSH studies which found that VDTs workers, especially those who (like their assembly-line counterparts) performed repetitive tasks and had little control over the work pace, suffered from high levels of on-the-job stress, which contributed to low self-esteem, sleep disorders, anxiety and depression.[220] A survey of the literature by the International Labour Office (ILO)-- released approximately at the same time that CBEMA's Smoot was criticizing the OTA report-- cited 36 studies and

publications (by no means an exhaustive list) on the relationship between mental stress and VDT work.[221]

Further substantiation came in October 1986 with NIOSH's report that the repetitive nature of computer-driven office jobs was imposing increased psychological and physical demands on workers.[222] Mangement's use of computer-driven work pacing which pitted worker against worker in a piece-rate type of competition leading to higher workloads, coupled with low pay, irregular work hours, lack of job security, and chance for advancement, NIOSH reported, created a variety of psychological problems "including neuroses and depression, anxiety, irritability, drug abuse, sleep difficulties and physical complaints such as headache and stomach ache." "I think we're going to be seeing a shift," Dr. Alex Cohen, NIOSH's head of applied psychology stated, "from occupational safety and health problems in mechanization to more problems of a psychological nature." Contrary to CBEMA's argument that reports of stress among VDT workers were "out of proportion to the problems reported," NIOSH said "there are increasing data on the relationship between specific working conditions and psychological disorders," and that "these problems impose substantial health and financial costs in the United States."[223] In the final analysis, however, OTA and NIOSH staff reports that carried conclusions running against the grain of Reagan and Bush

administration positions did not carry the same weight that the more agreeable CBEMA and COT arguments did.

The situation has not demonstrably improved in the intervening years. Meanwhile, a 1989 review of the literature on VDTs and psychosocial by the ILO stated that stress "symptoms, which have been studied by a number of investigations in several countries around the world (i.e., France, Italy, Japan, New Zealand, Poland, Sweden, and the U.S.) seem to be excessive among VDU operators."[224]

Conclusion.

OSHA's failure to respond positively to the development of safety and health hazards in the office was not due to either bureaucratic or cultural lag-- it had been petitioned to act by organized labor and others. Rather, it was due to complacent attitude (and ideological belief) of the Reagan and Bush administrations that a policy of inaction was best for all concerned. Insufficient interest in Congress, exemplified by the lack of Congressional support both during and after the House hearings, denied organized labor the legislative lever needed to move the executive branch.

In effect, the Reagan/Bush nonregulatory approach meant the continued privatization of power regarding occupational safety and health issues in the office. The federal government left full authority as to how, when, and, if, ergonomic issues in the workplace would be addressed to the complete

discretion of corporate America. Since office ergonomics was a low priority for many unions and corporate managers, many employers remained woefully ignorant of proper VDT use practices. In refusing to regulate the safety and health aspects of VDT work, the federal government virtually assured that the tide of VDT-related ergonomic problems would continue to increase.

Notes.

1. Ronnie Dugger, On Reagan: The Man and His Presidency (New York: McGraw-Hill, 1983), 167-68. For a similar statement on the campaign trail, see Myra MacPherson, "The First Salvos; Reagan's Main Street; Ronald Reagan Takes Over and Takes Aim," Washington Post, June 5, 1980, D1.

2. Perry D. Quick, "Businesses: Reagan's Industrial Policy," in eds. John L. Palmer and Isabel V. Sawhill, The Reagan Record: An Assessment of America's Changing Domestic Priorities (Cambridge: Ballinger Publishing Co., 1984), 306.

3. President, Public Papers of Ronald Reagan: 1983 (Washington, D.C.: U.S. Government Printing Office, 1984).

4. COT was known as the Center For Workplace Technology until its reorganization in 1985. See Chapter V, 23-24.

5. Cathy Trost, "The Price of Progress: Computers, While Increasing Productivity Have Spawned New Occupational Ailments," Wall Street Journal, September 16, 1985, 34C. See also, Computer and Business Equipment Manufacturers Association, Fact Sheet 2: Comfort Aspects of Visual Displays (Washington, D.C.: CBEMA, 1984).

6. "Growing Furor Over Safety Rules For Workers," U.S. News & World Report, June 26, 1972, 42-44. Four years later, business complaints had further intensified. See "Why Nobody Wants To Listen To OSHA: The World's Worst Startup Made Everybody Mad," Business Week, June 14, 1976, 64-72.

7. Fred K. Foulkes, "Learning to Live With OSHA," Harvard Business Review, November-December 1973, 57-67.

8. Reagan's distorted view of OSHA was exemplified by the spurious stories he told on the 1976 campaign trail. One went like this: "The owner of a small business in one Western state... was told to install separate men's and women's rest rooms for his employees. He had only one employee-- at home-- in the same bed. It was his wife." Quoted in "Why Nobody Wants to Listen to OSHA," Business Week, 64.

9. For example, Andrew Hacker wrote: "Why is it that the Occupational Safety and Health Administration can afford only four hundred inspectors to make the rounds of the country's four million business establishments?... The short answer of course is that the Congress keeps... OSHA... on [a] token budget... just enough to insure that [its name remains] on the organization charts, but not nearly the amounts necessary to hire personnel who might challenge corporate conduct in any serious way." Quoted in "Citizen Counteraction?" in eds. Ralph Nader and Mark J. Green, Corporate Power in America (New York: Grossman Publishers, 1973), 174.

10. Robert Stewart Smith, The Occupational Safety and Health Act: Its Goals and Its Achievements (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1976), 62.

11. "Organizing for Health & Safety," Labor Research Review, 16 (Winter 1991). The same trend prevailed prior to OSHA's passage in 1970.

12. Ibid., 65; Robert Sherrill, "What's Behind the Failure to Protect the Health of America's Workers," Today's Health, August 1972, 16ff.

13. The complete text of the letter is contained in Nicholas A. Ashford, Crisis in the Workplace (Cambridge: MIT Press, 1976), 545-546.

14. Susan J. Tolchin and Martin Tolchin, Dismantling America: The Rush to Deregulate (Boston: Houghton-Mifflin Co., 1983), 115.

15. "Inspections of very small firms so far have been quite limited, Mr. Guenther says," the U.S. News & World Report wrote ("Growing Furor Over Safety Rules for Workers," 42). In this story, which appeared shortly after the secret memo was written, Guenther signaled to small businessmen that, despite the federal government's newly acquired power, they needn't fear an OSHA inspection: "The smoke is a great deal greater than the fire... Mainly it's a fear that when we do make an inspection we're going to make it really rough. I can tell you that isn't true. We hope to minimize the burdens on the tiny businesses."

16. Ashford, Crisis in the Workplace, 545-546, emphasis added.

17. "Why Nobody Wants to Listen to OSHA," Business Week, June 14, 1976, 64.

18. Ibid., 64.

19. OSHA Task Force, OSHA Safety Regulation: Report of the President's Task Force, ed. Paul MacAvoy, (Washington, D.C.: American Enterprise Institute, 1977).

20. James C. Hyatt, "Proposal Labor Agency Quit Safety Role Makes Political Heat for Administration," Wall Street Journal, July 18, 1977, 14. Despite Carter's efforts to weaken OSHA, the agency still enjoyed greater freedom to carry out its mission than under any other president before or since.

21. Ibid., 14.

22. Smith, The Occupational Safety and Health Act.

23. Ibid., 14. This comment proved to be prophetic; the sectors of the business community most angered by OSHA's intrusion on their autonomy, mobilized behind the Reagan campaign that defeated Carter in 1980.

24. "When Regulators Feed Inflation," Business Week, June 26, 1978, 135.

25. For an example of an economist's application of cost/benefit analysis to OSHA's cotton dust standard, see John F. Morrall III's essay in eds. Robert W. Crandall and Lester B. Lave, The Scientific Basis of Health and Safety Regulation (Washington, D.C.: Brookings Institution, 1981), 93-108.

Although cost/benefit analysis creates more problems than it solves (e.g., how can the true value of the loss of life and limb be quantified?), it has had great appeal to OSHA policymakers in the White House from Nixon through Bush. Its appeal to policymakers is that it gives the public the impression that their decisions are based on the objective determination of fact, at the same time that it reinforces their own particular political biases.

Lost in the way the debate is usually cast by anti-regulatory proponents of cost/benefit analysis is that businesses often derive benefits (e.g., the textile industry after the cotton dust standard was implemented), such as more productive operations and lower workers compensation rates, from updating their facilities to meet the stricter OSHA standards. On the other hand, additional workers and their families may incur increased health costs, lost earnings and

benefits, and the great intangible-- loss of life-- if stricter standards are not put in place.

26. Tom Alexander, "OSHA's Ill-Conceived Crusade Against Cancer," Fortune, July 3, 1978, 88, and; "Diseased Regulation," Forbes, February 1979, 34.

27. Marshall and Bingham were belatedly vindicated when the Supreme Court ruled, despite the Reagan administration's attempt to have the case dismissed, in American Textile Manufacturers Institute v. Donovan (1981) ruled in their favor. The Court said that Congress did not intend for OSHA to take cost/benefit analysis into account when proposing standards, only the "feasibility," of implementing them. The Court's ruling turned out to be a Pyrrhic victory for organized labor since the Reagan administration proceeded to drag its feet on implementing and enforcing the cotton dust standard. See, for example, Seth S. King, "U.S. Proposes Easing Some Rules on Cotton Dust," New York Times, June 6, 1983, D21. Reagan's OSHA weakened the standard and extended the deadline for meeting it to 1986.

28. "Growing Furor Over Safety Rules," U.S. News, 44.

29. "Restraining OSHA: It's Just a Matter of Time," Business Week, May 5, 1980, 110; Vicky Cahan, "The Overhaul That Could Give OSHA Life Under Reagan," Business Week, January 19, 1981, 88.

30. Occupational Safety & Health Reporter, August 2, 1979, 211; OSHA Lists Industry Groups Exempted By Schweiker Amendment From Inspection," Occupational Safety & Health Reporter, December 27, 1979, 700-01.

31. "Schweiker Introduces Bill to Exempt 'Safe' Sites From Safety Inspections," Occupational Safety & Health Reporter, December 27, 1979, 699.

32. "Storm-Tossed OSHA," The New Republic, May 17, 1980, 5-6, 8; "Restraining OSHA," Business Week, 110.

33. "Schweiker Bill May Provide OSHA With 'Greater' Power, Study Asserts," Occupational Safety & Health Reporter, April 17, 1980, 1069.

34. "Conflict of Interest By Schweiker Charged; Senator Denies Allegations," Occupational Safety & Health Reporter, March 20, 1980, 965. The charge was made by the Philadelphia Area Project on Occupational Safety and Health (PHILAPOSH).

35. Ibid.; Ronald Brownstein and Nina Easton, Reagan's Ruling Class: Portraits of the President's Top One Hundred Officials (New York: Pantheon Books, 1983), 252-53.

36. Brownstein and Easton, Reagan's Ruling Class, 253.

37. Ibid.; "Will Reform Be the Death of OSHA?" Nation's Business, April 1980, 55-58; "IUD Urges Democratic Cosponsors to 'Disavow' Schweiker OSHA Bill," Occupational Safety & Health Reporter, January 24, 1980, 788-89.

38. Ibid., 56.

39. Ibid., 56.

40. "Restraining OSHA," Business Week, 110.

41. As Thomas Byrne Edsall states: "More than any other president since Franklin Delano Roosevelt, Ronald Reagan has consciously set out to use the federal government to alter the balance of power between labor and management through his appointments to the Department of Labor and to the National Labor Relations Board; [and] through the weakening of the regulatory functions of the Occupational Safety and Health Administration...." The New Politics of Inequality (W.W. Norton & Co., 1984), 28.

42. Lifting the regulatory burden did not help. The economy went into a deep slump in 1981-82 with little or no growth and an official unemployment rate that hit 10.8 percent in 1982, the highest since the Great Depression.

43. Quoted in Congress, Committee on Labor and Human Resources, Oversight of the Occupational Safety and Health Administration: Hearings before the Committee on Labor and Human Resources, 100th Cong., 2nd sess., April 18-20, 1988, 278.

44. Brownstein and Easton, Reagan's Ruling Class. Figures for Donovan are on 226; and, for Auchter, on 237. "The Door at OSHA Opens Up to Industry," Business Week, April 6, 1981, 32-33.

When asked what goals he had planned for OSHA in 1984, Auchter replied: "The campaign of President Reagan." "New Goals for OSHA," Dollars and Sense, February 1984, 11.

45. Taking the mid 1970s, when anti-OSHA sentiment in the construction industry hardened, the Bureau of Labor Statistics reported that it had the highest rate of occupational injury and illness of any industry in the nation: 18.3% (1974), 15.9% (1975) and 15.3% (1976). See U.S. Department of Commerce, Statistical Abstract of the United States: 1978 (Washington,

D.C.: General Printing Office, 1978), 435. From 1971 to 1973, the construction industry was assessed higher fines for imminent danger, willful and repeated violations than any other industry, averaging $9500 per citation. See Ashford, Crisis in the Workplace, 260.

46. Dugger, On Reagan, 168; Brownstein and Easton, Reagan's Ruling Class. Figures for Donovan are on 226; and, for Auchter, 236-37.

47. Dugger, On Reagan, 167.

48. James Crawford, "The Dismantling of OSHA," The Nation, September 12, 1981, 207. According to Dugger, "An aide was quoted as saying that Auchter threw the booklet down on a coffee table and exclaimed, 'Get rid of it.'" Dugger, On Reagan, 169. Auchter had the "offensive" pamphlet replaced with one addressed to employers as well as employees, minus the pictures and quotations of workers who suffered from brown lung disease. "OSHA Is Now Trying To Help You," Nation's Business, 26.

49. R. Jeffrey Smith, "OSHA Shifts Direction on Health Standards," Science 212 (1981) 1482-83.

50. Jeff Stansbury, "The Battle For Workplace Safety," Solidarity, December 1-15, 1981, 12; Crawford, "The Dismantling of OSHA," 207.

51. "OSHA Is Now Trying To Help You," Nation's Business, 26.

52. Ronald Brownstein, "Making the Worker Safe For The Workplace," The Nation, June 6, 1981, 692-94; Stansbury, "The Battle for Workplace Safety," 13.

53. David Seideman, "Occupational Hazard: Three Steps to an Unsafe Workplace," The New Republic, December 6, 1982, 11-12.

54. In a cynical manipulation of OSHA statistics, the Reagan administration began to count these records inspections as actual shop floor inspections in February 1984. This change was made just in time to inflate OSHA's FY1983 totals: 11,402 records inspections were added to 58,516 actual inspections for an instant increase of 19.5 percent. Ben A. Franklin, "OSHA Regulatory Changes: Departing Chief Proud, but Criticism Persists," New York Times, April 9, 1984, B16.

55. James Crawford, "Briefing: An OSHA Without Teeth," In These Times, April 7-13, 1982, 5.

56. "A Lighter Schedule of OSHA Inspections," Business Week, September 14, 1981, 38.

57. Ibid., 38.

58. "Little Impact on Safety Seen From Mere Existence of Committee," Occupational Safety & Health Reporter, November 25, 1982, 519.

59. Seth S. King, "Director Rates OSHA 'Far Better Than It Was,'" New York Times, October 29, 1982. P.R. Russ, Jr., a Florida union official who knew Auchter for 20 years said "all that [occupational disease] stuff is absolutely foreign to him." Regarding Auchter's disdain for occupational health matters, an OSHA official said: "When an assistant secretary has to ask what beryllium is, I think that gives some indication... His tolerance for scientific discussion, even translating scientific discussion into lay terms, is very low." See Brownstein and Easton, Reagan's Ruling Class, 236-37.

60. See Congress, House of Representatives, Committee on Education and Labor, OSHA Oversight-- Review of 116 Dormant Rulemaking Projects. Hearing before the Subcommittee on Health and Safety, 98th Cong., 1st sess., October 4, 1983. See also, Cass Peterson, "OSHA May Drop Standard-Setting Efforts: Deletion of 116 Chemicals Urged," Washington Post, September 21, 1983, and Philip Shabecoff, "Agency Gets Plan to Scrap 116 Proposed Rules Protecting Workers," New York Times, September 21, 1983, reprinted in Hearing.

61. William Glaberson, "Is OSHA Falling Down on the Job?" New York Times, August 2, 1987, III: 1. Auchter's statement in October 1982 that "we have slots for only 1,200 inspectors, the same number my predecessors had," was incorrect. His predecessor, Eula Bingham had 128 more when she left office in January 1981. See King, "Director Rates OSHA 'Far Better.'"

62. Sources: The New York Times, Also, the Washington Post and the United Auto Workers. Cited in Jeff Stansbury, "OSHA Under Reagan: The Battle for Workplace Safety," Solidarity, December 1-15, 1981, 13.

63. Brownstein and Easton, Reagan's Ruling Class, 253.

64. Ibid., 253-54; Stansbury, "OSHA Under Reagan," 15.

65. Marjorie Sun, "NIOSH Under Siege," Science, July 17, 1981, 315.

66. Auchter expressed the Reagan administration's position well. Of his predecessor's (Dr. Eula Bingham) emphasis on the need for OSHA to develop health standards, Auchter disparagingly said: "The primary measure of effectiveness seemed to be the number of health standards OSHA could spit out." See "OSHA Is Now Trying to Help You," Nation's Business, August 1981, 20-21.

67. Ibid., 315.

68. Ibid., 315.

69. Brownstein and Easton, Reagan's Ruling Class, 253.

70. Ibid., 315.

71. Smith, "OSHA Shifts Direction," 1482-83.

72. Brownstein and Easton, Reagan's Ruling Class, 242.

73. Ibid., 1482-83.

74. Ibid., 1482-83.

75. Ibid., 1482-83. "The Door at OSHA Opens up to Industry," Business Week, 32-33.

76. Percentages derived from OSHA "Federal Compliance Activity Reports" figures cited in Charles Noble, Liberalism at Work: The Rise and Fall of OSHA (Philadelphia: Temple University Press, 1986), 182-83.

77. Oversight of the Occupational Safety and Health Administration:, 907. The FY1989 budget figure is from U.S., Executive Office of the President, Budget of the United States Government, Fiscal Year 1991 (Washington, D.C.: Government Printing Office, 1990), A-885.

78. Glaberson, "Is OSHA Falling Down on the Job?" III: 1.

79. Ibid., 907.

80. The company in question, B.B. Andersen Construction Companies, Inc., belonged to B.B. Andersen, "a major Republican contributor in Kansas." Ben A. Franklin, "OSHA Regulatory Changes: Departing Chief Proud, but Criticism Persists," New York Times, April 9, 1984, B16. Auchter was replaced by another devotee of Reagan's named Robert A. Rowland. A lawyer who worked in the 1980 Texas campaign for Reagan, Rowland compiled an anti-labor voting record as a member of the Occupational Safety and Health Review Commission. Rowland, who owned stock in several chemical

companies that where the beneficiaries of decisions he made regarding chemicals, was accused of conflict of interest. He resigned in a hail of criticism on the same day that the White House Office on Government Ethics exonerated him of the charges. Not since the Nixon administration had OSHA been so politicized. Cathy Trost, "OSHA Chief Resigns After 11 Months As He's Cleared of 'Conflict' Over Stock," Wall Street Journal, May 29, 1985, 7. Shortly before his 11 months tenure ended, the New York Times editorialized that Rowland "has distinguished himself by refusing to require outdoor toilets and running water for farm workers." "OSHA's Safety and Health," New York Times, April 29, 1985, A16.

81. Martin Tolchin, "Nader Says OSHA Is Shackled Now," New York Times, September 5, 1983, 9; "OSHA Is 'Industry-Indentured Bureaucracy,' Nader Public Interest Group Report Charges," Occupational Safety & Health Reporter, September 8, 1983, 349. See also, Philip Simon, Reagan in the Workplace: Unravelling the Health and Safety Net (Washington, D.C.: Center for the Study of Responsive Law, 1983).

82. "Selikoff Gives Pessimistic Appraisal of Obstacles to Health Data Utilization," Occupational Safety & Health Reporter, May 10, 1984, 1315.

83. Congress, House of Representatives, Committee on Science and Technology, Potential Health Effects of Video Display Terminals and Radio Frequency Heaters and Sealers. Hearings, before the Subcommittee on Investigations and Oversight, 97th Cong., 1st sess., May 12-13, 1981; The Human Factor in Innovation and Productivity. Hearings, before the Subcommittee on Science, Research and Technology, 97th Cong., 1st sess., September 9-11, 15-17, 1981; Job Forecasting. Hearings, before the Subcommittee on Investigations and Oversight, House of Representatives, 98th Cong., 1st sess., April 6-7, 1983.

84. Congress, House of Representatives, Committee on Education and Labor, New Technology in the Workplace: Hearing Before the Subcommittee on Labor Standards, 97th Cong., 2nd sess., June 23, 1982.

85. Congress, House of Representatives, Committee on Education and Labor, OSHA Oversight-- Video Display Terminals in the Workplace. Hearings, before the Subcommittee on Health and Safety, House of Representatives, 98th Cong., 1st sess., 1983; and OSHA Oversight-- Video Display Terminals in the Workplace. Hearings, before the Subcommittee on Health and Safety, House of Representatives, 98th Cong., 2nd sess., 1984.

86. Ibid., 173.

87. Ibid. 10.

88. House, Potential Health Effects of Video Display Terminals, 170. Emphasis added.

89. Ibid., 405.

90. Ibid., 606.

91. Letter from Congressman Albert Gore, Jr. to author, February 15, 1984. Gore's subcommittee (which had no legislative power) did not issue a report to the full Committee urging that legislative action be taken. Nor did it hold any more hearings on the VDT issue.

92. House, Video Display Terminals in the Workplace, 301.

93. Congress, House of Representatives, Committee on Government Operations, Dramatic Rise in Repetitive Motion Injuries and OSHA's Response: Hearing Before the Employment and Housing Subcommittee, 101st Cong., 1st sess., June 6, 1989, 2. Also see, Mitch Betts, "Hand Impairment Plagues Industry," Computerworld, June 26, 1989, 17.

94. National Academy of Sciences, National Research Council, Committee on Vision, Panel on Impact of Video Viewing on Vision of Workers, Video Displays, Work, and Vision (Washington, D.C.: National Academy Press, 1983).

95. "Year-old Tubes Vision Hazards?" The Guild Reporter, March 12, 1982, 1.

96. NRC, Video Displays, Work, and Vision, 235.

97. Ibid., 236.

98. Ibid., 236.

99. "Newspaper Union Criticizes VDT Study As Understating Employee Health Hazards," Occupational Safety & Health Reporter, July 21, 1983, 178. Emphasis in original.

100. Ibid., 178.

101. House, Video Display Terminals in the Workplace, 1-111. The NIOSH recommendations are listed on 212. Also see "Vision, Pregnancy Problems Reported by VDT Users, Union Tells House Panels," Occupational Safety & Health Reporter, March 1, 1984; "Musculoskeletal Ills rank after Vision in VDT Health Complaints, Union Reports," Occupational Safety & Health Reporter, March 15, 1984, 1131-32.

102. House, Video Display Terminals in the Workplace, 86.

103. Ibid., 113-208, 231-366. Also see, "Representative of Obstetrics Group States That VDTs Do Not Pose Reproductive Hazard," Occupational Safety & Health Reporter, May 10, 1984, 1313.

104. House, Video Display Terminals in the Workplace, 301.

105. Ibid., 301.

106. Ibid., 302.

107. Ibid., 301.

108. Ibid., 301. Also see, "Education, Not Legislation, Is Key to Alleviating Fears Concerning VDTs," Occupational Safety & Health Reporter, June 14, 1984, 26.

109. Panasonic Industrial Company and Professional Secretaries International, The Causes of Stress in the Modern Secretary (Secaucus, N.J. and Kansas City, Mo.: Panasonic Industrial Company and Professional Secretaries International, 1986), 16.

110. Professional Secretaries International, "Professional Secretaries/Panasonic Conduct Survey On Secretarial Stress," News Release, (Kansas City, Mo.: Professional Secretaries International, February 1986), 1.

111. Ibid., 1.

112. Steelcase, Inc., Office Environment Index: 1988 Detailed Findings, (Grand Rapids, MI.: Steelcase, Inc., 1988); cited in
Michael R. Kagay, "Workers Want Their Employers To Listen To Them, Survey Shows," New York Times, June 14, 1988, A25.

113. Ibid.

114. House, Potential Health Effects of Video Display Terminals, 401.

115. House, Video Display Terminals in the Workplace, 301.

116. "VDT Health," A public service announcement produced by the American Council on Science and Health, n.d.

117. House, Video Display Terminals in the Workplace, 301.

118. American Council on Science and Health, Introducing... American Council on Science and Health (New York: ACSH, n.d.).
Theodore D. Goldfarb, ed. Taking Sides: Clashing Views on Environmental Issues 4th ed. (Guilford, CT.: Duskin Publishing Group, 1991), 153. For another example of the ACSH's excessively pro-industry, anti-regulatory stance, see executive director Dr. Elizabeth M. Whelan's article: "The Charge of the Cancer Brigade," National Review, February 6, 1981, in Goldfarb, 164-69. She maintained that the EPA's estimate that between 60-90% cancer is caused by environmental factors was wrong and described OSHA's 1980 proposal that the workplace use of a handful of carcinogens be banned or restricted as a policy that "... would require industries to invest large sums of money to protect their workers from allegedly harmful chemicals.", 165. In the same volume (157-63), see Dr. Samuel S. Epstein's "Losing the War Against Cancer," The Ecologist, 17 (1987), where he cites the ACSH's industry ties and quotes a characterization of Dr. Whelan as a practitioner of "voodoo science.", 158.

119. ACSH, American Council on Science and Health, 2.

120. "'People Problems' Must Be Solved Before VDTS Introduced, Study Finds," Employee Relations Weekly, December 17, 1984.

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134. Mitchell Betts, "Opposition to VDT Regulation Continues in House Hearings," Computerworld, June 11, 1984, 28.

135. Congress, House of Representatives, Committee on Education and Labor, Subcommittee on Health and Safety, Oversight of OSHA With Respect to Video Display Terminals in the Workplace, staff report, 99th Cong., 1st sess., August 1985, 28.

136. Ibid., 28.

137. News release from Mary Rose Oakar, Member of Congress, Washington, D.C., "Oakar to Release OTA Study on Office Health Hazards," September 14, 1984, 1.

138. Letter from Mary Rose Oakar, Member of Congress, Washington D.C., to author, October 22, 1984.

139. News release from Mary Rose Oakar, 1.

140. "Office Health Under Study," 9to5 Newsletter, September/October 1986, 2.

141. "Potential Hazards To Office Workers Cited By OTA; More Research Recommended," Occupational Safety & Health Reporter, September 20, 1984, 336.

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143. Congress, General Accounting Office, Office Health Hazards: Federal Activities Funded in Fiscal Years 1981-1986, GAO/HRP-86-101FS (Washington, D.C.: Government Printing Office, 1986).

144. "NIOSH VDT Budget," VDT News, November/December 1984, 2.

145. "Maryland Chambers of Commerce Opposed To Labor-Supported VDT Legislation," Occupational Safety & Health Reporter, August 1, 1985, 210.

146. Harvey J. Hilaski, "Understanding Statistics On Occupational Illnesses," Monthly Labor Review, 25-29. Hilaski commented that: "after considering the recordkeeping criteria and the factors inhibiting detection and recognition of occupational disease, one can better understand why the BLS estimates of occupational illnesses are suspected of being seriously understated." (29).

147. Thomas Byrne Edsall makes the same point on a broader scale in his book The New Politics of Inequality, 140: "Of the various elites that have gained strength in recent years, business has been among the most effective. Not only has it gained from highly favorable tax treatment and from a major reduction in regulation, but government action has increased the bargaining leverage of management in its relations with organized labor. This increased leverage grows out of reductions in unemployment compensation and out of the elimination of the public service job programs, and through the appointment of promanagement officials at such key agencies as the Occupational Safety and Health Administration and at the National Labor Relations Board. The end result is a labor movement that has lost much of its clout at the negotiating table and in the polling booth. High on the list of losers in the new politics of inequality are the organized workers of this country."

148. Surgeon General, The Surgeon General's Report on Health Promotion and Disease Prevention (Washington, D.C.: U.S. Government Printing Office, 1979).

149. Library of Congress, Office of Technology Assessment, Preventing Illness and Injury in the Workplace, Washington, D.C.: Government Printing Office, April 1985, 5.

150. Congress, House of Representatives, Occupational Health Hazard Surveillance: 72 Years Behind and Counting, 61st Report by the Committee on Government Operations, H. Rept. 99-979, House of Representatives, 99th Congress, 2nd sess., October 8, 1986, 11.

151. "Selikoff Gives Pessimistic Appraisal," Occupational Safety & Health Reporter, 1315.

152. Ibid., 1315.

153. National Association of Public Health Policy, Council on Occupational and Environmental Health, Women's Committee, Women's Occupational Health Agenda For The 1990's, Working Draft, March 1988, 1-3. Also see, "Health Group Study Advocates VDT Standards, Supports Tougher OSHA Indoor Air Quality Rules." Occupational Safety & Health Reporter, October 21, 1987, 850-51.

154. Ibid., 14-15.

155. Congress, House of Representatives, Committee on Energy and Commerce, NIH Reauthorization and Protection of Health Facilities. Hearings, before the Subcommittee on Health and the Environment, House of Representatives, 101st Cong., 2nd sess., February 8, June 18, 1990. Also see, Jeanne Mager Stellman and Joan Bertin, "Science's Anti-Female Bias," New York Times, June 4, 1990, A23; and Gina Kolata, "N.I.H. Neglects Women, Study Says," New York Times, June 19, 1990, C6.

156. Congresswoman Patricia Schroeder (Democrat, Colorado) cited in Gina Kolata, "N.I.H. Neglects Women, Study Says," New York Times, June 19, 1990, C6. Also see, U.S., Congress, House of Representatives, Select Committee on Aging, Women Health Care Consumers: Shortchanged on Medical Research and Treatment. Hearings, before the Subcommittee on Housing and Consumer Interests, House of Representatives, 101st Cong., 2nd sess., July 24, 1990.

157. Ibid. The GAO's report and a Congressional hearing on the issue in June prompted the NIH to announce the establishment of an Office of Research on Women's Health in September. See Philip J. Hilts, "N.I.H. Starts Women's Health Office," New York Times, September 11, 1990, C9.

158. Ibid.

159. Ibid.

160. Kolata, "N.I.H. Neglects Women, Study Says," C6.

161. Ibid., C6.

162. Letter from Gene Lynch, Ph.D., Tektronix, Inc., Chairman, HFS/ANSI VDT Standards Committee, Human Factors Society, to author, June 1, 1985.

163. Human Factors Society, The American National Standard for Human Factors Engineering of Visual Display Terminal Workstations (Santa Monica, Ca.: Human Factors Society, 1988); "ANSI/HFS Standard Approval Renews Debate Over Use," VDT News, March/April 1988, 2-4.

164. "ANSI/HFS Standard Approval," VDT News, 3.

165. "Labor Applauds, Questions New ANSI Standard on VDT Workstations," Monitor, Summer 1988, 13-14; "ANSI/HFS Standard Update," VDT News, July/August 1988, 2-3.

166. "ANSI/HFS Standard Approval," VDT News, 3. Also see, "ANSI/HFS Standard Update," VDT News, 2-3.

167. "ANSI/HFS Standard Approval," VDT News, 3.

168. Reprinted in House, Video Display Terminals in the Workplace, 212.

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170. Department of Labor, Bureau of Labor Statistics, Occupational Injuries and Illnesses in the United States by Industry, 1991, Bulletin 2424 (Washington, D.C.: Government Printing Office, May 1993), 5. See also, Peter T. Kilborn, "Automation: Pain Replaces the Old Drudgery," New York Times, June 24, 1990, I:1. Maria Mallory and Hazel Bradford, "An Invisible Workplace Hazard Gets Harder to Ignore," Business Week, January 30, 1989, 92-93; and "Workplace Hazards Hit a Nerve," same issue, 104.

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172. Philip Shabecoff, "OSHA Seeks $2.59 Million Fine For Meatpacker's Injury Reports," New York Times, July 22, 1987, A1; "U.S. Fines Meatpacker $3 Million In Injuries From Repetitive Motion," New York Times, May 12, 1988. Willful violations are citations for situations where the employer knowingly fails to correct a health and safety hazard, or a group of nonserious hazards.

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high rate of repetitive motion illnesses. These guidelines are expected to be issued in the near future." But another 6 months passed before OSHA announced its plans for guidelines, and an additional 3 months before they were actually released. Also see, Frank Swoboda, "OSHA Guidelines Aim to Prevent Repetitive-Motion Injuries," Washington Post, May 29, 1990, A16; "U.S. Guidelines Address Meatpacking Injuries," New York Times, September 1, 1990, 8.

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CHAPTER 7

THE NON-PROBLEM OF NONIONIZING RADIATION.

The most controversial and complex aspect of the entire video display terminal (VDT) safety and health debate involves the contention that continuous exposure to low level, nonionizing radiation emitted by the computer terminals can cause eye cataracts and reproductive hazards, including miscarriages, stillbirths and birth defects. However, exhaustive research on this possibility has not been conducted by many scientists, in part, because the theory of a causal effect between low level, nonionizing radiation and occupational safety and health problems suffered by VDT workers runs counter to the prevailing scientific theory that only ionizing radiation (not a serious problem with VDTs) can cause such damage. Public officials, especially in the executive branch, have rejected labor's appeals to authorize funds for research in this area.

The lack of research by federal agencies, such as the National Institute for Occupational Safety and Health (NIOSH) and the Bureau of Radiological Health (BRH), into alternative theories of nonionizing radiation emitted by VDTs may be explained by two key factors. First, is the scientific establishment's tendency to suppress conclusions that don't support dominant research paradigms. This factor gave the computer industry a decisive debate advantage over

labor, helping it to persuade the federal government not to fund independent research. Second, even where some scientists expressed interest in investigating alternative theories, the federal government's preference for funding research that stimulated economic development seriously constrained research into occupational safety and health problems. The resultant political vacuum left this field of research under the domination of the computer industry and allied organizations.

In his seminal book, The Structure of Scientific Revolutions, Thomas S. Kuhn maintains that the scientific establishment (what Kuhn calls "normal science") stifles "fundamental novelties" that do not fit with its prevailing paradigms.[1] He defines a paradigm as the "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners."[2] As Kuhn explains:[3]

> Normal science, the activity in which most scientists inevitably spend almost all their time, is predicated on the assumption that the scientific community knows what the world is like. Much of the success of the enterprise derives from the community's willingness to defend that assumption, if necessary at considerable cost. Normal science, for example, often suppresses fundamental novelties because they are necessarily subversive of its basic commitments.

The governing paradigm holds that the nonionizing radiation waves emitted by VDTs are too weak to cause biological damage in humans. Thus, research in this field was viewed as unnecessary. American scientists are more likely

to support this exclusionary view than their European counterparts (especially the Scandinavians), who have been encouraged by a history of state funding and nonionizing radiation research, to explore the possibility that electromagnetic fields (EMFs) might cause biological damage to humans.

However, in the U.S., the state, especially under the Reagan and Bush administrations, has become less interested in supporting independent research. As the economy deteriorated, state support for private sector research increased.[4] Since its fiscal and political fortunes are tied to a prosperous economy-- and the computer industry is one of the few bright spots in an otherwise sluggish economy-- federal government officials are predisposed to support research that leads to commercial applications (new product development) and enhances the competitiveness of American corporations in an increasingly global economy. Under the Reagan administration, David Dickson writes, in his book, The New Politics of Science, "science was no longer to be treated as a public good but as a private commodity."[5] President Bush's science advisor, Dr. D. Alan Bromley said: "At both ends of Pennsylvania Avenue... there is a real sense that science and technology must play a more important role if we are to be competitive internationally."[6] "The economic downturn has brought a recognition of the link between science/technology and long-term growth" to the

executive and legislative branch's attention, reports Industry Week.[7] This emphasis on gearing federal research to enhance competitiveness of American business places severe budgetary constraints on the state's support of occupational safety and health research. Except for a handful of liberal Democratic Congressmen, there was virtually no high-level political support for occupational safety and health research into the effects of nonionizing radiation on VDT workers. These factors explain why computer industry officials were able to convince federal government officials that state-sponsored research on nonionizing radiation emitted by VDTs was unnecessary and a waste of the taxpayer's money.

This chapter discusses how the computer industry-- allied with quasi-governmental, industry-supported, standard-setting organizations-- dominates and manipulates the debate and substance of scientific research on nonionizing radiation. It shows how private industry's dominance of this important public policy issue is accomplished with the help of the federal government's repeated refusal to take the lead in funding independent research, or question the computer industry's approach, and the media's refusal to seriously report on research developments (both domestic and foreign) which point to the need for further study. It also examines American science's rejection of European studies that run counter to the grain of normal science.

Part I. Eye Cataracts:

It should be noted at the outset that not all the women who suffered adverse pregnancy outcomes worked with VDTs. Some were doing non-VDT work in close proximity to VDTs. The electromagnetic fields (EMFs) are strongest at the sides and back of the terminal, especially on the right side, where the flyback transformer is usually located. The flyback transformer increases the voltage used to power the cathode ray tube's (CRT) electron gun, which, in turn, creates an image on the CRT's screen by bombarding its phosphor coated backside with a highly focused electron ray gun. The electron ray gun's movement from left to right and top to bottom of the screen is controlled by horizontal and vertical deflection coils located at the back of the CRT. Interaction of the electric current with the horizontal and vertical deflection coils creates a magnetic field, which via fluctuations in the current, controls the movement of the electron ray gun. The horizontal deflection coil's left to right movement, followed by its return, occurs at a rate of 15,000 times per second (15 kiloHertz (kHz)), which puts these fields in the very low frequency (VLF) range. This movement creates pulsed electromagnetic fields in concert with the flyback transformer.

Pulsed EMF fields are of particular concern to researchers because they can produce power increases five to

ten times that of unmodulated fields.[8] Both the VDT's power transformer and the vertical scan coil produce 60 hertz (Hz) extremely low frequency (ELF) fields.[9] Higher than normal incidences of cancer have been found in children and workers who have been exposed on a continuous basis to power lines and electrical equipment that, like VDTs, emit 60 Hz fields.[10]

In 1976, two New York Times copy editors, aged 29 and 35, developed eye cataracts while working on VDTs for one year and four months respectively. Eye cataracts result from the clouding of the lens or its capsule which, in turn, leads to loss of sight. It is unusual for them to occur in people under 65.

This unprecedented development led the Newspaper Guild, which represented the two copy editors, to contact Dr. Milton M. Zaret, an associate clinical professor of ophthalmology at the New York University/Bellevue Medical Center, for advice. A pioneer in the field of radiation induced cataracts, he had documented the development of eye cataracts among radar technicians in the U.S. military since 1958.[11] Upon examining the two copy editors, Dr. Zaret concluded that both men were suffering from "bilateral incipient radiant-energy cataracts" that might be due to the nonionizing radiation emitted by the VDTs. Dr. Zaret based his conclusion on the fact that radiation induced cataracts differ from the type that occur during the aging process in

that they form on the capsule behind the lens instead of in the lens itself.

In February 1977, NIOSH was brought in to investigate the case. Dr. Jacqueline Messsite evaluated the copy editors' medical histories for NIOSH. She appeared to agree with Dr. Zaret's diagnosis, saying that the cataracts were:[12]

> ... compatible with those reported from exposure to radiant energy, but they also are compatible with those seen congenitally, or those associated with other etiologies, such as diabetes or steroids. However, the workers' medical histories did not disclose any perti nent information to suggest any such etiologies for the cataracts.

