KNOWLEDGE, POLITICAL POWER AND THE TOXICS RELEASE INVENTORY

by

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Abstract

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In an effort to explicate the relationship between knowledge and political power, this study examines three community-based conflicts in which knowledge derived from the Toxics Release Inventory (TRI) played a role. The case studies are used to develop a definition of power and an analytical framework appropriate for describing and understanding the functions of knowledge in political conflicts. This analytical framework is then used to explain variations in the political utility of TRI-based knowledge for pollution opponents.

Political power is defined as the capacity to understand and advance one's interests in concert with some even in the case of conflict with others. The related analytical framework is inspired by the three dimensions of power scheme conceived by Lukes (1974) and developed by Gaventa (1980). The proposed model of power draws a clear distinction between political activity and the underlying political structural capacities that account for such activity. The greater or lesser knowledge-building and organizational capacities of the actors in the conflicts account for the political utility of knowledge.

Preface

Since 1989, many neighbors of polluting industries have used data obtained from the national Toxics Release Inventory (TRI) to oppose toxic chemical releases in their neighborhoods. Political conflicts in which TRI data have played a role afford an opportunity to explore the relationship between knowledge and political power.

The 1986 Emergency Planning and Community Right-to-Know Act (EPCRA) ordered manufacturers in the United States to file annual reports of their releases of certain toxic chemicals into the environment. The Environmental Protection Agency is required to compile these reports into a national database called the Toxics Release Inventory and to make the data publicly accessible. Since this information became publicly available, many citizens have, with varying degrees of effectiveness, used it in efforts to learn more about health and safety conditions in their communities and to press polluting industries to decrease or eliminate their toxic chemical releases.

This study examines the political utility of TRI data for three communities that engaged in power conflicts with polluting manufacturers. Each community was exposed to TRI-reported toxic chemical releases. As the direct consequence of the publication of a TRI-based study, residents of Northfield, Minnesota discovered that a local manufacturer was releasing large quantities of a carcinogen into the air. A worker-community coalition emerged in Northfield that successfully pressed the facility to adhere to a toxic-use reduction plan. In Brooklyn, New York, a neighborhood committee formed in the 1970s to oppose noxious fumes emitted by a local facility. TRI-based knowledge became a factor in the committee's activities when a TRI-based study showed that the facility was New York City's largest air polluter. In Pennsylvania, TRI data confirmed common assumptions that the small town of Marcus Hook had exceptionally high levels of air pollution. In trying to develop ongoing opposition to pollution in the town, an environmental group from Philadelphia introduced TRI-based knowledge to parents who were protesting odors at two

elementary schools located next to local industries. Although protesters, in conjunction with local municipalities, achieved some industry accountability for acute odor incidents, there have been no local efforts to hold industries accountable for routine toxic chemical air releases reported to TRI.

Data gathered on these cases are used to address two sets of questions. The first set is methodological and conceptual. In light of standing arguments in power theory, what definition of power best serves analysis of the role of knowledge in the power conflicts? How do existing analytical frameworks fare when used to analyze the relationship between knowledge and political power in these particular conflicts? What kind of analytical framework is warranted by the facts of the case studies? What has the political utility of TRI-related knowledge been for the community-based groups studied here? What role, if any, did TRI-based knowledge serve in empowering anti-toxic activists to achieve their goals? What light does the working analytical framework cast on the description and classification of the political functions of knowledge?

The second set of questions is theoretical in the sense that it raises issues of causal explanation. Why was TRI-related knowledge more or less politically useful for the groups in this study? What conditions determined whether or not the form of knowledge under study became an effective tool of political empowerment? Why did TRI-related knowledge play a seminal role in Northfield, an auxiliary role in Boerum Hill and no role in Marcus Hook?

Chapter 1 reviews literature relevant to the empirical analysis of the role of knowledge in political power conflicts, selecting Steven Lukes' three dimensions of power framework (1974) as a departure point for the analysis. Chapter 2 provides background on the federal Emergency Planning and Community Right-to-Know Act (EPCRA). Chapter 3 explores the Minnesota case, Chapter 4 the New York case and

Chapter 5 the Pennsylvania case. The conclusions of the study are contained in Chapter 6.

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Power, like a desolating pestilence, Pollutes whate'er it touches.

Percy Bysshe Shelley, Queen Mab III

Toxic Politics

This study has to do with a very particular kind of politics -- toxic politics (Reich, 1991) -- and an even more particular kind of political power -- toxic power. Through the exercise of toxic power, one party such as a manufacturer exposes another party such as a work force or a community to toxic chemicals. In the varied arenas of toxic politics, parties to toxic power conflicts vie for state support either to authorize or to prohibit the exercise of toxic power with regard to particular toxic chemical exposures. Since 1989, participants at many levels of toxic politics in the United States have used information made publicly available through the Toxics Release Inventory, affording a unique opportunity to examine the relationship of knowledge and political power. This study takes an in-depth look at three of the many neighborhood communities where TRI-related knowledge has become a factor in toxic power conflicts.[1]

Toxic politics has a history at least as old as the Roman Empire. An essay called "Lead Poisoning and the Fall of Rome" argued that lead-lined aqueducts and lead-based cooking ware in ancient Rome help explain the fall of the Roman Empire[2]. In the 20th century, one of the pillars upon which the United States built its position as the world's premiere industrial force was the industrial use of chemicals. Since World War II, there has been a virtual revolution in manufacturing applications of chemicals.

[1] The three communities studied here fit Edelstein's definition of a contaminated community as "any residential area located within the identified boundaries for a known exposure to some form of pollution" (1988:6).

[2] Reich (1991:3) refers to S. Gilfillan's "Lead poisoning and the fall of Rome". Journal of Occupational Medicine 1965: 7 (53-60).

As competing industries have found it necessary to incorporate toxic chemicals into their manufacturing processes, the dilemma of toxic chemical pollution has become a global phenomenon. Now issues like "global warming" are attributed to industrial and other uses of toxic chemicals. Some environmentalists argue that all of human civilization could go the way of Rome if no remedy is found for the toxic poisoning that has "led us to the brink of ecological catastrophe" (Lappe, 1991:261).

In the United States, the mounting usage of toxic chemicals for industrial, commercial and other purposes has dramatically increased the risk of toxic exposure.

> The dimensions of toxic exposure are staggering, reflecting our dependence upon an increasingly synthetic world. Some 70,000 chemicals are in regular use in the United States and another 1,000 are added every year. This includes 1 billion pounds of pesticides, herbicides, and fungicides used in the United States every day. Beyond toxic exposure due to the manufacture, transportation, storage, and use of these materials, the country generates between 255 million and 275 million metric tons of hazardous waste annually, of which as much as 90 percent is improperly disposed of (Edelstein, 1988:3).

Losers in the gamble represented by increased dependence on hazardous chemicals have been the people whose health, livelihood and sometimes lives have been lost due to toxic exposures large and small. With reference to industrial accidents and occupational health problems, labor unionist Eric Frumin states that "...more than 25 American workers are killed in so-called accidents every single day, or about 10,000 a year. An additional 50,000 to 100,000 die from occupational diseases, many due to toxic chemical exposure. That's a Vietnam War every six months." (Frumin, 1992:11)

Prior to the increasing assumption of regulatory authority by the state in this century, the power of industries to expose workers or neighbors to toxic substances was argued to be a natural extension of labor contracts or of property rights. The premise for state intervention was expressed by Theodore Roosevelt when he stated in his 1901 Inaugural Address that "Corporations engaged in interstate commerce should be regulated if they are found to exercise a license working to the public injury..." (excerpted in Hofstadter, 1963,1986:143). Such a rationale underlies the state

regulation of pollution and many other areas of private sector activity that have emerged in this century.

To the extent that the state has intervened to regulate toxics-based pollution, toxic chemical users have in theory ceased to possess an arbitrary power to act as they wish. Whether in fact this has occurred has depended on whether state intervention has served the interests of the chemical users or the parties exposed to the chemicals.

Against the power of chemical users to arbitrarily expose humans and the natural environment to toxic substances, a new political coalition, sometimes called the anti-toxics movement, emerged in the 1960s. With characteristic foresight, Rachel Carson expressed a central demand of the coalition long before it became a public rallying cry. In testimony before a Congressional committee not long after publication of Silent Spring, Carson staked claim to the "right of the citizen to be secure in his own home against the intrusion of poisons. I strongly feel this should be one of the basic human rights."[3] While the political forces needed to fight for this right were only forming in Carson's lifetime, a political movement would coalesce over the next two decades demanding the right to be secure against toxic poisoning at home and at work. By the early 1980s, a unique coalition of community, labor and environmental organizations was spearheading local, state and national demands for toxic-free living and working conditions. With a strong base in those middle class and working class communities where toxic exposure is common, this coalition is distinct from the broader environmental movement in which professionals and political activists have played leading roles (Edelstein, 1988).

A key demand of the anti-toxics coalition has been the right to obtain chemical-specific information about substances to which people have been exposed. Toxic victims' ignorance of the identity of the chemicals to which they have been exposed has

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[3] The American Experience, "Rachel Carson's Silent Spring", Public Broadcasting System.

typically crippled their ability to protect their health and to seek redress of grievances. Without the names of the chemicals, toxic victims have been unable to seek appropriate medical treatment and to demand change in the behavior of the party responsible for the exposure. Subsequently, information about chemical substances and their toxicological effects has been a central demand of anti-toxic activists. John O'Connor, the founder and chair of the National Toxics Campaign, lists as one of the central demands of grass-roots campaigns over toxic threats to public health the "right to know about the health effects and environmental impact of materials used by the plant under investigation" (O'Connor, 1993:55).[4] Toxics right-to-know campaigns have pressed for government-mandated public disclosure of chemical-specific information by parties that routinely or inadvertently expose others to toxic chemicals.

Workers exposed to chemicals on the job were the first to realize that access to chemical information was indispensable for understanding health risks and taking appropriate action (Morse, 1987:573). One major achievement of the labor campaign that passed the Occupational Safety and Health Act in 1970 was the labeling of items in the workplace that represented a potential health hazard to workers. Section 212(c)1 of the Act called for "the use of labels or other appropriate forms of warning as are necessary to insure that employees are warned of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure" (quoted in Morse, 1987).

Missing from the OSHA labeling provision was identification of chemicals by name. Without knowing the precise identity of the chemicals, workers still had to depend on their employers' interpretations of the risk posed or the harm caused by

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[4] Two other rights demanded by anti-toxic groups are the "right to inspect facilities where citizens and their experts actually have access to view, test, and witness the operation or process of the manufacturing site" and the "right to negotiate agreements with responsible parties over issues affecting human and environmental health, safety and welfare" (O'Connor, 1993:55).

exposure to a particular chemical. Similarly, residential victims of nameless forms of industrial pollution found themselves unable to target the source of their grievances.

Industries used a variety of arguments against required disclosure of information on toxic chemicals used in the workplace. Among the many objections raised by employers was that OSHA's labeling requirement was sufficient; voluntary release of information was sufficient; disclosure costs would force firms to lay off workers, close down or move overseas; disclosure would only confuse workers; management's desire to have healthy workers was sufficient incentive to protect workers from harmful toxic exposures; job-related sicknesses were exaggerated; and disclosure would reveal trade secrets (Morse, 1987:561).

According to Morse, a better explanation, of companies' resistance to releasing the name of a chemical was fear that "independent research (by unions and others) might reveal that those [OSHA-required] warnings were not adequate, or tie the chemical into diseases that workers were experiencing but were not being identified as work-related." (1987:559)

At the residential level, Reich found that the ability of toxic victims to publicly identify the name of a chemical causing a particular health problem was pivotal in advancing the redress of grievances.

> Public identification of the cause as a specific chemical contaminant represents a major turning point, transforming the problem from a private to a public concern (Reich, 1991:9).

According to Reich, precise chemical knowledge is needed by toxic victims in order to transform a toxic exposure problem from a private or strictly personal issue into a public issue.

Workplace and community-based demands for identification of chemicals suspected of causing health problems and health risks coalesced into a national toxics right-to-know movement. In the late 1970s and 1980s, this movement achieved a host of state-level right-to-know laws and eventually the federal Emergency Planning and

Community Right-to-Know Act of 1986. These legislative successes are the topic of the next chapter.

The use of toxic chemicals has produced a power relationship referred to here as a toxic power relation. Adapting Steven Lukes' definition of power as an action by one party contrary to the interests of another (1974), toxic power may be defined as an action that exposes others to toxic chemicals in a manner contrary to their interests. Because of its adverse impact, the toxic power relation is inherently conflictual -- and is referred to here interchangeably as the toxic power conflict.

The power holders in toxic politics are the toxic use decision makers. They are typically the dominant party in toxic power relations. The power subjects are the people adversely affected or put at risk by the use of toxics (in this study workers or neighbors of facilities using toxics).[5] The subjects of toxic power are typically the subordinate or less powerful party in the relationship.

The scale of toxic power relations considered in this study ranges across national, state, county, municipal and neighborhood levels. At any one of these levels, it is possible to refer to A as that class of persons that makes toxic use decisions and B as that class of persons adversely affected by toxic use decisions. Inasmuch as environmental regulators constrain or make possible toxic use decisions, they are part of class A in the toxic power relation. While this study concentrates on toxic power relations in three different neighborhood communities, higher levels of legislative or regulatory authority over toxic power are factors in all cases.

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[5] As defined, the existence of a toxic power relationship hinges on whether or not toxic exposure results in adverse effects or significant risks. Polluters, however, commonly dispute a causal connection between toxic exposure and adverse effects experienced by people thus exposed and parties who attribute ill effects to such exposure often find it difficult to prove their case. This study focuses on the processes through which people exposed to toxics in three communities challenged polluters. Although the existence of adverse effects or significant risk was a topic of dispute in each case, this study found that the challengers' positions were reasonable enough to claim the existence of a toxic power relationship in each case.

In his comparative study of three toxic chemical exposure disasters[6], Reich identified three phases of toxics-based political conflict. The first consists of "the individual's discovery of a private trouble and the institutional processes that maintain social problems as a nonissue." In the second phase, "the problem appears on the agenda of society as a public issue." In the final stage, "the issue expands to include groups of nonvictims in alliances with victims' groups. These alliances use social conflict around the problem as a political issue to pressure private and public institutions to provide redress through a redistribution of resources" (1991:8, emphasis in the original). In other words, protests over community-based toxic releases typically evolve from a private issue facing individual residents into a public issue covered by the mass media and finally into a political issue for a variety of actors both inside and outside the community.

In order to transform the problem from a private into a public and political issue, toxic victims need to organize and protest.

> The victims respond by creating formal organizations and by conducting public protests to counter the power of social institutions over the issue. Both responses by victims are efforts at empowerment that expand rather than contain the issue's scope (Reich, 1991:10).

In other words, both organization and protests function to give victims greater control over the issue and improve their chances of achieving redress of their grievances.

The Power of Knowledge

At its heart, this is a study on the power of knowledge. As such, it must first address the popular assumption that equates knowledge with power. In a period often called an age of information and a society frequently depicted as an information society[7], it comes as no surprise that information and knowledge[8] exercise a strong

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[6] The three toxic chemical exposure disasters studied by Reich (1991) were PCB contamination of rice in Kyushu, Japan in the late 1960s, PBB poisoning of cattle in Michigan in the mid-1970s and dioxin inhalation in Seveso, Italy in 1976.

[7] Daniel Bell's The Coming of the Post-Industrial Society (1973) is predicated on "the primacy of theoretical knowledge" (1973:18). Whereas industrial society was based on the production of goods,

claim on power. In board rooms, class rooms and the columns of the daily newspaper, the adage that "knowledge is power" has achieved the status of conventional wisdom.[9] But the lasting power of the equation between knowledge and power, noted by Francis Bacon almost four centuries ago[10], attests to something more fundamental and enduring in the claim than its current popularity. While knowledge is more critical to the course of events in our age than it ever was before, it has been central to the life of all societies (Bell, 1973:20). What is it that makes the power of knowledge so compelling and timeless?

When associated with popular views of power, there is a basic common sense about the power of knowledge that transcends its particular importance in any age. In popular discourse, there are two frequent assumptions about power. The first is that power concerns the capacity to take some action. The most frequently encountered meaning of power according to the Random House College Dictionary is the "ability to do or act; capability of doing or accomplishing something" (1972). The conception of

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post-industrial society is organized around the delivery of knowledge-related services. "In effect, theoretical knowledge increasingly becomes the strategic resource, the axial principle, of a society." (1973:26) An extensive survey of employment trends in the United States by Porat (1977) confirmed Bell's thesis.

[8] To speak of "information" and "knowledge" in the same breath raises the question of whether a useful distinction can and should be drawn between these terms. As discussed later in this chapter, this study assumes that either information or knowledge develop by establishing relationships among discrete pieces of data, much as Taylor (1986) asserts. One subtle distinction between the knowledge and information is worth noting. Knowledge involves an act of knowing by a cognizant being. The term "information" does not by itself connote cognition. A human, for example, may possess data, information or knowledge; a computer may possess data or information but not knowledge. Because this study focuses on information known and used by political actors, the term "knowledge" tends to be more expressive than "information" and is used more often.

[9] The author performed a computer search on Compuserve's Knowledge Index on December 14, 1993 for occurrences of the phrases "knowledge is power" or "information is power" on selected full text newspaper databases. One or the other phrase had occurred 70 times in the Chicago Tribune over about 9 years, 53 times in the Los Angeles Times over the same period, 46 times in the Washington Post over ten and a half years, 40 times in the Boston Globe back to 1980, and 25 times in New York Newsday since 1987.

[10] In 1597, Francis Bacon observed that "knowledge is power" in Meditationes Sacrae (quoted in Goldman, 1990:3).

power as capacity is especially strong in the Romance languages. In Latin and its five siblings, a single word doubles for expressing "ability to" and "power" in a more political sense. In Spanish and Portuguese, for example, "poder" is simultaneously a verb meaning "to be able to" and a noun meaning "power".

A second popular assumption about power is that its exercise fulfills some intention or purpose of the actor. Many power analysts concur with this view and make intentionality an essential component of their definitions of power. Max Weber linked power with "the probability that one actor in a social relationship will...carry out his own will" (quoted in Wrong, 1979:8). Bertrand Russell defined power as "the production of intended effects" (1938,1986:19). Dennis Wrong viewed power as "the capacity of some persons to produce intended and foreseen effects on others" (Wrong, 1979:2).

If we temporarily assume that power refers to the capacity to achieve a certain goal, the power of knowledge is evident in the most mundane of daily activities. Experience teaches us that, in many circumstances having to do with our personal capacity to act as we wish (or might have wished), we are powerless without the right knowledge or information. When we say "If only I had known!" we usually regret not having have had the knowledge that would have allowed us to act in a manner we would have preferred. But for knowing, we may have sent someone a sympathy card after a death in the family, or dressed properly for stormy weather, or avoided falling victim to consumer fraud. Because we did not know what we needed to know in order to take a preferable course of action, we say we were powerless to act. Had we known about the death in the family, the bad weather, or the fraudulent intent we would have had the power to act in an appropriate manner or in a way we would have preferred. Ordinarily, we do not have to probe far back in our memories in order to recall an instance in which certain knowledge enabled us to do something we would otherwise have been unable to do.

There is much room for improvement in the way political scientists speak of the power of knowledge, largely because the relationship between knowledge and political power is not widely addressed in the discourse. While the concept of power has a legacy extending back to Aristotle and has continued to be a central concept of political science, conflicting views about the meaning of power persist. Analysts of political information have found that "sexier" topics like game theory, rational choice and political psychology are safe havens for analysis of the politics of knowledge. Analysts of knowledge and information in political science have rarely focused on their relationship. Without an established literature on the topic to provide a ready-made framework, this study has sought to test competing conceptual approaches and, in the end, to propose the analytical tools most appropriate for the task.