NIOSH took measurements of the EMFs emitted by various VDTs in the Times building, but did not take measurements of the VLF and ELF fields. Still, NIOSH concluded that:[13]

> ... based on... [our electromagnetic field] measurements, the current [Occupational Safety and Health Administration (OSHA)] safety standards, and present knowledge of biological effects, the VDTs surveyed do not appear capable of producing levels of radiation presenting an occupational ocular radiation hazard.

NIOSH exonerated the VDT as a potential cause on this basis, but it never determined the cause of the cataracts. "Since the survey did not indicate any significant occupational electromagnetic radiation levels" said NIOSH, "the etiology of the cataracts remains undetermined."[14]

Given NIOSH's agreement that the cataracts were caused by radiation, and its failure to measure the strength of the VDTs VLF and ELF emissions, it is surprising that the Institute was so quick to dismiss the computer terminals as a

possible cause. NIOSH defended its decision on the basis that there was no conclusive proof in the scientific literature that EMFs emitted by VDTs cause cataracts.

NIOSH's position on the issue of EMFs was well within the mainstream of the American scientific community's opinion on the issue, but very little research had been done in the U.S. on the subject. The military had commissioned work on the subject, but much of it was classified. During the 1940s, American scientists discovered that exposure to high intensity microwaves produced a thermal effect on tissue (e.g., eye cataracts). Since VLF and ELF fields-- which reside at the lowest end of the nonionizing portion of the electromagnetic spectrum-- were too weak to create a thermal effect, they were assumed to be harmless. As a result, NIOSH's and the computer industry's view that EMFs were harmless rested on little more than theory.

But the Soviets and East Europeans, who had researched the subject since World War II, came to a different conclusion. Their research on the biological effects of microwave and radio frequency nonionizing radiation on animals and humans found that prolonged exposure <u>at non-thermal</u> levels disrupted the operation of the nervous, cardiovascular, reproductive, immunological and blood systems, and had deleterious effects on vision. But, caught up in Cold War politics and methodological differences, their work was largely discounted in the west.[15] "Apparently Western sci-

entists have always thought the risks were only from thermal (high-level) radiation and simply concluded that the 15-to-125 kiloHertz [VLF] range was safe," said Ian Marceau, science advisor to the House Committee on Science and Technology's Subcommittee on Investigations during its 1981 hearings on the VDT issue. "The FDA [Food and Drug Administration] tested VDTs [in 1981] and finding this range, simply said it didn't violate any known health standards," he added. "So no one studied this radiation range until the military did it."[16]

What the U.S. military found was disturbing. Their secret research verified what the Soviets and East Europeans had learned: that long-term exposure to microwave and radio frequency radiation can have teratogenic effects on animals and humans. But the focus of the Defense Department's research on the nonionizing frequencies was their communications potential, not their effects on health and safety. Because their extremely long wavelengths make them ideal for long range communications, the U.S. Navy uses ELF fields to communicate in code with submarines on the ocean floor from its base in Michigan's upper peninsula.[17]

It was not until Army Colonel Phillip E. Winter, M.D., testified before the Subcommittee on Investigation's hearings on VDTs in 1981 that the military publicly admitted that a hazard to human health might exist at the lower end of the electromagnetic spectrum.[18] As subcommittee chair,

Representative Albert Gore, Jr. (D-Tenn.), declared: "I think the significance of Col. Winter's testimony is that for the first time a government scientist has acknowledged that radiation in low levels can cause damage to the body."[19] Still, the military was not generous with its information, most of which was classified.

The U.S. military did not take kindly to researchers who didn't share its interests. Dr. Zaret sought to publish his pioneering work connecting eye cataracts in radar technicians with the microwaves emitted by the CRT's in 1968, but the Air Force put a halt to his research. Fearing that Dr. Zaret's revelations might jeopardize the use of nonionizing emissions for communications purposes and microwave ovens, the Air Force, along with the Association of Home Appliance Manufacturers, and Raytheon (which manufactured radar and CRTs for the military, and microwave ovens for the consumer market) launched an ongoing campaign to discredit Dr. Zaret within the scientific community and the public at large.[20]

Western science's failure to keep up with the east's advances in this field, and the secrecy shrouding the military's research had the effect of circumscribing the VDT debate. Since there was virtually no body of scientific work in the west (none regarding VDTs which were still relatively new) to which organized labor and others who were concerned about VDTs could appeal, computer manufacturers and corpo-

rate users had a tremendous advantage when they argued that there was no reason to worry, let alone spend large sums of money on research on a hazard that didn't exist. This factor, more than any other, undermined whatever momentum labor generated. Deprived of this information, labor had a difficult time countering government officials and computer and corporate spokesmen, who cited scientists' and engineers' claims that nonionizing radiation was harmless.

Another consequence of the research gap between east and west could be seen in the differing safety standards that were set. As a result of their research, the Soviets and Czechs established the tightest occupational safety standards for radio frequency and microwave nonionizing radiation in the world-- 100 times stricter than the U.S. regulation.[21] The weaker-- and for some frequencies, nonexistent-- U.S. standards were due in part to the lack of research in the field. Reporting on the problem in 1977, the Washington Post said: "... Many researchers say, attempts to set safety standards remain problematic because of the relative sparsity of scientific data [in the west] on the biological effects of low-intensity radio-frequency radiation."[22]

Moreover, U.S. safety standards are based on the premise that microwaves are harmful only at very high intensities, which can burn tissue. This view was expressed by Dr. Myron L. Wolbarsht, a professor of ophthalmology and biomed-

ical engineering at Duke University and a consultant to the computer industry: "It's true that microwaves can cause cataracts in animals, but you almost have to cook them to do it. It's also true that CRTs emit radiation and it's true that radiation causes cancer. But the human body also has radioactive potassium in it normally. It's like saying that if you sit next to someone you'll get cancer. There's just not enough radiation there."[23] On this basis, he told Congressman Gore's Subcommittee that: "I am not convinced and I don't see any one of my colleagues who is convinced that there is a need for research in this field as applied to visual display units in the frequency range, let's say the low kilohertz [VLF and ELF] range."[24]

But some researchers in the west, such as Dr. Zaret, came to the conclusion that continued exposure at non-thermal levels over a period of time produced an accumulating effect that altered the biological structure of tissue. As Dr. Zaret put it:[25]

> Our standard is... based on the wrong thing. Our standard for nonionising (sic) radiation [regarding occupational] health and safety is based on a burn from an acute exposure, getting an immediate burn, relatively immediate, [but]... the health [and] safety problem is chronic exposure to non-thermal levels....

However, Dr. Zaret's warnings were overwhelmed by the computer industry's assurances that VDTs were safe and needed no further testing. As part of its public relations campaign the International Business Machines Corporation (IBM) released a study of VDTs and vision in April 1980. The

study, which was led by Dr. Wolbarsht, concluded that "there are no known biological hazards from electromagnetic radiation associated with the visual display unit. In most cases, emission level was below that known to have any biological effect at all...."[26] The Computer and Business Equipment Manufacturers Association's (CBEMA) president, Vico E. Henriques, assured the Gore subcommittee that there was nothing to be alarmed about: "In view of the work that has been going on in our industry for many years, it comes as no surprise to us that this recent FDA testing program and a similar NIOSH testing program conclude what we have known for some time, that radiation from VDTs is well within safe levels."[27] Wolbarsht dismissed Zaret's work, telling the press that "no one agrees with him."[28] He added his opinion that unions were wasting their time and, the government's money in calling for federally sponsored VDT studies. But David Eisen, of the Newspaper Guild's director of health and safety, disagreed: "This is an area of some controversy... We don't say there's radiation coming from the machines. We just don't feel it's been proven that there isn't any." "I feel these CRTs ought to be tested up and down the electromagnetic spectrum."[29]

Reacting to organized labor's calls that the Radiation Control for Safety and Health Act of 1968 (which covers color television CRTs) be amended to include VDTs, a computer industry spokesman said: "Such legislation won't affect

us at all. We have internal radiation standards that are much more conservative that the U.S. or European standards. If the law requires us to put a sticker on the unit saying we meet U.S. standards, that will be easy."[30] To which Wolbarsht added: "A label certifying that CRTs pass radiation measurements may be a good idea. Not because there's radiation coming out of them. But because there is a scare and a label might make CRTs more acceptable."[31]

What CBEMA and Wolbarsht didn't say was that there were no federal occupational safety and health standards governing ELF and VLF waves-- those suspected of causing reproductive problems. Furthermore, the FDA's Bureau of Radiological Health was uninterested in using its power to establish and regulate performance testing standards for CRTs (i.e., VDTs), although it had done so for heating and sealing machines that emit radio frequency radiation. As its director, John C. Villforth, told Gore's subcommittee: "we are not currently planning a regulatory standard for radiation."[32]

Computer industry assurances that VDTs were safe were sufficient to discourage Congress from considering legislation that would require radiation labels on computer terminals. CBEMA and their allies in the scientific community expressed confidence that the concern with VDTs and radiation would pass, as it did with color televisions that leaked ionizing radiation during the 1960s. "CRTs emit

radiation comparable to a color TV's, which is way below the standards we usually set,"[33] Dr. Wolbarsht said. This statement was true to a point, but he failed to add that, unlike the average television viewer, the VDT user must sit close to the machine in order to operate the attached keyboard and read the small-type characters. Moreover, critics point out that the nonionizing fields are strongest up close where they have the greatest potential to do harm. While the advent of detachable keyboards in the early 1980s gave the operator greater latitude, many still sit close to the screen. Besides, millions of the older VDTs, in which the keyboard and terminal constitute a single unit, are still in use. Wolbarsht also failed to consider that while a television viewer is free to stop, many VDT operators must spend up to eight hours a day working close to the screen.

CBEMA works with the American National Standards Institute (ANSI) to set voluntary occupational safety and health standards in the effort to forestall governmental action. CBEMA is keenly aware of the political advantages to be derived from setting the standards agenda: "'voluntary standards' developed by these organizations through consensus can be contrasted with 'mandatory standards' which are dictated and promoted by governmental agencies when industry itself does not take such action...."[34]

ANSI is industry-supported but performs an important quasi-governmental role in lieu of federal action. When

mandatory standards are developed, ANSI's voluntary standards are often the basis for OSHA standards.[35] ANSI's special relationship with the federal government was described by its president, Francis L. LaQue, who told the members of the Senate Labor Committee in 1970: "ANSI is not an organization in competition with the government. On the contrary, the competence of the personnel within the government agencies is an integral part of the effort organized by ANSI, its member bodies, and its councils."[36]

Since ANSI did not established voluntary standards for VLF or ELF radiation (i.e., below 300 Khz), the two frequencies that would become the focus of safety and health concerns, neither did OSHA or the BRH. Besides demonstrating the fact that VDTs can malfunction, the following exchange between Congressman Gore and the BRH's William Herman illustrates the extent to which the federal government follows ANSI's lead:[37]

Herman: We found measurements of 1,000 volts per meter, which were then compared to a standard of 200 volts per meter. That standard applies to a different frequency range, not the [VLF] range of the measurements that we made.

Gore: Only because there is no standard in the other range, is that right?

Herman: There is no standard in the frequency range where our measurements showed the emissions to be.

Gore: OK. But if the standard in that frequency range did exist, and if it was the same level as the other one, then it would have been exceeded by a factor of five.

Herman: Right, but that is a substantive question.

Gore: I understand that.

Herman: The absence of a standard in that band may be a meaningful piece of information.

Gore: Well, I think it certainly is, no matter what side of the debate you are on.
Herman: Right. The fact that the ANSI organization did not choose to extend it down to that level is significant.
Gore: Well, there are no studies of radiation effects in that level-- at that level, correct-- in the United States?
Herman: There are some animal studies, and there are physical models which we believe are reliable. There is not as much data as there are in the higher frequency ranges.

Dependent on ANSI, the BRH had no basis on which to gauge the power intensities of VLF and ELF fields. As a result, both NIOSH and the BRH exonerated the VDT without monitoring the two electromagnetic fields (EMFs) most likely to be associated with hazardous effects on the human body.

The argument that VDTs did not emit hazardous levels of nonionizing radiation had a curious "Catch-22" quality to it. The nonionizing radiation emitted by VDTs was harmless, the reasoning went, because there was no scientific proof it wasn't. There was no scientific proof that nonionizing radiation was harmful because no scientific research had been done. No scientific research was needed because, theoretically, nonionizing radiation can not be harmful.

John C. Villforth's testimony before the Gore subcommittee in 1981 illustrates this "Catch-22" type of reasoning involved in the BRH's decision that VDT performance standards were unnecessary.[38] Referring to his Bureau's report, Villforth stated that VDTs "do not pose a significant radiation hazard...." When Gore asked him if he was sure, Villforth declared that there is no proof of harm of VLF radia-

tion in 15 to 125 kilohertz (kHz) range. Pressed by Gore, Villforth admitted that studies had not been done to find out. "Why?" Gore asked. To which Villforth answered: "The voluntary scientific community has not felt a need for standards in this area based on non-observance of biological effects." Gore responded: "But you say, yourself, on page 7 of your statement 'Research on bioeffects for the 15-to-125 kilohertz range is lacking.'" "Yes that is correct," Villforth replied. Then Gore told Villforth that: "It may be that your reassurance is valid, but it does not appear to be based on any scientific evidence at all."[39] Dr. Zaret, who also testified before Gore's subcommittee, summed up the BRH's tautology: "It's idiotic, sir ... you have no standard, you don't need a standard, we don't need it because there is no research to show that you need it. But we haven't done the research. It makes no sense."[40]

The BRH has remained silent on the nonionizing radiation issue since 1981. Despite its Congressional mandate to study products emitting EMFs, the BRH has consistently refused to sponsor animal experiments or even to conduct the relatively simple task of testing VDT emissions. VDT News attributed the BRH's policy of inaction to the FDA's "trying to avoid having to do anything that might rile the computer industry."[41]

Besides ANSI, the Institute of Electrical and Electronics Engineers (IEEE) also plays an important role in setting

performance standards for electrical equipment. It has showed little tolerance for the view that nonionizing radiation emitted by VDTs may be unsafe. In 1984, a contributing editor was dismissed after his story on the biological effects of nonionizing radiation appeared in the IEEE Spectrum. Then, in 1986, IEEE killed an article on the VDT safety and health issue that was scheduled to appear in the IEEE Spectrum, telling the editor that work on the story was not to be continued.[42]

As a consequence of the computer industry's efforts to suppress public discussion of the ELF and VLF nonionizing radiation issue, the federal government and public lacked knowledge to assess the biological effects of nonionizing radiation on VDT workers. Hence, NIOSH's readiness to dismiss VDTs as a cause, despite acknowledging that the cataracts were radiation induced. Given that there had been only a few years experience with VDTs in the workplace, and, no body of research to fall back on, NIOSH might have taken a more cautious approach than it did.

The lack of scientific knowledge regarding the effects on nonionizing radiation emitted by VDTs is exemplified by NIOSH's (and the vast majority of the scientific community) focus on ionizing (X-ray) radiation as the source of possible problems prior to the eye cataract controversy. This had been of some concern due to the fact that many of the early terminals used were of poor design and construction. Tests

done on VDTs between 1970 and 1977 by individuals, the Liberty Mutual Insurance Company (on 67 VDTs at the New York Times in 1976), the state of Maryland, NIOSH, and the U.S. Department of Labor found no X-ray radiation problem.[43] But Zaret hypothesized that nonionizing radiation, not X-ray radiation, was to blame for the two copy editors eye cataracts. NIOSH was caught off guard by this supposition. As William E. Murray, NIOSH's official in charge of radiation testing said: "Until this request came up, X-rays were the primary concern in the use of video terminals."[44] Prior to this, NIOSH had not seriously considered the possibility that nonionizing radiation might pose a threat to human health. As NIOSH's Wordie Parr said regarding VLF and ELF fields in 1980: "To be quite honest, nobody knows a damn thing about that low a frequency."[45] Neither did most other observers, with the exception of a few dissenters, such as Dr. Zaret, whose views were considered too "controversial" by the medical establishment to be taken seriously. Afterwards, he was critical of NIOSH's failure to adequately investigate the causes of the 2 copy editors' cataracts:[46]

> It became evident that NIOSH had no meaningful knowledge about non-ionizing radiation cataracts in humans although suitable information was available. Nor did it exhibit any awareness of the significance attached to capsular opacification at the posterior surface of the lens as this relates to hertzian radiation exposure.

The limit of NIOSH's knowledge of nonionizing radiation was further demonstrated by its failure to measure the ELF and VLF fields from the Times' VDTs. After the investigation,

Dr. Zaret criticized NIOSH for using "instruments that were inadequate for measuring a large segment of the suspect portion of the electromagnetic spectrum."[47] In response to NIOSH's report that its measurements found VDTs to meet "acceptable standards" of radiation, he countered that these levels are "arbitrary and just a license to irradiate people up to some prescribed limit." Zaret added that "a good technology for doing the studies has yet to be evolved."[48]

NIOSH and the BRH continued to pursue their policy of inaction, despite calls from Dr. Zaret and unions to monitor and investigate these fields. Upon completing its eleven month investigation of the five San Francisco/Bay Area worksites in February 1981, NIOSH attributed the workers' ailments to poor workplace design, faulty lighting and overwork, but exonerated the VDTs of the charge that they emit hazardous levels of radiation. Even before the study began on March 26, 1980, team leader Dr. Wordie Parr said, "The problems CRT [VDT] users have aren't caused by radiation."[49] The BRH's John Villforth told the Gore subcommittee that: "One of the beautiful things about radiation is that anyone who's paranoid can blame their problems on it."[50]

Despite NIOSH's view VLF and ELF fields soon became the focal point of the debate over the question of whether or not the nonionizing radiation emitted by VDTs is harmful to humans. NIOSH would not publicly admit its inability to

accurately measure VLF fields in the workplace until 1983.[51] Nevertheless, this did not stop NIOSH from declaring its faith in laboratory tests conducted by the BRH, nor did it change the Institute's position that no new radiation tests were needed.

NIOSH's evaluation of the Times worksite was also flawed by its lack of concern regarding an unusually high reading of nonionizing radiation that it recorded in the Times building. NIOSH "postulated" that it was produced by "signals from nearby TV and radio stations,"[52] but did not make the effort to find the source.[53] The Cold Type Organizing Committee, a group of type workers who were active on the VDT safety and health issue, pointed out that the radiation level monitored in the Times building was five times greater than that found emanating from the television transmitters on top of the World Trade Center.[54] Since the view that nonionizing radiation might cause biological damage to humans did not fit into the prevailing paradigm, it was rejected by NIOSH and most of the scientific community.[55]

In effect, NIOSH made a definitive decision to exonerate VDTs, based on flawed and inadequate information. The result was weaker safety standards, with direct public policy consequences that aided VDT manufacturers and corporate users in their quest to convince the public of the safety of their terminals. It was an important victory for the Times which had installed 90 VDTs as part of its $3.5

million plan to computerize its operations. On a larger scale, it was also a victory for the computer industry, which made the VDTs, and all corporate users of VDTs who were beginning to computerize their operations.

NIOSH's and arbitrator's decisions set the pattern for future policy decisions on the issue of nonionizing radiation in a way that favored the computer manufacturer and corporate users position. That is, barring conclusive proof to the contrary, the operating premise of policymakers would be that there is no need to regulate the use of VDTs with regards to the nonionizing radiation emitted by the machines. This innocent-until-proven guilty approach constituted a major obstacle for proponents of regulation to surmount.

The two copy editors filed grievances and the matter was submitted to arbitration. The arbitrator commissioned a panel of three engineers to study the VDT's radio frequency (RF) emissions and another panel of three ophthalmologists to review the medical evidence. Like NIOSH and the Times' consulting ophthalmologist before them, the panel of ophthalmologists could not rule out the possibility that the copy editors' cataracts were radiation-induced. But they, too, concluded that there was no direct evidence that the VDTs were the problem. On this basis, the arbitrator, like NIOSH before him, concluded that "the VDT's ... do not pose

any ocular radiant energy hazard to the employees of the New York Times."[56]

But the arbitrator's ruling did not settle the eye cataract controversy. If anything, it raised doubts. Dr. Zaret criticized the arbitrator's decision for not adequately considering the subtle biological effects this new technology might have on the human eye. He also noted that the risk is greater when machines malfunction, which, the Times stated, happened to one of its models on at least 200 occasions in the space of five and one-half months. But the Times made a decision that showed greater concern for its VDTs than the welfare of its employees. Fearing that it would void the manufacturer's warranty, the Times refused to allow its VDTs to be measured while malfunctioning.[57] As a result, the arbitrator's decision was based on information that did not reflect the actual working conditions in the Times newsroom.

Meanwhile, cases of cataracts among VDT workers continued to be reported. Two employees (one developed a precataract condition) at the Baltimore Sun,[58] one at the Chicago Reader, and a Canadian government worker developed eye cataracts at relatively young ages. Afterwards, Dr. Zaret reported 6 additional cases that he had treated.[59]

The eye cataract controversy served to help mobilize labor's interest in the VDT safety and health issue. But it received little of the attention in the major media that was

necessary if labor was to appeal to the broader public and the vast majority of unorganized VDT workers for support. On March 11, 1980, the Chicago Sun-Times' managing editor, Stuart Loory removed an article on entitled: "VDTs can hurt vision: expert," after it appeared in the early edition of the paper. The story by the paper's science correspondent, William Hines, discussed Dr. Zaret's views on VDTs and vision problems. Few readers saw the story and neither it, nor the story of its removal generated any copy at the Chicago Tribune, the Sun-Times' competitor. But it caused a stir among newsroom employees at both the Sun-Times and the Tribune, whose papers had invested millions of dollars in converting to VDTs.[60]

The lack of major media coverage of the eye cataract controversy is made all the more curious by the fact that it first occurred at the New York Times. The Times ignored the story. In fact, the closest the Times came to covering the story was a 1981 article reporting that a check of the VDTs in its newsroom found no significant radiation problem.[61] The story failed to mention that the eye cataract controversy in its own newsroom was the reason for the inspection of its VDTs in the first place. The Times' silence on the issue was made conspicuous in February 1978, when the Wall Street Journal ran a story on NIOSH investigation of the issue. It was the only coverage of the story in the major media as it developed. The media's sparse coverage of the eye cataract

issue was a further blow to labor's attempts to reach a broader audience in support of its organizing efforts.

In 1981, NIOSH asked the prestigious National Academy of Sciences (NAS) to study the issue of VDTs and vision. In July 1983, its panel on the Impact of Video Viewing on the Vision of Workers issued a report stating that there was no scientific proof that VDT use caused vision damage, including eye cataracts.[62] Reassuring the public that "the levels of radiation emitted by VDTs are far below current U.S. occupational radiation exposure standards and are generally much lower than the ambient radiation emitted by natural and human-made sources to which people are continuously exposed," the panel reiterated the assertion that the types of radiation emitted by VDTs "are highly unlikely to be hazardous."[63] Although they thought it "highly unlikely" that VDTs caused the premature development of eye cataracts, the panel added that: "Studies of long-term (years) exposure to radiation of the wavelengths and levels emitted by VDTs have not been done, and few studies of chronic exposure exist for radiation of any wavelength."[64] This important proviso was lost in the next day's headlines. The New York Times reported the NAS panel's findings under the headline: "Video Terminals Harmless to Eye, Study Asserts."[65] "Eye Disease Not Caused By VDT Use, Panel Says" read the Washington Post's headline.[66]

The media's handling of the NAS story worked to the computer industry advantage. CBEMA and the Center for Workplace Technology (CWT) added the NAS panel's conclusion to its arsenal of arguments against conducting research on VDTs, radiation and vision. Just as important to CBEMA and CWT was the fact that the NAS panel's conclusion-- advising against legislating European-style regulatory standards that would "freeze" the new technology's development at a time when it was still evolving-- closely echoed their position. Citing the NAS report, it was now much easier for CBEMA and CWT to make the case to the public that their position was in the public interest.

The nationwide publicity the NAS Panel's conclusions received was remarkable given that it was based on little or no reliable studies of VDTs and vision problems. In two years of looking for scientific literature on VDTs, the panel was only able to turn up "a small number of studies, many of which have substantial shortcomings in methodology that severely limit the conclusions that can appropriately be drawn from them."[67] Instead of taking the prudent step of stating that it did not have a sufficient scientific basis upon which to evaluate VDTs, the panel based its conclusions on a review of the non-VDT literature regarding vision, lighting, ergonomics and radiation.[68] Nor had they conducted any new scientific research of their own. What was needed-- but wasn't forthcoming-- was an intensive, longitu-

dinal research study that would investigate the theory that VDT use might cause vision problems. Had the NAS called for such a study, the scientific community and the public might not have had to wait until 1988 for verification of the charge that-- as Dr. James Sheedy, director of the VDT Eye Clinic at the University of California, Berkeley, reported-- regular, long-term use of VDTs can cause damage to the eye's ability to focus.[69]

Part II. Reproductive Hazards.

By early 1980, NIOSH officials were confident that they had laid to rest any fears that workers might have regarding VDTs and radiation. Wordie Parr, co-author of NIOSH's New York Times study, was impatient with those who were concerned about VDTs: "we don't particularly give a damn about them. It's not our responsibility to go out and test VDTs. We just don't think there's a radiation problem."[70] Dr. Wolbarsht, the computer industry's consultant, concurred. He declared that: "...there is no dangerous radiation coming out of these machines," he declared. "In fact,... if one wanted to shield oneself from all the radiation bombarding us from radio stations, space, luminous watch dials and other peoples' bodies, a good place to hide would be behind one of these machines."[71] Evidently, Dr. Wolbarsht had supreme confidence in his belief that nonionizing radiation is harmless because this is precisely where the electromagnetic

fields are strongest. Further evidence that Wolbarsht's confidence may have been misplaced came during the summer of 1980 when higher than normal incidences of miscarriages and birth defects among women using VDTs (and women working within close proximity to them) began to be reported.

Clusters of Concern:

Concern was first aroused when four clusters, or groupings, of reproductive problems were reported among VDT workers in the span of 18 months. The first report came from the Toronto Star, where, during a one year period starting in May 1979, 4 out of the 7 babies born to VDT workers in the classified department had birth defects.[72] This cluster was quickly followed by reports of three others. At Montreal's Dorval Airport, 7 of 13 Air Canada employees suffered miscarriages from February 1979 to February 1980. At the Defense Logistics Agency (DLA) in Marietta, Georgia, 7 miscarriages and 3 birth defects were reported among 15 pregnancies during a one year period (October 1979 to October 1980). From Sears, Roebuck in Dallas came word that 8 out of 12 women miscarried over a 14 month span (May 1979 to June 1980).[73]

Eleven more reports of clusters, largely self-reported by VDT workers themselves, came in. From Canada came four more reported clusters. At the Ministry of the Attorney General, Toronto, Ontario (1980-81). 7 adverse outcomes

(four women miscarried, 2 had children with birth defects and one gave birth prematurely) occurred out of 8 pregnancies at the Office of the Solicitor General, Ottawa, Ontario (1979-82).[74] Six out of 7 pregnancies among VDT operators in the accounting department of Surrey Memorial Hospital in Vancouver proved to be abnormal (3 miscarriages, 2 birth defects, and 1 premature delivery) between 1978 and 1982.[75] From 1980 to 1984, there were five miscarriages, plus a child who died one week after being born with a heart defect, among 6 pregnant VDT operators at the Library, Queen's University in Kingston, Ontario (1980-84).[76]

Five more reports came from the U.S. Two birth defects and a stillborn delivery out of 5 pregnancies were found at Pacific Northwest Bell Telephone Company's Renton, Washington facility from July 1980 to August 1982.[77] Half (15 miscarriages, 2 premature births, 2 born with birth defects, 1 stillborn baby, and 1 baby that died shortly after birth; 3 results were not disclosed) of the 48 pregnancies that occurred at United Airlines' reservation department in San Francisco between 1979 and 1984 resulted in adverse outcomes.[78] Seventeen reproductive problems were found among 32 pregnant operators at General Telephone Company of Michigan (GTCM), in Alma, Michigan, from December 1981 to March 1983.[79] Six miscarriages occurred among 15 pregnancies at Southern Bell Telephone Co., Atlanta, in 1983.[80] Twenty-seven out of 84 women miscarried at USA Today's headquarters

in Arlington, Va. between January 1986 and February 1989.[81] Two clusters were reported in Europe: one at the Department of Public Employment, Runcorn, England (1979-1982); and the other at the Public Library, Aarhus, Denmark (1978-1984).[82]

This is not a complete list of clusters. Since most of these clusters were self-reported by workers who made the association between the cluster and VDT work, and had unions to back up their claims, it is highly likely that other clusters went unreported. The cluster at United Air Lines came to light as a result of 9 to 5's "VDT Hotline," established in May 1983 as part of its "Campaign on VDT Risks." It received 6,000 calls from VDT operators over an 8 month period.[83] As reports of new clusters mounted during the early 1980s, Microwave News, a respected publication monitoring the issue observed that: "It is impossible to know how many clusters exist."[84]

Where VDT workers were organized, unions called for government investigations of VDTs and their potential to do harm to the human body. The CWA was rebuffed by Pacific Northwest Bell and the Washington State Department of Health in its effort to get them to monitor the radiation emitted by the VDTs and conduct an epidemiological study of the situation in Renton.[85] The Center for Disease Control's (CDC) Family Planning Evaluation Division (FPED) investigated the Sears/Roebuck cluster and concluded that: "No association was seen between extent of exposure to VDTs and ad-

verse reproductive outcome."[86] FPED attributed the spontaneous abortions at Sears to chance. It labeled them an "expected/unexpected" cluster; that is "given a sufficiently large number of women's groups, the chances are very high that at least 1 group will have a high rate of adverse pregnancy outcomes." Dr. Nancy J. Binkin, FLED's chief investigator on the case put it this way: "With 7 million VDT workers in the United States, many of whom are women of reproductive age, we would expect to see-- on the basis of chance alone-- several clusters similar to the one reported at Sears."[87] However, based on an adverse pregnancy rate of 16% for the U.S., the odds in the Sears case that 8 out of 12 pregnancies would have adverse outcomes was 6 out of 10,000.[88]

FPED did not rule out the possibility that the cluster was due to nonionizing radiation emitted by the terminals. Yet, FPED, which did not test the emissions from the VDTs used at Sears, accepted the received wisdom that "ultraviolet radiation, microwave, infrared, and X-ray levels have always been below the recommended NIOSH criteria or were too low to be measured...."[89] Like the FPED's analysis of the Sears cluster, the Army Environmental Hygiene Agency's (AEHA) investigation of the cluster at the DLA in Marietta, Georgia, concluded that it was an "unusual statistical event."[90] DLA employee complaints that having the army investigate itself represented a conflict of interest were

dismissed by the CDC, which "basically agreed" with the AEHA's report.[91] Robert DeMatteo, of the Ontario Public Service Employees Union summed-up organized labor's frustration with statistical explanations. "I don't know how anyone can chalk up the clusters to chance, to a statistical quirk. They warrant very intense investigations, including radiation testing."[92]

The confusion surrounding the VDT issue continued with health hazard evaluations conducted by NIOSH at Southern Bell in Atlanta and GTCM in Alma, Michigan.[93] The former failed to establish a statistical association between VDT work and miscarriage,[94] but the latter study did. The uncertainty was summed up by NIOSH's statement that "... a small number of miscarriages was statistically associated with VDT work in the Alma, Michigan office...," but "many of the necessary scientific links required to attribute this excess to VDT use are missing."[95] In neither case did NIOSH conduct tests of the radiation emitted by the VDTs. In 1986, NIOSH announced that it would cease conducting health hazard evaluations where VDTs were involved and applies its energies to a comprehensive epidemiological survey of VDT workers.[96] But NIOSH's proposed study contained a major flaw: it had no provision to test the radiation emitted by VDTs. This was more than a mere oversight on NIOSH's part for it ignored labor's calls for research on VDT radiation.

Delgado's Effect on the Nonionizing Radiation Debate.

If NIOSH's strength was epidemiologically oriented statistical analysis, its weakness was research on nonionizing radiation. While American scientists and government officials continued to assert that VLF and ELF fields were harmless, and did not warrant study, a team of Spanish researchers led by Dr. Jose M.R. Delgado found evidence that challenged this assumption. In 1982, they found that chick embryos exposed to pulsed ELF magnetic fields (the same type emitted by VDTs) showed arrested or inhibited development in 80 percent of the cases.[97] It indicated that further research of the teratogenic effects of ELF waves was needed. Moreover, it contradicted the scientific assumption that the weaker the radiation the less harmful it was. The teratogenic effect was produced by ELF fields, the weakest on the electromagnetic spectrum; stronger nonionizing fields did not produced this effect. This important breakthrough, which was published in the British Journal of Anatomy went unnoticed in the U.S. for nearly a year. Follow-up experiments in 1983 pointed to the sawtooth shape of the pulsed ELF magnetic field and the rate of speed of its rise and fall as the factors involved in inhibiting the development of the chick embryos.[98]

American interest in the "Delgado Effect," as it came to be known, increased in 1984 when Kjell Hansson Mild of the Swedish National Board of Occupational Safety and Health

replicated it. The computer industry took greater interest in Delgado's work than NIOSH and BRH; it also took quicker action. IBM, the nation's largest manufacturer of computer terminals, quietly hired Dr. Arthur W. "Bill" Guy, an engineer at the University of Washington's School of Medicine, to study the Delgado effect. Professor Guy submitted a 66 page report to IBM's Office of Health and Safety in October 1984.[99] It stated that the Delgado Effect was real and had relevance to IBM's private concern about VDTs. Guy told IBM "... that the levels of induced currents where Delgado, et al., (1983) observed teratogenic effects in chick embryos can be produced in human tissue exposed to magnetic fields."[100] But he counseled against shielding them "unless it can be shown that there is a real hazard due to the magnetic fields exposures."[101]

Significantly, Guy's report revealed what NIOSH and the BRH were unable to determine: that the electric fields emitted by unshielded terminals could reach harmful levels. Guy's report to IBM said that:[102]

> The localized [Electric]-fields at the surface of an unshielded cover of a VDT nearest the flyback transformer can reach extremely high values as a result of the associated high voltage and close proximity of the transformer to the cover. Since these fields have a capability of inducing much greater currents in an exposed user of the device than the relatively low magnetic field emissions it certainly is desirable to shield the cover of the VDT. Since such shielding is relatively inexpensive the benefit to cost ratio is large.

But IBM withheld this news from the public. When the report was leaked to VDT News, it quoted Prof. Guy as saying that he was "shocked" by some of the abnormally high readings he recorded when "direct hand contact with the surface" of the terminal was made.[103]

Instead IBM released a 6 page summary, which was interesting more for what it didn't say than for what it did. It failed to mention Guy's recommendation that electric fields be shielded in older VDTs. It discounted the possibility that the Delgado Effect had any relevance to VDTs.[104] IBM's summary also omitted Guy's statement that although it appeared "highly unlikely," a "relationship could exist," with ELF fields produced by VDTs.[105]

When Guy's recommendation became public, IBM assured the public that its terminals were thoroughly shielded and tested. But this was done primarily to comply with a 1983 Federal Communications Commission (FCC) requirement that terminals be shielded to keep their nonionizing electric fields from interfering with communications transmissions, not to protect safety and health. IBM maintains that its terminals built prior to the FCC rule were voluntarily shielded to meet international electromagnetic interference standards.

IBM's claims that its terminals were thoroughly tested for faulty radiation emissions was contradicted by its own officials. During a tour of one of its major VDT manufactur-

ing plants, an IBM spokesman told trade union and government visitors that only one of the estimated 750 to 900 terminals produced weekly was tested.[106]

Prof. Guy's findings raised some basic questions. Given that most of the reported cases of eye cataracts and reproductive hazard clusters were reported before the FCC's 1983 requirement that all VDTs be shielded to prevent electromagnetic interference with other communications equipment, might not the dangerously high readings recorded by Guy-- and the New York Times and the BRH before him-- be a factor worth investigating? Also, why couldn't NIOSH and the BRH conduct the same tests of electromagnetic fields emitted by VDTs that Dr. Guy had?

The IBM/Guy study revealed the extent to which the computer industry and its paid consultants were ahead of the federal government on the issue of ELF fields and VDTs. Not only did IBM take greater interest-- and action-- in the issue than the federal government, but the greater extent of their knowledge gave them an edge in the public policy debates. It was 5 months before the public learned of the full extent of IBM's experiment through VDT News, a publication with a circulation restricted to those who monitor the field. Despite its potential implications for VDT use (an estimated 7-10 million were being used by 15 million workers), the story was not picked up by the mainstream press.

Nor was it widely noted in the appropriate governmental circles, such as NIOSH, OSHA, EPA, and the BRH.

While IBM continued to publicly proclaim that VDTs were safe, it was privately pursuing its own ELF field research. Release of Guy's study prompted renewed calls for publicly sponsored research on the nonionizing fields emitted by VDTs. Karen Nussbaum, leader of 9 to 5, called upon NIOSH and the FDA "to begin at long last to investigate the pulsed magnetic fields and appropriate shielding mechanisms."[107] A Computerworld editorial remarked: "Recent findings regarding radiation emissions from VDTs have opened the door once again for much-needed discussion on the potential health risks posed by these terminals."[108]

In 1982, Dr. Karel Marha and his staff at the Canadian Center for Occupational Health and Safety (CCOHS) in Hamilton, Ontario recommended that VDTs be shielded to block its pulsed VLF electromagnetic emissions. This was two years before Dr. Guy-- IBM's consultant-- said that shielding was unnecessary. Dr. Marha was the first to suggest a link between the clusters and VLF fields emitted by VDTs.[109] As a simple remedy, Marha also recommended that terminals be spaced at least 40 inches apart and that operators keep at least 28 inches from the screen. But Marha's recommendations and three other reports on VDTs and nonionizing radiation issued by CCOHS in 1983 were dismissed by the computer industry and ignored by the major media.[110]

In 1983, CBEMA threatened to file a complaint with the Federal Trade Commission (FTC) to halt advertisements for shields that claimed to protect the operator from the radiation emitted by VDTs. CBEMA objected to the ads' inference that working with VDTs was hazardous to one's health. General counsel John Voorhees warned the shield manufacturers that CBEMA members would monitor the content of ads and that a complaint would be filed with the FTC "if we establish a pattern of false advertising."[111]

CBEMA's tactic was effective in maintaining the view that there were no radiation hazards associated with VDTs. It forced companies that marketed radiation shields to think twice about the content of their ads, to, in effect, practice a form of self-censorship. It also forestalled the potential that the shield ads had for spreading the debate over VDTs and nonionizing radiation to a wider audience.

But, as CBEMA was well aware, two separate NIOSH investigations of Newspaper Guild shops indicated that there were grounds for concern regarding the electromagnetic fields emitted by VDTs. In 1979, VDTs at Newsday and the New York Times were found to be emitting radio frequency waves above government standards. An August survey of VDTs at the Lexington Herald and Leader in Kentucky revealed that two VDTs emitted high frequency readings. As with virtually all VDTs, those tested by NIOSH were encased in plastic, not the protective metal, shielding. On January 6, 1981, NIOSH

issued a report recommending that all VDTs be fitted with grounded metal shielding to block electric fields.[112]

Although Teleram, the manufacturer of the model used at Newsday and the Times, made metal shields available to the newspapers at $40 a piece,[113] no VDT manufacturer incorporated this relatively simple and inexpensive modification into its assembly procedure. Neither OSHA, nor the BRH used its regulatory power to mandate grounded metal shielding on VDTs. For only 30-40 dollars each, employers could have shielded their VDTs against electric fields.[114] Incorporated in the assembly process for new models, the cost would have been even cheaper. However, these options were deemed impractical and unnecessary by computer manufacturers and business users alike, who, publicly declared that VDTs did not create a radiation hazard. Privately, CBEMA feared that shielding VDTs would be tacit admission of the existence of radiation problems. This would undermine CBEMA's stance that the machines were totally safe and provide potential plaintiffs with the basis for product liability lawsuits.