Like all sciences, political science can and must look inward toward more specialized and particular concepts that necessarily have little popular appeal. When presenting its public face in the classroom or other fora, however, the discipline faces a common expectation. The political scientist is expected to interpret the ramifications that various contemporary events and developments have for political power. And, in an age when knowledge is regularly touted over the mass media to be the equivalent of power, it is vital for political scientists to develop means to address the relationship between political power and knowledge.

Aside from the political scientist's public duty as an interpreter of power in an age of information, there are any number of analytical reasons to give rigorous attention to the relationship between knowledge and power. While the topic has nothing like a subfield to buoy its presence in the discipline, there is plenty of unfinished business left by the scattered attention it has received.

Equating knowledge with power has some obvious problems. Criticizing the Baconian equation between knowledge and power, Bierstedt noted that

> When we speak...of the power of an idea or when we are tempted to say that ideas are weapons or when we assert...that the pen is mightier than the sword, we are using figurative language, speaking truly as it were, but metaphorically and with synedoche. Ideas are influential, they may alter the process of history, but for the sake of logical and sociological clarity it is preferable to deny to them the attribute of power (1950, 1990:6).

Assuming that power is exercised by one actor over another, Bierstedt argues that power is too often confounded with knowledge and other phenomena like prestige, skill, competence, ability and eminence. All of these are independent variables. Rather, he asserts,

> Power would seem to stem from three sources: (1) numbers of people, (2) social organization and (3) resources (1950, 1990:14).
>
> Resources may include
>
> money, property, prestige, knowledge, competence, deceit, fraud, secrecy [and]...'natural resources' (1950, 1990:15).

Personal circumstance, physical ability, maturity, organizational resources, finances and numerous other factors can intervene to negate the power of knowledge.

While daily experience may tempt us to blur the distinction between knowledge and power, it soon becomes clear that, while knowledge is often decisive to an outcome, it is never the single independent factor. Knowledge by itself is not power. No matter how critical knowledge may be in our capacity to take action, it is never the only component of the action. We may have the knowledge required to take a desirable action but lack other capacities or resources also required for effective action. Knowledge <u>is</u> power only in a manner of speaking -- usually where it is virtually all that is lacking for power to be exercised. In a properly receptive circumstance, knowledge may seem to grant the power to take action but the factors that make a particular circumstance receptive to knowledge are always vital to the outcome. We may conclude that knowledge is one of a number of capacitating resources. Likewise, ignorance, like lack of money or disorganization, can be incapacitating. Resources like knowledge, money and organization are therefore typically important enough to be necessary but are, by themselves, never sufficient conditions for the exercise of power.

The pertinent questions in analysis of the relationship between knowledge and power have to do not with knowledge as power but with how knowledge and associated capacities become critical to the exercise of power.

This study takes a readily-graspable empirical approach to the concepts of data, information, and knowledge. Following in the vein of Taylor (1986), we may speak of "data" as unrelated facts or pieces of information. In turn, "Data become information when we establish relationships among data" (1986:7). While Taylor draws finer distinctions between information and knowledge, for the purposes of this study the same may be said of knowledge. That is, data also become knowledge when we establish relationships among them. "Information" and "knowledge" are therefore used interchangeably here to refer to data that have achieved a relatively greater degree of integration with other data.

As noted earlier (in footnote 2), knowledge connotes an act of knowing by a cognizant being. This assumption does not hold for information which can be possessed by inanimate objects like computers or books, even if cognizant beings were required to build the information. In its title, this study refers to "knowledge" rather than "information" because its central concern is the cognitive activity of political actors.

As discrete pieces of data stored in the Toxics Release Inventory database, TRI data are unrelated facts or pieces of information. In 1987, EPA developed Form R, a paper-based report form on which manufacturers were required to submit 66 pieces of data for each reportable toxic chemical. These data included facts like the name of the facility, its address, phone number, the name of the chemical released and the annual amount released into the environment. About 18,000 manufacturers submitted approximately 75,000 paper forms (Elkins, 1989:6), amounting to about 5 million pieces of data.

Knowledge-building or information-building is the process by which people build relationships among discrete pieces of data. By associating 66 pieces of data on a single form, the Form Rs initiated an information-building process. Consider three pieces of Form R information -- the name of a manufacturer, the name of a chemical released, and the annual amount released into the environment. Unrelated to one another these three pieces of data provide virtually no information. But, when a manufacturer forwarded the data to EPA on a Form R, it provided not only data but information. As EPA related these and other data on the Form R, it acquired knowledge. The names of the company and the chemical, for example, informed EPA that the company was the releaser of a specific toxic. With the amount released in a specific year, EPA also began to learn how great or small an emitter it was. Toxic exposure victims who would make TRI data politically useful first face the challenge of constructing knowledge out of many discrete pieces of data. These include TRI data about the company and the chemical as well as many other kinds of data, including known toxic effects of exposure to the chemical and information about health problems among the exposed community.

Standing Arguments in Power Theory

Due to "an endemic variety of concepts of power" (Lukes, 1977:5), power phenomena do not easily succumb to empirical analysis. Viewed as a political power resource, knowledge and its political functions cannot be analyzed without entering into standing arguments about the nature of political power. It is not possible to explore the relationship between knowledge and power without taking some stand on these arguments and arriving at a working definition of power.

First, what is political power? Russell's definition of power as "the production of intended effects" is too broad a concept for political analysis (Wrong, 1979:2). Max Weber's politics-centered view of power presents a more useful basis for a working concept of political power. For Weber, power is exercised when the will of certain

individuals prevails over the will of other individuals. Weber describes power as "the chance of a man or a number of men to realize their own will in a communal action even against the will of others who are participating in the action" (quoted in Lenzer, 1990:98). Through the exercise of power, certain people, individually or collectively, make others conform to their wishes.

In this view, power commonly depends on the use of physical force or coercion and the state, because it monopolizes the authority to use force, exerts enormous power. Weber defined the state as "a human community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory" [emphasis in the original] (Weber, 1990:114). With the exclusive right to use violent coercion or to authorize others to do so, the power of the state generally has no match.

In turn, Weber builds his definition of politics on his views of power and the state. Politics means "striving to share power or striving to influence the distribution of power among states or among groups within a state" (Weber, 1990:114). In other words, politics consists of any efforts to influence the distribution of power. And since the state monopolizes the authority to use force, political activity must also be directed at or through the power of the state.[11] In other words, power conflicts are typically contests over how state authority is to be applied.

Key power theory issues addressed in this study include the following four questions.

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[11] While broader notions of politics are common, it is useful to narrow the term to refer to state-related activity. By way of illustration, "office politics" is not to be considered "political" as long as it remains at the level of private personal relationships (personality conflicts, cliques etc.). Once it acquires some relationship with state authority, through, for example, civil rights violations, labor union activity, hazardous working conditions or any other matter that falls under state authority -- actually or potentially -- it is "political" in the sense used here.

1) Consensual or Conflictual Approaches to Power

Does power reflect a commonality of interests, a conflict of interests or both? Definitions of power by Arendt and Lukes illustrate the stark contrast between these two approaches to power. For Arendt,

> Power corresponds to the human ability not just to act but to act in concert (1969, 1986:64).

Power in this view depends on mutual consent and shared interests. Lukes, on the other hand, assumes that one actor effectively violates the interests of another. He states

> I have defined the concept of power by saying that A exercises power over B when A affects B in a manner contrary to B's interests. (1974:34)

Each definition of power excludes the other. If parties to power act in concert, power cannot involve a conflict of interests. But if A exercises power by harming B's interests, power cannot be defined as the ability of A and B to act in concert.

While the exercise of toxic power involves clear conflicts of interests, parties to toxic power conflicts must act in concert if they are to advance their interests. For B to take political action presumes that B is a political actor. But this in turn assumes some degree of organization on the part of B. If B is disorganized, it is likely to lack the capacity for political action.

In his study of "contaminated communities", Edelstein emphasized the importance of group organization, stating, "the development of community organizations serves to enable many toxic victims" (emphasis in original, 1988:138). By organizing a community group, community members overcame a feeling of powerlessness and were better able to take action aimed at resolving the problem. According to Edelstein, "The development of community organizations tends to provide people with a new sense of power in the midst of a situation that otherwise produces an overall sense of loss of control." Groups served as "a collective means to achieve commonly shared goals" and as a means to help "reverse psychological sense

of powerlessness" (1988:144). Edelstein found that, while toxic crises can have destructive, divisive effects, "one frequently finds the development, rather than destruction, of community" (Edelstein, 1988:138).

It will be recalled that Weber's conflict-centered definition of power incorporated a notion of consensus. Weber stipulated that people exercising power may "realize their own will in a communal action" that defies the will of others (quoted in Lenzer, 1990:98, emphasis added). While Arendt clearly limited power to consensual activity, is it possible that the kind of concerns she expressed for citizen participation through concerted action can in any way enrich such conflict-centered views of power?

Toxic power is rooted in a conflict of interests but requires the discovery of common interests by those who would challenge it. In its conclusion, this study will use the case material to revisit the question of whether one or the other, or some combination of both the consensual and conflictual approaches to power is the most useful analytical approach.

Regardless of whether power is defined exclusively in consensual or conflictual terms, knowledge plays a vital function in the exercise of power. Actors in power relations require knowledge in order to understand their interests. Power actors typically use knowledge to decide whether or not their interests are at stake and subsequently whether to collaborate with some and to do political battle with others. A focus on the role of TRI-related knowledge in toxic power conflicts is helpful in this regard because people exposed to toxics have used toxic release knowledge as a means to define and understand their common and conflicting interests.

But, in order for parties in power conflicts to even engage in knowledge-related actions, they must somehow become capable of taking action. For power actors to develop an understanding of their own interests or to communicate knowledge to others, a group of some sort is typically required. According to Edelstein, a primary function of groups that formed in contaminated communities was to serve as a source

of trusted information in a political climate of mistrust (1988:125, 127, 143). Groups were, in other words, a prerequisite to understanding and developing a sense of common interests.

In the cases examined here, TRI-related knowledge serves not only to help define group interests but as a form of political ammunition to win allies and to persuade decision-makers. Again, a group or organization is the medium required in order to fire this ammunition. The ability to use knowledge presumes some ability to act in concert. In its conclusion, this study will use the case material to assess the relationship between the capacity for mutual political action and the ability to engage in knowledge-related political activities.

2) Unilateral or reciprocal approaches to power

As a conflict-based phenomenon, power is often defined as a unilateral action by one party. In the unilateral power model, "A exercises power over B." In such a view, "power holders" and "power subjects" (Wrong, 1979:10) partake in an unequal relationship. According to Wrong, "Power relations are asymmetrical in that the power holder exercises greater control over the behavior of the power subject than the reverse..." (1979:10). Actor A tends to exert power over B while B remains the relatively passive object of power.

The unilateral model is well suited for analysis of relatively hegemonic power relations in which A ultimately prevails over B and where B remains a relatively passive and powerless object of A's actions. However, to introduce activity by B, or even the possibility that B could prevail over A, is to run up against the limits of the unilateral model. If B succeeds in the conflict with A and effectively harms the interests of A, does this mean that B also exercises power? If so, what accommodations are needed in the definition of power? Should there be a formal equality among parties to power conflicts in the sense that both A and B try to exercise power over one another? Should a definition of power account for the possibility of

B's successful challenge of A's power? Should such success be defined as B's empowerment?

If it is possible for the outcome of a power conflict between A and B to favor B, then it is not possible to predefine power as something that necessarily harms B. It becomes necessary to develop an interactive notion of power conflict with an open outcome.

Lukes' unilateral definition of power as A harming the interests of B appears to be a useful means to describe toxic power. Toxics users (A) exercise power over people exposed to toxics (B) because B's exposure is contrary to B's interests. When toxic power is exercised (i.e. when one party exposes another to toxic substances), it is appropriate to argue, in Lukes' terms, that the toxics user affects the exposed party in a manner contrary to the interests of the latter. As long as the focus remains on the toxics user in the toxic power relation, a unilateral model of power is a useful means to analyze the relationship.

Where, however, B actually succeeds in reversing a particular toxic power relation in its favor, where for example, B forces state intervention that empowers B against toxic user A, this power model must be reformulated to account for B's exercise of power. In toxic politics, there is clearly a need to account for the activity and the occasional success of challengers to particular toxic power relations. Frumin regards power in toxic politics as "the practical ability to force prevention programs on polluters both outside and inside the workplace" (1992:2). How such activity by the challengers is accounted for also affects analysis of the relationship between knowledge and power. Power defined unilaterally can account for A's but not B's use of knowledge for strategic advantage. If, however, B is formally coequal with A in the sense that B is also capable of exerting power, B's knowledge-related political activity can be related to the exercise of political power.

3) Capacitative or behavioral approaches to power

Another major standing argument in power theory concerns power as capacity and power as action. Is power a capacity that people possess or hold, or, for power to exist, must it be exercised? Or, is the distinction between the potential and actual exercise of power a false dichotomy? Can power be observed both in the capacity to act and in the exercise of that capacity?

For some theorists, power only manifests itself in empirically identifiable actions (Bachrach and Baratz, 1962, 1970; Dahl, 1961; Lukes, 1974). Viewed as a form of behavior or action, power only materializes when actor A does something to actor B that corresponds with whatever definition of power we may have selected. If power is the achievement of an intended goal, power is the behavior that achieved that goal.

On the other hand, it is possible to broadly conceive of power as a capacity to act. In "Beyond the Three Faces of Power: A Realist Critique", Isaac faults Lukes for advocating a behavioral concept of power in which "A does something to get B to do something" (Isaac, 1992:32). This view is "doubly confused. First, it is limited to situations of 'power over' and fails to see that 'power over,' or what I will call domination, is parasitic upon a 'power to.' Second, it fails to distinguish between the possession of power and the exercise of power" (Isaac, 1992:32).

Proposing "a capacitative concept of power" (1992:48), Isaac links power to one's capacity to take actions in social relationships. He defines social power as "the capacities to act possessed by social agents in virtue of the enduring relations in which they participate" (Isaac, 1992:46).

For analytical purposes, is it more fruitful to view toxic power as the capacity to expose others to toxics, or as an action through which one party exposes others to toxics? Or, is power manifest both in the capacity and its exercise? And, if B's

exercise of power is somehow accounted for, what is the significance of B's capacity to engage in a toxic power conflict?

The potential and actual exercise of power has an important bearing on exploration of the relationship between power and knowledge. One party's knowledge or ignorance regarding whether another party possesses power or has exercised power may have an important bearing on the course of a power relationship. Knowledge and ignorance may be conditions of one's capacity to act.

Knowledge itself can be potential or actual. One may have a capacity to know or one may have actually acquired knowledge. Is such a capacity relevant to the exercise of power? Polluters may stop releasing pollutants because people have just acquired the means to find out about their actions and they fear the consequences of public knowledge. Or, they may only act in direct response to public knowledge. If power is assumed to be based on one's capacities, is it possible that power is not only a capacity to act but a capacity to know?

4) Structure, agency and responsibility for power effects

Another power theory issue of relevance to this study is the question of whether impersonal structures can exert power as surely as individuals can, what is sometimes called the "structure versus agency" debate? Do relatively blind structural forces sometimes exert power, or can only conscious individuals exercise power? Must the exercise of power be a volitional act of a human agent? Must the exercise of power always include the conscious intention of an actor to achieve a certain goal (Weber, 1990; Russell, 1938,1986; Wrong, 1979; Lukes, 1977)? Or, can power sometimes be exerted by broad structural forces beyond human control or responsibility (Lukes, 1974)?

Regarding the roles of human agency and structure in relation to power, Lukes alternated from assigning the exercise of power to forces that include impersonal structures in Power: A Radical View (1974) to making power an exclusive attribute of

conscious and responsible human decision-making in "Power And Structure" (1977). Strong noted this change of mind, observing that

> Steven Lukes contrasts power as 'subjective' human agency with structure as 'objective' constraint in his essay 'Power and Structure...However, in his earlier book..., he identified power with constraint exercised by some persons, groups or institutions over others. Clearly, there is a shift here from a view of power as a constraint on the freedom to act of the power subject to a view of power as precisely the capacity to act, to choose between alternatives, in the face of 'structural constraints'. The distinction is essentially a variation on the contrast between 'power to' and 'power over' (1979:301, footnote 84).

Wrong objects to views that allow for unconscious forces to exert power over others on the grounds that it broadens the concept of power to the point of meaninglessness. Wrong asked "...if the unintended and unforeseen effects of the exercise of power are often more enduring and consequential than the intended effects, why not, it might be argued, include them in the very definition of power? The answer is that to do so would make any social effect equivalent to the exercise of power...Power would cease to be a 'key concept in the social sciences' but become the key concept, identical with society and the very realm of the social itself" (1979:252-253)."

Steven Lukes' Three Dimensions of Power: A Departure Point

Steven Lukes' Power: A Radical Theory (1974) offers a useful point of departure for the current analytical effort for a number of reasons. Unlike many power theories, the fundamental concern of Lukes' approach was to help analysts undertake empirical studies of political power. John Gaventa (1980), a student of Lukes, and Michael Reich (1991) have demonstrated the considerable utility of Lukes' approach in this respect. Secondly, by making the exercise of power over the consciousness of political actors an integral part of his framework, Lukes' approach is directly applicable to analysis of the role of knowledge in political conflicts. Again, both Gaventa and Reich have demonstrated Lukes' value for this purpose. Thirdly, Reich's work, Toxic

Politics, shows how Lukes' framework can be adapted to the particulars of community-based political opposition to toxic poisoning.

As already apparent, Lukes' approach has provided fodder for critics. At two decades old, the Lukesian model shows many signs of age or, some would say, rigor mortis.[12] Lukes' approach falls clearly to one or the other side of the standing arguments described above. This makes it possible to test the value of his approach or the need for an alternative approach. While Lukes favors a conflictual view of power, the merits of a consensual view can also be assessed. While Lukes offers a unilateral view of power, the merits of an interactive model can be examined. While Lukes emphasizes behavioral aspects of power, the capacitative approach can be assessed as well. On the last issue -- structure versus agency -- Lukes was of a divided mind in his 1974 book and his 1977 essay. This difference offers an opportunity to assess the relative strengths of conflicting positions on the issue.

As noted earlier, Lukes defined power as an instance in which A affects B in a manner contrary to B's interests. This may occur in any of three dimensions of power. Lukes' three-dimensional view of power incorporates foci on 1) empirically observable decision-making by political authorities (Dahl, 1961; Polsby, 1963), 2) control over the inclusion and exclusion of issues on the political agendas of decision-makers (Bachrach and Baratz, 1962; 1970) and 3) control over the perceptions of political actors. As applied and developed by Gaventa and Reich, Lukes' framework is useful not only for the analysis of power conflicts but for the analysis of the role of information in A's exercise of power over B.

In the first dimension, A exercises power over policy, in the second, power over policy agenda, and, in the third, power over consciousness. In Lukes' view, A

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[12] As noted earlier, Isaac dismisses Lukes three dimensions of power approach outright, arguing that it is too tightly bound by behavioral analysis assumptions and fails to account for the structural bases of power (1992).

may be understood to include not only individuals but institutions, collectivities and social or political structures. In each dimension, A's exercise of power affects B in a manner contrary to B's interests.

In the first dimension, A exercises power over B by setting policy contrary to B's interests.

For Lukes, the first dimension of power reflects the decision-centered views of Dahl and Polsby. Lukes states that the "first, one-dimensional, view of power involves a focus on behavior in the making of decisions on issues over which there is an observable conflict of (subjective) interests, seen as express policy preferences, revealed by political participation" (1974:15, emphasis in original). As formulated by Lukes, there is no necessary association between the focus on observable decisions and the pluralist theory usually associated with Dahl and Polsby. Rather, theoretical explanations of decisions must depend on decision-making structures. Elitist structures generate elite-based decision-making; pluralist structures produce decisions with plural political origins (Lukes, 1974:11).