Through the 1980s, the computer industry continued to publicly maintain its case that, since there was no documented scientific study showing harm to humans from the radiation emitted by VDTs, there was no need to conduct research. CBEMA's president, Vico E. Henriques, assured Congressman Joseph Gaydos' subcommittee in 1984 that: "We found from the start that visual displays emit no harmful

radiation, that they are completely safe to operate and, in fact, are among the safest devices used in the workplace today."[115] Dr. Max M. Weiss, a physicist at AT&T's Bell Labs stated that: "The responsible scientific community has concluded that radiation emissions from the VDT is a non-issue."[116] Their public pronouncements that VDTs were safe was sufficient for the federal government, which refused to conduct its own studies. William Murray reiterated NIOSH's stance that "the VDT does not present a radiation hazard to the VDT operator."[117] Faith in the conventional scientific wisdom, backed by computer industry statements convinced NIOSH officials that their stance was correct. Furthermore, budget cuts under the Reagan administration made it highly unlikely that NIOSH would have sufficient funds necessary to conduct research even if it had been willing to do so. The federal government's policy of inaction permitted the de facto privatization of public policy to continue. The regulatory vacuum created by the federal government's policy of inaction was filled by the computer industry, which used its position as defacto public policymaker to dominate the debate over VDTs and radiation and influence its outcome.

But many workers and observers were distrustful of NIOSH and industry officials' claims that working with VDTs was perfectly safe. They drew comparisons between themselves and the plight of asbestos workers, who were reassured by industry, government and science for many years that the

problem did not warrant effective regulation.[118] Many VDT workers were determined that they not repeat the asbestos workers plight by becoming the high tech generation's guinea pigs. They sought assurances from government that studies would be conducted to determine that VDTs were safe to work with. A union organizer forecast that "cathode-tube operators are going to be the asbestos workers of the future" unless they organized and demanded protection.[119] A former VDT worker at the Toronto Star, whose child was born "with a nearly fatal heart defect" drew a parallel between the long-term health risks of her line of work and those of asbestos workers: "Any of those machines doesn't give off enough radiation at a time to harm, but I wonder about the cumulative effects of the radiation... It just seems like we're going to be the asbestosis people of the future."[120] CBEMA's declarations that VDTs had not been proven to be unsafe, moved Computerworld to charge that the trade association was playing politics with a very sensitive issue: "Who in the country would dare tell a pregnant woman that she shouldn't worry about the effects of low-level radiation on her fetus because conclusive evidence won't be available for another five years or so?" "The attitude that 'What hasn't been proven, simply does not exist' is the same attitude that coated the nation's schools in asbestos...."[121]

Unions had better success in winning alternative work assignments for pregnant employees through both informal agreements and the collective bargaining process. Canadian unions won the first alternative work provisions in the wake of the reports of reproductive problems at the Toronto Star. Agreements were reached with Bell Canada, the Open Learning Institute in British Columbia and the New Democratic Party Caucus in Ontario.[122] The first alternative work provision in the U.S. was secured by District 65, UAW in its 1983 contract with Boston University. It called for the reassignment of pregnant operators to non-VDT work but, if no other work could be arranged, permitted her take a personal leave.[123] This breakthrough was followed by similar agreements at the Equitable Life Assurance Company; Mother Jones magazine; Time, Inc.; the Village Voice; the city of Honolulu; and the city and county of San Francisco; the cities of Fremont, Hayward and Berkeley, California; the rent control board of Santa Monica, California; Air Canada, the federal government of Canada; the province of Ontario; and others won collective bargaining provisions providing for alternative work for pregnant employees.[124]

But pregnancy transfers were not universally approved. Most employers, especially where workers were unorganized, resisted employee calls for alternative work during pregnancy. They cited NIOSH studies that showed no association between VDTs and harm to reproductive systems. Alternative

work was also viewed unfavorably by those, such as Dr. Jeanne Mager Stellman, Associate Professor at Columbia University's School of Public Health and executive director of the Women's Occupational Health Resource Center, who felt that it could be used as a weapon to isolate women in the workplace, much as the protective legislation of the Progressive era barred women from doing certain jobs for decades thereafter.[125] They argued that the solution to the radiation problem should focus on shielding the VDT, not barring women from work. But this approach was even less popular with employers and VDT manufacturers than the alternative work solution.

Still, CBEMA was concerned that employer grants of alternative work for pregnant women using VDTs might be construed by observers as a tacit form of admission that the monitors presented reproductive hazards. The computer industry staunchly opposed VDT operators' efforts to win alternative work assignments during pregnancy. CBEMA's LeGates ridiculed their request, saying it was "like protecting them from light bulbs... It's like employees saying, 'the office is filled with cosmic rays and we need to fight them with balloons.'"[126] She warned that employers were setting a bad precedent by "giving in to a baseless fear."[127]

Like CBEMA, the American Newspaper Publishers Association (ANPA) was concerned that no cracks appear in the corporate coalition against VDT regulation. Claudia James,

ANPA's legal counsel, also saw the collective bargaining agreements as a precedent that the unions might use as a basis for further gains. "We do not see the need for alternative work," she told attendees at an ANPA meeting. "These are emotional concerns, and the proper solution is education, for people to understand." In a revealing statement, James added: "To permit this [alternative work] is almost to admit there's a problem."[128]

The CWT's opposition to "alternative work" found an important source of support among NIOSH officials. Dr. Jane Gordon, an epidemiologist, supported industry's contention that alternative work was unnecessary. Misconstruing the union position on alternative work, Gordon said: "You don't have to leave the workplace in order to deal with this. Those who are promoting it [alternative work] are promoting fear instead of reason."[129] But employees and their unions were not asking "to leave the workplace," rather they were requesting that non-VDT work be provided during the duration of their pregnancies.

Gordon's position was also troublesome in that it cast doubts on her objectivity as she was about to begin NIOSH's first major epidemiological study of VDT work and pregnancy. Regarding the theory that there was a link between VDT use and reproductive problems, she stated that the "biological evidence is meager."[130] As industry had done, she failed to add that since no studies had yet been done, the evidence

could hardly be anything but "meager." William Murray, head of NIOSH's radiation investigation unit agreed with his colleague: "The VDT doesn't present a radiation hazard." Therefore, he added, there was "no justification" to labor's calls for alternative work, rest breaks or shielding of terminals.[131] With NIOSH's help, the computer industry and corporate users ultimately prevailed in its efforts to limit the spread of "alternative work" collective bargaining agreements.

Ignoring the Disturbing News From Sweden:

Prompted by the findings of two recent studies, Sweden's National Board of Occupational Safety and Health (NBOSH) held a press conference on January 30th, 1986 to announce "that low frequency pulsed magnetic fields of a kind similar to those appearing at VDUs and TV sets seem to have an influence on the pregnancy outcome of mice and rats."[132] One study, conducted by Doctors Bernard Tribukait and Eva Cekan of the Karolinska Institute and Lars-Erik Paulsson of the National Institute of Radiation Protection, found that pulsed magnetic fields (the same type emitted by VDTs) caused fetal deformities among pregnant mice.[133] The second study, conducted at the Institute for Industrial Medicine in Lodz, Poland, involved placing caged rats close to TV screens for extended periods of time. Calling for further investigation and testing, NBOSH's medical director,

Dr. Ricardo Edstrom said: "There's a big step between animals and humans... but the findings mean we can no longer rule out the possibility that radiation [from VDTs] could affect fetuses."[134]

This was a newsworthy story. That night, the NBC Nightly News was the only network to mention the story (it did so briefly). Although the story was available to all major media outlets on the Reuters wire service, ABC, CBS, and the major print media did not mentioned it.[135] In contrast, the story was reported by the Toronto Globe and Mail and the Toronto Sun.[136]

CBEMA quickly dismissed the significance of NBOSH's announcement. The day after NBOSH's press conference, CBEMA issued its own press release saying that the Swedish study "contradicts all other evidence."[137] CBEMA was already defensive about any indication, no matter how slight, of a link between VDT use and reproductive hazards. A few weeks before, the Congressional Office of Technology Assessment released a report saying that "there is at this time no good basis for fear of VDT effects on reproductive processes,"[138] but called for further research on the occupational hazards of VDT use, especially reproductive health problems. CBEMA was so sensitive to charges that VDT use was unsafe that it criticized the report's use of phrase "at this time" as being "needlessly alarming."[139] For CBEMA, the proper role of the federal government, whether it be OTA or NIOSH,

was to validate their view that there were no problems associated with VDTs and their use. As a result, OTA's and NIOSH's positions were perceived by CBEMA as deviations from that certainty.

On February 6th, the Center for Office Technology, the organization established by CBEMA and VDT user companies to combat labor's drive for protective regulations, sent to "U.S. editors and science writers an elaborate [21 page] press kit"[140] emphasizing "that it is premature to draw conclusions from this study."[141] COT's executive director Renee S. Ross stressed that other epidemiological studies conducted in Canada, Finland and Sweden showed that "there is no evidence of any impact on human reproduction from the use of VDTs."[142]

COT's press kit was accompanied by a "Note to Editors" from Ross that sought to downplay the significance of the Reuters story. Despite her fears that the press might use the Reuters story, the major U.S. print media did not get around to reporting it for 19 days. By then, NBOSH's governing board had done a surprising turn-around (dubbed the "cow turn" by the Swedish press), finding the Tribukait study to be less significant than first thought.[143]

The controversy was heightened by NBOSH's implication that the decision to downplay the significance of the Swedish study was unanimously approved by the business, labor and government representatives on its governing board. In

its statement of February 13th, NBOSH said: "The Board, which includes representatives of the employers and trade unions, says that presently there is no reason for further Board action."[144] But this statement gave no indication that Monica Breidensjo, who represented TCO, the Swedish Central Organization of Salaried Employees, on NBOSH's governing board, objected to the board's about-turn. She charged NBOSH officials with engaging in political "tricks and cheating" in order to downplay the importance of the study's findings.[145] A Swedish scientist who had intimate knowledge of the study's progress called NBOSH's reconsideration "political business."[146] Breidensjo added that "NBOSH must go out and clearly admit that there actually are problems at workplaces, no matter at what stage the scientific investigations may be... Now research is needed on a broader scale. It is not only a question of pregnancy risks. We have skin and eye problems, fatigue, stress and problems with work organization. The reports on workers' injuries are piling up at TCO."[147]

Despite the heated controversy generated by NBOSH's unexpected turn-around, the story found virtually no coverage in the U.S. media. It was mentioned in passing by the Wall Street Journal's "Labor Letter" column on February 18th, but the New York Times and other major media outlets ignored the story.[148] The lack of coverage moved the Columbia Journalism Review to write that the NBOSH incident

provided "further evidence of a blind spot in print journalism." It added that ignorance was no excuse for the VDT safety and health story had been there all along, right in front of every publisher's and editor's nose."[149]

Much confusion resulted from the U.S. media's failure to report the story. Many concluded that the Swedish government had refuted the study, when, in fact, it hadn't. The confusion was perpetuated by the British periodical New Scientist, which erroneously reported that the Swedish government had repudiated the study's conclusions. VDT News reported that "the confusion ... may have dissuaded some news reporters-- at least in the U.S.-- from covering the Swedish study findings."[150] The U.S media's confusion stemmed largely from the aversion of editors and publishers to the VDT story, which, in turn, left them poorly informed about its many complicated details.

Another important study presented at the Stockholm conference was ignored by the American media, as well. A paper presented by Jukka Juutilainen and Keijo Saali, researchers in the Department of Environmental Hygiene at the University of Kuopio, Finland, reported that 60 Hz extremely low frequency magnetic fields-- the lowest frequency fields in the electromagnetic spectrum-- emitted by the VDT's vertical deflection coil were actually stronger than the very low frequency fields-- the next highest frequency in the spectrum. This finding confounded the scientific view

that frequencies become weaker in sequential order as you go down the electromagnetic spectrum, and supported the scientific view that ELF fields did not behave according to the accepted theories of normal science. They also found 60 Hz magnetic field strengths of 8 milligauss one foot from the VDT (one milligauss is considered acceptable). This was significant because epidemiological studies had found that children who lived in close proximity to 60 Hz magnetic field strengths of only 2-3 milligauss had higher than normal incidences of cancer than those who did not.[151]

Despite the controversy surrounding what is the most troubling aspect of the VDT safety and health debate, the major U.S. media did not send any reporters to cover the International Conference on VDTs, held in Stockholm in May. In fact, only two members of the U.S. media attended: Louis Slesin and Mark Pinsky, of VDT News, a publication with a limited circulation. Nor did their reporting spur the major media to do any follow-up stories on the Stockholm conference.

In 1987, the American Medical Association's (AMA) Council on Scientific Affairs issued its review of the literature on VDT safety and health. It concluded that: "No association has been found between radiation emissions from VDTs and reported spontaneous abortions, birth defects, cataracts, or other injuries."[152] While this statement was true as far as it went, it illustrated the problems with

literature reviews. First, the AMA's review was not as thorough as it could have been. The AMA ignored the papers given at the Stockholm conference claiming that they had not yet undergone peer review.

Second, literature reviews were no substitute for actual research with VDTs. Thus, additional literature reviews, especially from the prestigious AMA, served to reinforce the computer industry's argument that VDTs were safe and further research was unwarranted. What was not emphasized (and lost in the political shuffle) was the need for substantive research on nonionizing radiation emitted by VDTs.

In 1987 came word from the Swedish University of Agricultural Sciences in Uppsala, where professors Gunnar Walinder and Hakon Frölen reported a statistically significant increase in fetal abnormalities among mice exposed to pulsed ELF electromagnetic fields. Dr. Tribukait observed that their study was in accord with his findings.[153]

In 1988, further evidence that VDTs should be investigated came in the form of laboratory and epidemiological research. In June, the U.S. Office of Naval Research, which primarily conducts research with ELF waves for military, announced the results of its efforts to replicate the Delgado Effect. Dubbed the "Henhouse" project because-- with one exception-- its six teams used the same type of chicken eggs as the Delgado team did, the experiment provided fur-

ther substantiation to the claim that low level pulsed ELF magnetic fields can adversely affect embryonic development.[154] A subsequent study involving two researchers who took part in the "Henhouse" project, found that embryonic development is most susceptible to pulsed ELF magnetic fields during the first 24 hours.[155]

Taken together, the research results of the "Henhouse" project and subsequent study; the Delgado team; Mild; Tribukait; Cekan and Paulsson; Walinder and Frölen; and the "Henhouse" project researchers amounted to a growing body of scientific evidence that pulsed magnetic fields of the type emitted by VDTs can have teratological effects on rat and chick embryos. While the results were not directly applicable to women and VDTs, they did indicate the need for federally sponsored research on the ELF and VLF fields emitted by computer monitors to determine if they cause reproductive abnormalities.

In addition, epidemiological evidence of the need to address the VDT reproductive hazards problem was supplied in June 1988 by a study of 1,583 pregnant women conducted by the Kaiser-Permanente Medical Care Program of California. It found that those who worked more than 20 hours a week on VDTs during the first three months of pregnancy had statistically significant increases (80%) in miscarriages.[156]

While U.S. advocates were unable to interest the federal government in conducting research with pulsed magnetic

fields emitted by VDTs, further work was being conducted in Sweden.[157] Another experiment, conducted by Dr. Hakon Frölen, verified that pulsed magnetic fields (PMF) can cause abnormalities in mice fetuses. He told VDT News that "the fetus is most sensitive to PMF's in the early stages of pregnancy," but cautioned against directly applying the results of mice and chicken embryo studies to the working conditions of pregnant women using VDTs. Stating that he used stronger PMFs that those used in VDTs, and that women were exposed to emissions for shorter durations, Frölen said that "I don't think they are at risk from VDT magnetic fields."[158] The computer industry could not take complete comfort in Frölen's statement, because the scientific community's knowledge of ELFs was still evolving. Only a few years before many researchers-- including Frölen himself-- did not think the results achieved by the Delgado team; Mild; Tribukait, Cekan and Paulsson; Walinder; and the "Henhouse" project researchers were possible.[159]

In 1988, the Swedish government required that all computer terminals be shielded to block VLF magnetic fields. As a result, U.S. computer manufacturers marketed two versions of the same terminal: A shielded version for Sweden and much of the European market, and an unshielded model for the U.S. and other markets.

The Swedish developments had virtually no policymaking impact on the U.S. government. It still had not commissioned

research on VLF and ELF fields emitted by VDTs, nor were there any plans to do so. The federal government's decision not to act insured that there would be no publicly accessible research. As a result, the domestic debate on nonionizing radiation continued to be limited to literature reviews (which stated that VDTs did not emit harmful levels of radiation, but cited little or no research with the terminals to back up this conclusion) and speculation. Since the burden of scientific proof traditionally stands with those who make allegations, and no federally funded research into VDTs had been done, VDT manufacturers and corporate users benefitted from the maintenance of the status quo.

IBM seemed more concerned than the federal government about the implications of the Scandinavian research. After all, IBM's financial wellbeing rest on the trust users had that their VDTs were safe to operate. In 1987, it quietly applied for a patent on a method of reducing VLF magnetic fields in VDTs,[160] and had a low emission monitor on the market by the fall of 1989.[161] David Eisen, of the Newspaper Guild called it "a salutary development that we and other North American unions have been calling for for [sic] at least four years."[162]

While IBM's action was welcome, it applied only to the company's InfoWindow terminals, which were used with mainframe computers and workstations, rather than in offices. Plus, it did not shield against ELF magnetic emissions. As

Eisen added: "It would have been far better if IBM were shielding the ELF frequencies as well. There is no reason they should not be shielding against both."[163] With the exception of Digital Equipment Company, which also marketed a terminal that reduced VLF emissions, the rest of the computer industry showed no interest in shielding against VLF and ELF fields. The feasibility of creating a metal shield that reduced both VLF and ELF emissions was not in doubt, since at least one small company was marketing an effective shield in 1988 for an estimated $400-450.[164] But, only the computer industry (which could incorporate metal shields in the manufacturing process) had the required capital, market access, distribution networks, and economy of scale to make the price of shielding terminals reasonable.

IBM's limited action also drew criticism from investigative writer, Paul Brodeur, who charged that:[165]

> IBM's move is a half measure because it does not deal with the 60 Hertz (HZ) fields that are emitted by VDTs. The studies of 60 Hz radiation done in the last 10 years clearly show that the fields suppress the immune system, affect cells and promote cancer, particularly leukemia, lymphoma and brain cancer. Since it is known that 60 Hz fields are the dominant radiation emitted by computer terminals, IBM's failure to acknowledge this hazard seems irresponsible.

But IBM was not inclined to publicly admit that its terminals might be hazardous to the user's health. Since the industry giant had always insisted that the nonionizing fields emitted by its terminals posed no harm, any admission

to the contrary might leave the company open to product liability lawsuits. IBM insisted that its introduction of the terminal was a response to market demand, not an admission that VLF emissions were harmful.[166] But virtually all the market demand for low emission VDTs was from those concerned that the unshielded terminals might be harmful. IBM's reaction to the release of a 1989 report by Johns Hopkins University linking higher than normal incidences of cancer with telephone cable splicers, whose work regularly exposes them to the same 60 hz EMF fields as emitted by VDTs, is a case in point. As the Wall Street Journal reported: "reacting to the public outcry, last week International Business Machines Corp. pledged to reduce the amount of radiation emitted by all of its future-model computer terminals."[167]

Fourteen years after the possibility that the nonionizing radiation emitted by VDTs might be hazardous to human health first came to the federal government's attention, it still had not conducted a thorough test of the strength of computer monitors' fields. This policymaking vacuum led VDT News editor Louis Slesin to remark in 1990:[168]

> With the growing public concern over radiation from VDTs, it is amazing that no one in the U.S. has ever done a comprehensive survey of the electromagnetic emissions from different models. For instance, would one expect higher electromagnetic fields from a Compaq or from a Macintosh? We don't really know.

Slesin's question was soon answered, not by the likely source-- the federal government, but by an unlikely one-- a trade magazine devoted to the computer industry.

In 1990, two developments combined to push the U.S. computer industry to establish a nonionizing radiation standard that would preempt any effort by the federal government to do likewise. First, the July issue of MacWorld magazine carried a cover story by Paul Brodeur, detailing the evidence that 60 Hz ELF EMFs emitted by VDTs might be linked to health hazards.[169] The magnetic field emissions of ten top selling monochrome and color monitors were measured 4 inches from the screen with a gaussmeter, which recorded levels ranging from two to ten times as high (from 4.79 to 22.79 milligauss) as the strength (2-3 milligauss) linked to higher than normal incidences of cancer in children. Magnetic field strengths were even higher at the sides and back of the tested monitors.[170]

With a circulation well over 325,000, the MacWorld "special report" represented an unprecedented breakthrough in media coverage of the VDT EMF debate. It was the first time that a major computer magazine-- which usually make their living promoting the computer industry's products-- had been so bold in its criticism of the computer industry's claims that VDTs were safe. As a result, stories appeared in Time, the Columbia Journalism Review, The Nation, and the New York Times, which reported that "the article has touched

off a heated debate in the computer industry and has angered some important advertisers."[171] It was also discussed 4 times in 12 days on Cable News Network's "Moneyline" program.[172]

MacWorld's coverage of the possible EMF hazards of VDTs spurred the computer industry-- which feared that more bad publicity might hurt its lucrative $6.6 billion monitor market-- to retake the initiative.[173] Apple Computer, one of the companies whose color monitors registered potentially dangerous ELF emissions in the MacWorld sponsored testing, announced that it would support medical research on the biological effects of EMFs.[174] Sigma Designs, Inc., IBM and DEC quickly announced plans to introduce shielded monitors that reduced ELF emissions to levels suggested by the proposed Swedish standards.[175]

Fortunately for the computer industry, the federal agencies responsible for public health and safety regarding VDTs expressed no interest in taking action to set protective standards governing their products. An OSHA representative said he couldn't comment "because unfortunately we don't have a subscription to MacWorld magazine."[176] The BRH's Center for Devices and Radiological Health added: "There isn't any scientific consensus on the issue, so there is no present need for the Center to do any testing."[177]

On July 24th, MacWorld and Supermac Technology invited 12 computer companies to meet in San Jose, California to

discuss the nonionizing radiation issue. MacWorld editor Jerry Borrell declared that the "goal is a federal standard for EMF emissions."[178] However, this did not fit with the computer industry's plans to retain autonomy from government regulation. As a result, the meeting turned out to be more for public relations than substantive purposes. IBM, the industry leader, refused to attend. Fearing erosion of industry autonomy over such decisions, it preferred to formulate a response to the nonionizing radiation within established industry forums. Industry representatives at the San Jose meeting concurred with IBM: "The sense of the meeting was that the most effective forum for addressing the [EMF] issue is an established industry group or technical society, such as AEA [American Electronics Association], CBEMA... and EIA [Electronic Industries Association]," which was more directly under the industry's control.[179]

Rebuffed by the computer industry, Borrell mounted a campaign to persuade the federal government to launch an inquiry into the EMF controversy. He enclosed postcards in the December 1990 issue of MacWorld urging his readers to send them to: Senator Albert Gore, Jr., chairman of the Senate Science Committee, and Senator Barbara Mikulski (D-MD.); Congressman Robert Roe (D-N.J.), chair of the House Science Committee; and Dr. D. Allan Bromley, President Bush's science advisor and Director of the Office of Science and Technology Policy. Senator Gore's staff reported receiv-

ing approximately 1,000 postcards, adding that while their boss supported the idea of EMF research, he was not going to take a leadership role on the issue. Congressman Roe got five times as many cards as Gore, but he had moved over to chair the Public Works and Transportation Committee after the December 1990 session. His replacement as chairman of the Science Committee, Rep. George Brown (D-Ca.) supported the idea of an investigation.[180] However, the EMF issue was soon sidetracked by the growing crisis in the Persian Gulf, which occupied much of Congress' time and attention in early 1991.

The second major impetus to industry action on reducing nonionizing radiation emissions came from Europe. In May 1990, the European Economic Community mandated that its 12 members reduce nonionizing radiation emitted by VDTs "to negligible levels from the point of view of the protection of workers' safety and health," by 1993.[181] The question of what "negligible levels" meant became less uncertain in October, when Sweden-- which is not an EEC member-- announced the world's first VDT guidelines for ELF EMFs.[182]

CBEMA officials quickly realized if they didn't develop an alternative (i.e, weaker) standard, the stronger Swedish standard would most likely become the norm for Europe's growing $45 billion computer market. With economic union planned for 1992, that could threaten the U.S. computer industry's dominance of the its most profitable market.[183]

"We need to develop a U.S. position to counter Sweden in the European Economic Community," Dr. Charles Abernathy of the Digital Equipment Corporation (DEC) said.[184] Not only that, the Swedish standard was on the verge of "becoming a de facto standard in the U.S.," said Apple's John Chubb, because they are "the only thing that customers can quote."[185]

CBEMA and the IEEE joined forces in late 1990 to head off the stricter Swedish standard at home and abroad. The magnetic field standard they proposed would be the same as Sweden's, but the electric field standard would be weaker.[186] However, the joint effort broke up after the IEEE decided in March 1991 that such standards were unwarranted.[187] As more customers, worried about the potential health hazards, sought to buy low emission monitors, Apple Computer, Inc., DEC and IBM continued to work on an industry standard that would apply to both the U.S. and European markets. Further pressure came from the City of New York's Board of Education which announced in the spring that it was preparing purchasing guidelines that would mandate nonionizing radiation restrictions even stricter than Sweden's.[188] Apple's John Chubb put it bluntly: "If we don't come up with something soon, we're going to pay the consequences."[189] Despite the chain reaction of activity set off by Sweden's announcement of ELF standards, the federal government was content to defer to the computer industry's

leadership. The BRH announced that it would only consider action if the computer industry was unable to agree on its own standard.[190] Given the tremendous economic risks at stake for CBEMA, this possibility seemed unlikely.

Playing Politics with EMFs at the EPA:

With NIOSH and the BRH mired in a continued state of policymaking inertia, an important development in the VDT nonionizing radiation debate came from an unexpected source: the Environmental Protection Agency's (EPA) staff scientists. A review of the literature undertaken by its Office of Health and Environmental Assessment (OHEA) in 1989 found a pattern linking 60 Hz electromagnetic fields, emitted by VDTs and electric power lines, and cancer, leukemia, and lymphoma in children and electrical workers. Consequently, OHEA staff scientists proposed that ELF EMFs be classified as "probable human carcinogens," the second highest category of toxicity in the EPA's five-tier system of classification.

The staff scientists' recommendation that ELF EMFs be classified on a par with such known carcinogens as dioxin, formaldehyde and polychlorinated biphenals, created an intense political controversy within the executive branch during the winter of 1990.[191] Arguing that further research must be done before ELF EMFs could be classified as "probable human carcinogens," OHEA head Dr. William Farland told

his staff scientists that they should be downgraded to the third ranking-- "possible human carcinogens."[192]

On March 6th, 1990 Farland and other senior EPA officials were called to the White House, ostensibly to brief members of the President's Office of Policy Development and representatives from the Department of Energy, National Cancer Institute and the CDC on the classification controversy. From this point on the center of decisionmaking shifted from the EPA to the White House. About a week after the White House meeting, Farland downgraded the ELF EMF recommendation from "probable human carcinogen" to "possible human carcinogen."[193] However, even Farland's watered-down recommendation was overruled by the White House, which preferred that no recommendation be made. When a draft version of the report was released in June for scientific review, it contained no recommendation.[194] The same held true for the final version of the draft report released to the public in December.

While the White House feared that classifying ELF EMFs as "probable human carcinogens" might unnecessarily alarm the public, the computer industry had as much, if not more to be alarmed about. VDT News editor Louis Slesin, who felt the classification was justified by the evidence, recognized the political stakes involved in this debate. "Of course, such a move would have wide-ranging implications, particularly for VDT workers, who are exposed to weak EMFs from

their terminals throughout the working day," he wrote.[195] In the end, the draft report was released with no recommendation regarding the carcinogenicity of ELF EMFs.

The conflict further intensified when word spread during the summer that the EPA's Science Advisory Board (SAB) might recommend that the original classification be restored. The SAB co-chairmen had told Agency administrator William Reilly in May that sufficient evidence existed to warrant the launching of a research program into ELF EMFs.[196] During the summer and fall, the executive branch escalated the pressure on the EPA to tone down the draft report. In August, President Bush's science advisor, Dr. D. Allan Bromley, sent a cryptically worded message to Reilly urging him to proceed with caution. "This is a very difficult area that, I am sure you agree, requires careful treatment if we are able to serve the public well," wrote Bromley.[197] Bromley also tried to influence the selection of the external review panel, a group of scientists outside the EPA who review and make comments on the review draft when it is finished, and hold an open meeting to solicit the public's comments for the final report. Bromley sent the EPA a list of scientists who believed, in the words of the SAB's Donald Barnes, that the idea of a connection between ELF EMFs and health hazards "doesn't make any sense."[198] But Bromley, whose list of biased candidates made it easier for the SAB to resist, was rebuffed by the EPA. The U.S. Air

Force voiced its objections in more strenuous tones. On October 2nd, it sent the EPA a scathing 33 page assessment of the draft report, saying that it was "biased... toward EMF-induced carcinogenicity."[199]

Since electric utility lines, VDTs, and electronic appliances used in millions of homes (such as hair dryers and electric blankets) also emit ELF EMFs, classifying them as "probable human carcinogens" would have tremendous ramifications for the whole society. It would also have potentially severe repercussions for the computer, electronics, power industries and the military.

As a result, the issue of what the draft report should conclude continued to occupy a place on the short list of issues that warranted the immediate attention of policy-makers at the highest levels of the White House. Having failed in his effort to influence the selection process of the SAB's external review panel in favor of those who opposed the view that ELF EMFs might be linked to cancer, Bromley sought to buy time by delaying the report's release. On November 26th, the day before the draft report was scheduled to be made public-- and more than a month after it had been completed and printed-- Bromley pressured Reilly to withhold its release. To protect against the possibility that the SAB's panel of outside scientists might be sympathetic to the original recommendation that ELF EMFs be classified as "probable human carcinogens," the White House

instructed its own Committee on Interagency Radiation Research and Policy Coordination (CIRRPC)-- a liaison group reporting to Bromley's Office of Science and Technology Policy-- to have the last word by conducting its own assessment.[200] The next day, White House Chief of Staff, John Sununu, stepped in and made the decision for Reilly, ordering that the draft report be withheld from the public.[201]

The White House's actions engendered angry responses on Capitol Hill. On December 11th, Congressmen George E. Brown (D-Ca.), chairman of the House Committee on Science, Space and Technology, and fellow committee members Frank Pallone (D-N.J.) and James Scheuer (D-N.Y.), sent Bromley a letter accusing him of censoring the EPA's report. They stated that his "unprecedented decision" was "more likely to fan public concern than to allay it."[202] Saying "I want to know what the EPA found in its study," Representative George Miller (D-Ca.) announced that his House Interior Subcommittee on Water, Power and Offshore Energy Resources would hold hearings on the issue in January 1991 to determine "... if Bush Administration officials in fact sought to manipulate the report's scientific findings for political purposes."[203]

Congressmen Brown, Scheuer and Pallone also criticized the EPA for permitting the law firm, Crowell and Moring, which specialized in lobbying for electric power company interests, to be the only speakers at the SAB's external review panel's open meeting in January.[204] The EPA claimed

that it did not receive any requests from other groups to address the external review panel.[205] The three Congressmen saw it differently. In a letter dated December 21st, they called upon Reilly, who was now operating under orders from the White House, to "put an immediate halt to the practice of granting to interested parties the right to control who appears before the SAB."[206] If not, they charged, "... the 'stacked deck' appearance of the presentations will destroy the very credibility of the SAB review process."[207]

The White House refused to release the draft report, claiming that it would needlessly alarm the public.[208] However, its decision had more to do with its displeasure at the report's findings than with concern for public unrest, and the fear that labor would cite it as supporting their call for research on VDTs and nonionizing radiation. The draft report entitled, Evaluation of the Potential Carcinogenicity of Electromagnetic Fields,[209] was not released until December 14th, when the EPA finally agreed to Sununu's conditions.[210] One of his conditions was that the EPA distance itself from the draft report. The draft report was prefaced by an extraordinary "Note To Reviewers," telling them-- contrary to what EPA's staff scientists concluded-- in bold faced type that "there are insufficient data to determine whether or not a cause and effect relationship exists," between ELF EMFs and cancer.[211] This unprecedented attachment concluded with the following proviso, also in

bold faced type: "Given the controversial and uncertain nature of the scientific findings of this report and other reviews of this subject, this review draft should not be construed as representing Agency policy or position."[212] However, it was difficult to downplay the report's significance when, just three days before its release, the New York Times ran a story noting the dramatic increase in brain cancer among those under 45. The story discussed the possibility of a link with electromagnetic fields.[213]

Despite the disclaimer, and the White House's efforts to delay and weaken its conclusions, the draft report's release was a step towards the federal government's recognition that the health threats of nonionizing radiation needed to be addressed. The report concluded that:[214]

> Several studies showing leukemia, lymphoma, and cancer of the nervous system in children exposed to magnetic fields from residential 60-Hz electrical power distribution systems, supported by similar findings in adults in several occupational studies... show a consistent pattern of response which suggests a causal link.

Commenting on the report, the EPA's William Farland said: "Over the past few years, more and more people have begun to say there does seem to be something there, that we need to do more work, whereas before we were saying that it was not worth pursuing. This is an important step in getting more research done."[215]

But Farland's optimism was shrouded by the White House's efforts to put a different spin on the EPA report. In insisting that CIRRPC conduct a time-consuming literature

review of nonionizing radiation research, the White House bought ample time to defuse the controversy and weaken the EPA report's findings.[216] Sununu and Bromley appointed their colleague, Dr. Alvin Young, director of the office of agricultural biotechnology at the Department of Agriculture, to chair the panel. Moreover, the CIRRPC panel worked closely with the Oak Ridge Associated Universities, a consortium based around the government's Tennessee-based nuclear research facility. The CIRRPC literature review-- which added no new research-- lasted until June 1992. Not surprisingly, it echoed the Bush administration's view that there is "no convincing evidence in the published literature" to support the claim that ELF fields present "demonstrable health hazards" to VDT users.[217] Unlike the disclaimer that was attached to the draft report at the White House's insistence, no disclaimer was attached to the CIRRPC's report indicating that it was not the view of the EPA.[218] Critics noted the incongruity between the CIRRPC's conclusion and the various chapter's recommendations. Nature quoted critics as saying that the CIRRPC's conclusion "seems to run counter to [the report's] "individual chapters, which urge dozen of new studies."[219] The White House's interference in the EPA's evaluation of the potentially harmful effects of EMFs, was echoed by the repeated denials of BRH staffers requests to test VDT EMF emissions by political appointees at the FDA.[220]

The critics of the White House's suppression of the EPA's initial findings were soon supported in their call for further research by four more studies from abroad in 1992. In the first study designed to examine the possibility of a link between VDT work and brain tumors, Australian epidemiologists found that female VDT workers developed brain tumors at 5 times the rate of nonusers.[221] Then, came news from Sweden that occupational exposure to EMFs "can increase the risk of developing cancer-- both leukemia and brain tumrs."[222] Another Swedish study found that children living with 50 meters of EMF-emitting, high-tension power lines developed leukemia at nearly three times the expected rate of those who lived farther away.[223] As a result, Sweden, which is the world's leader in the area of EMF research, became the first country to officially recognize the link between exposure to EMFs and cancer as a matter of public policy.[224] Finally, a Finnish study, published as the lead story in the American Journal of Epidemiology, reported that female VDT workers who were exposed to ELF fields greater than 3 milligaus (one milligaus is the acceptable) had 3.5 times the risk of miscarriage of women who used terminals with acceptable levels (one milligaus) of ELF emissions. The researchers concluded that:[225]

> There is a clear need for further studies on the effects of low frequency magnetic fields on the outcome of pregnancy using precise assessment of exposure in the actual working environment. In addition to the effects on users of [VDTs], effects on female workers

in industrial and other electrical environments should be investigated.

Conclusion.

Despite the EPA's conclusion that "we can identify 60-Hz magnetic fields from power lines, [VDTs, which also emit 60 Hz fields] and perhaps other sources in the home as a possible, but not proven, cause of cancer in humans,"[226] the federal government has not authorized further research on EMFs. Motivated by their view that the state should do the utmost to support unrestrained economic development, the probusiness Reagan and Bush administration's were steadfast in their refusal to support independent, government-sponsored research that might lead to the growth-inhibiting regulation of the computer industry and business users of office automation systems. In a recessionary economy, the state viewed an unregulated computer industry as one of the nation's few bright spots in terms of jobs creation, which helped the administration stay in office, and increased tax revenues upon which the federal government was dependent to pay for its fiscal policies.

Congress, NIOSH and the BRH continue in their state of policymaking inertia. Christopher Dodge, a research analyst specializing in the VDT safety and health issue with the Library of Congress, observed that Congressional interest in the VDT issue peaked in 1989.[227] The legislative branch--which usually takes a crisis management approach to occupa-

tional safety and health problems-- is unlikely to fund research until it receives overwhelming scientific proof of a link between VDTs and health hazards.[228] This, of course, is the "Catch-22" of the nonionizing radiation debate: scientific research won't be funded by the government until workers can show scientific proof of the need for such research. As Kuhn points out, normal science tends to suppress the "fundamental novelties" that run counter to the prevailing paradigm. As a result of the federal government's failure to take the lead on this important public policy issue, the computer industry has been able to, in effect, continue making public policy on the issue of VDTs and nonionizing radiation by default. The computer industry-- along with industry-supported, quasi-governmental organizations like IEEE and ANSI-- constitute a private government, dominating the field of nonionizing radiation research and standard-setting.

Notes.

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3. Ibid., 5.

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6. William H. Miller, "Science and Technology Policy: Science Friction," Industry Week, May 4, 1992, 54.

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9. A unit of measurement of the frequency of electromagnetic fields, one hertz is equal to one cycle, or wavelength, per second.

10. Bob DeMatteo, Terminal Shock: The Health Hazards of Video Display Terminal Workers (Toronto: NC Press Limited, 1986), Chapter 2; Paul Brodeur, Currents of Death: Power Lines, Computer Terminals, and the Attempt to Cover Up Their Threat to Your Health (New York: Simon and Schuster, 1989), 231-232.

11. Paul Brodeur tells Dr. Zaret's story in The Zapping of America (New York: W.W. Norton & Co., 1977).

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17. "DOD to Expand Project ELF and Add Fourth PAVE PAWS," Microwave News, November 1981, 1.

18. For Col. Winter's testimony, see House, Committee on Science and Technology, Potential Health Effects of Video Display Terminals and Radio Frequency Heaters and Sealers. Hearings, before the Subcommittee on Investigations and Oversight, House of Representatives, 97th Cong., 1st sess., May 12-13, 1981, 118ff.

19. Plunkett, Jr., "VDTs in the Office," 25.

20. Ironically, some models of microwave ovens were found to leak harmful microwave radiation during the 1970s. See Susan Schiefelbein, "The Invisible Threat: The Stifled Story of Electric Waves." Saturday Review, September 15, 1979, 16-20.; and Brodeur, The Zapping of America.

21. The power density for pulsed re/mw fields is limited to 10 microwatts per square centimeter in Czechoslovakia, compared to 1 milliwatt per square centimeter in the U.S. A microwatt is 1/1000th of a milliwatt, DeMatteo, Terminal Shock, 61-65. Prior to 1982 revisions in the U.S. Code, the Czech standard was 1000 times tighter. See Herman Cemler, Introduction to Health Physics (Oxford: Pergamon Press, 1969), 200-204, cited in Cold Type Organizing Committee, Don't Sit Too Close to the TV: VDTs/CRTs and Radiation," Bronx, N.Y.: 1980; and Lynton, "Microwave Radiation," A4.