In the second dimension, A exercises power over B by excluding from consideration policy options that would benefit B.

This focus corresponds with the "second face of power" put forth by Bachrach and Baratz (1962; 1970). While acknowledging the utility of a focus on policy decisions, Bachrach and Baratz called for additional consideration of ways that power wielders prevent certain issues from entering the decision-making arena. As summarized by Lukes, the second dimension "allows for consideration of the ways in which decisions are prevented from being taken on potential issues over which there is an observable conflict of (subjective) interests, seen as embodied in express policy preferences and sub-political grievances" (1974:20, emphasis in original).

Central to the notion of a second face of power is Schattschneider's well-known conceptualization of organization as the mobilization of bias. Schattschneider stated

> All forms of political organization have a bias in favor of the exploitation of some kinds of conflict and the suppression of others because organization is the mobilization of bias. Some issues are organized into politics while others are organized out (Schattschneider, 1960, 1975: 69).

Bachrach and Baratz (1970:8), Lukes (1974:16), Gaventa (1980:9), and Reich (1991:12) all quoted the above phrase when explaining the significance of a second dimension of power.

Bachrach and Baratz emphasized that, for a power relationship to exist, the power subject must be aware that power has been exercised in a manner that conflicts with its values.

> ...the successful exercise of power is dependent upon the relative importance of conflicting values in the mind of the recipient of the power relationship (Bachrach and Baratz, 1970:18, emphasis in the original).

The knowledge of the power recipient regarding its position in the power relationship is assumed to be one characteristic of power in the second dimension.

In the third dimension, A's power causes B to think in ways averse to B's own interests. When introducing the third dimension of analysis, Lukes cited three shortcomings in the second dimension. First, it relied too heavily on deliberate decisions. "Decisions are choices consciously and intentionally made by individuals between alternatives, whereas the bias of the system can be mobilized, recreated and reinforced in ways that are neither consciously chosen nor the intended result of particular individuals' choices" (1974:21). Secondly, by focusing exclusively on observable conflict -- with Weberian assumptions about compelling involuntary behavior -- other exercises of power were neglected. "A may exercise power over B by getting him to do what he does not want to do, but he also exercises power over him by influencing, shaping or determining his very wants...the most effective and most insidious use of power is to prevent such conflict from arising in the first place" (1974:23). The third shortcoming is related to the second. Bachrach and Baratz's insisted that power's second face only emerges in suppressing the consideration of

actual grievances. Because power wielders may succeed in preventing power subordinates from becoming aware of their own interests, Lukes asked

> is it not the supreme and most insidious exercise of power to prevent people, to whatever degree, from having grievances by shaping their perceptions, cognitions and preferences in such a way that they accept their role in the existing order of things, either because they can see or imagine no alternative to it, or because they see it as natural and unchangeable, or because they value it as divinely ordained and beneficial? (1974:24)

Power exercised in the third dimension therefore involves "latent conflict, which consists in a contradiction between the interests of those exercising power and the real interests of those they exclude" (1974:24-25, emphasis in original). A therefore may prevent B from knowing that it is party to a power conflict. "This conflict is latent in the sense that it is assumed that there would be a conflict of wants or preferences between those exercising power and those subject to it, were the latter to become aware of their interests" (1974:25, footnote 5, emphasis in original).

Lukes' third dimension therefore allowed for the possibility that B may be unaware of the fact that A is engaged in activity contrary to B's own interests. As summarized by Gaventa, the third dimension involved "a consistency that certain potentially key issues remain latent issues and that certain interests remain unrecognized--at certain times more than at others" (Gaventa, 1980:19).

Gaventa noted that third dimension-type analyses are poorly developed within political science.

> By far the least developed and least understood mechanisms of power--at least within the field of political science--are those of the third dimension. Their identification, one suspects, involves specifying the means through which power influences, shapes or determines conceptions of the necessities, possibilities, and strategies of challenge in situations of latent conflict (Gaventa, 1980:15).

This could include the study of the manipulation of symbols, information content and the manner of its communication, the shaping of perceptions of legitimacy, and the formation of beliefs that help the power wielder control the subject of power (Gaventa, 1980:15-16).

As long as the focus remains on the toxic user, analysis of toxic power is well-served by Lukes' focus on power over policy decisions (the first dimension), over policy agendas (the second dimensions) and over the consciousness of power subordinates (the third dimension). Where toxic user A is relatively free to act as it wishes, A exercises a first dimension toxic power over B. Where there is tangible physical harm, B may voice grievances against A (the second dimension).

Lukes' third dimension of power (A's control over the perceptions of B) is useful for the analysis of the role of knowledge about toxic chemicals used in the toxic power relation. When toxic activity by A is contrary to the interest of B, A's strategic advantage clearly lies in limiting B's knowledge about such activity. Where the toxic use decision has no immediate tangible effect but poses long term physical risk to B, any efforts by A to limit B's awareness of its own interests constitute a third dimension exercise of power. Exclusive possession of information about toxic chemicals used by a facility is strategically advantageous to a facility vis-a-vis its workers and neighbors because it allows the facility to argue either that there is no problem related to chemical exposure or, if health problems exist, that they are unrelated to activities at the facility. Lacking specific identification of chemicals used or released, exposure victims have relatively weak grounds to dispute facility arguments. In other words, A's ability to withhold toxic chemical information that is in B's interests to know is a third dimension exercise of power by A over B.

Before proceeding, several comments are in order regarding the ramifications of using Lukes' analytical framework. Lukes' method for determining interests and his conflicting stands on the structure-agency debate have sparked disagreements. Also, some developments made to Lukes' approach since its publication are relevant to this analysis.

Determination of whether one party's interests are at stake in a power conflict raises inherently difficult judgment questions. Who is to make such a determination and how is the determination to be made? These questions generate endless debate.

Forewarning that the notion of "interests" was an essentially contestable concept, Lukes proposed a twofold empirical test for whether "real interests" have been violated. First, would people given the opportunity to have acted otherwise done so? Does any counterfactual provide evidence that people would have acted otherwise? Second, can a decision-making mechanism be identified that prevented people from acting otherwise (1974:41-42)?

Lukes has been faulted for building a determination of interests on the subjective belief of actors regarding the legitimacy or non-legitimacy of a given action. In his critique of Lukes, Bradshaw argued that "B's hypothesized independence of A's power fails to rule out the likelihood of B's continued subjection to other sources of power which, even though opposed to A, may still be inimical to B" (1976:121). In other words, the beliefs that cause people to define their interests may themselves be shaped by factors inconsistent with people's "real interests" .

A presumption in the definition of toxic power used here regarding harm to the interests of the party exposed to toxic chemicals is not without problems. Whether or not the effect of chemical use is significantly toxic and genuinely harms the interests of the exposed is a common issue in toxic power conflicts. Most levels of exposure to toxic chemical releases reported to the Toxics Release Inventory are protected by state and federal laws. While toxic politics is replete with instances of indisputable harm caused by exposure like the Bhopal tragedy and numerous other disasters, determination of harm is not always a clear-cut matter. Risk assessment is a common need and often a dilemma in toxic politics.

For analytical purposes, it is assumed here that toxic power harms the interests of the exposed party. How such a determination of interests is achieved is unimportant

for now, although it must be confronted later. The conflicts examined in the case studies all raise issues associated with determination of harm. How such a determination is made and, more particularly, the role that TRI-related knowledge plays in making such a determination is addressed in all three case studies.

In his call for a capacitative definition of power, Isaac faulted Lukes for a behavioral bias rooted in Lukes' assumption that power is a form of behavior by A that affects B in a manner contrary to B's interests. John Gaventa, in his adaptation of Lukes, appears to have little trouble accounting for power as capacity. Building on Lukes' three dimensions of power, Gaventa defined power as "the capacity of A to prevail over B both in resolution of manifest conflict and through affecting B's actions and conceptions about conflict or potential conflict" (Gaventa, 1980:20).

While Gaventa retained the exclusive focus on what Isaac called domination, he appeared to make the three dimensional framework a far more robust device than Isaac could imagine. Does Gaventa effectively blunt the main thrust of Isaac's criticism regarding behavioral bias? By making both "capacity" and "affecting" attributes of power in his reformulation of Lukes, Gaventa appears to account both for power's capacitative character and for its behavioral effects. Do behavioristic assumptions still flaw such an approach, or is Isaac's approach flawed by a failure to account for the effects of power?

While he proposed his three dimensional model as a tool for empirical analysts it was Lukes' prerogative as a theorist never to undertake such an analysis. When applied to any protracted historical conflict, it soon becomes clear that Lukes' unilateral model of power does not sufficiently account for the power subject's role in the conflict. In his widely-praised application of Lukes' three-dimensional framework, Gaventa used Lukes' unilateral focus to build an interactive model that accounts for B's challenge of A's power.

For the most part, Lukes unilateral power model was ideally suited for Gaventa's analysis of the obdurate power structures of Appalachia, what he calls "a system of unitary power" (1980:88). Given that his was a study of powerlessness, Gaventa understandably refrained from use of the term "empowerment". Not surprisingly, however, Gaventa found the need to account for B's actual and potential participation over the course of protracted political conflict. In doing so, he developed a focus on the activity of B in the power conflict that is ignored in Lukes' model (see Figure 1.1).

> ...as challenge emerges, several steps in overcoming powerlessness by B must occur before the conflict is on competitive ground. B must go through a process of issue and action formulation by which B develops consciousness of the needs, possibilities and strategies of challenge. That is, B must counter both the direct and indirect effects of power's third dimension. And B must carry out the process of mobilization of action upon issues to overcome the mobilization of bias of A against B's actions. B must develop its own resources--real and symbolic--to wage the conflict. Only as the obstacles to challenge by B in the second and third dimensions are overcome can the conflict which emerges in the first dimension be said to reflect B's genuine participation--i.e. self-determined action with others similarly affected upon clearly conceived and articulated grievances (Gaventa, 1980:23-24, emphasis in original).

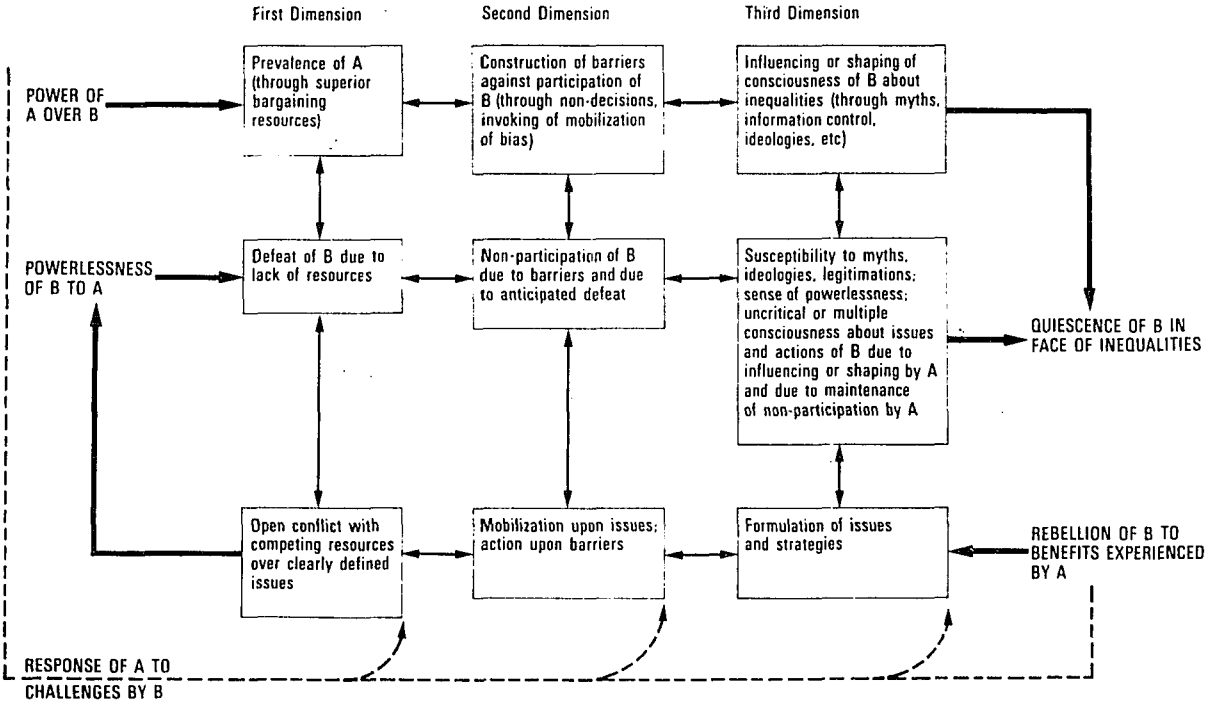
For Lukes, the third dimension was an arena of latent conflict in which unilateral action by party A manipulated B's consciousness to A's advantage. Gaventa's interactive model, however, implicitly breaks with Lukes' by opening the third dimension to actions during the overt phase of a conflict. As an active participant in the three dimensions of power, B formulates issues and strategies in the third dimension, mobilizes upon issues and acts against barriers created by A in the second dimension and engages A in "open conflict with competing resources over clearly defined issues" in the first dimension (Gaventa, 1980:21).

In order to transform the unilateral character of second dimension power in the Bachrach-Baratz and Lukes models, Gaventa extrapolated from Schattschneider's view on the mobilization of bias. He proposed that, as a participant in the second dimension of a power conflict, B must organize and mobilize upon issues as a means to overcome

exclusion from the political agenda. That is, for B's group or organization to become an accepted or legitimate "player" on the political scene is tantamount to B's success in getting its issues onto the political agenda.

Simply by depicting the barriers created by A's exercise of power in all three dimensions and positing activity required of B in order to overcome these barriers, Gaventa transforms Lukes unilateral model into an interactive model with impressive potential. In Gaventa's hands, what was a cartoonish and ahistorical depiction of power takes on dimensions relevant for assessing empirically-rooted conflicts over time.

Figure 1.1 The Three Dimensions of Power: A Tentative Scheme by John Gaventa (Gaventa, 1980:21; permission to reproduce granted by the University of Illinois Press)



Several subtle questions remain, however, after Gaventa's "rescue" of Lukes one-sided power model. Are there any sleights of hand in Gaventa's convenient

adaptation of Lukes that left some standing arguments about the nature of power unattended? Generally, Gaventa remains consistent with the A-centered view of power, avoiding reference to power exercise by B, choosing instead to refer to B's "challenge" of or "rebellion" against A's exercise of power. But, Gaventa appears to have straddled the line between the A-centered definition of power that he inherited from Lukes and the clear and pressing need for a view of power that accounts for B as an active participant in power conflicts. If power remains an A-centered concept -- as in "the capacity of A to prevail over B" (1980:20), how can there be "gain in the power of B" (1980:24)? Is power also a capacity of B to prevail over A? Can B's power accumulate as surely as A's? When B has power do we mean that B is then able to harm the interests of A? If there is a sinister and oppressive connotation in the "sundry mechanisms" of power (Gaventa, 1980:20) associated with A's power over B, does B's power also have its sundry side. Are there "victims of power" (1980:260) because power is by definition victimizing?

Methodology

The raw material of this study was gathered from a variety of published and unpublished sources and from personal interviews.[13]

Several Washington-based advocacy groups that lobby for a broadened toxics right-to-know law have collected a great deal of information about community uses of TRI data around the country. The best regularly published source of information in this regard is the newsletter Working Notes on Community Right-To-Know. It is edited by Paul Orum from the U.S. Public Interest Research Group Education Fund. At two TRI-related conferences I attended, Mr. Orum gave me helpful advice on

[13] I first learned about the importance of the Toxics Release Inventory when collaborating on the production of a book with Benjamin Goldman. As one of the six editors of Computers for Social Change and Community Organizing (Haworth Press, 1991), I worked closely with Mr. Goldman on the chapter he contributed to the book regarding TRI. When I decided to undertake the TRI study, he helped me get started with my research, sharing with me several of his unpublished papers on TRI and a number of related publications.

pursuing my research. References to the Boerum Hill and the Northfield experiences with TRI in Working Notes were partly responsible in my selection of two of the three case studies.

Boerum Hill became my first case because of its proximity and my limited resources. My principal sources of information were interviews with a number of neighborhood opponents to emissions from Ulano Inc. and with researchers at the Consumer Union who published TRI-based assessments of air pollution in New York City. Jane Califf, the chair of the neighborhood Clean Air Committee, gave me access to the Committee's files. Subsequent to a request under the state freedom of information law, I also inspected extensive records of the state Department of Environmental Conservation regarding Ulano and its interactions with the Clean Air Committee.

Sketchy accounts of the Boerum Hill case led me to believe that TRI-based publicity was pivotal in causing the Ulano Corporation to effectively reduce offending odors in the neighborhood. I discovered, however, that such publicity played only an auxiliary role in the eventual outcome. This made me eager to study a case in which TRI had played a more decisive role. The opportunity to do so presented itself at an EPA-sponsored Toxics Release Inventory Data Use Conference in Chicago in March 1993. There I met and interviewed Mike Caspar, the chair of the Air Toxics Study Group in Northfield, Minnesota. Dr. Caspar also shared with me an unpublished account he had written about the history of the confrontation over methylene chloride in Northfield. This encounter with Dr. Caspar provided the impetus for the beginning of my research on Northfield. While I had to conduct other interviews with Northfield residents over the phone, I interviewed Eric Frumin, the National Health and Safety Director for the Amalgamated Clothing and Textile Workers Union, in his New York City office. Mr. Frumin also gave me access to the union's internal records and

communications dealing with the Local's grievances over workers' exposure to toxic chemicals inside Sheldahl facilities.

In consultation with my sponsor, my third and final case was chosen to be a "null" outcome, or one in which a community unsuccessfully tried to employ TRI data in achieving toxic use reduction. I asked Greg Schirm, director of the Delaware Valley Toxics Coalition, if he could suggest such a case. He readily volunteered the Marcus Hook experience. During several visits to Philadelphia and Marcus Hook, I interviewed Greg Schirm, Jerry Balter of Philadelphia's Public Interest Law Center and various residents of Marcus Hook. Greg Schirm also gave me access to the Coalition's records on its involvement in Marcus Hook. Knowledge Index queries of full-text databases on the Philadelphia Inquirer and the Delaware County Times also proved helpful in uncovering much detail about pollution politics in Marcus Hook.

Each chapter begins with a story or narrative of relevant events and ends with an interpretation using concepts and issues discussed earlier in this chapter. In this manner, the study develops conceptual tools of analysis at the same time that it seeks to explain the differing outcomes of the cases.

Conclusion

As stated in the preface, the goals of this study are twofold: 1) to develop a concept of power and an analytical framework well-suited for analysis of the relationship between knowledge and political power and 2) to explain the differing political utility of knowledge in the three community conflicts under study. With a review of some power theory issues, this chapter has begun the first task. The next chapter provides background on the federal Emergency Planning and Community Right-to-Know Act (EPCRA) that created the Toxics Release Inventory.

Chapter 2: The Toxics Release Inventory

Among its various provisions, the Emergency Planning and Community Right-to-Know Act of 1986 ordered EPA to collect and disseminate information on environmental releases of toxic chemicals by manufacturers. EPCRA requires that industries annually report on such releases and that EPA compile the reports into a publicly accessible "national toxic chemical inventory", now known as the Toxics Release Inventory (TRI). This chapter provides historical background on the toxics right-to-know movement and the federal legislation that created the Toxics Release Inventory.