22. Lynton, "U.S. Radio-Frequency Radiation High," A10.

23. Paul Hyman, "NIOSH Widens Probe: Checks CRTs For Health Effects," Electronic Buyers' News, April 30, 1980, 1.

24. House, Potential Health Effects of Video Display Terminals, 399.

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27. House, Potential Health Effects of Video Display Terminals, 193.

28. Hyman, "NIOSH Widens Probe," 1.

29. Ibid., 1.

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CHAPTER 8

REAGAN'S OFFICE OF MANAGEMENT AND BUDGET: OMBUDSMAN TO BUSINESS.

> People are not likely to start a fight if they are certain that they are going to be severely penalized for their efforts.
>
> -- E. E. Schattschneider.[1]

> If you're the toughest kid on the block, most kids won't pick a fight with you. The executive order establishes things quite clearly.
>
> -- James C. Miller III, Director of OIRA and OMB, Reagan Administration.[2]

> [OMB is] 'the big kid on the block' to whom all the agencies must 'kowtow.'
>
> -- David C. Vladeck, Public Interest Research Group attorney.[3]

Introduction.

The Reagan administration's approach towards the social regulatory process presented a paradox:[4] in the name of weakening the government regulation of business, they strengthened the executive branch's control over the occupational safety and health, environmental, and food and drug agencies. Using executive orders, the Reagan administration gave the Office of Management and Budget (OMB) vast new powers, unprecedented in scope, to insure that all pending rules and policies conformed with its goal of giving business "regulatory relief." With the economy slowing down,

regulation. As the final arbiter over all pending rules and regulations, OMB became in James C. Miller III's words "the toughest kid on the block." Consequently, few agencies were willing or able to pick a fight with it. In effect, OMB was an ombudsman for business, cutting through the tangle of administrative procedures to help solve the regulatory problems of corporate America. As a result, the Reagan administration exercised control over regulatory policy to an extent unequalled by previous administrations.

Using BellSouth's and OMB's interference in the National Institute of Occupational Safety and Health's (NIOSH) epidemiological study of the reproductive problems of VDT workers as its case study, this chapter discusses how the Reagan administration used executive orders (12291 in 1981 and 12498 in 1985) and the Paperwork Reduction Act (1980)[5] to justify its unilateral expansion of control over the social regulatory agencies' activities. It also examines the resulting conflict with Congress, which passed the Paperwork Reduction Act with more modest goals in mind. The Act established the Office of Information and Regulatory Affairs (OIRA) as a "single control point" in OMB to review all pending regulations and studies with the express purpose of reducing the unnecessary paperwork burden imposed on the public,[6] not to usurp the statutory authority vested in the social regulatory agencies themselves.

This chapter also investigates the conflict between the presidency and the bureaucracy, which resulted in the latter's demoralization, isolation, and erosion of its statutory power. Finally, it investigates the special relationship between business and the executive branch, which resulted in the latter's politicization of scientific research in order to protect corporate interests from public accountability.

Congress, the Presidency and Conflict Over the Bureaucracy.

Article I of the Constitution gives Congress the power to authorize, fund, oversee, and dismantle programs, but these prerogatives do not lend themselves to effective oversight of the bureaucracy in daily practice for several reasons. First, Congress is an unwieldy body, where power is dispersed among numerous Committees and Subcommittees, whose rules and procedures often encourage disagreement or inaction as much as consensus and action. Second, Congress is now called upon to consider a much broader array and number of policy issues than the framers imagined. As a result, little time is left for detailed oversight of the implementation process. Finally, members of Congress must consider an increasing number of policy questions dealing with complex scientific and technical matters that are beyond their ken as laymen.

Consequently, most of the complexities and demands of policymaking are left to be worked out by the executive branch during the implementation process. Presidential use of executive orders to expedite the implementation process has accelerated since Franklin Roosevelt's administration, as the tasks that the executive branch assumed, or were called upon by Congress to undertake, became more manifold and complex.[7] Since its inception in 1970, every president has used executive orders to increase OMB's powers over the social regulatory agencies.[8]

However, none were as far reaching as executive order 12291, (issued on February 17, 1981), which President Reagan used to launch a concerted campaign to undermine the Congressionally-mandated missions of the social regulatory agencies. In passing the Paperwork Reduction Act, Congress intended that OIRA would monitor and reduce the growing mountain of unnecessary paperwork involved in compliance with rules and studies. But the Reagan administration saw it as the means to tighten its control over the entire social regulatory process; to ensure that OSHA and NIOSH's policies conformed with its agenda of "regulatory relief" for business.[9] It empowered OMB to unilaterally evaluate pending rules and studies in terms of cost/benefit analysis, although this was contrary to the Occupational Safety and Health Act (OSHAct),[10] and to consider regulatory alternatives (such as privatization of government functions). As a

result, OMB's OIRA screened all pending rules and studies so that they complied with the Reagan administration's proindustry, deregulatory policies.

The Reagan administration further expanded OMB's powers in January 1985 by issuing executive order 12498, which gave it the authority to review proposed regulations and studies from their inception. With these two executive orders, OMB could secretly control the social regulatory process from start to finish. Paradoxically, President Reagan centralized power within OMB to an unprecedented extent in the name of lessening the federal government's regulatory control over industry.

The White House defended its utilization of OMB as final arbiter over the social regulatory process as a legitimate activity covered under the chief executive's constitutional duty to see that the laws be faithfully executed.[11] But the effect of OMB review was to undermine Congressional intent, as expressed in the OSHAct of 1970, that the final authority rests with NIOSH's and OSHA's respective departmental superiors, the Secretary of Health and Human Services and the Secretary of Labor. Since the Reagan administration's policies were at cross purposes with the Congressionally mandated missions of these agencies, the result was the paralysis of the occupational safety and health policymaking process. Isolated, demoralized and deprived of much of their decision making power, the social

regulatory agencies soon realized it was easier to comply with OMB than to fight it.

There is often a fine line between the discretionary power administrators need to apply their legislative mandate to the unanticipated problems that arise in a complex and fast changing world and the subversion of Congressional intent itself.[12] What happens when a president and powerful group interests cross that fine line and subvert an agency's Congressional mandate?

The aforementioned aspects of this conflict are amply illustrated in the following case study of OMB's collusion with the BellSouth Corporation,[13] to weaken and hinder NIOSH's proposed epidemiological study of the reproductive health of the company's VDT operators.

Origins of NIOSH's VDT Study.

Since the mid 1970s rumors had been circulating that the higher than normal incidences of miscarriages, birth defects and infertility among female VDT operators was due to the low level, nonionizing radiation emitted by the terminal's flyback transformer. During the two year period from the summer of 1980 to the summer of 1982, eight clusters of miscarriages and birth defects among VDT operators were identified in the United States and Canada.

However, VDT operators were caught in a bind. The prevailing opinion among most computer industry, government,

medical and scientific officials was that VDT use was not the cause of the higher than normal incidences of miscarriages, birth defects or infertility problems suffered by VDT workers. Testifying before Gaydos' subcommittee, Vico Henriques, president of the Computer and Business Equipment Manufacturers Association (CBEMA), reiterated the status quo: "We found from the start that visual displays emit no harmful radiation, that they are completely safe to operate and, in fact, are among the safest devices used in the workplace today."[14] Henriques assured the subcommittee that a VDT's "measurable electromagnetic radiation is less than you will get from the walls of this building and he charged that the whole VDT controversy was the product of "some zealous and self-interested parties who create fear for their own advantage."[15] Henriques did not name names, but it was clear that his comments were directed at advocates of VDT safety in the workplace, such as, labor unions (especially those representing VDT workers); 9to5, the National Association of Working Women (9to5); and various Committees on Occupational Safety and Health (COSH Groups). These VDT advocates had come to Congress in 1984 asking it to apply pressure on NIOSH to fulfil its two-year old promise "to resolve this issue once and for all."[16]

NIOSH's original plan was to contract out the VDT survey to a California-based group retained to conduct a pesticide and pregnancy study, but, in practice, this proved

too unwieldy to execute and was abandoned in early 1983.[17] However, the discovery of three more clusters of miscarriages and birth defects amongst VDT workers during the next year combined with renewed calls from organized labor, prompted NIOSH to try again. In 1984, NIOSH announced a second effort to study the problem. Unlike the first attempt, NIOSH planned to conduct this effort itself. NIOSH's official position was that there were no proven links between reproductive hazards and the electromagnetic fields (EMFs) emitted by VDTs, but that the clusters warranted a closer investigation of the machines.[18] Dr. Philip J. Landrigan, Director of NIOSH's Division of Surveillance, Hazard Evaluation and Field Studies said: "In the face of great uncertainty, it is better to meet the issue head-on than to let the uncertainty fester."[19]

The computer industry was confident that VDTs would be exonerated. At American Telephone and Telegraph's (AT&T) Bell Labs, the view was that the VDT clusters were purely a coincidence. "Everybody's found the same thing... there really isn't a problem," said Ronald C. Petersen, an AT&T radiation specialist. Confident that VDTs would not be implicated as the cause of VDT operator's fertility problems, Charlotte LeGates, a spokeswoman for CBEMA declared: "We have no doubt what the results will be."[20]

Corporate users were also confident that VDTs would be exonerated by any NIOSH investigation. For example, General

Telephone Company (GTE) was not outwardly concerned that the health hazard evaluation being conducted by NIOSH at its Alma, Michigan facility in 1984 might implicate the VDTs being used by its operators. As GTE vice president, H. Max Preston, surmised: "If there is a cluster it could be the water or anything at all."[21]

While NIOSH was negotiating with BellSouth to use its Southern Bell employees in the study, they were also busy conducting a health hazard evaluation of a reported VDT cluster among Southern Bell operators in Atlanta. "There have been a lot of miscarriages," said a Southern Bell VDT operator, who added, "if there is a problem, we want to know."[22] Southern Bell was quick to quiet employee fears, declaring that: "VDTs do not cause a problem."[23] But Southern Bell workers' anxieties were heightened by the fact that, like the vast majority of the ten million workers using VDTs by 1984, they did not have the right to transfer to non-VDT Work during pregnancy. Ironically, company officials may have fueled employee's fears when they stated that Southern Bell "will not honor a request made on that basis."[24] From management's point of view, the VDT cluster controversy was just the latest manifestation of employee fear of new technology. It's "the new microwave scare," a Southern Bell official declared, referring to the wave of consumer's concerns that resulted when it was revealed during the late 1970s that some models of microwave ovens

were leaking microwave radiation. "It is something we all have to live with," he added.[25]

In November 1984, after two years of false starts, rumors, delays, and planning, NIOSH began to solicit public comment for its proposed draft of the VDT study protocol from scientists, (both within and outside the Institute), industry and labor. The next step was a meeting before a tripartite audience of business, labor and government representatives, on December 17, 1984, where NIOSH made public its plan to determine whether, as the study protocol put it, "women who work with VDTs experience an increased risk of adverse reproductive outcomes compared to women who do not work with VDTs."[26] The number of reported clusters of adverse reproductive health effects among VDT workers had now risen to twelve.[27] As a result, the meeting drew one of the largest audiences ever to attend this kind of presentation. Among those in attendance were representatives from International Business Machines Corporation (IBM), Ford Motor Company, AT&T, Ameritech, the Communications Workers of America (CWA), Local 925 of the Service Employees International Union (SEIU), and 9to5.[28] Dr. Landrigan told the audience that "we don't know" what adverse reproductive effects, if any, can be attributed to VDT use, but that "it is extremely important to all of us to learn the truth of this matter." "If there is a risk, the nation needs to know it now, not 15 or 20 years from now," he added.[29]

BellSouth's and OMB's Interference in NIOSH's VDT Study.

The Reagan administration's February 1981 consolidation of regulatory power in OMB, effectuated by executive order 12291, gave the White House much greater control over the promulgation of regulations, especially those that their supporters in the business community opposed. The substance of executive order 12291 was the product of the President's Task Force on Regulatory Relief, which was headed by Vice President George H. W. Bush and included OMB's James C. Miller III, the director of the newly created OIRA.[30] On April 18, 1981, C. Boyden Gray, counsel to Bush and the Task Force, assured members of the U.S. Chamber of Commerce that the Task Force was there to act as an ombudsman to the White House for businessmen who felt burdened by particular government rules and regulations. As Gray put it:[31]

> If you go to the agency first, don't be too pessimistic if they can't solve the problem there.... That's what the task force is for. Not to long ago.... we told the lawyers representing the individual companies and the trade associations involved to come back to us if they had a problem. Two weeks later they showed up and ... said they did, and we made a couple of phone calls and straightened it out. We alerted the top people at the agency that there was a little hanky-panky going on at the bottom of the agency, and it was cleared up very rapidly. The system does work if you use it as sort of an appeal. You can act as a double check on theagency that you might encounter problems with.

Likewise, the Reagan administration was very accommodating to BellSouth in the fall of 1985 when it objected to important aspects of NIOSH's VDT study protocol: the only exception was that the Task Force's role of

business' ombudsman had been assumed by OIRA in OMB since 1983.

What motivated BellSouth, which had agreed to participate in NIOSH's VDT study, to seek OMB's help in undermining its integrity? Originally, BellSouth agreed to participate in NIOSH's project, assuming that it would be part of a multi-industry study.[32] There was an important public relations advantage to be gained by its participation in the NIOSH study. Although no scientific research conclusively linked VDTs to reproductive problems, twelve clusters of reproductive abnormalities had been reported among female VDT users by the end of 1984, including one at BellSouth subsidiary, Southern Bell in Atlanta. The reports of these clusters had heightened public fears that VDTs were unsafe to use, especially for women of reproductive age who represented a large percentage of BellSouth's telephone operators. By participating in NIOSH's study, BellSouth could add the federal government's imprimatur to their contention that VDTs were safe for women of childbearing age to use. BellSouth's assumption that any NIOSH study would exonerate VDTs was illustrated in a letter by Roy B. Howard, BellSouth's Assistant Vice President for Industrial Relations, to Wendy Lee Gramm, OMB's Administrator for Information and Regulatory Affairs, objecting to the VDT study protocol's design. It "... will not achieve NIOSH's

principal goal, which is to allay public and employee concern over the possible effects of VDT's, he said."[33]

But both of BellSouth's assumptions were soon undermined by two unforeseen events: NIOSH's inability to find more than one industry suitable to its research needs and the release of a ground breaking study establishing a link between VDT use and angina, an early sign of heart disease. First, after an unsuccessful search for suitable study populations to take part in a multi-industry study, NIOSH settled on a study restricted to the telecommunications industry.[34] NIOSH selected South Central Bell and Southern Bell (both companies of the BellSouth Corporation) and AT&T because they contained populations of VDT users and nonusers who otherwise did the same job and came from similar socioeconomic backgrounds.[35] The study protocol called for 4,000 women between the ages of 18-35 to be interviewed. 2,000 female directory assistance operators, who were using VDTs would constitute the study group, while another 2,000 long distance operators who were still using the older light emitting diode (LED) technology would serve as the control group.[36] The study would have both retrospective and prospective portions. The retrospective portion of the study, involving the use of questionnaires and the analysis of VDT operators' medical histories and work conditions, would take the first two years. The prospective

portion of the study would involve an ongoing monitoring of the operators' health conditions for the next two years.

However, BellSouth and AT&T were not pleased that they had been singled out by NIOSH. According to then study director Philip Landrigan, "[t]he companies came out and said they didn't really like it. They said they didn't see why it had to be done in their establishment and not some place else."[37] The companies agreed to participate but took NIOSH officials by surprise when they announced that the long distance operators would be using VDTs by 1986.[38]

The companies' decision forced NIOSH to forego the prospective portion of its survey. Of the study protocol's two parts, the prospective portion was most important and had attracted the most interest on the part of all concerned parties. It was hoped that the prospective portion of the study would give NIOSH investigators some clues as to why the clusters were occurring among VDT users in such unusually high numbers. Without it, NIOSH was unable to track the work and reproductive conditions of non-VDT operators, thereby depriving epidemiologists of the information necessary to control for deviations in the data of the group using VDTs.

Second, in January 1985, University of North Carolina researchers announced that a study of telephone workers that included employees of Southern Bell, a subsidiary of BellSouth, established a link between VDT use and angina; it

showed that VDT workers suffered from angina at rates 10 times higher than the national average. They also found that those who used VDTs regularly were twice as likely to suffer from eyestrain, musculoskeletal aches and pains, and stress-induced problems (i.e., headaches, nausea, tension, insomnia and fatigue) than workers who didn't work on the terminals.[39]

Further problems for BellSouth came in July when NIOSH verified the initial research, finding that nearly one in 5 female telephone workers who used VDTs for more than half their day's work suffered from angina. It also added an important new finding: that chest pain became more frequent as VDT workers' control over the job decreased.[40]

The University of North Carolina study was cause for alarm to BellSouth for two reasons. As the first study to demonstrate a connection between angina and VDT use, it received nationwide attention.[41] Also, the researchers' finding that management practices at Southern Bell (as well as other companies), including pressure to increase production, isolation from co-workers, and continuous work without rest breaks, contributed to increased stress and chest pain experienced by VDT workers was bad publicity for BellSouth.[42]

The alarming news of the angina link put NIOSH's inability to find additional VDT-using companies to take part in the study in new perspective. BellSouth became less

sanguine about NIOSH's plans to ask its VDT operators questions regarding stress in the workplace and their reproductive histories. The implications were clear; if NIOSH was permitted to ask BellSouth's employees questions reading stress and fertility, they might find a correlation between VDT use and stress, or VDT use and reproductive problems. Fearing the possibility of an adverse VDT study result, BellSouth lobbied for a multi-industry study so that it alone would not be the potential focus of bad publicity.[43] As David LeGrande, the CWA's Director of Occupational Safety and Health, observed: "BellSouth has done everything they can to prevent the study from being done."[44]

Unable to alter NIOSH's plans to ask female VDT operators questions about stress and fertility directly, BellSouth contacted OMB for help. Acting as ombudsman to business, OMB recommended that BellSouth hire Dr. Brian MacMahon, an epidemiologist at Harvard University's School of Public Health, to review NIOSH's VDT study protocol.[45] No stranger to controversy, Dr. MacMahon had a long track record as a prominent industry consultant. In 1976, he defended DuPont against Congressional charges that it was obstructing the release of employee cancer rate data.[46] In 1982, Dr. MacMahon chaired the National Academy of Sciences panel which criticized a proposed Veterans Administration study of Dow Chemical's Agent Orange as resting on an "insecure scientific base."[47] Despite the fact that Chlor-

dane was a known carcinogen, Dr. MacMahon testified in 1983 on behalf of the Velsicol Chemical Company's claim that its pesticide did not cause cancer.[48] In 1985, he vouched for the safety of Merrill-Dow's anti-nausea drug, Bendectin, which had been suspected as a cause of birth defects.[49] He also served on the Advisory Council of the electric utility industry's Electric Power Research Institute, which disputes the possibility that nonionizing radiation is linked to reproductive hazards and cancer.[50] Moreover, Dr. MacMahon had experience representing industry against NIOSH. In 1978, he was one of 8 "health scientists" who took part in a industry-orchestrated campaign to persuade Secretary of Health, Education and Welfare, Joseph Califano, to overturn NIOSH's recommendation that OSHA tighten the permissible level of workplace exposure to beryllium, a carcinogenic metal.[51]

Dr. MacMahon proved to be just the sort of expert BellSouth needed to critique NIOSH's study protocol. He and his collaborator, Dr. Sally Zierler of Brown University, told BellSouth what it wanted to hear: "It is in our view inconceivable that the study would yield results that are definitive, unequivocal or credible and, even with the modifications that we will propose, such results cannot be assured...." They also argued that the size of NIOSH study group was too small, that the very nature of the questions would prompt a biased response from women fearful for their

health, and that questions defining exposure to VDTs and pregnancy problems and stress factors were not clearly defined.[52] MacMahon, Zierler and BellSouth focused on these problems even though they had been found to be insignificant by internal and external peer review panels of scientists who approved the VDT study protocol.

Armed with MacMahon's and Zierler's critique, BellSouth's Howard sent a letter on November 20, 1985 to OMB's Gramm, complaining that "the proposed study, as currently designed, will not provide reliable and scientific information...."[53] Howard, with the implicit backing of OMB, also wrote to NIOSH director J. Donald Millar, complaining that the very presence of questions about fertility in NIOSH's study protocol lent credence to charges that a VDT reproductive/radiation problem existed. He cited the recently released House Education and Labor Subcommittee Staff Report on VDTs as exonerating the technology of any nonionizing radiation hazard.[54] But Howard misrepresented the staff report, it was a limited review of the literature, not a scientific research study. It didn't conclusively exonerate VDTs. He also contradicted himself, saying "the lack of a plausible health concern does not mean that a study should not be conducted." This was a curious statement to make because if there is no "plausible health concern," why conduct a study? Finally, Howard told NIOSH "to take the

time needed to develop a protocol that will in fact allay public concern."[55]

The fact that NIOSH first learned of the VDT Study protocol's rejection in a letter from BellSouth's Howard, not OMB's Gramm, amply illustrates the extent of the Reagan administration's collusion with industry.[56] NIOSH didn't hear from OMB until December 13th when Fay S. Iudicello, an OMB desk officer, informed the Department of Health and Human Services (HHS), which oversees NIOSH, that its study protocol had been rejected.[57]

OMB's objections closely echoed those of MacMahon and Zierler, BellSouth's hired consultants-- inadequate sample size, incorrectly defined sample frame, poorly defined major variables, and the inclusion of too many irrelevant questions regarding fertility. In OMB's arbitrary interpretation, these "flaws," especially the stress and fertility questions, violated the Paperwork Reduction Act of 1980's prohibition against burdening the American public with unnecessary paperwork.

Since the study protocol had passed a peer review of scientists, it is difficult to believe that the objections raised by BellSouth and OMB were serious enough to force NIOSH to make major revisions. The close cooperation between BellSouth and OMB, followed by the similarity of their conclusions raised charges by members of Congress, union leaders and other observers that the integrity and

independence of NIOSH's VDT study had been undermined for political, not scientific, reasons. OMB rejected the study protocol without even seeing the full document; its decision was based on a summary of studies that NIOSH regularly sent to OMB.[58] If ensuring good science had been OMB's chief concern, it could have asked NIOSH to see the full study protocol which, the project's director, Dr. Teresa M. Schnorr, noted, would have "answered their questions."[59]

BellSouth's and OMB's last minute intervention in NIOSH's VDT study provoked a firestorm of criticism that it was playing politics with medical research. Dr. Landrigan, now director of the Division of Environmental and Occupational Medicine at the Mount Sinai Medical Center in New York City, could afford to be more blunt. He called OMB's action an "unwarranted intrusion into the scientific authority of NIOSH."[60] "In my opinion, it was a pretty overtly political move," Landrigan said and added that "[T]he companies were just trying to get the government off their backs."[61] Dr. James Melius, who replaced Dr. Landrigan as head of the Division in charge of the study in 1985, noted that OMB had never before rejected a NIOSH study protocol solely for scientific reasons. "We've had problems with OMB holding up studies before, but we haven't had this particular situation," he remarked. "It hasn't happened as openly."[62] Karen Nussbaum, executive director of 9to5 accurately foresaw that we'd "be set up with a bad study, one

that's flawed in the first place, and doesn't give us any real answers in the end."[63] Congressman Ted Weiss (D-N.Y.), a member of the Government Operations Committee, criticized OMB's "end run" around NIOSH and announced that his Subcommittee on Intergovernmental Affairs would hold hearings to investigate the situation.[64]

Denying charges that it colluded with BellSouth, OMB maintained that it alone made the decision on scientific grounds. Responding to inquiries from Senator Carl Levin's (D-Mich.) office, the OMB's Gramm said "[w]hile we are interested in comments from affected parties, our original conditions were not based upon the comments of the Bell South consultants and we see no reason to change our position."[65] "We're supposed to minimize the burden on the public," explained OMB spokesman Edwin Dale. "It's completely normal and standard for us to reject surveys on the basis of flawed statistical techniques... The work by the Harvard guy, Brian MacMahon, was received, but it was not a major influence. We were already moving in the same direction...."[66]

Given the fact that OMB has no scientists or epidemiologists on staff, where was it getting its information from? The evidence points to OMBs collusion with BellSouth and its consultants. OMB had more than a passing interest in "comments from affected parties," actively orchestrating the critique of NIOSH's study protocol with

BellSouth. As an OMB official, who anonymously contradicted Dale's comment that MacMahon's work was insignificant, said: "Part of what made BellSouth's comments cogent was the inclusion of a critique by a well-respected epidemiologist."[67] Moreover, it was ironic that OMB officials failed to mention was that they had recommended MacMahon to BellSouth in the first place.

Statements by the other parties involved also belied OMB's claim to independent and impartial decision making. In his letter to OMB's Gramm, BellSouth's Howard made a point of stressing that his company had a "large investment in these terminals" and was planning to increase its investment.[68] Shortly after OMB rejected the VDT Study Protocol, NIOSH's Dr. Millar told Congressman Weiss' subcommittee investigation that BellSouth's going to OMB was a common practice for corporations which were upset with his agency's work. Millar said:

> I am not very fond of it. I accept the fact that the work NIOSH does clearly has implications that are perhaps not true of research done by other agencies.... Our findings can have clear-cut economic ramifications for industry, particularly if they result in a recommendation to OSHA for a new workplace standard, as many of our studies do. One just has to expect that major corporations that anticipate some effects growing out of this, will go to whomever they can go to see that these studies are as well done as possible or not done at all, if that can be arranged.[69]

Unionists suspected that BellSouth's complaint to OMB was motivated by fear of legal liability if a link between management-induced stress among VDT operators and adverse

pregnancy outcomes was substantiated by NIOSH. "It was the goal of BellSouth to damage the credibility" of the VDT study, the CWA's David LeGrande charged. "They may not want to supply information that may work against them" he added.[70] BellSouth denied that fear of legal liability motivated its insistence that fertility and stress questions be omitted from the study. BellSouth spokeswoman Kathleen Hughes stated that OMB's stipulations "have nothing to do with [our] liability."[71]

However, there was good reason to believe that BellSouth was concerned about legal liability. BellSouth knew that the University of North Carolina and NIOSH studies called for further investigation of work-induced stress and fertility as factors that might be causing health problems for VDT workers several months before it contacted OMB about the removal of the stress and fertility questions from the VDT study. "This finding suggests that BellSouth had substantial financial incentives to prevent or delay NIOSH research on stress among VDT workers," Congressman Weiss concluded.[72]

OMB was more than willing to listen to BellSouth's problems: it was ready to remedy them. The Reagan administration's OMB was more accountable and accessible to private enterprise than to either NIOSH or the public. As NIOSH's director, Dr. Millar, told Congressman Weiss' subcommittee: "[w]e usually are not involved in the

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discussions that OMB has with the people who are raising questions." To which Weiss replied:

> That is precisely the point... The problem is that when OMB gets involved, it is not held accountable, whereas you have to argue out your position with people from the affected industry and other scientists and so on. OMB is reached out to by the affected industry. They have a nice, private discussion about it. They don't bring you into the process at all. They tell you that in fact the protocol has been rejected, to go back to the drawing board, we don't like what you are doing.[73]

In a highly irregular move, OMB told NIOSH officials to meet privately with BellSouth "to hear their concerns." On December 20th, 1985, NIOSH sent its Deputy Director, Dr. Harris, and several VDT study staff members to meet privately with BellSouth officials to discuss their concerns about the study protocol. This was an extraordinary deviation from the policymaking process that became common during the Reagan administration. As Director Millar said, NIOSH does not "have a lot of contact with people except in scientific settings, which are, generally speaking, very open to the public."[74] Subsequently, OMB compelled NIOSH to make revisions to the study protocol based on BellSouth's "scientific concerns."[75]

The stakes involved in what form the VDT study would take were raised for both labor and industry during the Spring of 1986 by the announcement of a Swedish study revealed that mice exposed to weak pulsed EMFs-- similar to that emitted from VDTs-- for 14 days suffered higher rates of birth defects than mice that weren't exposed. Researcher

Lars Erik Paulsson recommended that VDTs be shielded as a precaution until further research determined what level of harm, if any, EMFs posed for humans.[76] CBEMA and its front group, the Center for Office Technology (COT), disputed the implications of Dr. Paulsson's research, reiterating their position that VDTs were safe to use. SEIU and 9to5 saw Paulsson's findings as further evidence that fertility and stress questions must be an integral part of the VDT study.[77]

On May 21, 1986, NIOSH submitted its fourth and final version of the VDT study protocol to OMB. The next day, Gramm spoke to a meeting of the American Industrial Health Council, Inc., an umbrella organization of business and trade groups. If there was any doubt of Gramm's pro-industry bias, it was dispelled by her promise that OMB would take a closer look at pending occupational safety and health regulations to see if they passed its cost/benefit analysis before being implemented.[78]

On June 5th, OMB extracted its price for granting NIOSH permission to conduct the VDT study-- the removal of the stress and fertility questions.[79] There was a Catch-22 quality to OMB's reasoning for rejecting the stress questions. OMB justified its decision saying that the stress questions had "no practical utility," since "there is insufficient evidence relating these items to hypotheses concerning VDT exposure and adverse reproductive

outcomes."[80] Dr. Irving J. Selikoff, of the Mt. Sinai School of Medicine in New York, noted that this was true, but only "... because the subject has not been studied."[81] Dr. Selikoff, the nation's premier epidemiologist, added "[w]e badly need information about this...."[82] Dr. William J. Butler of the University of Michigan, who was conducting a reproductive study of VDT workers at the time which included questions regarding stress, said: "... occupational stress is one of the leading suspected causes of the reported association between VDT exposure and pregnancy outcome. Therefore, collecting information on stress is crucial for the thorough investigation of this occupational health issue."[83]

Moreover, OMB knew that NIOSH needed the stress questions:

> ... to confirm that the two [study and control] groups are similar with respect to workplace stressors and personal anxiety factors, factors which have been hypothesized by the public as the reason for the reported [miscarriage] clusters. Failure to obtain these data would mean that we could not know if the groups are comparable in these respects.[84]

Responding to OMB's decision, Dr. Schnorr, the study's director said "... that those questions were important to the study and without them the study will be less credible. There is no advantage to deleting them."[85]

Like BellSouth's consultants, OMB also criticized the inclusion of fertility questions on the grounds that "[m]easuring the effect of VDT exposure on fertility is not

the purpose of the study" and that "NIOSH has not demonstrated that the study design would provide sufficient statistical power to test any hypothesis relating to fertility."[86] OMB's objection illustrated its lack of epidemiological expertise. Technically, the study's primary purpose was to investigate reproductive outcomes, not the fertility, of VDT workers in the telecommunications industry. But determining the number of adverse reproductive outcomes related to working with VDTs could not be adequately assessed without determining the degree of fertility. Furthermore, OMB's rejection of the fertility questions disregarded the fact that the study was being done in response to widespread public fear that there was a link between VDT exposure and infertility.

Ironically, OMB's demand that fertility questions be deleted undermined NIOSH's efforts to meet another of OMB's objections to the study design: recall bias. Recall bias, which is a recurring problem in epidemiological studies, refers to the fact that interviewee's responses to questions may be subject to memory lapse. NIOSH intended the fertility questions to serve in part as an "indirect method of assessing recall bias" on questions relating to spontaneous abortions.[87]

There was an Orwellian-like irony to OMB's decision forbidding NIOSH from asking female respondents questions regarding fertility in a study entitled: Reproductive Study

of Women Who Work With Video Display Terminals.[88] Dr. Selikoff wrote that "NIOSH cannot conduct a meaningful study of reproductive outcome in relation to work if NIOSH is prohibited from asking women (a) whether they were working, and (b) whether they have a uterus."[89] As Dr. Selikoff implied, OMB economists, statisticians and desk officers, were not capable of making complex decisions regarding epidemiology.

Again, OMB's conditions for approval of the VDT study closely echoed BellSouth's list of complaints, reinforcing charges that it was business' ombudsman. OMB's demand that stress and fertility questions be deleted from NIOSH's study paralleled BellSouth's criticism that these questions were "useless and intrusive." The CWA's LeGrande was skeptical of OMB's denials of collusion with BellSouth. It was "either ironic or just strange" he said, that the revisions required of NIOSH by OMB were "exactly the points proposed by Bell-South." LeGrande described the relationship as one where BellSouth had the ideas for the revisions and "OMB happened to have the letterhead paper."[90]

Following OMB's denial of NIOSH's appeal to maintain the integrity of the VDT study, the conflict shifted to the Congressional arena. During the summer of 1986, Congressman Weiss waged a one-man campaign to have the deleted questions reinstated. An analysis of the study protocol commissioned by Weiss was released by the OTA in August. It was critical

of OMB's deletion of the fertility and stress questions, concluding that:[91]

> The OMB-deleted questions would have provided valuable information for a study of the possible adverse reproductive effects of radiation exposure from VDT work. Spontaneous abortions may occur before a woman is sure she is pregnant and may be subject to differential recall between exposed and unexposed groups. An analysis of the fertility of the two groups can provide information on the possible occurrence of early spontaneous abortions and the possibility of recall bias. Information on stress can assist the researchers in ensuring that the two groups of operators really are similar.
>
> Due to the high visibility of this study and the likely use of the conclusions by a wide variety of individuals, organizations and governments, it is important that its conclusions be as clear as possible. The questions deleted by OMB were intended to provide important and useful information that would reduce the potential for alternative explanations of study results. While the wording of specific questions and the order of the questionnaire might be reexamined and improved, complete deletion of questions on fertility and stress will limit the conclusions that can be drawn from this study.

Weiss' analysis of the controversy led him to the conclusion that the executive order granting OMB the power to review regulations infringed on the powers given to the regulatory agencies by Congress. On September 3rd, with time and alternatives running out, he sent HHS Secretary Otis R. Bowen a copy of OTA's evaluation that the fertility and stress questions should be reinstated and urged him "to override the Office of Management and Budget's inappropriate demands."[92] Weiss reminded Bowen that he had the statutory power to determine what questions went into the study, but

Bowen's aide replied that it was OMB's decision to make, not theirs.[93]

During the fall of 1986, the effort to reinstate the fertility and stress questions gained momentum both in and outside of Congress. Weiss-- joined by his colleagues, Augustus F. Hawkins (D-Cal.), and Mary Rose Oakar (D-Ohio)-- wrote to Secretary Bowen urging him to use his Congressionally-given power to overrule OMB.[94] Their efforts were joined by the leaders of the CWA, SEIU, and 9to5, who also wrote to Secretary Bowen.[95]

In October, a surprising development added a compelling new dimension of authority to efforts to convince OMB to reinstate the stress and fertility questions. One of BellSouth's consultants, Dr. Zierler, announced that she had serious reservations regarding OMB's politicization of the scientific review process and added that the fertility and stress questions should be included. Her turnaround resulted from discussions with Dr. Diana Zuckerman, one of Congressman Weiss' staff members, who supplied Zierler with a review of the OTA analysis of the deleted questions and the Health Hazard Evaluation conducted by NIOSH on BellSouth VDT workers in North Carolina. After seeing this information, she wrote to Weiss, expressing her misgivings about OMB's role:

> I have become increasingly aware of the role of the Office of Management and Budget in setting up barriers to governmental scientific activity. Inadvertently, I feel that I participated in a process that served to

> undermine the spirit of peer review, despite the fact that I believe the protocol was improved by the acceptance of revisions suggested by the BellSouth consultants. The adversarial undertone of the exchange between NIOSH and the industry-initiated review created a climate of mistrust and led to accusations of being bought by industry. Regardless of the intention of the review from the reviewers perspective (and that intention was solely in the interest of scientific integrity), the effect of the review was to delay the study's implementation (at the cost of increased publicity, thus increasing the potential for recall bias-- ironically, the major problem the industry reviewers were addressing) and to confer to OMB (a nonscientific agency) the power to act as scientists without the benefit of scientific expertise.[96]

Referring to BellSouth's interference in NIOSH's VDT study, Dr. Zierler added that "if the study findings could lead to policies that affect private industries, then these industries should have no participation in the review process."[97]

The news of Dr. Zierler's reevaluation of the need for the stress and fertility questions, in light of information she had not previously considered, highlighted the shortcomings of OMB-reliance on paid industry consultants. As the Government Operations Committee reported:

> The use of consultants paid by the industry presents an obvious conflict of interest... Although the consultants were described by BellSouth as independent, their interest in the study apparently resulted from their consulting relationship with the industry; they had not taken advantage of earlier opportunities to express concerns about the study, when scientists from across the country were asked to comment on the study in December 1984.[98]

Dr. Zierler's reversal also forced BellSouth to publicly announce that it had no further objection to their inclusion in the study. BellSouth rationalized its about-

turn by saying that her reevaluation was "based on new scientific evidence and information that was not available" when she last reviewed the study questionnaire in April.[99] But BellSouth's rationale was disingenuous. It opposed the inclusion of the stress and fertility questions on grounds of self-interest, not good science. The "new scientific evidence and information" was a reference to the materials that Dr. Zuckerman had brought to Dr. Zierler's attention, but sufficient evidence was available to both consultants before April to justify the inclusion of the stress and fertility questions. If either BellSouth, its consultants, or OMB, had been truly interested in ensuring good science, they could easily have obtained answers to their questions from NIOSH's Dr. Schnorr, the project director. BellSouth's last minute turnaround, coming 4 months after OMB had made its "final decision,"[100] can only be explained as a public relations ploy that was not expected to alter the final outcome.

Congressman Hawkins wrote to Bowen on October 20th asking him to reconsider in light of Dr. Zierler's recantation. Replying on November 12th, Bowen said that HHS "... has reached accord with OMB on the design, procedures, and content of the study," and that "NIOSH is proceeding with the study as directed."[101] Weiss wrote to Bowen on November 18th, inquiring whether this meant that OMB "continues to limit" the contents of the VDT study.[102]

Hawkins also wrote to Bowen, stating that, since both Dr. Zierler and BellSouth had dropped their opposition, "... it would seem that OMB does not have a leg to stand on in opposing the reinsertion of the [stress and fertility] questions."[103] On December 23rd, Bowen's deputy, S. Anthony McCann replied to Hawkins stating that "the Department cannot reinsert questions into a study without prior approval by OMB as required by the Paperwork Reduction Act."[104] It was clear that OMB was making the decisions, and Bowen had no intention of challenging its authority.

Senator Levin wrote to OMB director James C. Miller III stating that "[t]he deletion of the questions on stress and fertility throws the value of the VDT study into question," and urged him to reinstate them.[105] Ignoring BellSouth's and Dr. Zierler's reversal, Gramm repeated the same objections to Senator Levin on December 16th, that OMB had told HHS on June 5th.[106] She said that "the burden to respondents both in terms of the number of [stress and fertility] questions asked and the sensitive nature of the questions" warranted their exclusion from the study.[107] But a Levin aide countered Gramm's assertion, saying: "It is okay for them to stop when they want. In fact, most of them are eager" to take part.[108]

While Reagan's OMB was quick to control the cost of regulations, money was no object when it came to forcing agencies to comply with its interpretation of the Paperwork

Reduction Act. "The cost of the study was not a factor in OMB's action," Gramm told Senator Levin.[109] But NIOSH spent $53,451 in personnel costs in order to make the OMB-ordered paperwork reduction revisions-- more than 13 percent of the study's approximately $400,000 cost.[110] Also, OMB's exclusion of the stress and fertility questions made it virtually certain that the federal government would have to incur additional costs to conduct another study. As Congressman Weiss put it:

> The NIOSH study on VDTs was supposed to examine how the work environment affects infertility, but because of OMB interference no infertility questions are included. The government will then have to fund another study to find out whether VDTs cause infertility, and if so, how that could be prevented.[111]

Gramm admitted to Senator Levin that the VDT study would probably be inconclusive, requiring another study.[112] What Gramm didn't acknowledge was that her rejection of the stress and fertility questions was a major reason why.