The Toxics Right-to-Know Movement

As noted in the prior chapter, advocates of workplace safety and health found the labeling requirement established by the Occupational Safety and Health Act (1970) inadequate because it failed to precisely identify substances to which workers were exposed. On the eve of the Reagan Administration, the out-going head of OSHA, Dr. Eula Bingham, issued a Hazardous Communication Standard that represented a breakthrough for these advocates. It required industries to identify toxic chemicals used in workplaces. The Standard was revoked, however, during the first weeks of the Reagan administration and replaced by a "voluntary hazard communication program" giving industries discretion over how much chemical information to share with workers (Hadden, 1989:22; Ochsner, 1992:45-46).

In 1983, OSHA promulgated a Hazardous Communication Standard that, from labor's perspective, had more teeth in it. Among its requirements was detailed notification of workers regarding their exposure to hazardous chemicals, related health risks and appropriate safety measures to take. However, industry opponents challenged the Standard and kept it tied down in courts under various legal appeals. The

opposition exhausted its legal alternatives and the Standard eventually took effect in 1988 (Hadden, 1989: 20-24).

In the early 1980s, toxics right-to-know activists grew frustrated with the anti-regulatory climate created by the Reagan Administration at the federal level and channelled their demands toward state and local governments (Ochsner, 1992:66). Among the various local efforts in that period[1], a unique worker and community-based coalition in Philadelphia achieved a breakthrough law. Philadelphia's 1981 Right-to-Know law made city government the repository and public disseminator of toxic release information and was the first to guarantee general public access to chemical-specific information.

The drive toward the Philadelphia law originated among community and labor activists in the late 1970s. Members of the Public Interest Law Center who had been working with neighborhood communities concerned about illnesses they attributed to industrial pollution joined forces with members of Philadelphia's Occupational Safety and Health Committee (PHILAPOSH) who had been active in efforts to secure workplace right to know. In 1979, both groups called a conference that united worker and community activists concerned about the hazards of chemical exposure. Attendees at the conference agreed that toxic exposure was both a workplace and a community problem and that community residents must, together with workers, press for and acquire the right to know (Balter, Interview; Schirm, Interview).

The lineage of the federal right to know can be traced directly back to Philadelphia. Jerry Balter of the Public Interest Law Center represented right-to-know activists in the negotiations that drafted the Philadelphia law. Balter performed the

[1] From 1979 through 1984, more than two dozen states passed toxic right-to-know laws. Laws requiring at least some degree of worker or community access to information about possible exposure to toxic chemicals use in workplace facilities subsequently passed in Maine (1979), California (1980), Connecticut (1980 and 1981), Michigan (1980), New York (1980), West Virginia (1981), and Wisconsin (1981), Connecticut (1982 and 1983) and in 1983 in Illinois, Massachusetts, Minnesota, New Hampshire, New Jersey and Rhode Island (Ochsner, 1992:66,84).

same role in the negotiations that resulted in the New Jersey Worker and Community Right-to-Know Law of 1983. The New Jersey law, in turn, became the model of the right-to-know provisions that eventually passed both houses of Congress in 1985.

While broad-based concern over adequate public knowledge regarding toxic exposure was apparent, the campaign behind the Philadelphia law was the first to demonstrate how this base could coalesce and flex its muscle in the political arena. Philadelphia activists demonstrated that the toxics right to know as an issue could unite organized labor, environmentalists, public health organizations and groups generally concerned about the public interest. As similar coalitions formed and gained political experience in New Jersey, Maryland and other states, toxics right-to-know coalitions became well-prepared to ride the enormous wave of public concern that arose when tragedy of enormous proportions struck, namely the chemical disaster in Bhopal, India.

The Legislative History of EPCRA and TRI

The Congressional mandate to create the Toxics Release Inventory is contained in one of the five reporting requirements in the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986. EPCRA is an amendment to a large piece of environmental legislation called the Superfund Amendments and Reauthorization Act (SARA). In 1980, Congress passed the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA), often called the 'Superfund bill' because of the cleanup funds it provides for hazardous wastes sites. Set to expire on October 1, 1985, CERCLA came up for reauthorization at the same time that other environmental bills not directly related to the hazardous waste focus of CERCLA were introduced in Congress, including toxic right-to-know bills discussed later in this chapter. A consensus emerged to introduce such bills as amendments to the CERCLA reauthorization and to consider all key pending environmental bills as a single package in the form of SARA. After a year's delay, SARA passed both houses of Congress and was signed into law by Ronald Reagan on October 17, 1986. Title III of SARA

established provisions for dealing with toxic chemical accidents, the creation of a toxic releases inventory and public access to information on toxic chemical risks and exposure. Title III is formally known as the "Emergency Planning and Community Right-To-Know Act of 1986" (EPCRA, Pub. L. No. 99-499, title III, sec. 300(a), 100).[2]

The Politics of Passage

On December 3, 1984, the airborne escape of methyl isocyanate (MIC) from a Union Carbide facility in Bhopal, India killed over 2,500 and injured as many as 200,000 thousand of people. This event is generally acknowledged to have played a critical role in the passage of EPCRA (U.S. General Accounting Office, 1991:2). During the session of Congress that began one month after the Indian accident, a variety of bills were introduced that addressed emergency preparedness for chemical accidents and the public's right to know about chemical hazards. Invariably, the Bhopal tragedy was invoked as a major reason for seeking such legislation.[3]

Sponsors and supporters of legislation dealing with toxic chemical hazards were able to use Bhopal and the subsequent general public concern to turn the spotlight on potential problem areas in the United States. Various "industrial corridors" and areas with clusters of chemical plants and oil refineries, where it had become routine to smell toxic fumes from chronic and common accidental releases of chemicals, came under scrutiny.[4]

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[2] The reader is reminded that all acronyms in this study are listed in Appendix B.

[3] For example, Senator Frank Lautenberg noted that "Bhopal", unknown a year earlier, had become "a name that strikes terror into the hearts of millions who live or work near a chemical plant" (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 117:S11664). At Lautenberg's request, an in-depth series on Bhopal that appeared in the New York Times in late January and early February 1985 was republished in the Congressional Record (1985. 99th Cong., 1st Sess. Vol. 131. No. 117:S11670-11680). At Congressional hearings regarding the same bills, committee members and witnesses, including members of industry, routinely use the Bhopal accident as a point of reference (see, for example, U.S. Congress. Senate Committee on Small Business, 1985).

[4] Speaking on the floor prior to a major House vote in favor of right-to-know legislation on December 5, 1985, Representative Gerry Sikorski (D-MN) claimed that "last year alone we had 5,700 toxic

Vis-a-vis the policy making process that produced EPCRA, the Bhopal tragedy offers a classic case of what Kingdon calls a "focusing event" (1984:99-105).[5] For policymakers, Bhopal highlighted the significance of longstanding concerns of the toxic victims movement -- emergency preparedness in the face of toxic chemical accidents and the right of community residents to know about toxic exposure health risks posed by neighboring facilities. For policy specialists already aware of these issues, the Bhopal tragedy reinforced awareness created by past disasters and was a useful means to communicate concern to others. Bhopal alerted policymakers not well versed in the area to the existence of a problem that, upon closer examination, caused many to see grounds for action.

Bhopal also forced the chemical industry to seize initiative in addressing the question of chemical emergencies and related public concerns. In the first half of 1985, the Chemical Manufacturers Association began a voluntary program for its members called Community Awareness Emergency Response (CAER). The program called upon CMA members to work with local authorities to develop emergency plans for chemical accidents in their communities and to inform citizens about these plans.

The CMA clearly considered chemical emergencies legislation inevitable and used its CAER program to shape legislation. In June 18, 1985 congressional testimony, the CMA proposed that legislation should establish local emergency

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chemical accidents" (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 167:H11204). A New York Times op-ed piece entitled "To Avoid a Bhopal in the U.S." cited an EPA estimate of 1,400 toxic chemical accidents each year (Sheiman and Doniger, 1985:A31).

[5] In his study of how policymakers set their priorities, Kingdon found that certain events 1) focus the attention of policymakers on a known problem, 2) serve as warning of possible future problems, or 3) recur often enough to capture their attention (Kingdon, 1984:99-105). "Crises, disasters, and other focusing events...reinforce some preexisting perception of a problem, focus attention on a problem that was already 'in the back of people's minds'..[Or] sometimes a disaster or crisis serves as an early warning; attention is called to something that could be considered a problem if subsequent consideration really establishes that there is a widespread condition that needs attention" (Kingdon, 1984:103). Finally, a combination of focusing events or an "aggregation of disasters" (Kingdon, 1984:104) may push a certain problem high on to the agenda of policymakers.

planning mechanisms of the sort created through CAER. It also proposed the establishment of a committee in each state that would designate "local Emergency Response Committees" (U.S. Congress. Senate Committee on Small Business, 1985:132). The function of State Emergency Response Committees and Local Emergency Planning Committees eventually established by EPCRA bears a clear resemblance to that proposed by the CMA for its CAER committees.

For sponsors of toxic emergency and right-to-know legislation that was coming up for a vote in the fall of 1985, one of that year's "routine" toxic chemical accidents occurred as if on cue. On August 11, 1985, toxic chemicals accidentally leaked from a pesticide plant in Institute, West Virginia belonging to Union Carbide, the same company responsible for the Bhopal disaster.[6] A toxic cloud drifted up to 10 miles away, forcing 135 people to seek hospital treatment and requiring the temporary shut down of Interstate 64 and other local roads. The emissions were composed of methylene chloride and aldicarb oxime, a Union Carbide pesticide and a derivative of MIC, the same chemical that killed and injured people in Bhopal. One editorial referred to the incident as "Bhopal, West Virginia" (Philadelphia Inquirer, 1985:A8). The incident prompted a congressional hearing.[7] Senator Frank Lautenberg made joint reference to "Institute and Bhopal" during the Senate floor debate that led to the passage of S. 51 (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 117:S11664).