The study, involving 4,000 BellSouth and AT&T operators, finally got under way in May 1987, five years after it was first proposed by NIOSH. Without the stress and fertility questions, NIOSH's VDT study was doomed to be a big disappointment from the start. As the study got under way, Dr. Schnorr reiterated her concern that the OMB-ordered "changes may hurt the ultimate value of the study."[113]

The lost opportunity to investigate whether there was a correlation between reproductive outcomes and VDT use was accentuated by the release of two more studies. In August

1987, Swedish researchers found that a higher number of miscarriages occurred in mice exposed to nonionizing radiation similar to that emitted by VDTs than those who weren't exposed illustrated the need to ask female VDT users of reproductive age questions regarding fertility and stress.[114] Once again, it was Congressman Weiss who raised the need for a federally-funded study: "These findings are extremely important and reaffirm the need for a definitive study assessing the dangers of VDTs for pregnant women."[115] The tragedy, Weiss observed, was that while spokesmen for CBEMA and COT disputed the significance of the Swedish studies findings, "OMB's interference with NIOSH's study has set back efforts [to determine adverse VDT health affects] by at least two years, possibly putting thousands of pregnant women at risk for birth defects."[116]

In June 1988, epidemiological evidence of the need to address the VDT reproductive hazards problem was supplied by a study of 1,583 pregnant women conducted by the Kaiser-Permanente Medical Care Program of California. It found that those who worked more than 20 hours a week on VDTs during the first three months of pregnancy had statistically significant increases (80%) in miscarriages, and recommended that further research be conducted to see if VDT work-induced stress might be the cause.[117]

Nine years after it first agreed to undertake the task, NIOSH's epidemiological study of reproductive hazards of VDT

workers was published in the prestigious New England Journal of Medicine on March 14, 1991. "The use of VDTs and exposure to the accompanying electromagnetic fields were not associated with an increased risk of spontaneous abortion," the study concluded.[118] Given that the stress and fertility questions had been deleted, this was not a surprising result.

The study's finding that EMFs posed no threat to female VDT users of reproductive age was curious in that the study was not designed to deal with the nonionizing radiation question. In fact, NIOSH reversed its initial stand in 1984 and decided not to include a survey of EMFs in the study.[119] This was a severe blow that weakened the study's potential to explain whether EMFs were a factor in miscarriages as many hypothesized. Given that NIOSH did not make its decision to measure EMFs until the research was nearly complete,[120] it is not surprising that the results were flawed. The major problem was that both the control and study groups were exposed to EMFs. This made it impossible for NIOSH to compare the effects of exposure to EMFs and nonexposure, and constituted a severe limitation on the study's value.[121]

If OMB had allowed NIOSH to ask questions regarding stress and fertility, and had NIOSH sought and been given permission by OMB to include an EMF survey in its study protocol, then the public might be able rest a little easier

knowing that the federal government had finally established that there was no risk of miscarriage associated with the workplace use of VDTs. But OMB's interference, which striped the VDT study of its primary purpose, insured that the issue would remain unresolved. It also gave many people, taking the media's reports of the study at face value,[122] a false sense of security about working with VDTs.

The VDT Study: Part of a Larger Pattern of OMB Interference.

The VDT study's emasculation was typical of a larger pattern of OMB interference on behalf of business interests. In a study of the 51 research projects submitted by the Centers for Disease Control (CDC) to OMB between January 1984 and March 1986, the Harvard School of Public Health and the Mt. Sinai School of Medicine found that OMB was 7 times more likely to reject or limit the scope of occupational safety and health and environmental studies than those that focused on other subjects, such as infectious diseases.[123] Unlike infectious disease research, occupational and environmental studies were especially vulnerable to OMB interference because of the economic ramifications their results could have on business practices. Viewing its mission as the lessening of the regulatory burden on business, OMB was more likely to reject, delay, or limit, occupational studies.

The researchers also found that OMB was more likely to reject or limit the scope of reproductive health studies than other types of studies.[124] Reproductive studies, which, like the VDT study, might reveal a correlation between computer use and adverse reproductive outcomes, were also more likely to stir industry unrest for economic reasons. Add to this the federal government's research bias in favor of men's health over women's health studies (as documented in the previous chapter) and it is not surprising that OMB was more likely to reject reproductive, than other studies. As both an investigation of occupational safety and health and women's reproductive health, the VDT study was perceived by BellSouth as a double threat to its economic interests. This also made it especially vulnerable to interference from a like-minded OMB.

The pattern of OMB's interference in the VDT study was strikingly similar to its pattern of intervention in the other studies investigated by the Harvard/Mt. Sinai researchers. They found that OMB's review, "... which was superimposed on the peer review process, generally relied on single consultants rather than a panel of experts. The process was poorly documented and often demonstrated a dismaying ignorance of the fundamentals of science and public decision making."[125] The research team, which included three of Dr. MacMahon's colleagues at the Harvard School of Public Health, found that Reagan's OMB had

politicized the medical scientific process to a degree unequaled by previous administrations. It concluded that:[126]

> The health policy implications are serious; OMB is clearly interfering with the substance of CDC research. OMB has delayed, impeded, and thwarted governmental research efforts designed to answer public demands for information on serious public health questions. Rather than minimize the cost of information collection, the paperwork review process has resulted in a diversion of tax dollars from productive health research into paperwork clearance activities and unnecessary contracting costs.

In effect, the Reagan administration had placed private economic interests before the public's interest in health and science. OMB's interference in the VDT study was part of a larger and more pervasive pattern of the Reagan administration's close and secret cooperation with industries that were affected by pending regulations and studies. Disregarding a 1980 Congressional law requiring the regulation of infant formula, Reagan's OMB vetoed pending Food and Drug Administration (FDA) regulations. As a result, contaminated infant formula soon began to circulate in the unregulated market.[127] In 1982, the FDA proposed banning 6 carcinogenic color additives and dyes in accordance with the Delaney Amendment's prohibition against the use of cancer causing agents. Alerted by a friend who represented the industry's trade association, Vice President Bush had OMB kill the proposal.[128] Reagan's OMB went so far as to strip the FDA commissioner of his power to order carcinogenic agents off the market.[129] Not even 21 deaths and over 800

injuries caused by allergic reaction to sulfites was sufficient to move OMB to permit the FDA to require warning labels. A public outcry and the threat of Congressional action had to ensue before the Reagan administration acted.[130] When the FDA proposed regulations stipulating a mandatory warning that aspirin use by children who have influenza or chicken pox could cause Reyes syndrome, a rare but potentially fatal disease, lobbyists for the Aspirin Foundation of America approached Bush for help. He contacted OMB, which forced the FDA to agree to voluntary warnings--which proved to be ineffectual.[131] Just before the VDT study's rejection, and in very much the same way, OMB rejected NIOSH's peer reviewed and approved dioxin/Agent Orange study protocol on behalf of the Dow and Monsanto Chemical Companies.[132] In 1986, OMB rejected the Environmental Protection Agency's (EPA) pending asbestos regulations on behalf of industry. The pattern of industry's and OMB's interference was virtually the same as in the VDT study incident.

A major expansion of OMB's power to intervene in agency rule making on industry's behalf occurred under the tenure of Douglas H. Ginsburg, who is best remembered as the Reagan Supreme Court nominee who withdrew his name from consideration for the post when it was revealed that he had smoked marijuana. Less well known, but more lasting in its impact, was his role in undermining occupational safety and health

regulation as OMB's director of OIRA from July 1984 to August 1985.[133] Complaining that OMB's final "review comes too late," in the regulatory process, Ginsburg oversaw the development and implementation of executive order 12498.[134] Signed by President Reagan in January 1985, it gave OMB's OIRA the power to review proposed regulations from the start of the process. Just as agencies were required to submit annual fiscal budget requests to OMB, they were now required to submit annual "regulatory budgets," listing high priority regulations in the making.[135] In effect, executive order 12498 gave OIRA greater power over the regulatory agencies by permitting it to secretly squelch regulations and studies before the public was even aware of their existence. Reagan administration supporters defended executive order 12498, saying it was necessary tool if the president was to exercise greater control over the burgeoning social regulatory bureaucracy.[136] In practice, however, this enhanced power resulted in increased OMB interference in OSHA regulations on industries' behalf. In fact, the Department of Labor, which houses OSHA, became "Number One on" OIRA's "hit list," with 100 pending regulations under OMB review.[137] The Department of Health and Human Services, which houses NIOSH, was number two on OIRA's "hit list" with 88 pending regulations under OMB scrutiny.[138] The U.S. Chamber of Commerce welcomed this development, proclaiming that business would "benefit from OMB's efforts to coordinate and

provide a preview of the regulatory actions of the executive branch."[139]

By the time Gramm became head of OIRA, there was a well-worn path from OMB to the business community, hacked through a field of established and pending safety and health regulations. Between 1980 and 1986, NIOSH's budget was cut from $80,382,000 to $67,683,000; a 19 percent cut (a 42 percent cut when adjusted for inflation). That NIOSH was singled out by Reagan's OMB for special treatment is illustrated by the fact that, its parent agency the CDC received a 28 percent increase during the same period. NIOSH's staff fell from 1,019 in 1980 to 806 in 1986, a 21 percent decrease. Had the Reagan administration had its way with Congress the cuts would have been deeper.[140] In 1986, the House Committee on Government Operations observed that federal occupational safety and health data collection was 72 years behind that for communicable disease research and that increasing spending for preventive research would have a greater payoff in terms of reduced occupational illness than spending for medical care after the diagnosis of illness.

The Reagan administration's use of OMB as an ombudsman for business interests did not go unnoticed in Congress. Congressman John Dingell (D-Mich.) noted that "... OMB's arguments against EPA's [asbestos] guidelines were virtually identical to arguments presented-- in secret and outside of

the regular procedures-- to OMB by industry officials."[141] Acting on behalf of the chemical and medical industries, OMB suddenly, and without prior notice, eliminated OSHA's short term exposure limit (STEL) for ethylene oxide on the eve of its court-ordered publication in the Federal Register on June 15, 1984. Linked by scientific studies to cancer, genetic damage and miscarriages, ethylene oxide is used by a largely female hospital workforce-- many of whom are of child bearing age-- to sterilize surgical equipment. An amicus curiae brief filed by 5 House Committee Chairs on behalf of a lawsuit to reinstate the OSHA rule stated that OMB conducted its review in an "off the record" and "clandestine" way, excluding the public in the process.[142] OMB's method for eliminating the STEL was similar to its rejection of the original VDT study protocol. As the Congressmen noted, OMB rationale for rejecting the STEL "... thoroughly parroted the arguments that industry sources opposed to the rule had previously made-- without success-- to OSHA."[143]

The Administrative Procedures Act requires that the regulatory process be conducted in a public and deliberate manner, but the Reagan administration's OMB turned it into a private and arbitrary one. "One of the most troubling aspects of OMB's review of regulations," Congressman Weiss observed:

> is the secrecy in which it takes place. Behind closed doors, nameless and faceless OMB employees-- using the powers granted them not by statute, but by executive order-- have forced expert agencies like the Food and

> Drug Administration to alter regulations. Often these orders are issued over the phone, with no documentation of the communication.[144]

This practice was so pervasive under Miller's tenure at OIRA that it moved some members of Congress to remark that "his office served as a back-room 'conduit' for industries anxious to escape federal regulations, but less anxious to have their advocacy appear in a public docket." In fact, Miller became notorious for refusing "... to publicly log his meetings with outside parties."[145] As Miller defiantly told Congressman John Dingell's subcommittee in 1981, "We will not maintain a file and a record...." of contacts with business interests seeking regulatory relief. Miller's deputy, Jim Tozzi, boasted that "I don't leave fingerprints."[146]

The trend towards institutionalizing secrecy was further accelerated in Reagan's second term by executive order 12498. It forbade the social regulatory agencies from publicly discussing or soliciting comment on proposed regulations without permission from OMB. OMB even claimed that limiting the public's access would make the regulatory review process more open.[147] However, there was nothing open about OMB's ability to squelch pending regulations it did not like without the public's knowledge or comments. As Alan B. Morrison observed, this gag order did not apply to OMB, which, given its deregulatory outlook, gave industry a

tremendous advantage over other actors in the policymaking process:[148]

> What makes matters worse is the fact that OMB is under no similar injunction of secrecy. Given the predilections of OMB desk officers, industry will know perfectly well what is being proposed and will surely have its input into OMB's decision whether to permit an agency to begin to consider a problem in earnest.

This is precisely what happened in the case of the VDT study, and numerous others that were rejected or substantially revised during the 1980s.

Reviewing OMB's pattern of interference in OSHA, NIOSH and FDA studies, a 1986 House Committee on Government Operations report concluded that OMB was "... not qualified to make health policy decisions, or research of any kind."[149] In comments that addressed the issue of OMB's interference in FDA's work, but applied to its increased powers over OSHA, NIOSH and EPA, as well, Senator Proxmire remarked that:

> ... there has been increasing political pressure to place economic consideration above considerations of public health and the three Commissioners to serve during the Reagan administration have been kept on increasingly short leashes. The result has been a triumph of politics over science and has led to criticism from both sides of the aisle.[150]

Conclusion.

Although every president since Carter has expanded OMB's powers over the social regulatory process, none has done so as dramatically and with such far reaching effect as Reagan.[151] Using executive orders 12291 and 12498 as its

instruments, the Reagan administration gave OMB the power to oversee and overrule the regulatory process from start to finish although the budget agency was ill-equipped to micro-manage the regulatory process.

The Reagan administration's interference in NIOSH's VDT study was one example of how, on a larger scale, it utilized OMB to undermine the regulatory process in the name of granting business interests "regulatory relief" from health and safety regulations. In the process, the Reagan administration politicized medical and scientific aspects of the regulatory process, forcing research content to conform to its ideological agenda. As a result, the value of NIOSH's Study of BellSouth's VDT operators was put in doubt from the start.

The effect of the Reagan administration's OMB policy was to undermine the primacy of the rule of law, and to elevate administrative discretion based on the preferences of powerful groups affected by regulation. Furthermore, the Reagan administration redefinition of the agencies' Congressionally-mandated missions upset the equilibrium that existed between the two branches in their shared responsibility for overseeing the bureaucracy. This provoked Congress to attempt to restore the balance. In 1986, Congress required that future directors of OIRA be confirmed by the Senate, but, politically fragmented and distracted, Capitol Hill was unable to muster majorities to rein in the

expanded powers given to OMB in the two executive orders.[152] Even if it had, veto-proof majorities would have been next to impossible to mobilize. Most of the limited success in holding OMB accountable to the law came as a result of suits filed in the courts.[153]

The Reagan administration made two arguments to justify its grant of expanded powers to OMB. First, it argued that OMB's role vis-a-vis the content of agency policymaking was strictly an advisory one, responsibility for making the final decisions rested with the appropriate agency head. It denied that OMB's acted, in effect, as the first and final arbiter of agency policymaking. Second, the Reagan administration maintained that its grant of expanded powers to OMB to oversee the social regulatory process was covered by the president's Constitutionally-mandated duty to "take care that the laws be faithfully executed."[154]

First, in the ethylene oxide case, Reagan's Justice Department maintained that OMB's role was strictly advisory regarding agency rulemaking and that decision making power remained with OSHA's superior, the Secretary of Labor.[155] But the Reagan administration implicitly admitted, that, in practice, this was a hollow distinction when it said that "[t]he agency head remains free <u>to risk presidential discipline</u> and take the action he believes appropriate."[156] This was the Reagan administration's way of saying it would not tolerate agency and department heads who made decisions that

were not in accord with the president's regulatory objectives as spelled out by OMB.

HHS Secretary Bowen understood where power lay when he told Congressman Weiss that the final say over whether the stress and fertility questions should be restored to NIOSH's VDT study rest with OMB, not himself. OMB made it clear where it thought final authority rested, too, when it told Bowen that "... our approval [of the VDT study] is conditioned on HHS agreeing to all [our] provisions ...."[157]

The Reagan administration's second argument has a contradiction at its core. If the president is free to ignore the will of Congress, then how is he faithfully executing the laws they pass? The president's duty to "take care that the laws be faithfully executed" does not give him the unilateral authority to redirect the Congressionally-mandated missions of the social regulatory agencies. As indicated in this chapter, the Reagan administration violated the Congressional intent of the Paperwork Reduction Act and various other acts governing OSHA, NIOSH, EPA and the FDA.

OMB had another check on an agency's independence; the Paperwork Reduction Act required that all submissions of forms to the public (e.g., rules and studies) carry a control number assigned by OMB upon its approval.[158] The Act states that any government regulation that does not carry the control number is "bootleg," and the public (e.g.,

business) is free to ignore it.[159] OMB can simply threaten to refuse to assign a control number until a recalcitrant agency head complied with its wishes.

As this chapter has shown, the Reagan administration went well beyond the Congressional intent of the Paperwork Reduction Act. Congress intended that "[t]he Government-wide management system created should ... help solve information management problems...."[160] As the Paperwork Reduction Act's legislative history indicates, Congress did not intend for OMB to remake occupational safety and health policy.

Regarding NIOSH's VDT Study, Congress did not intend for OMB to control the course and content of biomedical and epidemiological research. It specifically considered whether or not to exempt biomedical and epidemiological studies from OMB's paperwork review. Fearing that OMB might be tempted to meddle in the content of scientific and medical research, the Association of American Colleges and the Association of Schools of Public Health, among others, asked Congress to exempt biomedical and epidemiological research from the law's requirements. The Senate Committee on Governmental Affairs sympathized with their request, but did not think the exemption was necessary for three reasons. First, most research was conducted by nongovernmental parties through "assistance grants," which were exempt from the law's provisions. Second, they believed that Congressional oversight would be sufficient to maintain the independence

of government sponsored biomedical and epidemiological research. Finally, since political interference had not been a problem for the past 38 years of budget agency review, the Committee assumed that the OMB director would continue to be the defender of the integrity of biomedical and epidemiological research. As the Committee said, the OMB "Director has sufficient flexibility in the administration of this Act to ensure that our nation's health research effort is not impaired."[161] In practice, however, none of these assumptions protected NIOSH's VDT study, or other pending regulations and studies, from OMB's meddling.

It is ironic that, in the name of preventing wasteful paperwork burdens from being imposed on the public, OMB's interference in NIOSH's affairs insured that a greater paperwork burden was imposed on government administrators and Congress. OMB forced NIOSH to go through 3 revisions of the study and countless additional pieces of paper were generated in the form of memos, hearings and reports.

Also ironic was the Reagan administration OMB's disregard for cost of the VDT study despite its order that agencies should be cost effective. Overall, administrative expenditures had been conservatively estimated to run into the hundreds of thousands of dollars per OMB-ordered document by 1985.[162] The result of OMB's handiwork was a study that demonstrated considerably less than it could have for its $400,000 price tag, and necessitated a need for

further expenditures on additional studies to do what the NIOSH VDT study originally intended to do. In 1984, NIOSH estimated the study would cost $100,000 and take three years to complete.[163] While it is not unknown for studies to cost more and take longer to complete than originally planned, OMB's interference was a major reason for the four-fold increase in the study's cost, why it took twice as long as expected to complete, and why its findings were of limited value.

The process of secret and arbitrary decision-making on regulatory issues that affect business interests was also a high priority in the Bush administration.[164] As head of the Council on Competitiveness, Vice President J. Danforth Quayle played the same role that Bush played, as head of President Reagan's Task Force on Regulatory Relief. Like its predecessor, the Council on Competitiveness was a high-powered and secretive conduit for businesses seeking regulatory relief. The Council described itself as being in the business of "reducing regulatory burdens on the free enterprise system."[165] As was the case with the Task Force on Regulatory Relief, the OMB director was a Council member and played the key role in seeing that its decisions were implemented by the regulatory agencies in a coordinated fashion.[166] President Bush's declaration of a three-month moratorium on proposed new regulations during his 1992 State of the Union address was recommended by the Council on

Competitiveness, just as President Reagan's 60-day suspension of pending regulations in 1981 came from the Task Force on Regulatory Relief.[167] As pressures on the state to maximize conditions favorable to economic growth increase, it can be expected to continue to use OMB to exert tighter control over OSHA and NIOSH.

Notes.

1. E. E. Schattschneider, The Semisovereign People: A Realist's View of Democracy in America (Hinsdale, Il.: Dryden Press, 1975), 8.

2. Antonin Scalia, "Deregulation HQ: An Interview on the New Executive Order with Murray L. Weidenbaum and James C. Miller III." Regulation, March/April 1981, 19. For a sample of his antipathy to occupational safety and health see James C. Miller III, "Occupational Safety and Health Administration," Regulation, November/December 1980, 22-23 where he says: "The Occupational Safety and Health Administration ... is unique, even among federal regulatory agencies. It has surely the worst performance record. None is more despised by the business community... It wastes precious resources and has done little to improve worker safety and health."

3. Occupational Safety & Health Reporter, January 30, 1986, 915-17.

4. The phrase "social regulatory agencies" is used to denote federal government bureaucracies which regulate aspects of the economy and society that, unlike independent commissions which regulate a particular industry, cut across industry lines. As they regulate more industries than independent commissions, social regulatory agencies usually incur more business opposition. The Environmental Protection Agency and the Food and Drug Administration are other examples cited in this chapter.

5. P.L. 96-511, 94 Stat. 2812.

6. Ibid., 6245. Only the Federal Elections Commission is exempt from this requirement. Independent regulatory agencies may override OMB rejections by a majority vote, 6242-43.

7. James E. Anderson, Public Policy: An Introduction, 4th ed. (Boston: Houghton-Mifflin, 1990), 134-35.

8. President Nixon established OMB by executive order in 1970. Not even Congress' post-Watergate Crisis concern with reigning in excessive executive authority altered the presidency's unilateral expansion of control. In 1974, President Ford issued an executive order requiring all pending rules to be evaluated for their inflationary impact. In 1978, President Carter, responding to industry pressure that OSHA regulations were too costly to implement, issued executive order 12044, which established the Regulatory Analysis Review Group (RARG). The extension of OMB's authority over OSHA and NIOSH is part of the larger development of the rise of administrative discretion in an increasingly complex, hierarchically-structured industrial society where great pressure is placed on government to meet the demands of powerful organized interests.

9. The regulatory commissions, by virtue of their quasi-independent status, are not covered by executive orders.

10. In American Textile Manufacturers Institute v. Donovan (1981), the cotton dust case, Justice William Brennan said: "Congress was fully aware that the [Occupational Safety and Health] Act would impose real and substantial costs of compliance on industry" but "it believed that such costs were part of the costs of doing business." The Reagan administration then adopted a "cost-effectiveness" analysis which turned out to be cost/benefit analysis by another name. Cited in James Crawford, "The Dismantling of OSHA," The Nation, September 12, 1981, 205.

11. The Constitution, Article II, Section 3.

12. See Gary C. Bryner, Bureaucratic Discretion: Law and Policy in Federal Regulatory Agencies (New York: Pergamon Press, 1987).

13. BellSouth Corporation is an Atlanta-based, holding company, founded in the wake of the 1983 break-up of AT&T's virtual monopoly over much of the nation's telephone service. Its subsidiaries include South Central Bell, Southern Bell and BellSouth Enterprises.

14. U.S. Congress, House, Committee on Education and Labor, OSHA Oversight-- Video Display Terminals in the Workplace. Hearings, before the Subcommittee on Health and Safety, House of Representatives, 98th Cong., 2nd sess., 1984, 297-298.

15. Ibid., 298, 299. The American Newspaper Publishers Association concurred with CBEMA's view that VDT use was perfectly safe, and conducted a radiation test of a cathode ray tube monitor in the hearing room to prove its point. Since the demonstration was not conducted under laboratory conditions, it did nothing to answer the scientific questions regarding VDTs and nonionizing radiation. But it did have the political effect that ANPA intended-- reassuring the Congressmen and many of those who watched that VDTs were safe. Ibid., 262-270.

16. Dr. Jay Bainbridge, Assistant Director of NIOSH's Division of Surveillance, Hazard Evaluation, and Field Studies, quoted in "NIOSH Planning Reproductive Study of VDT Workers," in Louis Slesin and Martha Zybko, eds. Video Display Terminals: Health and Safety (New York: Microwave News, 1983), 73.

17. "NIOSH Plans to Study Pregnancy Risks," VDT News, May/June 1984, 8-9.

18. "No Reproductive Risk Seen, But Study Set to Gather Further Data, Millar Tells Panel," Occupational Safety & Health Reporter, May 17, 1984.

19. "Pregnancy and VDT Workers: Pressure Leads to a Quest for Hard Facts," Business Week, April 23, 1984, 80.

20. Ibid., 82.

21. Ibid., 80.

22. Ibid., 80.

23. David Myers, "Pregnant Users Seek Non-VDT Reassignments," Computerworld, April 30, 1984, 6.

24. Ibid., 6.

25. Myers, "Pregnant Users Seek Non-VDT Reassignments," 6.

26. "NIOSH Cuts Back Reproductive Hazards Study," VDT News, January/February 1985, 4.

27. Teresa M. Schnorr, "The NIOSH Study of Reproductive Outcomes Among Video Display Terminal Operators." Reproductive Toxicology 4 (1990): 61.

28. "NIOSH To Study Effects of VDTs On Female Reproductive Systems," Occupational Safety & Health Reporter, January 3, 1985, 565.

29. "NIOSH To Study Effects of VDTs," Occupational Safety & Health Reporter, 565.

30. "High-Level Review Group Organized; 'Midnight Regulations' To Be Studied," Occupational Safety & Health Reporter, February 5, 1981, 1226-27.

31. U.S. Congress, Committee on Energy and Commerce, OMB: The Role of the Office of Management and Budget in Regulation. Hearings, before the Subcommittee on Oversight and Investigations. 97th Cong., 1st sess., June 19, 1981, 97.

32. "NIOSH Cuts Back," VDT News, 4.

33. Cited in "NIOSH Appeal Planned of OMB Rejection of VDT Reproductive Hazards Research," Occupational Safety & Health Reporter, January 16, 1986, 885.

34. Marjorie Sun, "Federal VDT Study Finally Wins Approval," Science 232 (June 27, 1986): 1595.

35. Okie, "VDT Study Endangered By OMB," A21.

36. Schnorr, "The NIOSH Study of Reproductive Outcomes," 61.

37. Okie, "VDT Study Endangered By OMB," A21.

38. VDT News

39. Suzanne G. Haynes, "Presentation at the American Heart Association Science Writers Forum," Monterey, CA.: January, 1985. The study was conducted with the help of the North Carolina Committee on Occupational Safety and Health (NCCOSH) and the CWA. This was followed by the release of the NCCOSH's report, Office Workers: Stress Survey Results, in March. "Angina Study Suggests Elevated Risk for VDT Users, Researchers Tell Meeting," Occupational Safety & Health Reporter, January 24, 1985, 624. "CWA North Carolina Study Reports Link Between VDT Use, Angina: Urges More Research," Occupational Safety & Health Reporter, March 28, 1985, 828.

40. Ibid., 5. U.S., Department of Health and Human Services, National Institute of Occupational Safety and Health, Health Hazard Evaluation Report: AT&T, Southern Bell and United Telephone, North Carolina. Rept. No. HETA 85-452-1698, May 1986, 2. Also, see the exchange between Teresa M. Schnorr, Michael J. Thun, William E. Halperin, "Chest Pain in Users of Video Display Terminals," and "Reply" by Andrea Z. LaCroix and Suzanne G. Haynes, JAMA, 257 (February 6, 1987) 627-628.

41. Ibid., 2.

42. "Angina Study Suggests Elevated Risk for VDT Users, Researchers Tell Meeting," Occupational Safety & Health Reporter, January 24, 1985, 624; "CWA North Carolina Study Reports Link Between VDT Use, Angina: Urges More Research," Occupational Safety & Health Reporter, March 28, 1985, 828. U.S., Department of Health and Human Services. National Institute of Occupational Safety and Health. Health Hazard Evaluation Report: AT&T, Southern Bell and United Telephone, North Carolina. Rept. No. HETA 85-452-1698, May 1986.

43. "When we originally got involved in the study, it was to be a multi-industry study," a BellSouth spokeswoman said. "It's now narrowed down to a one-industry, one company study, but we're still willing to do it," she added, after the study had been stripped of the questions objected to by BellSouth. Okie, "VDT Study Endangered By OMB," A21; Sun, "Federal VDT Study," 1594-95.

44. Ibid., A21. AT&T, which hadn't experienced a problem with its VDT workers, was willing to participate in the study.

45. Mark A. Pinsky, "O.M.B.'s Chokehold on Government," The Nation, January 23, 1988, 91.

46. "Toxic Control Law Needs Helping Hand," Chemical Week, December 15, 1976, 37.

47. Philip M. Boffey, "Panel Sees Problem in Study of Effects of Agent Orange," New York Times, November 10, 1982, A26.

48. Samuel Epstein, The Politics of Cancer (Garden City, N.Y.: Anchor Books, 1979), 271-81. See especially, Epstein's comments on the shortcomings of MacMahon's study on page 275. Also, "How Velsicol Pitched Its Case for Chlordane," Chemical Week, July 27, 1983, 34.

49. "Merrill-Dow Pharm; Wins Bendectin Lawsuit," Business Wire, June 24, 1985.

50. PR Newswire, February 10, 1986.

51. "Proposed Standard Threatens Beryllium," Aviation Week, May 1, 1978, 44.

52. Susan Okie, "VDT Study Endangered By OMB," Washington Post, June 4, 1986, A21.

53. Cited in "NIOSH Appeal Planned of OMB Rejection of VDT Reproductive Hazards Research," Occupational Safety & Health Reporter, January 16, 1986, 885.

54. U.S., Committee on Education and Labor, Oversight of OSHA With Respect to Video Display Terminals in the Workplace. A Staff Report. Subcommittee on Health and Safety, 99th Cong., 1st sess., August 1985.

55. Cited in "NIOSH Appeal Planned of OMB Rejection," Occupational Safety & Health Reporter, 885.

56. Pinsky, "O.M.B.'s Chokehold,"

57. Ibid., 885. Richard Corrigan, "VDT Study Is Short-Circuited," National Journal, May 10, 1986, 1117.

58. U.S. Congress, Committee on Government Operations, Occupational Health Hazard Surveillance: 72 Years Behind and Counting. 99-979, 99th Congress, 2nd sess., October 8, 1986, 24.

59. NIOSH Plans To Appeal OMB Rejection, 885.

60. Congress, House of Representatives, Committee on Government Operations, Occupational Health Hazards: Joint Hearing before Certain Subcommittees of the Committee on Government Operations, 99th Cong., 2nd sess., April 16, 1986, 88.

61. Okie, "VDT Study Endangered By OMB," A21.

62. Ibid., A21. Gary W. Bass, executive director of OMB Watch, a public interest group, stated that while rejection by OMB on the basis of scientific grounds was not unprecedented, what was unusual was that: "In almost all cases that would not be the sole criterion" for rejection.

63. "VDT Study," 9to5 Newsletter, September/October 1986, 2.

64. Corrigan, "VDT Study is Short-Circuited," 1117.

65. Wendy L. Gramm to Senator Carl Levin, n.d., but letter was received by Senator Levin's office on December 16, 1986, 4.

66. Okie, "VDT Study Endangered By OMB," A21.

67. Pinsky, "O.M.B.'s Chokehold," 91.

68. Cited in "NIOSH Appeal Planned of OMB Rejection," 885.

69. Committee on Government Operations, Occupational Health Hazards, 160-61.

70. "Work on BellSouth Data Collection Starts Despite Questions on Study's Credibility," Occupational Safety & Health Reporter, July 31, 1986, 218.

71. Ibid., 218.

72. Congressman Weiss to Otis R. Bowen, Secretary of Health and Human Services, October 20, 1986. Dr. Diana Zuckerman, a member of Weiss' staff, reports that BellSouth was more afraid of lawsuits based on stress than radiation at the time. Telephone conversation with author, June 15, 1991.

73. Committee on Government Operations, Occupational Health Hazards, 161.

74. Committee on Government Operations, Occupational Health Hazards, 161.

75. The BellSouth consultants conducted two more reviews of the revised versions of the study protocol during the winter and spring of 1986. These reviews were carefully watched and tacitly approved by OMB.

76. "Swedish Mice Study Links VDT Radiation to External Fetal Malformations," Microwave News, March/April 1986, 2-3.

77. "Industry, Worker Group Reactions Differ on Swedish VDT-Related Mice Birth Defects Test," Occupational Safety & Health Reporter, May 22, 1986.

78. "OMB Considering Specific Guidance For Agencies Performing Risk Assessments," Occupational Safety & Health Reporter, May 29, 1986, 1301.

79. In addition, OMB required the documentation of all adverse reproductive cases by medical records, OMB preapproval of any follow-up studies, and the rewriting of the introductory letter to be sent to the study's participants. James B. MacRae, Jr., Chief, Reports Management Branch, OIRA, OMB; to Barbara S. Wamsley, Acting Deputy Assistant Secretary for Management Analysis and Systems, HHS, June 6, 1986; in Committee on Government Operations, Occupational Health Hazards, 271.

80. Ibid., 271.

81. Ibid., 287.

82. Ibid., 287.

83. Ibid., 284. Emphasis in original. Butler's study, which was funded by the March of Dimes Foundation, was conducted with Kelly Ann Brix. They found no greater risk of miscarriage for VDT users who worked at the machines for less than 20 hours a week. There was a slight increase for those who worked more hours, which, as the SEIU pointed out, indicated a need to study full time VDT workers (which is what NIOSH was attempting to do). The SEIU also challenged the study's conclusion that cigarette and alcohol use posed greater risks since workers don't control the workplace. "Risk to Pregnant Women Unlikely from Part-Time Use, Study Indicates," Occupational Safety & Health Reporter, October 8, 1986. "University of Michigan Study Criticized By SEIU; 'Limitations' in Information Seen." Occupational Safety & Health Reporter, October 15, 1986.

84. Teresa Schnorr, et al., Response to the Third (April 2, 1986) BellSouth Review of the Protocol for the Reproductive Study of Female Video Display Terminal Operators (Cincinnati, OH.: NIOSH, April 9, 1986), 3.

85. "OMB Decision Allows VDT Study, But NIOSH Is Wary of Requirements," Daily Labor Report, June 11, 1986, A12.

86. MacRae to Wamsley, cited in Committee on Government Operations, Occupational Health Hazards, 271.

87. Schnorr, et al., Response to the Third BellSouth Review, 2.

88. See George Orwell's essay, "Politics and the English Language," A Collection of Essays (New York: Harcourt, Brace, Jovanovich, 1953), 156-71.

89. Selikoff to Weiss, cited in Committee on Government Operations, Occupational Health Hazards, 287.

90. Ibid., A12.

91. U.S. Congress, Library of Congress, Office of Technology Assessment. Review of Questions Deleted From A NIOSH Study of Video Display Terminal Users, August 1986, 8.

92. "HHS Secretary Urged By Weiss To Override OMB Restrictions On NIOSH Pregnancy Study," Occupational Safety & Health Reporter, September 17, 1986, 406-07.

93. Ibid., 406-07.

94. "Asking the Right Questions," National Journal, September 6, 1986, 2089; "Congressman Requests that Bowen Clarify Stand on Reproductive Study at BellSouth," Occupational Safety & Health Reporter, November 26, 1986,

95. "HHS Secretary Urged by Union to Override OMB Restrictions on NIOSH Pregnancy Study," Occupational Safety & Health Reporter, December 24, 1986, 821-22.

96. Letter by Sally Zierler, Dr.P.H., to Congressman Ted Weiss, October 9, 1986, 5-6. She said the other consultant, Brian MacMahon, agreed in spirit, but he did not come forward to change his assessment of the VDT study. BellSouth said that her shift was "reasonable" because information was not available before and they would allow the study to proceed if the questions were included. However, it was now too late and it begged the question as to why BellSouth opposed the inclusion of the fertility and stress questions in the first place. "BellSouth Consultant Revises Stand on NIOSH Study Questions Deleted by OMB," Occupational Safety & Health Reporter, October 29, 1986, 564-65.

97. Ibid., 6.

98. U.S. Congress, Committee on Government Operations, Occupational Health Hazard Surveillance: 72 Years Behind and Counting, Rept. 99-979, 99th Congress, 2nd sess., October 8, 1986, 18, 24.

99. "BellSouth Consultant Revises Stand on NIOSH Study Questions Deleted by OMB," Occupational Safety & Health Reporter, October 29, 1986, 564-65.

100. Harry A. Hadd, Reports Clearance Officer, Dept. of Health and Human Services, to Gooloo S. Wunderlich, Reports Clearance Officer, Public Health Service, June 12, 1986.

101. Otis R. Bowen, Secretary of Health and Human Services, to the Honorable Augustus F. Hawkins, November 12, 1986.

102. "Congressman Requests that Bowen Clarify Stand," 652.

103. Augustus F. Hawkins, Congressman, to Otis R. Bowen, Secretary of Health and Human Services, November 17, 1986.

104. Otis R. Bowen, Secretary of Health and Human Services, to the Honorable Augustus F. Hawkins, December 23, 1986.

105. Letter by Senator Carl Levin to James C. Miller, November 3, 1986, 2. Contrast Bowen's silence on the VDT issue with the New York Times portrayal of him a few months earlier. "Dr. Bowen ... arrived full of his own ideas, and he has not been hesitant to speak about them...." Robert Pear, "Setting Up Practice In The Health Bureaucracy: Dr. Otis R. Bowen," March 31, 1986, A12.

106. Gramm told Levin that the stress and fertility questions were deleted "because the study plan submitted to OMB contained no hypotheses relating fertility to VDT exposure and because the proposed study did not have the statistical power to test any such hypotheses." The stress questions were also omitted, according to Gramm, because the "significant" amount of time needed for posing such questions "could have a detrimental effect on response rates and thereby jeopardize the usefulness of the entire study." Wendy L. Gramm to Senator Carl Levin, n.d., but letter was received by Senator Levin's office on December 16, 1986, 4.

107. Ibid., 1.

108. "'Burdensome' Nature of Questions, Not Cost, Led to Limits on BellSouth Study, Gramm Says," Occupational Safety & Health Reporter, January 14, 1987, 902-03.

109. Gramm to Levin, 1. At the same time, Congressional advocates were justifying OMB's intervention in the regulatory process in order to control costs. As Congressman Robert S. Walker (R-Pa.), put it: "If each executive agency is free to pursue its own agenda, the size and cost of government... will continue to expand." Committee on Government Operations, Occupational Health Hazard Surveillance, 29.

110. Committee on Government Operations, Occupational Health Hazard Surveillance, 28.

111. Comments at hearing by House Select Committee on Children, Youth, and Families on Reproductive technologies, May 21, 1987. Cited in "NIOSH Reproductive Health Study to Begin; OMB Restrictions Included," Occupational Safety & Health Reporter, May 27, 1987, 1455.

112. Gramm to Levin, 4.

113. Testimony before a hearing of the House Select Committee on Children, Youth, and Families on reproductive technologies, May 21, 1987. Cited in "NIOSH Reproductive Health Study to Begin; OMB Restrictions Included," Occupational Safety & Health Reporter, May 27, 1987,

114. The study was conducted at the University of Agricultural Sciences, Uppsala. The results showed that 36 of 1566 fetuses in 211 mice exposed died after 19 days exposure, compared to 11 in 1125 fetuses in 154 control mice. The researchers concluded that: "No statistical significance included in the number of malforms," but "the number of placental resorptions was greater and the number of dead fetuses was probably higher in the exposed females compared with the controls." "Industry, Worker Groups Disagree on Implications of Swedish VDT Health Study," Occupational Safety & Health Reporter, September 2, 1987.

115. Ibid.

116. Ibid.

117. Marilyn K. Goldhaber, Michael R. Polen and Robert A. Hiatt, "The Risk of Miscarriage and Birth Defects Among Women Who Use Visual Display Terminals During Pregnancy," American Journal of Industrial Medicine 13 (June 1988). See also Tamar Lewin, "Pregnant Women Increasingly Fearful of VDT's," New York Times, July 10, 1988, 19, and "Protecting the Baby: Work in Pregnancy Poses Legal Frontier," New York Times, August 2, 1988, A1; Laura Stock, "Kaiser Study Finds High Miscarriage Rate in VDT Workers," Monitor, Summer 1988, 13; Philip Shabecoff, "U.S. Sees Possible Cancer Tie to Electromagnetism," New York Times, May 23, 1990, A22; and William K. Stevens, "Scientists Debate Health Hazards of Electromagnetic Fields," New York Times, July 11, 1989, C1; "VDT Use Linked to Increased Miscarriage Risk," VDT News, July/August 1988, 1.

118. Teresa M. Schnorr, et al., "Video Display Terminals and the Risk of Spontaneous Abortion," New England Journal of Medicine 324 (March 14, 1991), 727.

119. Dr. Schnorr stated that the main purpose of the study was to answer two questions: "Is the VDT inherently dangerous? Does it emit some form of nonionizing radiation that has yet to be studied?" But NIOSH decided to accomplish this by reviewing the literature on EMFs, which was limited in 1984, not by measuring the non-ionizing radiation emitted by the VDTs and monitoring its effects on female reproduction. NIOSH based its decision on the lack of medical and scientific evidence linking non-ionizing radiation with female reproductive problems. "NIOSH To Study Effects of VDTs," Occupational Safety & Health Reporter, 565; "NIOSH Cuts Back," VDT News, 4-7. Also see NIOSH Director Millar's statement: "Based on extensive radiation measurements and reported health data, NIOSH has concluded that video display terminals do not present a radiation hazard to the video display terminal operator or the developing fetus. No scientific evidence exists that the reported clusters of miscarriages and birth

defects are associated with radiation exposure from video display terminals. However, because alleged clusters of adverse reproductive health effects continue to be reported, further research into the possible link between video display terminal use and adverse reproductive outcomes is warranted." In Committee on Education and Labor, Video Display Terminals in the Workplace. 216-17. Both the CWA's David LeGrande and Diana Roose, 9 to 5's research director, criticized NIOSH's decision. These provisions were vital, they argued, if the study was to be effective in determining whether or not there was a connection between VDT use and female reproductive problems.

120. "NIOSH Cuts Back Reproductive Hazards Study," VDT News, January/February 1985, 4-7.

121. The NIOSH study said that "Abdominal exposure to extremely low frequency fields (45 to 60 Hz) was similar for both operators who used VDTs and those who did not." Schnorr, "Video Display terminals," 727. Dr. Michele Marcus of the Mt. Sinai School of Medicine, New York, said "I am concerned about its limitations-- particularly that it could not address ELF EMFs since the control group was exposed." Quoted in "NIOSH Finds No VDT Miscarriage Risk; EMF Conclusion Sparks Debate," Microwave News, March/April 1991, 1.

122. For example, see William K. Stevens, "Major U.S. Study Finds No Miscarriage Risk From Video Terminals," New York Times, March 14, 1991, A22; Michael Waldholz, "VDTs Are Said Not to Increase Miscarriage Risk," Wall Street Journal, March 14, 1991, B1. Merrill Goozner, "Study Finds No VDT Link To Miscarriages," Chicago Tribune, March 14, 1991, 1.

123. U.S. Congress, House, Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, OMB Review of CDC Research: Impact of the Paperwork Reduction Act, report prepared by Barbara Boardman, Ian A. Greaves, Charles Levenstein and Philip J. Landrigan, 99th Cong. 2nd sess., 1986. Cited in Congressional Record (11 August 1988), vol. 134, pt. 2, S11722-11724.

124. Ibid., S11722-11724.

125. Ibid., S11723-11724.

126. Ibid., S11724.

127. Senator Gary Hart speaking against the Gramm-Rudman-Hollings II bill, Congressional Record (July 24, 1986), vol. 132, S9600.

128. U.S. Congress, House. Committee on Government Operations, HHS Failure to Enforce the Food, Drug, and Cosmetic Act: The Case of Cancer-Causing Color Additives, H. Rept. 99-151, 99th Cong., 1st Sess., June 3, 1985, 63. Michael L. Millenson, "FDA 'Politicization' Called Hazardous to Health," Chicago Tribune, October 20, 1985, 10.

129. Senator William Proxmire (D-Wisc.) speaking on January 27, 1986, in support of S. 2025. A bill to amend Chapter IX of the Federal Food, Drug, and Cosmetic Act to require the appointment of the Commissioner of Food and Drugs to be subject to Senate confirmation to the Committee on Labor and Human Resources. Congressional Record, (January 29, 1986), vol. 132, no. 6, S470.

130. Ibid.

131. "Washington Wire," Wall Street Journal, June 6, 1983, 1; Millenson, "FDA 'Politicization,'" 10.

132. Committee on Energy and Commerce, OMB Review of CDC Research, S11722-11724.

133. For example, see John B. Judis, "To Ginsburg, A Life Is Worth $22,094.93," In These Times, November 11-17, 1987, 3.

134. "Administration Moves to Give OMB Insight Into Pre-Rulemaking Planning," Daily Report for Executives, December 24, 1984, A12.

135. Ibid.

136. For example, see the defense by two former OIRA directors, Christopher C. DeMuth and Douglas H. Ginsburg, "White House Review of Agency Rulemaking," Harvard Law Review 99 (March 1986): 1075-1088.

137. "Withdrawal of Ginsburg Nomination Heads Off Brewing Controversy Over OMB Role," Occupational Safety & Health Reporter, November 11, 1987, 936-37. "Budget Office Will Screen New Policies: Less Regulation Goal, Chicago Tribune, August 9, 1985, 3.

138. "Budget Office Will Screen New Policies," Chicago Tribune, 3.

139. "Major Changes Promised in Oil/Gas Rule: Ethylene Dibromide Now Set for August," Occupational Safety & Health Reporter, August 15, 1985, 235-37.

140. Committee on Government Operations, Occupational Health Hazard Surveillance, 5.

141. "Remarks of the Honorable John D. Dingell on Workplace Health and Safety, May 5, 1987," inserted in the record by Congressman William D. Ford, Congressional Record (May 5, 1987), vol. 133, no. 71, E1737.

142. Brief filed on June 28, 1985 by Congressmen Jack Brooks, Government Operations; John Dingell, Energy and Commerce; William Ford, Post Office and Civil Service; Augustus Hawkins, Education and Labor; and Peter Rodino, Judiciary. Public Citizen Health Research Group et al. v. Robert A. Rowland 796 F.2d. 1479; 254 App. D.C. 253 (1986), Also see, "Unlawful Interference by Budget Office In OSHA Rulemaking Charged by Congressmen," Occupational Safety & Health Reporter, July 4, 1985, 75-76; David Burnham, "5 in Congress Assail Budget Office Role," New York Times, June 29, 1985, 8.

143. Ibid.

144. Congressman Ted Weiss, "Hold OMB Accountable for Review Activities," Congressional Record (September 20, 1989), vol. 135, no. 121, E3105.

145. Ronald Brownstein and Nina Easton, Reagan's Ruling Class: Portraits of the President's Top One Hundred Officials (New York: Pantheon, 1983), 414.

146. Jonathan Lash, Katherine Gillman, and David Sheridan, A Season of Spoils: The Story of the Reagan Administration's Attack on the Environment (New York: Pantheon, 1984), 23.

147. "OMB is Limiting Agency Documents Released Publicly, Official Reports," Occupational Safety & Health Reporter, July 17, 1986, 148.

148. Morrison, "OMB Interference," 1068.

149. Committee on Government Operations, Occupational Health Hazard Surveillance, 24.

150. Proxmire, Congressional Record, S470.

151. OMB was formed in 1970 by the Nixon administration as a result of the reorganized the Bureau of the Budget. Ford mandated (E.O. 11821) that the "inflationary impact" of all pending regulations be evaluated by the issuing agency. Carter established the Regulatory Analysis Review Group (E.O. 12044) to perform "regulatory analyses" of major rules before their promulgation and supported the passage of the Paperwork Reduction Act which gave OMB greater power over the rulemaking process.

152. For example, oversight hearings were held by various House committees; In 1986, John Dingell led a successful effort in the House to cut OMB's financing from a FY 1987 appropriations bill. The bill failed in the Republican-controlled Senate, but the Conference Committee's compromise required that future OIRA directors be confirmed by the Senate. See "Whitten Supports Dingell's Request To Cut 1987 Funding For OMB Review Function," Occupational Safety & Health Reporter, July 10, 1986, 131-32; Ted Weiss' tabled bill (in 1989 and 1991) to limit OMB's regulatory review powers, see Congressional Record, September 20, 1989, E3105, and January 3, 1991, E24. In the upper chamber, a bill sponsored by Senators Carl Levin (D-Mich.), David Durenburger (R-Mn.) and Warren Rudman (R-N.H.) called for public accountability for OMB's review activities, see "Bill Aimed at Disclosing OMB's Role in Rulemaking Introduced By Senators," Occupational Safety & Health Reporter, January 30, 1986, 919. However, "On Capitol Hill there is not enough political support for prohibiting OIRA's intervention in the regulatory process." David Corn, "OIRA Lives!" The Nation, October 30, 1989. For general background, see Christopher H. Foreman, Jr., "Legislators, Regulators, and the OMB," in James A. Thurber ed., Divided Democracy: Cooperation and Conflict Between the President and Congress (Washington: CQ Press, 1991), 123-44.

153. Lawsuits filed by the public interest groups and various unions have had some success in forcing the Reagan administration to issue rules held or weakened up by OMB. For example, Environmental Defense Fund v. Lee M. Thomas 627 F.Supp. 566; 23 ERC (BNA) 1922 (1986), the District Court held that OMB could not withhold rules beyond legislative or judicial deadlines. See "Court Slap at OMB Termed Spur to Safety Enforcement," AFL-CIO News, February 15, 1986. Perhaps the most significant victory came in the Supreme Court, which ruled 7-2 in Dole v. Steelworkers 494 U.S. 26 (1990), that the Paperwork Reduction Act did not empower OMB to forbid OSHA from sending hazard notifications to third parties (i.e., workers). Linda Greenhouse, "High Court Decides Budget Office Exceeded Power in Blocking Rules," New York Times, February 22, 1990, A1.

154. The Constitution, Article II, Section 3. The Reagan administration made this argument in Public Citizen Health Research Group v. Robert Rowland (1986). The Appellate Court granted the petitioner's request that OSHA issue a STEL for the ethylene oxide rule, but did not rule on this important constitutional question.

155. David Burnham, "Suit Challenges U.S. in Revision of a Safety Rule," New York Times, April 10, 1985, A19.

156. "OMB Participation in Standards Setting Does Not Displace DOL Authority, Brief Says," Occupational Safety & Health Reporter, August 8., 1985, 219-20. Emphasis added.

157. MacRae, Jr. to Wamsley, June 6, 1986, 1.

158. U. S. Code, Congress and Administrative News, 96th Congress, 2nd sess., 1980, St. Paul, MN.: West Publishing Co., 1981, 6242.

159. Paperwork Act, 6242.

160. U. S. Code, Congress and Administrative News, 6244.

161. Ibid., 6265-66.

162. Thomas O. X, "The Role of Regulatory Analysis in Regulatory Decisionmaking," Administrative Conference of the United States, May 1985, unpublished manuscript. Cited in Alan B. Morrison, "OMB Interference With Agency Rulemaking: The Wrong Way To Write A Regulation," Harvard Law Review, 99 (March 1986): 1066. There were no publicly available estimates of additional costs incurred by OMB in the process.

163. "Pregnancy and VDT Workers," Business Week, 82.

164. David Hoffman, "Will the White House Take the Initiative on Regulatory Decisions?" Washington Post, February 3, 1989, A23.

165. Marianne Lavelle, "For Bush, A Subtler Approach: The Administration's Regulatory Game Plan Is Difficult To Fathom," National Law Journal, May 20, 1991,

166. Besides the Vice President and the OMB director, the other members are the President's Chief of Staff, the Secretaries of Commerce and Treasury, and the Chairman of the Council of Economic Advisors.

167. Memorandum from President Ronald Reagan to Acting Secretary of Labor Alfred M. Zuck, January 29, 1981, in "Four Pending OSHA Actions Delayed Under Reagan Order; Review Promised," Occupational Safety & Health Reporter, February 5, 1981, 1225-26. During Bush's 1988 presidential campaign, his and Reagan's aides had OMB prepare estimates that deliberately inflated the cost of Dukakis' programs in the hopes of discrediting him in the eyes of the voters. See Richard Fly and Paul Magnusson, "How Bush Is Using OMB To Drop Bombs On Dukakis," Business Week, September 12, 1988, 47. The Council on Competitiveness was abolished by an executive order issued by President Clinton in 1993.

CHAPTER 9

THE STATE AND LOCAL ARENAS: LABORATORIES OF DEMOCRACY OR LABYRINTHS OF FRUSTRATION?

Introduction.

Blocked at the federal level, advocates of safety and health regulations governing the workplace use of video display terminals (VDTs) shifted their attention to the state and local levels of government. State and local governments are sometimes referred to as "laboratories of democracy" for their willingness to experiment with new solutions to social and political problems, and labor unions hoped to achieve legislative breakthroughs at the state level that could be used as leverage to reopen the door to the establishment of national standards at the federal level.[1] In all, VDT regulatory proposals were considered in 30 states, and numerous counties and cites. But failure to overcome intense business and governmental opposition to VDT regulations would result in the states becoming labyrinths of frustration for organized labor.

This chapter analyzes organized labor's efforts to secure VDT safety and health regulations at the state and local levels of government. It discusses labor's tactical response to President Reagan's anti-labor and deregulatory policies and, in a series of case studies, examines the economic and political obstacles that confronted labor in

of government. These obstacles included a well-organized corporate coalition of manufacturers and users who backed up their opposition to VDT regulations with the threat of economic blackmail,[2] and state and local government officials who feared that controls on the market would undermine their ability to attract high-tech business investment. Finally, this chapter examines how labor achieved limited success at the local level of government, only to be blocked in the judicial arena. As this chapter will show, it becomes more difficult to persuade government officials to impose new regulations on business when they believe that doing so will mean a loss of economic investment, growth, and tax revenues.

Labor and Industry's Response to Reagan's New Federalism.

The Reagan administration's health and safety policies were both a blessing and a curse for the business community. Cutbacks in federal health and safety regulation were a boon to businesses seeking regulatory relief, but also created a Pandora's Box of problems for them as unions sought compensating remedies at the state and local levels. As Stephen A. Bokat, the U.S. Chamber of Commerce's General Counsel, put it: "It's an incredible hassle for companies that do business in all 50 states to cope with 50 different laws."[3]

The corporate coalition of VDT manufacturers and users' succeeded in blocking VDT regulation at the federal level, but it also had to contend with the explosion of lobbying efforts by organized labor at the state and local levels government. The legislative battle was confined to the state and local levels to such an extent that it was reminiscent of the days before the enactment of the federal Occupational Safety and Health Act.

The reversion to occupational safety and health policymaking at the state and local level was encouraged by the Reagan administration's "New Federalism" policy, the companion to its "regulatory relief" campaign. A counterattack against the transferral of the primary responsibility for health and safety policymaking from the states to the federal government during the 1960s and 1970s, it called for the return of much of the police powers over health, education and welfare issues, such as occupational safety and health, back to the states.

However, organized labor viewed Reagan's "New Federalism" from a different political perspective. Believing that VDT safety and health regulations should be the Occupational Safety and Health Administration's (OSHA) responsibility, unions hoped to achieve a regulatory breakthrough at the state and local level that would generate public support for a renewed assault on the national level. It was futile for organized labor to

approach OSHA regarding VDT regulations in the intensely anti-union deregulatory atmosphere created by the Reagan administration. As Geri D. Palast, the Service Employees International Union's (SEIU) legislative director, explained:[4]

> the Occupational Safety and Health Administration has faced one cutback after another and are [sic] in no position to either take on new programs as a matter of philosophy or as a matter of funding. Therefore we feel that once we begin to focus the attention of the states on this problem, we can make a breakthrough which we can then expand throughout the states and raise to an issue of national dimension.

In discouraging organized labor from approaching OSHA by its intensely anti-union, deregulatory stance, the Reagan administration had, in effect, made a nondecision that kept the VDT issue out of the federal arena.

New England was an early hotbed of VDT legislative activity. Bills were passed in Maine, Connecticut, Rhode Island and Massachusetts to study the VDT safety and health problem during the early to mid 1980s, but none enacted mandatory regulations.

Maine's experience in 1983 set the pattern of debate for virtually all state and local legislative fights to follow. Proponents of mandatory VDT regulation argued that it was an occupational safety and health issue, while opponents maintained that it was no more than an employee comfort issue which was best handled by management. As with most state battles to come, organized business' admonition to legislators not to be first to enact mandatory VDT

regulations on a "comfort" issue in a recessionary economy proved to be persuasive with Maine's legislators.

Nevertheless, Maine's passage of a law to study the VDT safety and health problem set a precedent that fueled subsequent legislative efforts to secure safety and health regulations in 6 other states in 1983; Connecticut, Illinois, Massachusetts, New York, Ohio, and Oregon.[5] The specific contents varied from state to state (some, especially bills submitted during the early 1980s, called for metal shields to reduce the level of nonionizing radiation emitted by the terminals' flyback transformer), but the typical VDT bill called for ergonomically designed and adjustable workstations (i.e., chairs, keyboard, video display and work surface), reduction of screen glare from improper lighting and windows, periodic rest breaks and daily work limits, shields to reduce printer noise, and the outlawing of keystroke monitoring.

Besides the interest caused by the passage of Maine's study law, proponents of VDT regulation were encouraged by the ergonomic standards for VDT design and use, including adjustable chairs, detachable keyboards and periodic rest breaks that had been recently established in Sweden, Switzerland and West Germany.[6] In Canada, women could ask for job transfers during pregnancy, a right that was of particular interest to female workers concerned about the

suspected link between the non-ionizing radiation emitted by VDTs and reproductive problems.[7]

These events alarmed the Computer and Business Equipment Manufacturer's Association (CBEMA), which formed the Coalition for Workplace Technology (CWT) to prevent VDT regulations from becoming law in the U.S. CBEMA used CWT to recruit 22 trade associations representing corporate VDT users, forming a formidable lobbying alliance. According to CBEMA President Vico E. Henriques, CWT's mission was to persuade policymakers that any purported connection between VDTs and health hazards is "unproved or disproved."[8] He told Congress in 1984 that the real purpose of labor's state legislative campaign was to hinder, not help, those who worked with VDTs:[9]

> [T]hey would force people to sit in special chairs, even if they were satisfied and comfortable in the present model; mandate covering windows with blinds even if there were no glare problem, or even if the glare problem came from another source. They would force low light levels in all working places using visual displays... They would reduce the number of hours people could work on displays to a maximum of four or five... They would force employers to pay for meaningless devices and activities, such as metal shielding for terminals and radiation inspections.

Despite their success in defeating organized labor's efforts in 13 states to secure passage of mandatory VDT regulations during the 1983-84 legislative year, CBEMA and CWT were not claiming victory. The American Newspaper Publisher's Association's (ANPA) legal counsel, Claudia James, warned her colleagues that VDT bills were "not going

to go away."[10] Indeed, in December 1984, the SEIU and 9to5: The National Association of Working Women (9to5) launched an ambitious national "Campaign for VDT Safety," with the introduction of a new VDT bill in the Massachusetts legislature. In announcing the campaign, SEIU president John Sweeney said the safety and health problems facing office workers in the 1980s were "no less serious than the problems faced by industrial workers in the 1930's and they are even more insidious because of their subtlety."[11] Its strategy was to organize lobbying, letter-writing and educational campaigns in the 18 states where passage of VDT legislation was deemed to be most likely. The campaign sponsored two types of VDT bills: those mandating ergonomics standards and those that promoted an employee's right to know about hazards related to the technology.[12] Advocates of VDT regulation got an early boost in March 1985 when New Mexico governor Toney Anaya signed an executive order mandating ergonomic and purchasing guidelines for state employees. While the New Mexico regulations were hailed by 9to5 as "better than anything that exists somewhere else," the campaign for VDT safety was unable to secure comparable victories on the legislative front.[13] Three months after the breakthrough in New Mexico, the Oregon legislature became the first to pass a bill mandating VDT ergonomics standards, but it was vetoed by the governor.

By 1987, bills addressing the workplace use of VDTs had been introduced in 25 states and the District of Columbia. Up to that point, 4 states had passed study bills, 5 had established purchasing guidelines for state employees, and 3 had established ergonomic guidelines, but none hand succeeded in mandating VDT protection in the private sector workplace (where most VDT operators work). The fate of Pennsylvania State Senator Buzz Andrezeski's VDT bill in 1986 was typical of the vast majority of legislative efforts throughout the 1980s and early 1990s: it ended up being "buried 'deeper than you could dig with a shovel.'"[14]

CBEMA was ever vigilant against the slightest suggestion that a state law had been passed. It even criticized the Congressional Office of Technology Assessment's (OTA) report, Automation of America's Offices, charging that it gave the public the impression that there some states had passed laws regulating the workplace use of VDTs. "No states have laws defining VDT-related ergonomics or mandating VDT rest breaks," Oliver Smoot, CBEMA's executive vice president said.[15] Smoot was correct then, and his comment remains an accurate assessment of the situation.

The States Compete for High-Technology Development.

The campaign for VDT safety and health regulation was hamstrung by the concurrent rise of the states' competition

for high-tech investment. Luring high technology industries, such as computers and VDTs, was seen by many states as the answer to their loss of smokestack industries during the recessionary economy of the 1970s and 1980s. In 1984, Chemical Week reported that "an enthusiasm for high technology, bordering on a mania, ... has been sweeping through state development offices around the country."[16] Virtually every state, and many cities, established high technology councils to ensure that it not be left behind in the race to win high technology investments. April Young, executive director of the Fairfax (Va.) Economic Development Agency told Business Week that "There are 4,500 economic-development agencies in this country, and it's fair to say that every one of them is after high tech."[17] These high technology councils, composed of businessmen, educators and labor leaders, but dominated by corporate executives, served as boosters of their state's economic virtues and planners for future development policy. Along with state economic development officials, many of them made pilgrimages to the 3 meccas of high technology-- California's Silicon Valley, Massachusetts' Route 128, and North Carolina's Research Triangle-- in the hopes of learning the secrets of their success, and to lure firms to their states.[18] According to the OTA, 17 states had programs to teach workers' high technology skills by 1983 and the idea was under consideration in 4 more. Many states established venture

capital funds to nurse and promote emergent high technology development, and tax credits to lure new investments.[19] President Reagan made the high tech, computer development an important part of his 1983 State of the Union address,[20] and followed it up the next day with a visit to a computer keyboard manufacturing site in inner-city Boston. Ironically, Reagan had cut federal funds from the program that had made the factory he visited possible. These cuts increased the pressure on states to fill the vacuum left by the federal government and offer bigger incentive packages to computer firms looking for places to locate their plant and equipment.[21]

However, the states' demand was growing faster than the supply of high tech jobs and capital investments. While high tech was a promising sector in the early 1980s, it was less labor intensive and more capital intensive than the manufacturing industries it replaced. As a result, the burgeoning high technology firms could not replace all the jobs that were lost in manufacturing. In 1982, the official unemployment rate reached 10.8 percent, the highest level since the Great Depression. With unemployment so high, and a limited number of new high tech jobs being created, the pressure on the states to secure new high tech investment increased. By 1984, the competition to attract high tech investment was growing so fierce that Trygve Vigmostad, deputy director of Michigan's Office of Economic

Development, described the situation as a "war between the states" that "is heating up."[22]

In this political-economic climate, states tried to one-up each other in the chase for business confidence. States that were attracting high tech industries worked hard to prove to prospective firms that their state provided a better business climate that others. Corporate officials were well aware that these states were not eager to add new economic burdens, such as VDT safety and health regulations, that might add to high tech firms' cost of doing business. "In most state capitols today, seldom is heard a discouraging word about high technology. States are trying to attract the high-flying high tech industries, which promise jobs and taxes for the future, with every thing from tax incentives to promotion of research institutes," said CBEMA President Henriques. "But a small, highly vocal group is introducing legislation into several states that could put a roadblock in front of these efforts," he warned.[23]

This economic pressure turned state economic development officials and most politicians into soldiers for CBEMA's cause. Even where there was some sympathy among legislators for the VDT regulations, it was no match for the argument that their establishment would chase business away to other states. Legislators who wavered were forced to consider the argument that if they made their state the first in the nation to enact mandatory VDT regulations, the

other 49 would quickly be touted as superior locales for high tech investment.

Pleased with the defeat of bills calling for mandatory VDT regulations, CBEMA's Charlotte LeGates said "Legislators have been highly responsible and will allow themselves to be persuaded by the facts."[24] In a sense, LeGates was right; the coalition against VDT regulations proved to be very persuasive. Using the threat of economic blackmail, CBEMA warned government officials that its members would leave states that passed VDT legislation. This threat was especially effective since many states were desperately competing to secure high tech investments to replace their declining steel, automobile and textile industries. As the following case studies show, it was an effective lobbying tactic in convincing legislators to oppose VDT bills.[25]

Maine.

The nation's first VDT bill was introduced by Rep. Edith S. Beaulieu (D-Portland) in March 1981. Her goal was to draw the nation's attention to the VDT problem and urge OSHA to set national standards. "It makes a lot more sense to have one standard rather than a collection of incompatible state rules," she explained.[26] Beaulieu's strategy eventually became the basis for labor's national state level campaign. Her bill provided that VDT workers in both the public and private sectors be covered by mandatory

regulations including, work-rest regulations, vision and monitor testing, regular monitor testing, worker education, and ergonomics factors (proper lighting, furniture and seating). Since they were most immediately affected, business users of VDTs, not their manufacturers, were the first to organize opposition to VDT legislation. The Associated Industries of Maine, New England Telephone and Union Mutual, Maine's most influential insurance company, led the opposition to Beaulieu's bill that resulted in its defeat in 1981 and again in 1983.[27]

Beaulieu, now officially supported by organized labor, succeeded in June 1983 with a compromise bill, making Maine the first state to pass VDT safety and health legislation.[28] However, the price of success was a law that fell far short of its predecessor. First, the law applied only to public sector, not private sector, employees. Second, in place of mandatory regulations, the VDT law directed the Maine's Bureau of Labor Standards (MBLS) to study the VDT safety and health problem with respect to the need for regulations. If approved by the Maine Bureau of Occupational Safety and Health (MBOSH), the MBLS would promulgate any regulations it deemed necessary to protect public employees.[29] The bill's weakness was revealed in 1984 when MBOSH voted 4-3 against imposing mandatory standards. Instead, it instructed the MBLS to institute voluntary VDT guidelines.[30]

Connecticut.

Connecticut, an early and important legislative battleground, is a good example of influence that CBEMA's and CWT wielded with state government officials. A coalition of labor groups and ConnectiCOSH began lobbying for mandatory VDT regulations in 1982.[31] In 1983 their efforts ran up against Governor William A. O'Neill's (D) $17 million legislative plan to foster a favorable business climate for high-tech industries. High tech is a "buzz word ... the hula hoop of the development business now," said John J. Carson, chairman of the Connecticut Development Authority and commissioner of the Department of Economic Development (DED).[32]

Attracting corporations to Connecticut and, keeping the ones they had happy, was a high priority for both the governor and the legislature. The O'Neill administration's High Technology Council and the DED worked closely with Connecticut's high tech industries in this regard, feting them and listening to their problems. "We have to make sure they feel comfortable here and do not search for greener pastures. Midwestern states are going crazy recruiting" Connecticut based companies, said the DED's David Driver.[33] Connecticut business also saw the VDT bill as working against the governor's goal of creating a favorable business climate. Harry Harris, the vice president and general manager of the Southwestern Area Commerce and Industry

Association of Connecticut, Inc., warned the General Assembly's Labor and Public Employees Committee that "Connecticut will be less attractive economically," if it were to become the first state to enact mandatory VDT regulations.[34]

Opposition to the VDT bill in the high tech business community was led by CBEMA and it included the Digital Equipment Corporation, International Business Machines (IBM), Xerox and Perkins-Elmer.[35] They combined with the state to defeat mandatory VDT regulations in 1983, but a compromise study bill was passed.[36]

This legislative foothold spurred supporters of VDT regulations to redouble their lobbying efforts in 1984, but corporate opponents were even more prepared to resist.[37] Labor's chief hope for a strong VDT bill in the Assembly was Rep. William Kiner (D), co-chair of the Labor and Public Employees Committee. But Kiner represented Enfield, where the Digital Equipment Corporation, the nation's second largest computer company, had recently built a factory which added 800 jobs to the town's economy.[38] They told the leader of Enfield's Democratic Club to advise Kiner that the enactment of VDT regulations could hurt the town's economy. As a result, Kiner's Labor Committee produced a weakened bill calling for the establishment of a 7 member committee of business, labor and government representatives to draw up a voluntary VDT "code of conduct."[39]

By the end of April, the VDT bill appeared to have the 76 votes necessary for passage in the 151 member Assembly. With the date for the floor vote on the VDT bill quickly approaching, Governor O'Neill and the business community were eager to avoid the nationwide publicity that passage of the VDT bill would generate; they preferred a compromise that would settle the issue in private. On April 30th, a lobbyist for the Connecticut Union of Telephone Workers (CUTW) was approached by a representative of the state Department of Labor who hinted that the governor's office wanted to make a deal with labor on the VDT issue. A meeting ensued between John McCarthy, the State Commissioner of Labor, Peter F. Burns, Deputy Commissioner of the DED, Rep. Kiner, Betty Tianti of the state American Federation of Labor-Congress of Industrial Organizations (AFL-CIO), and a representative of the CUTW. McCarthy and Burns asked the labor leaders to forego the VDT bill, which the governor was ready to veto, in return for the establishment of an informal government/ labor/management "compact" to promote VDT safety. The bottom line, they added, was that the governor's office and the business community didn't want the VDT bill "in the books."[40] As DED Commissioner Carson put it, the purpose of the "Innovations in the Workplace Compact" was "to minimize the impact of introducing new technologies into the workplace <u>without disrupting the business operations</u> of high technology users and <u>without</u>

discouraging the attraction of high tech manufacturers into Connecticut."[41]

The labor leaders met with business and government officials to finalize the compact on May 3rd. The meeting was attended by representatives from CBEMA, IBM, Digital Equipment, the Connecticut Business and Industry Association (CBIA), the Insurance Association of Connecticut (IAC), American Airlines, the state AFL-CIO, the CUTW, the American Federation of State, County and Municipal Employees (AFSCME), SEIU, and the State Departments of Economic Development, Labor, and Health. Facing the certain threat of a veto, the labor representatives caucused and voted 8-1 to drop their support for the VDT bill. The next day, Rep. Kiner publicly announced that a labor and business had established a "compact" and that the VDT bill was dead.[42] Although two attempts were made in 1985 to secure mandatory VDT regulations and training, both bills died in Rep. Kiner's Labor and Public Employees Committee.[43] Connecticut officials were now free to resume their pursuit of high tech industries unencumbered by the fear that VDT safety and health regulations might discourage development.[44]

The quasi-governmental "compact" was a great coup for CBEMA and CWT; it gave them the flexibility and authority of government they desired without the restrictions imposed by regulations. Although the 9 member VDT Task Force it established was composed of 3 representatives each from

business, labor and government, the state's role was slight, leaving CBEMA, CBIA and the IAC to dominate in practice by virtue of their superior influence and resources.[45] The Task Force was a public relations, as well as an educational, coup for CBEMA and CWT. It held six workshops in Connecticut over an 8 month period which stressed CBEMA's and CWT's view that the VDT issue was a question of employee "comfort," that was best addressed by management, not a safety and health problem that might require legislation. The establishment of the Task Force enabled CBEMA President Henriques to tell a House subcommittee that VDT legislation was unnecessary since industry was already taking the educational initiative to deal with the problem.[46] He did not tell Congress that the Task Force would not have existed if it weren't for organized labor's near victory.

The defeat of VDT regulations in Connecticut demonstrated CBEMA and corporate VDT users ability to persuade government officials that VDT regulations would hurt the state's economy. As one state legislator put it: "VDT use is high in Connecticut industries-- we have all the major insurance companies in the world headquartered here. So state legislators are scared to death that the more we make this a public issue, the more women who work in these industries will realize they need to be organized-- and this will jeopardize the state's economy."[47] It proved to be a

very successful formula for defeating VDT regulations in future state campaigns.

Massachusetts.

In January 1982, Rep. John R. Driscoll (R-Northbridge) introduced the first union-backed VDT bill.[48] Driscoll's bill was largely written by Joseph Faherty, President of the Boston Edison Clerical Workers Union. Faherty, who had worked at a VDT for several years, based much of his bill on the National Institute for Occupational Safety and Health's (NIOSH) 1981 recommendations to the Occupational Safety and Health Administration (OSHA); it called for periodic eye exams, flexible and ergonomically designed workstations, glare prevention and ambient lighting conditions, 15 minute rest breaks after 2 hours of continuous work, or after 1 hour for those performing repetitive tasks.

Some employers viewed the Driscoll/Faherty bill as a threat to the "Massachusetts Miracle." The Massachusetts Newspaper Publishers Association's (MNPA) Bulletin said the VDT safety and health issue was "organized labor's subtle way of expanding operations to unorganized businesses, especially Hi-Tech where it has made little progress."[49] Although Driscoll's bill enjoyed the support of the Massachusetts AFL-CIO, that was not enough overcome intense industry opposition and get it out of the House Committee on Commerce and Labor in 1982.[50]

With growing VDT use and increasing reports of safety and health problems, Faherty's bill was reintroduced by Rep. Elizabeth Metayer (D-Braintree) in 1983. Faherty added a provision to Metayer's bill, based on a recommendation by Canada's Ministry of Labor, to permit pregnant employees to request alternative work assignments. In addition to protecting pregnant VDT workers, he hoped that this provision would attract employer support, maintaining that it would protect them from legal liability.[51] With better organized support from labor and 9to5, and the backing of Labor Secretary Paul Eustace, advocates gave the bill a "50-50" chance of passage.[52] At a hearing held in April 1983, business opponents, such as IBM, Digital Equipment, the John Hancock Insurance Company, the Liberty Mutual Insurance Company, the Associated Industries of Massachusetts (AIM), Eastern Air Lines and Delta Air Lines, argued that the bill would be too costly to business, and that there were no medical or scientifically-documented need for VDT safety and health legislation. It would be a "sad irony," William J. McCarthy, AIM's general counsel and chief lobbyist, remarked, if the state that was the cradle of the high tech boom, became the first to pass legislation that would restrict that industry.[53] Moreover, the Massachusetts High Technology Council was busy trying to attract more investment to the "High Tech Highway" situated along Route 128. They feared that mandatory VDT regulations would stifle

the development of what was the second largest concentration of computer-related companies outside California's Silicon Valley. "We don't think it is fair that the Legislature has singled out one industry for regulation-- high tech-- that has given so much to the state," McCarthy told legislators. He added that labor was targeting high tech industries on the VDT safety and health issue "simply because its new."[54]

Proponents of VDT regulations refuted business lobbyists' claims that their were no medical and scientific studies documenting the problems suffered by VDT workers. They pointed out that business lobbyists had misrepresented NIOSH's landmark 1981 San Francisco/Bay Area Study, among others, which identified the problems VDT workers were suffering as serious safety and health problems, and not a trivial matter of employee discomfort, or fear of new technology. Moreover, union lobbyists pointed out that, in the long run, VDT regulations would not be so costly when balanced against the fact that healthy workers are more productive and make less medical and workers' compensation claims.

Nevertheless, state officials viewed high tech investment as the engine that would pull the Massachusetts economy out of the long recession of the mid-1970s and early 1980s, and business pressure on them to encourage a climate attractive to high-tech ventures was decisive in defeating VDT legislation.[55]

Employers refused to publicly admit the existence of safety and health hazards associated with VDT work for two reasons. First, many employers had made a big investment in time and money converting to VDTs, so they tended to oppose any idea that the new technology might cause work-related hazards. Second, and more important, under the product liability laws of many states, including Massachusetts, doing so was tacit admission that problems exist. Privately, employers feared that this might serve as the legal basis for making them parties to product liability lawsuits.[56]

High tech lobbyists' argument that VDT regulations would hurt the Massachusetts economy succeeded in putting VDT proponents on the defensive in 1984. "We're not trying to send a message to high-tech companies that we're not happy with them," said House Labor Committee Chair Timothy Bassett.[57] In its attempts to defeat the 5 VDT bills introduced in 1984, the MNPA issued instructions to the editors of its member papers to "carefully screen" all VDT stories for anti-employer or anti-computer industry bias before publication. Publishers who didn't normally worry about their reporters ability to cover stories objectively, suddenly found that reporters covering the VDT issue needed to be put on a tight editorial leash. They became so worried that young reporters might be duped into doing labor's bidding that the MNPA issued this warning to its editors:[58]

> Unions, particularly the 9 to 5 organization, have been distributing propaganda conjuring up all kinds of

> perils to safety of operators, and some of the information is being fed to young reporters who do not understand all the elements involved in the dispute.... The ambition of young reporters to achieve a page-one by-line by stretching or embellishing the facts is ever present and the consequences can cause serious damage.

The MNPA's concern for journalistic standards of objectivity was a smokescreen for its own economic interest in opposing an open inquiry into the VDT issue. The newspaper industry was the first to use VDTs and by the early 1980s was becoming heavily dependent on them. The MNPA told its editors and publishers that labors' "misinterpretation of facts and statements is ... dangerous, especially to business interests."[59]

But the MNPA's policy was also damaging to the public interest. Its policy was a blatant case of slanting the news and it deprived the public of full and fair account of the VDT controversy. The MNPA did not reveal its conflict of interest to its reading public. The ability to shape the content of VDT news that reached the public greatly aided MNPA and its allies in their successful quest to kill VDT legislation in the Massachusetts state house. From 1981 to 1985, every VDT bill mandating safety and health standards was defeated by industry opponents. The only policy victories for Massachusetts labor came in 1984; the inclusion of an amendment in the 1985 budget bill directing the Department of Labor to study the hazards of VDT use, and the executive branch's issuance of voluntary guidelines for the purchase of VDTs by state agencies.[60]

Rhode Island.

The first VDT bill was introduced by Rep. Henry Boeniger (D), the Chairman of the House Labor Committee in 1984. Conflict between business and labor centered around the hearing held on the VDT bill on March 8th. The Providence Newspaper Guild played the primary role in proposing the VDT bill, but AFSCME, SEIU, and 9to5 played important supporting roles. Representatives from CBEMA, IBM, AT&T, and VDT users, such as the American Automobile Association, the Air Transport Association, the Rhode Island Retail Federation, the Association of Manufacturing Jewelers and Silversmiths, and local businesses, formed an imposing coalition in opposition to the bill.[61] They argued that legislation was unnecessary since ergonomically designed desks, chairs, and VDTs were already on the market. But labor retorted that too few of the employers were using the equipment. The bill, said the Newspaper Guild's David Eisen, "will assure that the equipment and the knowledge necessary to protect the health and wellbeing of VDT operators are not left in catalogues and reference books, but are used."[62]

But industry arguments that Rhode Island, in a recessionary economy, could not afford to become the first state to enact VDT regulations that would scare business away carried the day. The spokesman for the Providence Chamber of Commerce warned legislators that becoming the first state to enact mandatory VDT regulations would be a

"major detriment" to Rhode Island's high tech business climate.[63] Corporate opponents warned legislators that VDT regulations would send the wrong signal to businesses thinking of moving out of, or coming to, Rhode Island at the very time that the Department of Economic Development's was trying to attract new high tech investment. Rhode Island was coming out of a deep recession during the early 1980's and its recovery was being led by growth in high tech and the commercial banking sectors-- VDTs were crucial to the success of both industries.[64]

Although it turned down mandatory regulations, the Rhode Island legislature approved a substitute bill appointing a 13 member commission composed of business, labor and government representatives to study the VDT safety and health issue and make recommendations.[65] While IBM staunchly opposed the bill creating the study commission, it was supported by the State and the Providence Chamber of Commerce as a harmless compromise.[66] Their assessment of the study commission proved to be accurate. The commission, where labor representatives were outnumbered by their government and business counterparts, voted against recommending mandatory regulations. Even the commission's preparation of a brochure was not without controversy. Business representatives complained that the intended use of solid dots, or bullets, to emphasize recommendations on how to avoid VDT-related health problems might mislead workers

into thinking they were regulations. To placate business, the bullets were omitted from the brochure.[67] However, business representatives ultimately used their considerable influence with state authorities in a more substantial way--the brochure was never written.[68]

Illinois.

When one thinks of the nation's most important high technology locales, states along the east and west coasts, such as California, Massachusetts and New York, usually come to mind. But Illinois ranks as one of the leading high technology states, and the most important in the Midwest, with more high tech jobs than any other state in the region. VDT-using industries, such as software and business services, play an important role in Illinois' high tech success, accounting for accounting for most of the state's high tech employment.[69] The Chicago area is home to one of the nation's largest concentrations of software producers, with approximately 600 new firms created between 1982 and 1984. The VDT-reliant service sector industries were growing rapidly. The State's Commission on Technology and Science played an aggressive role in fostering high tech growth, such as its contribution of money to establish the Illinois Software Association Center to nurture new firms.[70]

With such a high volume of VDT use in illinois, it is not surprising that business opposition to VDT legislation

was strong. The nation's second VDT bill was introduced by Rep. John S. Matijevich (D-North Chicago) in the Illinois legislature in April 1981, but it was not until the spring of 1984 that the VDT bill's proponents had mobilized sufficient support to seriously challenge industry opposition. The "VDT Network," a coalition of labor unions, 9to5, and the Chicago Area Committee on Occupational Safety and Health, aimed to get Rep. Matijevich's bill beyond the Labor and Commerce Committee where it had languished every year since 1981. Matijevich's VDT bill, called for pregnancy transfers, ergonomic guidelines governing furniture and lighting, periodic rest breaks and daily VDT work limits, and an end to computer monitoring.[71]

Like its counterpart in Massachusetts, the Illinois Press Association (IPA)-- a trade organization representing publishers-- took a leading role in opposing the VDT bill. At the bill's hearing in April, the IPA's Dale Barker ridiculed the testimony of VDT operators that much of VDT work was monotonous, repetitive, and contributed to high levels of stress, vision and musculoskeletal problems: "Unfortunately many jobs are tedious. What this bill plainly attempts to do is simply legislate work out of the workplace. Is the next step a law to say that no worker can go home more tired than when he arrived?" Borrowing one of the MNPA's favorite lobbying tactics-- that the VDT issue was really a Trojan Horse-- Barker charged that the

Newspaper Guild was "using fear and ignorance to create something of a panic." The only reason they had "turned to the legislative arena," she surmised, was because of their failure to get "these grossly featherbedding [VDT] provisions into local contracts."[72] With misleading testimony such as this, the lobbying power of the IPA and CWT was sufficient to keep the VDT bill pigeonholed in Committee.

Ohio.

In Ohio, a VDT bill supported by local labor groups and 9to5, which was headquartered in Cleveland, was introduced by Rep. Barbara C. Pringle (D) in October 1983. It called for adjustable chairs, work surfaces and tiltable screens; glare controls and ambient lighting; noise reduction shields; periodic eye exams; rest breaks, daily work limits and alternative work for pregnant employees; metal radiation shields; and semi-annual inspections and fines for noncompliance.[73]

Corporate opposition to VDT legislation in Ohio was led by the Dayton-based NCR Corporation, a CBEMA member and a major manufacturer of VDTs, and the Ohio Publishers Association (OPA) a major user of VDTs. Led by A. Raymond Daniels, NCR organized local Chambers of Commerce into a lobbying campaign aimed at legislators and Governor Richard F. Celeste's (D) office. As with all bills that would regulate VDT use, CBEMA objected to Pringle's bill, saying

that it "aids the notion that there's something unsafe about these machines, when there isn't."[74] Daniels accused the VDT bill's proponents of using "scare tactics" and added that "there are no VDT health hazards, there are discomfort problems." But his most important argument in terms of persuading state officials not to enact VDT regulations was that it would be "a definite detriment to the enhancement of Ohio as a high-tech state."[75] Ranked a close second to Illinois for the most high-tech jobs in the midwest, Ohio was working hard to enhance and attract new investment. Along these lines, it established the Thomas Edison Partnership to make venture capital available to high-tech firms.[76] Legislators agreed that to pass Pringle's bill would put a damper on the state's chances to overtake Illinois as the Midwest's high-tech hub. After the VDT bill's defeat, CBEMA made Daniels vice chairman of its Plans and Policy Committee.[77]

Like their counterparts in Massachusetts and Illinois, the OPA played an important role in the effort to shape public opinion against the VDT legislation. A Columbus Dispatch editorial entitled, "Assault on VDTs," implied that the VDT bill had no foundation in reality and that it's proponents were anti-progress:[78]

> It's a good thing that some of the present members of the Ohio General Assembly weren't around when the pencil was invented. Had they been, the world's most basic writing instrument might today come equipped with a tip safety shield with see-through visor, work gloves, protective eyeglasses, ear shields, and an

> anti-chew guard. And it would, of course, contain no lead and be made of splinter-free material. All of this would have been done in the name of 'operator safety.' Well, the doodlers and scribblers were spared this nonsense, but the users of the world's current basic writing instrument-- the video display terminal-- may not be so lucky.

The point of view of the Columbus Dispatch, the OPA, NCR, CBEMA, and other opponents of the VDT bill prevailed. Pringle's bill was referred to the House Committee on Health and Retirement where it died at the end of the 1984 legislative session.[79] No other bill has gotten further in the legislative process.

Oregon.

In 1983, Senator Margie Hendricksen (D-Eugene) introduced a bill calling for mandatory VDT regulations, including ergonomic standards for workstations, rest breaks, proper lighting levels and periodic eye exams, governing the public and private sectors. Business users and manufacturers of VDTs stepped up their lobbying pressure as the Oregon legislature moved closer to becoming the first state to pass a bill regulating the workplace use of the new technology. VDT manufacturers such as, AT&T, Hewlett-Packard and Textronix, Inc., the state's largest private employer, lobbied against the bill. A crucial turning point in the bill's defeat came when Consolidated Freightways, Inc., threatened to cancel its $8 million expansion plans and withdraw all of its 1,300-plus jobs from Oregon if the VDT

bill became law.[80] In a letter to Governor Victor Atiyeh (R), Vice President N.R. Benke said that Consolidated Freightways "felt that it is not desirable to expand operations in states where oppressive legislation causes unnecessary and costly restrictions."[81] Consolidated Freightways denied that it was attempting to blackmail the legislature, but its threat seemed clear enough. "If the Senate bill passes, they (the board of directors) won't build the building in Portland. If it fails, they will," said Phillip Seeley, another Consolidated vice president.[82]

Consolidated Freightways threat received widespread publicity and solidified opposition to the VDT bill in the legislative and executive branches. Governor Atiyeh opposed the bill, saying its passage would have a "chilling effect" on the state's economy. "I hope this signal goes out loud and clear to some of the dreamers in the Oregon Legislature," he said.[83] That and the fear of other employers following Consolidated's lead was enough to convince the Senate Labor Committee to strip all the bill's requirement's except the annual eye exam provision.[84] The legislature then effectively killed the bill until its next session in 1985 by establishing an interim committee composed of business, labor, medical and legislative members, to study the issue.[85]

The intensity of the opposition forced Senator Hendricksen to regroup and offer a weaker bill that applied

only to the public sector in 1985; it required the state director of Workers' Compensation to establish ergonomic and purchasing guidelines and set up educational programs informing state and local workers of potential hazards.[86] On June 15th, 1985, the Oregon legislature became the first to pass a law that governed the workplace use of VDTs. But it was vetoed by Governor Victor G. Atiyeh (R), who said that existing administrative rules could accomplish the same result. Although it was not binding on the private sector, Atiyeh cited business opposition and the ill-effect the bill would have on the state's rapidly growing computer industry.[87] The Los Angeles Times reported that "Atiyeh ... thought such a law would be harmful to the state's business climate. Oregon has been making a big push to cultivate high-tech industries and has succeeded to such a degree that the area around Beaverton, a town just west of Portland, is now called 'Silicon Forest.'"[88]

California.

California, the state with more VDTs in the workplace than any other, saw much legislative activity on the VDT issue but little results. The failure of VDT advocates to achieve a legislative breakthrough here is not surprising when one considers that California is also home to Silicon Valley, the nation's largest concentration of computer-related high technology firms.

The legislative battle was led by Rep. Tom Hayden (D-Santa Monica), the radical student activist turned liberal politician. In February 1984, Hayden introduced a bill requiring that all VDTs used in the workplace be equipped with metal nonionizing radiation shields; that pregnant VDT workers be provided with alternative work; establish standards governing furniture, lighting, noise, eye exams and terminal maintenance; and six-months warning notice to employees about plans to install new technology.[89] A coalition of 25 unions and support groups organized in support of the Hayden bill, including AFSCME, the Communications Workers of America (CWA), IAM, SEIU, the Newspaper Guild Council, and the California and the American Civil Liberties Unions. The bill, which would have covered the private, as well as the public, sector was actively opposed by VDT manufacturers such as AT&T, IBM, and Hewlett-Packard, their trade association-- CBEMA-- and trade associations representing corporate users, such as, the Air Transport Association, the American Electronics Association, the California Chamber of Commerce, the California Manufacturers Association, the California Newspaper Publishers Association (CNPA), and the California Bankers Association. Governor George Deukmejian (R) also opposed the bill.[90]

The most controversial aspect of Hayden's bill was the radiation shielding provision. Calculating that at $50 a

piece, it would cost $37.5 million dollars to shield the state's estimated 750,000 VDTs, Alan Foster, an AEA lobbyist said that "the cost would be astronomical."[91] Echoing Foster's estimate was Mike Dorais, general manager of the CNPA, who said it was "unreasonable to ask newspapers that have invested in state-of-the-art equipment to replace them all."[92] However, Foster's figures were based on an inflated estimate of the cost of shielding VDTs. Shielding VDTs, a relatively cheap and easy procedure, could be accomplished for $30-$40 dollars each, or less. At these rates the expense to California's businesses would be only $22.5 to $30 million. Despite tremendous business pressure, Hayden's bill passed both the Assembly's Labor and Education Committee and sent to the Ways and Means Committee, but was defeated on the Assembly floor by a 37-25 vote.[93] "Newspaper publishers, banks, airlines, travel agencies and giants like Hewlett-Packard and IBM waged a massive campaign" to defeat the bill, Hayden said. "Industry swamped the legislature with the most pressure seen on any bill all year."[94]

The next year, Hayden introduced three VDT bills (ergonomics standards, eye care, and purchasing guidelines) but none passed.[95] However, he did achieve a partial victory when portions of his third bill-- mandating VDT purchasing guidelines for state offices and the university system-- were adopted by the California Office of

Information Technology (COIT).[96] However, COIT's guidelines were voluntary and, as such, were more often ignored than followed.[97]

In June 1989, the California Occupational Safety and Health Board ignored the advice of its Ad Hoc Expert Advisory Committee on VDTs and voted 4-1 against setting standards to regulate the workplace use of VDTs. The Board's decision to reject the Ad Hoc Committee's suggestions was based on the objections of Cal/OSHA's Director, R.W. Stranberg, a political protegee of Governor Deukmejian who was a staunch opponent of VDT regulations. The Boards decision to reject standards was criticized by majority members of the Ad Hoc Committee, who pointed out that Stranberg's recommendation mirrored the dissenting position of the Ad Hoc Committee's 4 industry representatives that there are no VDT-related health hazards.[98]

New York.

Perhaps more than in any other state where legislation was considered, New York was the one where advocates of VDT safety and health regulations experienced the greatest swings between frustration and success. Their frustration started shortly after Assemblyman Frank J. Barbaro (D-Bensonhurst) introduced a VDT bill in the state assembly in early 1983.[99] "There's a big push to change the whole industrial base to high technology in our state that makes

this very crucial," he said.[100] On April 13th, Barbaro's Labor Committee held a hearing on his VDT bill in New York City. His bill was supported by the Newspaper Guild, the SEIU, CWA, New York Committee for Occupational Safety and Health (NYCOSH), the United Staff Association of New York University, and District Council (DC) 37-- AFSCME.

However, corporate lobbying kept Barbaro's bill bottled up in the House Ways and Means Committee every session. New York is home to IBM, the world's largest computer company, and other industry giants, such as Eastman-Kodak and Xerox Corporation, and they quickly launched a massive counterattack to defeat Barbaro's bill. "The computer industry has pulled out all the stops," said DC 37's Legislative Council Fred Jacobs in 1984. "Many computer companies are headquartered in New York, and they have made defeating any and all VDT legislation their number one priority," he added.[101] A NYCOSH lobbyist concurred, describing the Barbaro bill as a particularly tough sell because virtually every legislator between New York City and Albany had an IBM facility and employees in his district.[102] Business users of office automation systems also weighed in against the Barbaro bill. John D. Kutzer of the New York State Publishers Association spoke for them when he testified that it was needless to "protect people from nonexistent maladies."[103] The Barbaro bill "has very strong opposition from the business community, which

unjustifiably sees it as an anti-high technology bill," said Labor Committee aide Carol Gerstl.[104]

The issue of VDT safety and health in the workplace was also displaced by public officials desired to promote New York's high- tech industrial policy. The state's willingness to make high-tech business policies a top priority is illustrated by its use of the investment tax credit (ITC). ITC's, which give major corporations the right to subtract an amount worth up to 5 percent of their annual investment in manufacturing plant and equipment from their tax bill, are offered by states engaged in the competitive chase to lure new businesses and keep the one's they have from leaving. However, there is no convincing evidence that corporations view the ITC as the make-or-break factor in their multi-faceted decision to stay put or leave. 15 of 16 corporations doing business in New York surveyed by DC 37 agreed that the ITC had no impact on their investment decisions. The decision to reinvest in New York is made: "Whether you have an ITC or not," said an IBM spokesman. "We probably would have made the investment anyway without the credit, he added. "We think New York is a great place to work."[105] Indeed, IBM received an estimated $75 million in investment tax credits between 1982 and 1987. Fellow CBEMA member Xerox Corporation received an estimated $8,200,000 during the 1987-89 period. These massive subsidies were given to IBM and Xerox during a time when they made

$58,402,000,000 and $3,682,800,000 in profits respectively. The investment tax credits given to IBM and Xerox during this period virtually wiped out their state tax bills.[106] Moreover, New York state officials pursued this costly policy at a time when they were experiencing revenue shortfalls which forced legislators to limit and cut expenditures for vitally needed social welfare and education programs.[107] The lobbying clout of corporate giants like IBM and Xerox, combined with Albany's desire to placate business interests, keeps this subsidy in place despite a 1985 state report's conclusion that: "The ITC has probably not been a significant factor in the locational decisions of business [and] is inherently wasteful because a corporation receives a credit for all of its qualified investment, including that which would have occurred in any event."[108] The ITC's ineffectiveness as an instrument of fiscal policy was even recognized by Congress, which eliminated it from the federal tax code in the Tax Reform Act of 1986.[109]

The exact amounts of the ITC each corporation gets is an official state secret that is not released until 2 or three years after the fact, leaving the public in a position where it is unable to make an informed judgment on the appropriateness of these decisions.[110] Moreover, it is a tax policy which favors the giant corporations like IBM, Xerox and Eastman Kodak over their more needy, and smaller, high-tech competitors. Only about 3 percent of the

corporations in New York have investments large enough to qualify for the tax credit. In 1982, IBM and Eastman Kodak alone accounted for 43 percent of all the credits given by New York. The case of the investment tax credits illustrates Madison's fear, in Federalist #10, that-- at the state level of policymaking-- bigger, better organized interests, such as CBEMA, can more easily dominate over others.[111]

The Shift to Suffolk County.

Rebuffed at the federal and state levels, VDT proponents turned their energies to the county and local levels of government. In 1987, Legislator John J. Foley (D-Patchogue) introduced a VDT bill that made Suffolk County, New York, the focal point around which national conflict over VDT safety and health concentrated for the next two years.

Foley's bill (similar in content to those introduced in many states) called for employers to pay for annual eye exams and prescriptions for corrective lens, provide a 15 minute alternative work break at least every three hours, detachable keyboards, adjustable seats and workstations, shields to reduce printer noise, deflection of light-induced glare by means of screens and shields, and provide ergonomic training. The bill applied only to employees who worked at a VDT for more than 26 hours a week in businesses that had 5 or more machines.

For Foley, a self-described "New Deal" Democrat, the VDT bill was a natural outgrowth of his concern for workers' issues. Foley's attention was drawn to the issue by his wife, a CWA member, and his son, a professor of public health who was a specialist on the effects that stress has on people.[112] The Foley bill was supported by unions and affiliated groups such as, the CWA (which represented 4,000 VDT workers in the county), the Civil Service Employees Association (which represented 26,000 government workers in the county), the state AFL-CIO, the International Ladies Garment Workers Union, the International Brotherhood of Electrical Workers, 9to5, and NYCOSH.

Opposing the measure were many of the county's corporate VDT users, including AT&T, New York Telephone (which employed 2,000 VDT operators in the county), Grumman Corporation (Long Island's largest private employer) and Newsday, Inc. (a major user of VDTs). Local high technology firms and insurance agents, among others, also voiced their disapproval of the Foley bill. Many businesses groups and trade associations opposed the Foley bill, including the Long Island Association (the region's chamber of commerce and largest business group with 3,600 members), the New York State Bankers Association, the Business Council of New York State, the Long Island Forum for Technology (LIFT), and the Association for a Better Long Island (ABLI), a group representing 40 real estate developers.

Pressure against the Foley bill also came from the public sector. Fearing the flight of revenue-producing corporate neighbors, such as Grumman Electronics Systems (a division of the Grumman Corporation), Islip Town Supervisor Frank R. Jones testified against the bill. Acting County Executive William A. LoGrande (R) complained that the bill would regulate every firm that had a VDT no matter how small. In an attempt to appease LoGrande, Foley responded to LoGrande's objection by limiting his bill's jurisdiction to companies that used more than 20 VDTs.[113] Given that the worst safety and health problems among VDT operators were in smaller firms, Foley's concession weakened the bill's effectiveness considerably. However, Foley's modification helped get the bill passed on June 23, 1987, by a vote of 13-2 with 3 abstentions.

Cynically, LoGrande used Foley's concession to his own objection as an excuse to veto the VDT bill, calling the measure "unconstitutional" because it applied only to large employers. The override attempt fell one vote short when two county legislators who had supported Foley's bill were persuaded to vote against it. As a gesture of reconciliation, LoGrande commissioned a "blue ribbon" panel (composed of members from business, labor, government and science) to investigate the VDT safety and health issue and signed a measure that applied only to the County's 1,000 VDT operators.[114]

Organized labor's response to LoGrande's veto was to make the VDT bill an issue in the 1987 campaign for county executive. They targeted LoGrande for defeat and threw their support behind the campaign of the Democratic nominee, Assemblyman Patrick G. Halpin (D-Lindenhurst). Halpin, who co-sponsored Barbaro's VDT bill in the state assembly, promised to sign the VDT bill into law if elected.[115] The CWA donated $10,000 to Halpin's campaign and organized labor worked to get out the vote on his behalf.

Labor's campaign efforts were rewarded in the 1987 election when Halpin defeated LoGrande, making him the first Democrat ever to become County Executive since its inception in 1970. Moreover, the Democrats won 10 of the legislature's 18 seats, marking the first time that they had ever won control of both branches of Suffolk County government.

The legislative battle was rejoined in early 1988. When Foley reintroduced his bill on March 1st, it contained two new features aimed at addressing the business community's concerns. First, employers would be required to pay only 80 percent of the cost of eye exams and prescriptions, not the full amount. Second, to meet opponents criticism that his bill would freeze the technology at a time when it was still evolving, Foley added a provision to create a 5 member board that would suggest state-of-the-art modifications in the law's ergonomic standards every two years.[116]

Despite these modifications the business community continued to oppose the Foley bill. The LIA proposed a voluntary plan in a last ditch effort to stave off mandatory VDT regulations, but it failed to distract the legislators' attention from the Foley bill. Legislator George Nolan (D-Islip) spoke for most of his colleagues when he said: "Business is saying, let us regulate ourselves... I'm not willing to do that."[117] On May 10th, 1988, the county legislature passed the Foley bill by the same margin as it did the year before.[118]

Business pressure on Halpin to veto the measure was intense. Interest in the bill's outcome extended beyond Suffolk County. The influential New York Times, a major user of VDTs, decried "the heavy hand of governmental regulation." It went on to describe the Foley bill as "bizarre" and "picky," and charged that its passage "would set a reckless precedent for other jurisdictions."[119]

Halpin waited for the full 30 day period allowed under county law before vetoing the VDT bill on June 10th. Ultimately, the business community's threats of economic and job loss were decisive. "More than one business leader has told me bluntly they would move from Suffolk County ... or not relocate here" if the VDT bill became law, he said. In return for his veto, Halpin said that Suffolk County's leading businessmen had given him their "personal

commitment" that they would maintain adequate VDT standards.[120]

The business community was pleased that Halpin had reversed himself so completely. "It's an extraordinary act of courage by a guy who has matured very quickly in the job," said James Larocca, the LIA's president.[121] In a tribute to his "courage," many members of the business community turned out at Halpin's $300 a plate reelection fundraiser shortly after the veto.[122]

Despite intense pressure from the bill's opponents the Legislature overrode Halpin's veto by a 13-5 vote on June 14th, thereby establishing Suffolk County as the first governmental body in the nation to regulate the workplace use of VDTs in the private sector.[123]

The opponents' reaction was immediate and unfavorable. Northwest Airlines announced it was canceling plans to move 180 jobs into the County and the Metropolitan Life Insurance Company said it would not hire an additional 200 employees there. Real estate developers complained that clients, such as the Chubb Insurance Company, canceled deals when they learned of the proposed VDT law.[124] The announcement stirred interest as far away as Wyoming, where the city of Cheyenne proclaimed its willingness to provide a home for the corporate exodus.[125]

New York Telephone announced a hiring freeze on VDT jobs in Suffolk County, and said that it would close a

directory assistance office in Babylon at the end of 1989. The Babylon office, which employed 125 people with an annual payroll of $3 million, had been in operation for 18 years. Thomas J. Calabrese, general manager for the company's Long Island operations, said: "We regret having to take these steps. But as we testified at various hearings this bill imposes unnecessary costs on our company, which ultimately will be borne by our customers."[126] The same message was carried on nationwide television by the ABC Evening News, which quoted New York Telephone executive Steve Marcus as saying that "it's going to stifle business development in our view and its going to have an impact on our revenues."[127]

Organized labor's victory did not bring an end to the battle over VDTs in Suffolk County. Instead, it continued in the executive and judicial arenas. Despite their legislative victory, proponents of VDT regulations now were confronted with the dilemma of enforcement. Given Halpin's new-found opposition to the VDT bill, to what extent could he be counted on to vigorously enforce it? Opponents of regulation took heart from the fact that County Executive Halpin showed no enthusiasm for the task of implementing the VDT law. Halpin responded to the override with the promise to "do my best to implement this law so that it has the minimal impact on our business community."[128]

Moreover, the VDT law did not mandate extra money or staff to enforce its provisions. Suffolk County had only one person to oversee the implementation of the VDT law and that person also handled housing and sanitation problems.

Nevertheless, opponents preferred no regulations to weakly enforced ones. They feared that the VDT law would stifle business and set a precedent for the rest of the nation to follow. On June 23rd, four local businesses challenged the legality of the law in court.[129] They charged that the County overstepped its bounds in legislating that employers pay for 80 percent of VDT workers eye exams and prescriptions, a function reserved to federal and state regulations governing occupational safety and health and workers compensation. "We want to give the Suffolk County Legislature a message that they shouldn't tread in areas where they have no jurisdiction, especially when their acts create unnecessary negative impacts of [sic] the Long Island economy, said Gary Neil Sazer, the LIA's counsel."[130]

On October 5th, State Supreme Court Judge John Copertino handed down a preliminary injunction stopping Suffolk County from implementing the first part of its VDT law, the eye care provision (the day before it was to go into effect). The judge stated that the VDT law may interfere with state and federal rules regarding workers compensation, interfere with interstate commerce, and impose

"financial hardship" on employers by making them pay 80 percent of employee eye care costs. The Court of Appeals unanimously upheld his decision on October 19th.[131] The business community had won round one of the judicial battle.

Round two also went to the business community when Judge Copertino officially overturned the VDT law's eye care provision on December 27, 1989. His decision turned on a technical question of state and local jurisdictions, not on the substance of law's safety and health concerns. In a decision that was upheld on appeal, Judge Copertino said that "though the legislation is well-intentioned and ultimately may be proved an important first step in bringing the worker health concerns addressed in the law to the attention of the public, the Suffolk County Legislature lacked the authority" to pass it.[132] He added that "[i]n an era of almost daily revelations about workplace health and safety, it would be better to allow the state to continue its traditional oversight and control."[133]

As James O'Connor has made clear, public dependence on corporate-generated jobs and tax revenue, in many instances, may be sufficient to establish a community of interests between elements of the business sector and government.[134] In an era of tight budgets, the Islip Town Supervisor didn't need to be lobbied by Grumman executives to understand that he, too, should oppose the VDT bill. Rather, the Islip Town Supervisor's fear that Grumman might leave the region was

sufficient to insure his opposition to the VDT bill. The loss of Grumman's considerable contribution (i.e., $616,000 in school, town, and county taxes; $403,000 in sales and use taxes; $66 million paid annually to 1800 employees; and $10 million worth of contracts it gives to other local businesses) would have a devastating impact on the area's economy.[135] Halpin's position on the VDT issue changed under the pressure of similar arguments made by business lobbyists.

But few, if any, firms actually moved out of Suffolk County when the VDT law was enacted. The decisions by New York Telephone and Metropolitan Life to curtail new employment in the County had actually been made previous to the VDT bill's passage. Nonetheless, blaming the VDT law for scaring away business made for an effective lobbying tactic. That economic blackmail was more a threat than a reality was demonstrated by the fact that most corporations accepted the VDT law. Hewlett-Packard went ahead with its plans to build a new facilities in the County, as did Computer Associates, Inc.[136] The County Legislature's legal counsel, Paul Sabatino, reported that many firms asked his office for advice on how to comply with the law during its brief reign. He also reported that the vast majority of firms surveyed by the County were complying with its requirements.[137]

This is not surprising given that business decisions to leave are usually due more to the accumulation of long-term

factors such as traffic congestion, and the rising cost of supplies, labor and real estate, than the estimated regulatory costs involved in the VDT law. Pulling up stakes is not a business decision that is lightly made. The costs of moving a business must be carefully weighed against the possible benefits to be derived.

Suffolk County's Ripple Effect.

The passage of a VDT law in Suffolk County created a legislative ripple effect that spread as far as the west coast. Bills were introduced in California, Connecticut, Maine, Massachusetts, Minnesota, Missouri, New Hampshire, New Jersey, New Mexico, Oregon, Rhode Island, Washington, Wisconsin, and in localities such as New York City and San Francisco. The New York State AFL-CIO announced its intentions to push VDT bills in Erie, Rockland and Counties and redouble its efforts to get the Barbaro bill through the state legislature.[138]

Maine was the only state where a VDT bill became law, but not before corporate opponents succeeded in watering it down. In 1989, Maine considered a bill, modeled on Suffolk County's, but CBEMA and the Maine Chamber of Commerce and Industry (MCCI), persuaded legislators to strip the ergonomics standards from the bill, telling them that compliance costs could run as high as $5,000 per workstation. Even the Speaker of the House John L. Martin's

(D) support of the original bill was not enough to overcome the opposition's inflated cost claims. "The opposition to this bill was enormous. I do not recall seeing so many industry lobbyists getting so worked up about a proposal."[139] What remained was a provision palatable to business calling for education and training in companies with more than 25 VDTs in one location.[140] "Industry supports the Maine legislature's emphasis on education and training for VDT users and we see this bill as a reasonable measure," said CBEMA President John Pickitt. The final version of the law was "whittled down" to the point where it cost business an "insignificant amount of money to implement," said a MCCI spokesman.[141] Although VDT advocates succeeded in getting a VDT law on the books (albeit a weak one) in Maine, their most successful post-Suffolk efforts were in cities such as New York City and San Francisco.

New York City.

The success in Suffolk County sparked interest in the City Council, where on August 9, 1988, Councilwoman Miriam Friedlander (D-Lower Manhattan) introduced a VDT bill backed by the New York City VDT Coalition, representing DC 37, and 16 other local unions. Her bill was modeled on the law passed in Suffolk County a few months earlier with two important exceptions; it included a provision for transfers

to non VDT work for pregnant workers and it would apply only to the estimated 14,500 city employees who use VDTs.[142]

Although Friedlander's bill would not apply to the private sector, the business community eyed it with suspicion. In reply to industry complaints that a VDT law would stifle business, Diane Stein, the VDT Coalition's spokesperson, told the City Council that the bill "does nothing more than adopt the recommendations of companies like IBM and Bell Laboratories and codify them."[143] The New York Chamber of Commerce and Industry's (NYCCI) legislative counsel, Paul Magarill, called the Friedlander bill "extremely dangerous." They saw it as the first step on the road to regulating the private sector. "There's no question that they'd try to extend it to the private sector," he added.[144] Magarill was right; after the bill's unanimous passage on December 5th, 1989, City Councilman Walter L. McCaffrey (D-Long Island City) said "this should serve as a model to expand in the future to all employees."[145] Sharing the business community's concern that the VDT bill was the first step to regulation of the private sector, and that such a move would have a deleterious effect on New York's economy, outgoing Mayor Edward I. Koch (D) pocket vetoed the bill.[146] The degree to which Mayor Koch saw the VDT bill as a threat to the autonomy of the business community was indicated by the fact that it was only the 8th time he had vetoed a bill in his 12 years in office.

New York was still suffering from the stock market "crash" two years before, and a loss of business revenue contributed to the estimated $530 million budget deficit.[147] "In view of the present fragile state of the city's economy," Koch said, "I am reluctant to endorse any program which might endanger the business climate and cause firms to relocate outside the city or deter new ones from moving into the city."[148] The Mayor's office raised the estimated cost of compliance from $10 million to $30 million. This burden would force the city to raise taxes which would make a less hospitable climate for business. But Mayor Koch's cost estimates were challenged by the City Council which calculated the cost to be only $3 million and said that this would be made up by improved worker productivity and health.[149]

In his veto message, Mayor Koch stated that the subject of VDT safety and health regulations was better suited to the collective bargaining process, but the legislative effort was prompted by his administration's refusal to bargain in good faith on the issue since 1981. That the cost of compliance was not an insurmountable obstacle for the city to meet was demonstrated in June 1990. When the administration of David Dinkins (D) was confronted by the near certainty that the City Council was going to pass the same VDT law again, it reached a collective bargaining agreement with DC 37 that contained virtually the same

provisions.[150] VDT advocates in San Francisco advanced further towards the goal of legislation but ended up with less.

San Francisco.

The passage of Suffolk County's VDT law also inspired California activists, who had been lobbying unsuccessfully at the state level, to shift their energies to the local level. The original version of the VDT bill introduced by Supervisor Nancy Walker (D) required that VDTs be spaced 5 feet apart from one another to avoid overlapping electromagnetic fields (EMF), but this provision was dropped due to intense business opposition and the lack of specific scientific evidence linking EMFs to illnesses among VDT workers. Still, the watered-down version of the bill required employers with 15 or more employees who work at VDTs for more than 4 hours a day to provide them with work breaks, adjustable workstations, proper lighting and glare screens, and training. Mayor Art Agnos (D) signed the bill on December 27, 1989 after he persuaded labor leaders and the Board of Supervisors to agree to an amendment extending the time allowed employers to fully comply with the law from 2 to 4 years.[151]

Although the business community won many of the concessions that it demanded in negotiations with the mayor, some were not pleased that a precedent-setting law

regulating the private sector was on the books. Passage of the VDT law "placed San Francisco in a poor light," with business, charged Seth J. Gersch of Montgomery Securities. With its slow growth provisions, high taxes and expensive office rents, business opponents of the VDT law warned that San Francisco already had an "anti-business" reputation. They declared that compliance with the VDT law would cost tens of millions of dollars and further exacerbate San Francisco's anti-business image.[152]

Like the Suffolk County law, San Francisco's law was challenged by business in court, and as in Suffolk County, the San Francisco law was struck down in February 1992 on the grounds that it interfered with the state's power to set occupational safety and health regulations.[153] The president of one of the two local firms that sued, Bob Tessler, President of Data Processing and Accounting Services charged Mayor Agnos and the Supervisors who voted for the bill with "fiscal irresponsibility." "The cost to the taxpayers, both individuals and corporations, was unnecessary," he added.[154] In effect, Tessler was also speaking for IBM and other large VDT manufacturers (who preferred to remain anonymous), which paid the two local firms' legal fees.[155] Given that all the major cities (including Los Angeles and San Diego) in California had requested copies of San Francisco's legislation, the Court's ruling was an important victory for corporate VDT coalition

because it meant they didn't have to deal with the potential nightmare of complying with hundreds of different regulations on a city by city basis. Moreover, the San Francisco VDT law had generated tremendous interest nationwide with over 400 cities requesting copies of the legislation.[156] Having to lobby against hundreds of VDT bills,[157] and comply with a myriad of enacted laws, had the potential to turn the state and local arena into a labyrinth of frustration for VDT manufacturers and corporate users.

Conclusion.

Suffolk County, New York City, San Francisco and the states turned out to be labyrinths of frustration, not the laboratories of democracy, that advocates of VDT regulation had hoped. Only two states enacted laws dealing with VDTs, but neither included mandatory regulations. In 1986, Rhode Island directed its Department of Labor to develop an informational brochure on VDT work hazards and, in 1989, Maine required employers to provide education and training for their VDT workers.[158] However, Rhode Island's brochure was never written, and Maine's law was much very weak. 8 states have voluntary training and/or purchasing guidelines for state employees,[159] and New York City has a collective bargaining agreement with its employees covering ergonomic factors, but none have laws or administrative regulations

governing the private sector where the vast majority of VDT operators work.

Business opponents warned that imposing mandatory VDT regulations on the private sector would stifle the economic growth of an industry that state officials increasingly saw as the answer to their state's growing economic and revenue problems. Given that labor's campaign for safety and health regulation arose at the time when state officials were increasing their courtship of the high technology investment dollar, this tactic was effective in persuading the latter that their interests lie in opposing VDT regulations in the workplace. Cutbacks in federal aid, combined with a recessionary economy, thrust states into a highly competitive campaign during the 1980s and early 1990s to outrun one another in the chase to secure business confidence. Many businesses eagerly encouraged states to up the ante in terms of who would offer the greatest incentives, such as tax breaks or exemptions, investment tax credits, monetary grants, taxpayer-provided infrastructure and other favors.

The business community could easily exploit its most important weapon-- the threat of economic blackmail. That is, the threat to boycott or withdraw its business from the first state to seriously consider enacting mandatory VDT regulations. The flexibility of computer and communications technology (which made it possible to transmit work around

the corner or around the world) made this a real possibility, not just an idle threat. As New York Telephone spokesman Bruce W. Reisman said regarding Suffolk County's VDT law:[160] "It is easy for us to put VDT jobs in an adjacent location... artificial geographic boundaries mean little."

This chapter has shown the difficulties inherent in trying to achieve policy with nationwide implications at the state and local level. The ease with which VDT work can be transmitted beyond local and state boundary lines, combined with states' fierce competition for the high tech investment dollar, gives the corporate community a tremendous advantage in the shaping of occupational safety and health policy in the office. These factors increase government officials fears that imposing VDT regulations on business will result in a loss of economic investment, jobs and tax revenue. The failure of state and local governments to protect the occupational safety and health of VDT workers illustrates the need for national planning and a strong OSHA to regulate the harmful effects of new technology in the workplace.

Notes.

1. The phrase "laboratories of democracy" was coined by Justice Louis Brandeis.

2. See Richard Kazis and Richard L. Grossman, Fear at Work: Job Blackmail, Labor and the Environment (New York: The Pilgrim Press, 1982).

3. Quoted in "Reagan's 'New Federalism' is About to Have Its Day in Court," Business Week, October 7, 1985, 59. See also, "State Regulators Rush in Where Washington No Longer Treads: Will the New Federalism Create 'a 50-Headed Hydra'?" Business Week, September 19, 1983, 124.

4. Geri D. Palast, Director of Legislation, SEIU, Washington, D.C., letter to author, February 25, 1985.

5. Mark Pinsky, Martha Zybko, and Louis Slesin, Video Display Terminals: 1983 Health and Safety Update (New York: Microwave News, 1984), 8-12.

6. Ibid., 8-12.

7. "Canadian VDT Ruling: No Loss of Pay for Alternative Work During Pregnancy," Microwave News, 2 (March 1982), 5.

8. Craig Brod, Technostress: The Human Cost of the Computer Revolution (Reading, MA.: Addison-Wesley, 1984), 33.

9. Henriques told Congress in 1984 that "in the past 2 years, 15 States have considered bills or regulations." Gaydos, 301.

10. Loren Stein and Diana Hembree, "VDT Regulation: The Publishers Counterattack," Columbia Journalism Review, November/December 1984, 42.

11. Quoted in "Growing Activism on VDTs," WOHRC News, January/February 1985, 1. "Unions Mount Campaign," Computerworld, February 6, 1985, 8.

12. "Groups to Push VDT Bills," Computerworld, December 17, 1984, 8; "Joint Effort Is Launched By SEIU, 9 to 5 To Introduce VDT Legislation in 18 States," Occupational Safety & Health Reporter, December 20, 1984, 555-56.

13. New Mexico. Office of the Governor. Executive Order No. 85-11, Governor Toney Anaya, March 27, 1985. "New Mexico Governor Anaya Signs VDT Regulations for State Workers," Occupational Safety & Health Reporter, April 11, 1985, 883. 9to5: National Association of Working Women, First Campaign for VDT Safety Victory; Governor of New Mexico Signs VDT Regulations for State Employees, press release, n.d.

14. "A Politician's Convictions," VDT News, March/April 1986, 3.

15. U.S. Congress, Library of Congress, Office of Technology Assessment, Automation of America's Offices (Washington, D.C.: Government Printing Office, 1985); "OTA

Report On Office Automation 'Needlessly Alarming' Group Says," Occupational Safety and Health Reporter, January 16, 1986, 887.

16. "The Quest for High-Tech Plant Sites," Chemical Week, December 12, 1984, 68.

17. "Nearly every city and state is convinced that, as new industries replace old, survival will depend on attracting and nurturing high-tech industry," Business Week reported. "Every state and city plans to make it big." "America Rushes to High Tech For Growth," March 28, 1983, 84.

18. Tobi Lippin, "Hyping High Tech," Technology Review 89 (October 1986): 77-78.

19. "America Rushes to High Tech For Growth," Business Week, March 28, 1983, 84.

20. President, Public Papers of Ronald Reagan: 1983 (Washington, D.C.: U.S. Government Printing Office, 1984).

21. "Reagan Due for Whirlwind Tour of Boston," UPI, January 25, 1983; Norman D. Sandler, "Hightech," UPI, January 29, 1983.

22. "America Rushes to High Tech For Growth," Business Week, March 28, 1983, 84.

23. Vico Henriques, "The State Factor: Restricting the Use of High Technology in the Workplace," (Washington, D.C.: CBEMA, 1984), 1.

24. Loren Stein, "Coalition Fights VDT Legislation; Business groups fight bills intended to safeguard office workers," InfoWorld, September 17, 1984, 47.

25. "Twisting the Day Away," In These Times, March 21-27, 1984, 4.

26. Mark Pinsky, Martha Zybko, and Louis Slesin, Video Display Terminals: 1983 Health and Safety Update (New York: Microwave News, 1984), 9. Mike Clancy, "Maine is a Testing Ground for Legislation," UPI, March 31, 1981.

27. "Maine House kills VDT bill," UPI, May 18, 1981; Elizabeth A. Marchak, "House Kills VDT Bill," UPI, May 23, 1983; Hy Shaffer, "Growing Concern Over the VDT," Administrative Management, June 1981, 24-27; Elizabeth A. Marchak, "House Kills VDT bill," UPI, May 23, 1983; Mike Clancy, "House Action On Labor Bills," UPI, May 23, 1983;

"Maine is First With a VDT Safety Law," The Guild Reporter, June 10, 1983, 4.

28. State of Maine, H.P. 1265-- L.D. 1575, "Resolve, Providing for Collection of Data and Promulgation of Rules Concerning Occupational Safeguards for Operators of Video Display Terminals," June 2, 1983; "Maine is First," The Guild Reporter, 1; Mike Clancy, "House Action On Labor Bills," UPI, May 23, 1983.

29. Telephone interview with Rep. Edith S. Beaulieu, July 28, 1984; State of Maine, Department of Labor, "Proposed Rules for Video Display Terminals in the Public Sector," March 15, 1984. "State sets Session on VDT-use Rules, The Guild Reporter, March 9, 1984, 3.

30. Lester C. Wood, Director, Industrial Safety Division, Department of Labor, State of Maine, to author, December 7, 1984. Roy Whitcomb, "Maine officials will not impose VDT rules," Editor & Publisher, June 16, 1984.

31. Michele Jacklin, "Safety of Video Display Terminals Debated at Hearing," Hartford Courant, October 14, 1982.

32. "The Quest for High-Tech Plant Sites," Chemical Week, December 12, 1984, 68.

33. Peggy McCarthy, "Face Race to Attract Technology," New York Times, April 17, 1983, Connecticut, XI:1.

34. "Labor Endorses, Management Opposes Proposed Connecticut VDT Health Study," Occupational Safety & Health Reporter, March 10, 1983, 836-37.

35. "Committee Hears Debate Over VDTs," UPI, March 7, 1983.

36. The bill directed the Connecticut Academy of Science and Engineering and the State Department of Consumer Protection to study the VDT safety and health literature and report back to the legislature on the need for regulations. Susan E. Kinsman, "Legislature Approves VDT Study," UPI, June 2, 1983; "Connecticut OKs Bill Requiring VDT Study," Guild Reporter, August 15, 1983, 6.

37. During one hearing before the General Law and Labor and Public Employees Committees in January 1984, the Southern New England Telephone Company (SNET), one of the state's largest users of VDT's, responded to the committee chairs request with 60 free box lunches for members. As the legislators digested their free lunches, SNET asked them to oppose the bill calling for mandatory VDT regulations. Since

the lunches were consumed in public and there was no stated quid pro quo, John D. Eaton, the head of the state's Ethics Commission, declared that there was no conflict of interest. Phil Blumenkrantz, "Activists Protest Hazards, Free Lunch," The New Haven Register, January 5, 1984, 48.

38. UPI, n.h., August 25, 1982; Its importance to Governor O'Neill's campaign to attract high technology cannot be underestimated. "It's very important for us to have Digital arrive in Connecticut," said David Driver of the Economic Development Department. "It's a great boost psychologically." McCarthy, "Face Race to Attract Technology," 1.

39. Interview with Susan Swartz, Service Employees International Union, New Haven, Ct., July 25, 1984.

40. Ibid.

41. Connecticut. Department of Economic Development. John J. Carson. Commissioner. "Innovations in the Workplace Compact." May 3, 1984, 1. Emphasis added.

42. Ibid.

43. Daniel S. Johnson, Secretary, Committee on Labor and Public Employees, Assembly, Connecticut, to author, June 7, 1985.

44. On his High Technology Council's advice, Governor O'Neill created the Connecticut Technology Assistance Council to carry out this task. "The Quest for High-Tech," Chemical Week, 68.

45. Connecticut, "Innovations in the Workplace Compact," 2; "Legislation: Connecticut," VDT News, September/October 1984, 17.

46. U.S. Congress, House, Committee on Education and Labor, OSHA Oversight: Video Display Terminals in the Workplace. Hearings, before the Subcommittee on Health and Safety, 98th Cong., 2nd sess., 1984, 301; VDT Task Force, "Proposed Education Training Program," 1984.

47. Rose Marie Audette, "Help! I'm Tied to My VDT!" Environmental Action, November/December 1984, 25.

48. House No. 2910, "An Act to Maximize the Impact Upon Both Employers and Employees Resulting From the Introduction and/or Utilization of Video Display Terminals," January 1982.

49. Stein and Hembree, "VDT Regulation," 43.

50. Susan Blakeney, "Lobbyist Blasts State CRT Health Legislation," Computerworld, April 26, 1982, 12.

51. "Committee Hears Clashing Views Over Need for VDT Safety, Health Law," Occupational Safety & Health Reporter, April 28, 1983, 998-99.

52. Ted Frier, "VDT," State House News Service, April 20, 1983.

53. Katherine Hafner, "Mass. Considering Bill to Regulate CRT Usage," and "Opposition Widespread," Computerworld, May 2, 1983, 6.

54. Frier, "VDT," 3.

55. "High-tech activity is stalled of late because of the national slowdown as well as recession abroad, the New York Times reported. "Hiring freezes are common and there have been some layoffs in the industry." Peter Cawley, "New England," New York Times, October 11, 1981, XII:70.

56. Stein and Hembree, "VDT Regulation," 43.

57. "New Legislation in Two New England States," VDT News, January/February 1984, 3.

58. Stein and Hembree, "VDT Regulation," 43; "Screening of VDT Stories Advised," Guild Reporter, November 9, 1984, 2.

59. Stein and Hembree, VDT Regulation, 43.

60. Maura McEnaney, "States Vary in Approach to VDT Legislation," Computerworld, March 25, 1985, 6.

61. "Campaign Against VDT Bills Organized," VDT News, January/February 1984, 5.

62. Frank Prosnitz, another Guild member, mentioned the need for government to exercise its countervailing power to restrain industry's excesses. "Never has business and industry unilaterally implemented important health and safety measures for workers. That job has been left to the legislators." "Rhode Island Legislators Probe VDT Perils," The Guild Reporter, March 23, 1984, 3.

63. Ibid., 3.

64. Cawley, "New England," XII:70.

65. Rhode Island, Joint Resolution Creating a Special Legislative Commission to Study the Effects of Video Display Terminals on Workers, 1984; Paul O. Plunkett, Research Assistant, Legislative Council, Rhode Island, to author, January 29, 1985; "Rhode Island Panel Sees No Danger, Need to Regulate, Video Display Terminals," Occupational Safety & Health Reporter, March 7, 1985, 773; "VDT-Related Laws Pass in Two States," Computerworld, June 17, 1985, 23.

66. "Rhode Island Establishes Study Commission," VDT News, May/June 1984, 5.

67. "Banning 'Bullets,'" VDT News, November/December 1985, 3.

68. "Editor's Notebook," VDT News, January/February 1992, 2.

69. Illinois had 26 percent of the Midwest's high tech jobs in 1984. Based on a report, Formation and Growth of High Tech Industries: Original Assessment, by Candee Harris, an independent research consultant. Cited in Ann Grimes, "A Regional Roundup On Employment: Middle West," New York Times, October 14, 1984, XII: 54.

70. Ibid.

71. "Support by Labor, Women's Coalition for Bill Noted at Meeting on Office Hazards," Occupational Safety & Health Reporter, March 15, 1984, 1127.

72. Stein and Hembree, "VDT Regulation," 43.

73. H.B. 552, "Establishes minimum occupational health and safety standards at places employing video display terminal operators." 115th General Assembly, 1983-84; "Ohio VDT Bill Called Typical of State Efforts," Computerworld, January 23, 1984, 29.

74. Lynn Haber, "Opponents of Proposed VDT Laws Organize," Computerworld, February 27, 1984, 13.

75. "Campaign Against VDT Bills Organized," VDT News, January/February 1984, 5.

76. "At 26 percent, Illinois accounts for most high-technology jobs in the Midwest with Ohio following close behind at 25 percent." Based on a report, Formation and Growth of High Tech Industries, by Harris. Cited in Grimes, "Middle West," XII:54.

77. "Computer Industry: Supershorts," Computerworld, December 10, 1984, 140.

78. Stein and Hembree, "VDT Regulation," 44.

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81. "Firm cites VDT bill in move to delay expansion," UPI, May 5, 1983.

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90. "VDT Bill Clears First Hurdle in California," The Guild Reporter, April 20, 1984, 3; "California Assembly Kills

Bill Calling for VDT Alternative for Pregnant Workers," Daily Labor Report, July 13, 1984, A-13.

91. "California Bill Would Reassign Pregnant VDT Users," Computerworld, April 30, 1984, 6.

92. Stein and Hembree, "VDT Regulation," 43.

93. Judy Corbett, Administrative Assistant to Assemblyman Tom Hayden, to author, January 17, 1985; "VDT Bill Clears First Hurdle," Guild Reporter, 3; "Bill to Regulate Video Terminals Moving Through California Legislature," Occupational Safety & Health Reporter, May 10, 1984, 1318; "Legislation: California," VDT News, July/August 1984, 13.

94. "VDT Studies Okayed By Two States In '84: Bills In At Least A Dozen," Guild Reporter, September 14, 1984, 7.

95. Robert Crabbe, "Video Terminal Issue Laid Aside," UPI, June 12, 1985.

96. "Health, Safety Guidelines for VDT Users Issued by California Technology Office," Occupational Safety & Health Reporter, May 30, 1985, 1033.

97. "Legislation: California," VDT News, March/April 1986, 16.

98. CBEMA praised Cal/OSHA's recommendation against VDT regulations as being "right on the money," J.A. Savage, "California Board: Don't Restrict the Use of VDTs," Computerworld, July 3, 1989, 44; Barbara Plog, "Cal/OSHA Board Refuses to Issue VDT Standards," Monitor, July-December 1989, 19. The 4 industry representatives included 2 from IBM, one from Hewlett-Packard and one from the CNPA. "Cal/OSHA Says No to Regulations," VDT News, July/August 1989, 8.

99. It was modeled on one introduced in Ontario's legislature the year before. Ontario, Canada, Bill 169, "An Act for the Protection of Video Display Terminal Operators," 32nd Legislature, 1st session, 1981.

100. "N.Y. To Get Bill On VDT Safety," The Guild Reporter, November 24, 1982, 4.

101. Mickey Green, "VDT Safety: What's Known-- and What Isn't," Public Employee Press, December 28, 1984.

102. Interview with Joel Shufro, executive director of NYCOSH, May 2, 1985.

103. New York, State Assembly, Standing Committee on Labor, Video Display Terminals-- Blessing Or Curse? Hearing Before the Standing Committee on Labor, April 13, 1983, n.p.

104. "State Survey of Legislation: New York," VDT News, May/June 1988, 11.

105. Quoted in Alan Howard, "How Corporations Took $2 Billion in State Taxes (and Nobody Noticed)," Public Employee Press, April 20, 1990, 5.

106. Ibid., 5. It is uncertain whether IBM paid the minimum state tax of $250, Xerox paid it at least once. The $250 minimum has since been raised but the continued existence of loopholes permits corporations to circumnavigate this "reform."

107. Ibid., 5.

108. Ibid., 5. The study was conducted by the New York State Legislative Commission on the Modernization and Simplification of Tax Administration. The state tax department estimated that $383 million in ITCs would be claimed by corporations in 1992. John Riley, "Leichter Wants to Cut Investment Tax Credit," Newsday, May 16, 1991, 57.

109. Jeffrey H. Birnbaum and Alan S. Murray, Showdown at Gucci Gulch: Lawmakers, Lobbyists, and the Unlikely Triumph of Tax Reform (New York: Vintage Books, 1988), See Appendix B: "The Evolution of Major Provisions Affecting Businesses."

110. It is a felony to make public such information without the state's permission. Howard, "How Corporations Took," 4.

111. Alexander Hamilton, John Jay and James Madison, The Federalist (New York: The Modern Library, n.d.) 53ff.

112. Interview with John Foley by author, Hauppauge, N.Y., April 12, 1988; Eric Schmitt, "Suffolk's Unusual Legislature: Incubator or Just a Hothouse?" New York Times, May 19, 1988, A1.

113. "Suffolk Legislators Vote a VDT Safety Measure," New York Times, June 24, 1987, B3; "Bill to Regulate Office VDT Use Passed By County Legislature; Signature Pending," Occupational Safety & Health Reporter, July 1, 1987, 179-80.

114. Advocates of VDT regulations saw two problems with the County worker law. First, it contained no enforcement provision, and second, it excluded employees in the private sector. They viewed the blue ribbon VDT panel as window

dressing; Foley refused his appointment on these grounds. Realizing that the Foley bill had considerable support and that they had come so close to overriding the veto, proponents of regulation decided they had nothing to lose in going for the whole loaf. The blue ribbon panel made its recommendations (which paralleled the 1988 law) to County Executive Halpin in early 1989 and, then, disbanded. "VDT Task Force Report," VDT News, May/June 1989, 9.

115. #7158--A, "An Act to amend the labor law, in relation to video display terminal operators;" New York State Assembly, March 28, 1983.

116. Comparison of Resolution 1469-87 (the 1987 bill) and Resolution 1173-88 (the 1988 bill).

117. Eric Schmitt, "Suffolk Legislators Set to Vote on Disputed VDT Bill," New York Times, May 10, 1988, B1.

118. "VDT Bill Passed on Long Island," New York Newsday, May 11, 1988, 30; Eric Schmitt, "Suffolk Approves Video-Terminal Bill," New York Times, May 11, 1988, B2.

119. "Suffolk's Reckless Screen Scream," [Editorial] New York Times, May 26, 1988, A34.

120. Rick Brand, "Halpin Vetoes Suffolk VDT Legislation," New York Newsday, June 11, 1988, 13.

121. Ibid.

122. Rick Brand, "2 GOP Leaders Get Gift From 'Grandpa,'" Newsday, August 12, 1988, 20.

123. The law called for the eye exam provision to go into effect in 90 days and training provisions to start in 6 months. The requirement that businesses purchase or lease equipment (i.e., furniture, lighting, glare screens) that met ergonomic standards was scheduled to go into effect on January 1, 1990. "Suffolk's V.D.T. Legislation Becomes Law," News release from the office of Legislator John J. Foley," June 14, 1988.

124. Eric Schmitt, "Suffolk Executive Vetoes a Bill For Workers at Video Terminals," New York Times, June 11, 1988, 1; Eric Schmitt, "Suffolk Overrides Veto of Video Terminal Measure," New York Times, June 15, 1988, A1.

125. "VDT Bill Challenged in Court," WINS radio, June 23, 1988.

126. News Release, New York Telephone, July 5, 1988.

127. "Dangerous Terminals?" ABC Evening News, August 8, 1988.

128. "Measure to Regulate VDTs Is Enacted in New York," Wall Street Journal, June 15, 1988, 10.

129. Supporting the suit were the ABLI (which conceived the idea of a legal challenge), the LIA (which coordinated efforts to bring the suit) the Advancement for Commerce and Industry, LIFT, and the Hauppauge Industrial Association.

130. "Legal Challenge to be Mounted Against Suffolk VDT Law," Press release from the Long Island Association, June 24, 1988, 2.

131. "Suffolk Law Stymied By Court Orders," VDT News, November/December 1988, 4-5; "Video-Display Terminal Law Blocked on L.I.," New York Times, October 8, 1988, 31.

132. Eric Schmitt, "Judge Thwarts Suffolk's Video-Terminal Law," New York Times, December 28, 1989, B3; "New York Judge Overturns Law for VDT Use," Wall Street Journal, December 29, 1989, B3.

133. "Court Rejects Suffolk Law, County Appeal Likely," VDT News, January/February, 1990, 2.

134. James O'Connor, The Fiscal Crisis of the State (New York: St. Martin's Press, 1973).

135. Testimony of Islip Town Supervisor Frank R. Jones: VDT Public Hearing of the Suffolk County Legislature, April 12, 1988, 5.

136. "Businesses Sue to Void Nation's First VDT Law," VDT News, September/October 1988, 2-3.

137. Ibid.

138. "New York Union Leaders Organize To Spur Local, State VDT Legislation," Occupational Safety & Health Reporter, August 10, 1988.

139. John L. Martin, Speaker of the House, State of Maine, to author, December 27, 1989.

140. The law was amended to include employers with only 5 VDTs, effective January 1, 1992. "Editor's Notebook," VDT News, January/February 1992, 2.

141. "Maine Governor Signs Legislation Setting Strict Limits On Drug Tests," Daily Labor Report, July 13, 1989, A9; "Maine Training Law & More," VDT News, September/October 1989, 5.

142. "A Local Law to amend the administrative code of the city of New York, in relation to standards governing the health and safety of video display terminal operators," Int. No. 1088, August 9, 1988. 6,500 fulltime and 8,000 parttime VDT workers would be covered by the bill. City of New York, City Council, Committee on Civil Service and Labor, Report of the Legal Division, Intro. No. 1088-A. n.d.

143. N.Y.C. Video Display Terminal Coalition, Testimony of Diane Stein, Coordinator, Civil Service and Labor Committee, New York City Council, May 19, 1989, 5-6.

144. Alan Bresnick, "City Thinks VDT Bill's a Pain in the Neck," Crain's New York Business, July 25, 1989, 2.

145. "'Nation's Toughest' VDT Legislation Adopted Unanimously By New York City Council," Occupational Safety & Health Reporter, December 6, 1989, 1215.

146. Arnold H. Lubasch, "Koch, in Veto, Discounts Risks In Computer Use," New York Times, December 27, 1989, B3. Although the bill had passed by a 34-0 vote, there was no chance for an override vote since the Council's session had ended.

147. Lyle V. Harris, "Ed Going Out In a Flurry of Vetoes," New York Daily News, December 28, 1989, 11.

148. "Bill on VDT Safety Is Vetoed by Koch," The Chief-Leader, January 5, 1990, 1. Mayor Koch said the VDT bill "represents the first step in an effort to extend VDT regulation to all persons who work in this city." "New York Mayor Vetoes Bill Regulating Video Display Terminals," Occupational Safety & Health Reporter, January 3, 1990, 1301-02.

149. Bresnick, "City Thinks VDT Bill's a Pain," 2.

150. "Unions to Renew Push On VDT Protection Bill: Mix-up in Signals," The Chief-Leader, March 9, 1990, 1. DC 37 bargains for all civilian city employees on the non-wage issues to be contained in the citywide contract. Matthew Tallmer, "City Agrees to Protect VDT Users: Under Accord With DC 37," The Chief-Leader, June 15, 1990, 1; and "VDT Health, Safety Accord: What It Provides," The Chief-Leader, June 15,

1990, 4. "Union, City Agree on VDT Safety." Public Employee Press, June 22, 1990, 3.

151. "San Francisco Extends Deadlines For Complying with Local Ordinance," Occupational Safety & Health Reporter, January 9, 1991, 1207-08.

152. Bob Baker and Martha Groves, "Judge Overturns S.F.'s Landmark VDT Law," Los Angeles Times, February 14, 1992, D1.

153. Harriet Chiang and Reynolds Holding, "Judge Tosses Out S.F. Ordinance On VDT Safety: Court says only the state has authority to regulate," San Francisco Chronicle, February 14, 1992, A1.

154. Ibid.

155. Andrew Pollack, "San Francisco Judge Voids V.D.T. Safety Law," New York Times, February 14, 1992, A14.

156. "Proposed California State VDT Standard Threatens New San Francisco Ordinance," Daily Report for Executives, June 3, 1991, A7. "It's a victory for employers, because they shouldn't have to deal with city-by-city, county-by-county regulations," said Jeffrey Tanenbaum, the lawyer for the two firms that filed the suit, Zack Electronics and Data Processing and Accounting Services. Chiang and Holding, "Judge Tosses Out S.F. Ordinance On VDT Safety," A1.

157. VDT advocates persevere in the hope of achieving a state-level breakthrough; 41 bills were submitted in 20 states during 1991. Albert R. Karr, "Labor Letter," Wall Street Journal, December 31, 1991, A1.

158. Title 26, Chapter 5, Maine Revised Statutes, 1991; In 1986, Maine passed a law granting all workers, including VDT operators, rest breaks. Title 28, Chapter 20, General Laws of Rhode Island, 1991.

159. California, Colorado, Massachusetts, New Mexico, New Jersey, New York, Washington, and Wisconsin.

160. Philip S. Gutis, "Video-Display Terminal Law Blocked," New York Times, July 14, 1989, B2.

CHAPTER 10

CONCLUSION

Workers' Safety and Health in the Postindustrial Era.

The issue of Video Display Terminal (VDT) related hazards is the major occupational safety and health problem of the postindustrial era. As indicated in this study, many of the safety and health problems suffered by VDT workers can be traced to work practices that force the operator to contort his or herself to the needs of the technology. The emulation of Taylorist/Leffingwell assembly line techniques by office managers is an antiquated industrial response to a postindustrial form of work. Using similar methods to produce information as to produce automobiles leads to increased health hazards, worker alienation, and lower productivity.

When VDTs were first introduced in the 1970s, office automation analysts and the press touted them as labor-saving devices that would make the "Office of the Future" a liberating reality for the average office worker.[1] While the technology has indeed been a labor saving marvel for some, it has been like working in an "electronic sweatshop" for those who do not have control over their work.[2] Many office workers have less satisfying, more routinized, more stressful work now than before the VDT when they had a

variety of tasks to perform, which reduced stress and provided greater stimulation.

VDT workers have experienced such a tremendous increase in cumulative trauma disorders (CTDs) that OSHA has called it "the occupational illness of the decade." Research has shown that those with repetitive task jobs, such as VDT workers, also report high incidences of vision problems, nervous tension, nervous breakdowns, depression, sleep disturbances, cardiovascular disorders, and dissatisfaction with work. Many of these ailments are stress-induced. Experts have established a reciprocal relationship between stress and the degree of control a worker has over her job: stress occurs when job demands are high and control is low. The National Institute of Occupational Safety and Health (NIOSH) found that VDT workers with low control over their work suffered a higher rate of stress than air traffic controllers.[3]

The nonionizing radiation emitted by VDTs has been linked to/or suspected of causing premature eye cataracts, skin rashes, and reproductive problems, such as infertility, birth defects, still births and higher than normal incidences of miscarriages. Nonionizing radiation research in the U.S. has been dominated by corporations with an interest in obscuring the severity of the problem and the need for further research. Studies of electric power lines have pointed to increased incidences of cancer, but none have

been conducted on VDTs, although they emit the same 60 hertz fields.[4]

Technological Fixes.

The U.S. government must take a more assertive, independent role in funding and researching the inquiry into the nonionizing radiation problem, as the Scandinavians have done. As a result of research, Sweden now requires the use of low electromagnetic emission monitors. However, few are available in U.S. Another developing technology, the flat panel, liquid crystal display (LCD), will be more useful in protecting the safety and health of VDT users. Using liquid crystals in place of the cathode ray tube eliminates the potential problem of nonionizing radiation's threat to human health. The resolution of LCDs has improved to the point where they are now used in laptop computers and, with further improvements may be suitable for desktop terminals.

For those who suffer from crippling CTDs, voice recognition VDTs may be a partial solution to the problem. Pressured by the Newspaper Guild, Newsday, which had a serious problem with CTDs in its newsroom, has provided some of its reporters with this new technology on a trial basis to see if they can resume work. Newsday has also stopped using the electronic mail system, forcing workers to stop typing at their terminals and start talking to one another.[5] Voice recognition technology is still in its

early stages of development, and as improvements are made it may become a more viable solution. However, voice recognition computers should not be used by employers as a means to avoid taking preventive measures. It is no substitute for measures to redesign work stations and the work process to prevent CTDs from occurring.

The Need for Standards, Regulation and Workers' Participation.

Many of the ailments suffered by VDT workers can be alleviated by the application of ergonomics, the science of adjusting the workplace to meet the needs of the worker.[6] NIOSH's recommendations should serve as the basis for correcting the ergonomic problems that afflict VDT workers. These recommendations include: the use of indirect, ambient lighting, or glare shields where direct lighting exists to eliminate screen glare (which leads to vision problems); initial eye exams for employees assigned to VDT work, and periodically thereafter to gauge deterioration due to this technology; flexible and ergonomically designed workstations, including the use of chairs, workstations and detachable keyboards which can be adjusted to meet the needs of each worker (to reduce stress and musculoskeletal disorders. VDT workers should be given 15 minute rest breaks after 2 hours of work, or after 1 hour of intensive work.

Total daily work time at the VDT should not exceed 4 hours a day.[7]

NIOSH also recommends that jobs be redesigned to: make them more interesting and intellectually-stimulating, to give employees more control over the pace of the work process, to integrate other tasks and with VDT work, to restructure work-- and allow time-- to encourage cooperation and interaction with other employees rather than competition with and isolation from co-workers, and to make sure that the demands of work schedules not place undue burdens on employees non-work responsibilities. As Dr. Gabriele Bammer, an expert in the problem of repetitive strain injuries (i.e., CTDs) at the Australian National University, explains:[8]

> There is overwhelming evidence that improving work organization is crucial to preventing work-related Repetitive Strain Injury.... This means reducing work pressure, increasing worker control over the job, designing the job so that workers can help each other out and increasing the variety of tasks to be done, particularly limiting the time spent in repetitive work like keyboarding.

This study has shown that the voluntary approach to safety and health has not worked for most VDT workers. While some computer manufacturers and employers have made efforts to alleviate these ailments, the continued increase in ergonomically-related disorders among VDT workers suggests that most have not taken sufficient steps to remedy the problem. A more effective initiative would be the enactment

of VDT ergonomics' regulations based on NIOSH's and ergonomic specialist's recommendations.

Giving workers a greater voice in the work process contributes to a healthier, more stimulated workforce, and makes them more productive, as well. The Occupational Safety and Health Administration's (OSHA) chief ergonomist, Roger Stephens has found that VDT workers are more likely to follow ergonomic instructions if they are included in their preparation.[9] As Shoshana Zuboff indicates, information based computer work in postindustrial society requires that management take a new approach to the organization of work. Rather than emulating the assembly-line model of industrial work which regiments employees and limits discretion, a better use of office computers' potential requires that companies utilize the creative talents of workers by giving them more responsibility.[10] Arguing that computers are qualitatively different than previous forms of automation, Zuboff has shown that using Taylorist/Leffingwell methods to automate office work isolates and alienates workers.

Larry Hirschhorn also argues that workers must be given greater responsibility in the postindustrial workplace. Since no manager or planner can anticipate all the problems that will occur in the work process, this includes the necessity that workers be free to learn from their mistakes. These "control system failures," as he calls them, not only creates more productive and stimulated workers, but "may

help to bring out in the culture a developmental concept of the self, a concept that leads people to seek out learning opportunities throughout their lives."[11] Carole Pateman states "that it is possible for the authority structure in industry to be considerably modified, for workers to exercise almost complete control over their jobs and to participate in a wide range of decision making, without any loss in productive efficiency."[12] She adds that giving employees a voice in workplace decision making contributes to a greater feeling of efficacy on their part in the political arena.

The NIOSH recommendations have implications that go beyond the prevention of occupational safety and health hazards to the very relationship between capitalism, work and democracy. Taken as a whole, they implicitly challenge traditional, hierarchical assumptions about the organization of work, and, in effect, recommend greater workers' participation in the postindustrial workplace.

The Role of Unions.

Unions must play a more important role if America is to become a more democratic society in the postindustrial era. Despite their shortcomings, unions are the only economically-oriented interest groups that represent the interests of the average worker/citizen. That means they are willing to fight for a more equitable distribution of

society's costs and benefits, and for the democratization of political rights. As the VDT case study has shown, they are willing to fight for protective rights for all workers, not just those they represent. Organized labor has been battered by the state's and capital's undermining of the Wagner Act framework of labor relations. OSHA and the National Labor Relations Board have been of little help to workers trying to defend their rights in the postindustrial era.[13]

Given the problems that unions labor have faced in organizing the white collar workforce, they might make greater use of associational unionism. Generally, associational unionism provides services, benefits, and professional support for its members, encourages more flexible work rules, and greater workers' participation in the labor process, but doesn't collectively bargain for workers.[14] Associational unionism might be better suited to the unique characteristics of white collar workers, who are less likely to be receptive to the concept of unions than their blue collar counterparts, to solve their workplace problems. As Charles Heckscher writes, associational unionism applies to the situation of VDT workers: "the problem of worker representation extends far beyond... [the domain of traditional unionism to]... issues faced by all levels of employees-- and especially by the white collar and professional employees who are increasingly seen as the leading edge of economic growth."[15] Moreover, as Casey

Ichniowski and Jeffrey S. Zax have shown, associations often prove to be staging grounds for the development of unions.[16] Deborah Bell has also found that the presence of employee associations in state and local governments helped unions organize workers.[17]

Labor, Capital, the State and Power.

However, the power inequities between labor and capital discussed in this dissertation will have to be reversed before the afore- mentioned reforms and recommendations can become a reality for all VDT workers. As this study has shown, organized labor's attempts to secure occupational safety and health protection for the millions of office workers who use VDTs were met by overwhelming opposition from capital and the state. A synthesis of elements of the pluralist, neopluralist and capitalist state models of power was utilized to explain the dynamics of organized labor's defeat. Accordingly, the interest group struggle between organized labor and capital was examined within the context of political-economic factors which gave the latter an important structural advantage over the former. This study has shown that corporate interests' superior mobilization of pressure against organized labor in the economic and political arenas, supported by structural constraints on the state's ability to address occupational safety and health problems, resulted in the defeat of VDT regulations.

While this study is an examination of interest group conflict, pluralist assumptions were not completely borne out in this case. Pluralists have asserted that capital's economic power is dissipated in the political arena by intra-business strife, conflicting interests among various segments of industries, and the countervailing power of opposing groups.[18] However, this study found that there was little intra-business strife to erode the corporate coalition's unity on political goals. United, the computer manufacturers and business users of office automation systems were able to convert their economic resources into political influence to defeat organized labor's regulatory initiatives.

Second, whereas pluralists maintain that policy issues arise separately in the political arena,[19] this study demonstrates that both federal and state government officials regarded the questions of VDT safety and health regulations and economic development to be two sides of the same coin. In this zero-sum game formulation, VDT regulations were rejected, because they would have hampered the state's efforts to stimulate economic growth.

Corporate Dominance of Policymaking on the VDT Issue.

Occupational safety and health policymaking for office workers using VDTs is dominated by a corporate coalition of computer manufacturers and business users of office

automation (corporate coalition), in conjunction with a network of insurance companies, voluntary safety groups (e.g., the National Safety Council), professional associations (e.g., the Human Factors Society (HFS) and the Institute of Electrical and Electronics Engineers (IEEE)), and private standard-setting organizations (e.g., the American National Standards Institute (ANSI).

This policy network, which Daniel M. Berman calls the "compensation-safety apparatus," has been an influential factor in occupational safety and health policymaking since the Progressive era.[20] Although its dominance over industrial health and safety has been somewhat abated by the OSH Act, this corporately-controlled policy network remains unchecked in the unregulated realm of office work.

This study has presented evidence that the mobilization of bias supporting the compensation-safety apparatus was sustained by both governmental and corporate uses of nondecision making tactics. The corporate coalition's effectiveness was greatest where the most was a stake. It used nondecision making tactics to defeat organized labor's demands for both a regulatory standard governing the manufacture and use of VDTs, and research into the possibility that the nonionizing radiation emitted by VDTs was causing the reproductive health hazards suffered by women office workers.

The computer industry's establishment of a voluntary VDT ergonomics standard in cooperation with ANSI and HFS deflated organized labor's calls that OSHA promulgate a mandatory ergonomics standard and helped preempted the prospect of a federal ergonomics standard for VDTs. Despite the fact that its own private research indicated that there was cause for concern, the computer industry continued to publicly promote the conventional scientific view that nonionizing radiation was harmless to humans in order to persuade public officials that research was unnecessary. This tactic was successful largely because most of the research in this little-explored area was under the control of the computer and electronics industries, and because of successful corporate efforts to censor, ignore, and refute reports from abroad that pointed to the need for further research. The IEEE, the predominant professional organization in the field, was also a consistent opponent of research into the possibility that nonionizing radiation emitted by VDTs was related to the reproductive health hazards suffered by women office workers.

Due to governmental inaction, the corporate coalition, ANSI, HFS, and the IEEE became quasi-governmental policymakers with a de facto veto over the final shape of voluntary VDT occupational safety and health guidelines. Corporate control of research and standard-setting, as well as corporate interest's ability to mobilize superior

economic and political resources, enabled capital to block organized labor's initiatives in the political arena. Moreover, capital's task of defending the existing structure of power, which was well-entrenched, was easier than organized labor's job of trying to persuade public officials of the need for a more equitable distribution of the social costs of VDT work.

In response to organized labor's political efforts, the corporate coalition formed the Coalition for Office Technology (COT), which launched a massive, multimedia public relations campaign-- targeted at workers and public officials-- promoting their view that the VDT safety and health issue was actually a question of employee comfort which could best be addressed by management, not government regulation. COT also targeted the media, producing press releases, reports, and fact sheets to influence reportage of the issue, and public address announcements for airing on television. In addition, computer manufacturers and trade associations disseminated literature on ergonomics and nonionizing radiation which mimicked COT's approach. When employee grievances coalesced in an organizing drive, employers monitored employee behavior, threatened and/or fired employees leading the drive, and hired union-busting consultants. While there was a spate of collective bargaining agreements dealing with VDT safety and health issues, the vast majority of VDT workers weren't covered.

The Role of the State.

Corporate dominance of the VDT issue was also made possible by the state's dependence on capital as the generator of economic growth and tax revenues. This dependence made the state susceptible to pressure from the corporate coalition. The state's responsiveness to corporate pressure was accentuated by the importance it placed on fostering unfettered high technology/computer development as the engine of economic recovery in the globally-competitive, postindustrial era. Faced with the highest unemployment rate since the Great Depression and an economy in deep recession, President Reagan used his 1983 State of the Union address to announce that his administration would make the promotion of high technology development a top priority of his administration.[21] The anticipated negative economic impact of safety and health regulations on the manufacture and widespread use of VDTs, and the ripple effect it would have on the economy, led the state to oppose regulation of the computer industry and service sector.

As a result of the state's dependence on capital, public officials often acted on their own to block organized labor's attempts to secure VDT regulations. The Reagan administration used the Office of Management and Budget (OMB) to undermine NIOSH research studies, and prevent OSHA regulations from coming through the bureaucratic pipeline. It intervened in NIOSH's important study of reproductive

hazards among BellSouth's VDT workers. OMB forbade NIOSH from asking female workers questions regarding stress and fertility, even though the goal of the study was to determine if there was a connection between VDT use and reproductive disorders. NIOSH's determination of a link would have substantiated organized labor's claims for regulation, and would have had major financial repercussions for business. OMB delayed and weakened OSHA's proposed multi-industry ergonomics standard, and deleted the provision intended to cover VDT workers.

The Reagan and Bush administrations also used nondecision-making tactics to block efforts by unions to secure VDT regulation. Political appointees at OSHA, the Food and Drug Administration, and OMB, carried out their anti-union, deregulatory policies so that organized labor could not get a fair hearing on the VDT issue. As shown in Chapter 9, the Reagan administration's anti-union, deregulatory stance discouraged unions from asking OSHA to promulgate a VDT standard. As Chapter 6 showed, despite evidence of an epidemic of CTDs among VDT workers, the Bureau of Labor Statistics did not keep detailed statistics on the number of VDT workers who were afflicted.[22] This example of a nondecision made it more difficult for all concerned to assess and address the true magnitude of the problem.

Although cumulative trauma disorders (CTD) are one of the major ailments suffered by VDT workers, and has been the fastest growing occupational illness during the 1980s and 1990s, the Reagan and Bush administration's refused to allocate adequate monies to fund positions for an ergonomics program in OSHA and NIOSH. OSHA had only one ergonomist until a Congressional hearing on the CTD epidemic (which accounted for 61% of all reported occupational illnesses in 1991),[23] embarrassed the Bush administration into announcing that it would request funding for two more positions. This was still far short of the 10 regional ergonomists, plus a Washington-based team, that OSHA's ergonomist admitted was necessary if it was to begin to seriously deal with the CTD problem.[24]

In Congress, organized labor was not able to advance its case for VDT regulations beyond two inconclusive hearings in the House of Representatives. The corporate coalition's public relations campaign to redefine the VDT safety and health issue as a question of employee comfort that was best handled on a voluntary basis by employers persuaded most Congressmen that federal action was unnecessary. With the exception of Congressman Ted Weiss (D-N.Y.) few took more than a passing interest in pushing the VDT issue in the legislative process. There was no support for the VDT issue in the Senate. The corporate coalition

publicly promoted Congress' inaction as support of its position that VDT regulation was unnecessary.

VDT regulations were considered in 30 states and numerous counties and cities, but the futile efforts of advocates to achieve a breakthrough at the state and local levels has shown the difficulties inherent in trying to achieve policy with nationwide implications at the state and local level. The ease with which VDT work can be transmitted beyond local, state, and national boundary lines, combined with states' fierce competition for the high tech investment dollar, gives the corporate community a tremendous advantage in the shaping of occupational safety and health policy in the office. As a result, state government officials rejected organized labor's calls for VDT regulations in order to avoid losing much needed economic investment, jobs, and tax revenue to other states or countries. The failure of state and local governments to protect the occupational safety and health of VDT workers illustrates the need for national planning and a strong OSHA to regulate the harmful effects of new technology in the workplace.

Organized labor was handicapped by both the corporate coalition's superior ability to translate its economic resources into political influence and the state's dependence on capital. But organized labor had internal, organizational problems of its own. Unions were too preoccupied with defending the rights of its declining

membership in its predominantly male, blue collar industrial unions, to adequately focus their energies on the opportunity presented by the VDT safety and health issue to organize the predominantly female office workforce. The lack of strong campaign to organize women office workers and meet their concerns left the AFL-CIO unprepared to fully meet the challenge of the VDT issue.

In closing, the VDT case study is especially compelling because it touches upon social issues that affect the majority of Americans now and into the future. It illuminates the tension between democracy and capitalism as the U.S. makes the transition from the industrial to the postindustrial era. Will workers in the postindustrial age be forced to carry the burden of social costs in the form of occupational safety and health problems? Will the U.S. become a more stratified, two-tier society as present trends seem to indicate?[25] Can organized labor, the electorate, and the state meet the challenge of defending workers rights and reverse the trend towards inequality?

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