Although nine different congressional committees claimed authority over reauthorization of CERCLA, the Senate Environmental and Public Works Committee

[6] As a producer of MIC, the Union Carbide plant at Institute attracted official attention immediately after Bhopal. An EPA study begun days after the Indian accident found that MIC was "a major source of air pollutants" (Katell, 1985:A10) in the area and that, in five years, there had been 190 accidental chemical leaks from the plant, including 61 releases of MIC (Philadelphia Inquirer, 1985:A8).

[7] On October 2, 1985, the House Committee on Education and Labor held a hearing entitled "OSHA Oversight: Worker Health and Safety at Union Carbide, Institute, WV Facility." All five witnesses who testified before the committee addressed the issue of the August 11 toxic release accident at the plant.

proved to be the most influential in shaping chemical emergency and right-to-know provisions. In March 1985, the Committee unanimously adopted the introduction of the Superfund Improvement Act of 1985 (S. 51). Committee member Senator Frank Lautenberg (D-NJ) was the chief author of the bill. As passed by the Senate on September 26, 1985 (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131, No. 123), S. 51 clearly had a greater influence on the final statute than the corresponding bill that passed the House on December 10, 1985 (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 170). EPCRA's heritage is clear in the organization and wording of S. 51.[8]

On January 3, 1985, members of the Senate Environmental and Public Works Committee reintroduced as the Superfund Improvement Act of 1985 (S. 51) a bill they had sponsored the prior September. As rewritten and reported on May 24, 1985, the bill included emergency planning and right-to-know provisions that had not been included in the earlier version of the bill. The May bill called for the compilation of annual and monthly air and water emissions of hazardous chemicals into a "hazardous substance inventory." It also specified that information be accessible as an online database.

> The President shall establish a toll-free telephone number, operating twenty-four hours a day, that is computer accessible, to respond to telephone inquiries concerning the Hazardous Substance Inventory and the information contained therein. Within 60 days of the establishment of such a telephone line, the President shall inform appropriate State and local officials. (U.S. Senate, 1990:883).

It was not yet clear in the above wording whether the general public was to have online access to such a database.

Lautenberg noted two purposes of S. 51:

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[8] For example, S. 51 as passed on September 26 requires a "hazardous substances inventory" for routine releases. Much like the final statute, it states "The President shall establish and maintain in a computer database a National Toxic Release Inventory based on data submitted under this section. EPA shall make these data available by computer telecommunications to any person on a cost reimbursable user fee basis" (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 123:S12187).

> One is to compile an inventory of hazardous substances being released into the environment on a regular, routine basis. The other is to enable communities to better understand and adequately respond to releases of hazardous substances in their midst (U.S. Congress. Senate Committee on Small Business, 1985:5).

The toxic release inventory would, therefore, require industry reports on routine chemical releases.

While even the CMA conceded the need for a law requiring emergency planning mechanisms and for public access to emergency planning information, an inventory on toxic releases came under fire from the CMA and other industry spokespeople during the legislative debate. The chief point of contention, at least as publicly expressed, was the extent of reporting required of industries. The CMA acknowledged the validity of reporting information required for emergency situations but it balked on reporting of routine chemical releases. More to the liking of the business community was "The Community Right-to-Know Act of 1985" (S. 606) introduced in March by Senator Alfonse d'Amato (R-NY).[9] S. 606 called for the collection of emergency information but not information on routine releases.

The issue of routine as opposed to emergency reporting received a hearing in June before the Senate Committee on Small Business where two competing bills, S. 51 and S. 606, were the center of attention. The hearing was convened and chaired by committee member Sen. d'Amato. Testifying before the Committee, Sen. Lautenberg addressed Sen. d'Amato regarding the difference between his bill (S. 51) and d'Amato's (S. 606).

> I think the primary difference between the proposal you have outlined and the one that we passed through the committee is the concern for routine releases (U.S. Congress. Senate Committee on Small Business, 1985:9).

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[9] It is evident that business groups appropriated the politically useful term "right-to-know" for their own purposes. The "right-to-know" part of the law came to refer exclusively to the business-supported public access to emergency information provisions of EPCRA rather than to the release inventory. Information about routine emissions made available by the inventory has, however, proved to have been of greater public value than the emergency information.

Industry representatives who spoke before the committee insisted that emergency planning was the issue at hand and accepted the validity of collecting information limited to emergency matters. They argued, however, that a releases inventory would impose unnecessary burdens on industry for no clear or useful purpose. Eugene R. Humphrey, president of a chemical company in New Haven, CT testified "Apart from the burden included, I believe that the extensive information would serve no useful purpose to the emergency authorities that would receive it" (U.S. Congress. Senate Committee on Small Business, 1985:63-64). A lobbyist for the Independent Lubricant Manufacturers Association argued that the inventory imposed excessive reporting costs on industry and did not help protect the public (U.S. Congress. Senate Committee on Small Business, 1985: 65-72).

The Chemical Manufacturers Association submitted a formal statement but did not send a representative to the hearing. In the statement, it contended that

> ...while police, firefighting and emergency response officials have an interest in data that would enable them to respond more effectively to an emergency release of an acutely hazardous chemical, they have little use for information regarding total annual stack emissions, fugitive emissions or water discharges. The profusion of irrelevant information will be confusing and will detract from effective emergency response to acutely hazardous emergencies (U.S. Congress. Senate Committee on Small Business, 1985:131).

At the same hearing, general support for the inventory came in testimony from Martha Broad of the National Resources Defense Council and John O'Connor of the National Campaign Against Toxic Hazards. (U.S. Congress. Senate Committee on Small Business, 1985:90-113). Sen. d'Amato cut short the verbal presentation by O'Connor, an opponent of S. 606, with repeated interventions and finally a time limit. In the prepared statement that he was unable to read aloud, O'Connor wrote

> Senator, your proposal, S. 606, gives government officials information they need to combat accidental chemical releases, but unfortunately does nothing to help citizens battle the larger toxic chemical problem of everyday operating releases of millions of tons of chemical pollutants into our air, water and soil. The d'Amato proposal gives us roughly the same information that many chemical companies are giving to communities voluntarily. Unfortunately, S. 606 is the weakest proposal in Congress and is neither good for the public

> health nor good for the long-term health of the economy. Language already adopted by the Senate Environmental and Public Works Committee in S. 51 is a more helpful and valuable tool in solving the toxic chemical crisis we face. If the d'Amato proposal is accepted by the Congress, Americans will not have their right to know about toxic chemicals secured into the law (U.S. Congress. Senate Committee on Small Business, 1985:112-113).

While the chemical industry and other affected businesses clearly hoped that d'Amato's "Community Right-to-Know Act of 1985" might be able to seize the right-to-know banner and divert demands for public access to information on routine toxic releases, S. 606 failed to gain any significant support. On September 26, S. 51 easily passed the Senate by a vote of 86 to 13 (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131, No. 123).

Efforts to pass the toxic right-to-know provisions of the law were far more tightly contested in the House of Representatives. There, all attention focused on an amendment introduced by Rep. Bob Edgar (D-PA) and Rep. Jerry Sikorski (D-MN) in early December 1985. The Edgar-Sikorski amendment called for adding to the list of reportable substances those chemicals "known to cause or suspected of causing cancer, birth defects, heritable genetic mutations, or other chronic health effects in humans" (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 167:H11591). The wording "other chronic health effects" came under fire for embracing too many chemicals, posing too great a reporting burden on facilities and creating an unmanageable amount of information. Rep. Al Swift objected that "It will bury most communities under a volcano of annual reports...The Edgar amendment requires so much more information on so many more substances that it will make it all but impossible for all but the most sophisticated local governments to be able to absorb and handle that information" (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 170:H11591). Rep. Dan Coats (R-IN) complained that the Edgar-Sikorski amendment would require reporting on up to 2,500 substances and produce serious paperwork problems (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 170:H11201). Rep. John Dingell (D-MI) continued to complained that 2,500

substances "What you are going to do is drown these unfortunate local communities in paperwork" (Congressional Record. 1985. 99th Cong., 1st Sess. Vol. 131. No. 170:H11201). After assurances from its sponsors that the number of substances covered by their amendment was far less than 2,500, the Edgar-Sikorski amendment passed by a whisker on December 10, 1985 with 212 yeas and 211 opposed.

In 1986, two conference committees formed to work out differences between the House and Senate superfund reauthorization bills. A right-to-know subgroup worked out public disclosure aspects of the law. Passage came in October, first in the Senate on October 3, 1986 (88 for, 8 against, 4 abstentions). Republicans Dole and d'Amato suggested there was a possibility of veto by President Ronald Reagan but encouraged the President to sign the bill (Congressional Record. 1986. 99th Cong., 2nd Sess. Vol. 132. No. 135:S14937,S14938). On October 8, the bill cleared the House with 386 in favor, 27 opposed, and one "present". On October 17, 1986, Ronald Reagan signed SARA into law with terse remarks on the methods for funding the Superfund but no reference to EPCRA or any of the other amendments attached to the law.[10]

SARA was a mammoth and complex piece of legislation.[11] Relatively speaking, Title III or EPCRA was a small part of the law and did not receive as much scrutiny by business and industry lobbyists as did "bottom line" provisions in other parts of SARA.

> Most of the attention of lobbyists from all sides was on the tax and liability provisions of the Superfund..[the few who focused on Title III were] more

[10] Pres. Reagan noted that his approval of the law hinged on the fact that the Superfund would be paid for by limited taxing of businesses and not by a broad-based tax. In twelve sentences, he mentioned only one political issue: the cleanup of hazardous waste sites. (U.S. General Printing Office, 1986:1412)

[11] Title I and Title II address a myriad of hazardous waste site issues including cleanup scheduling, cleanup standards, liability standards, and criteria for prioritizing cleanup sites. Title IV, called "The Radon Gas and Indoor Air Quality Research Act of 1986", authorizes research and development on radon gas pollution. Title V, or the "The Superfund Revenue Act of 1986", specifies tax mechanisms to be used for financing Superfund cleanups.

> interested in the amount of information to be reported and trade secrets provision (Bass, 1990:4).

As a subsection of Title III (EPCRA), the provisions that created the Toxics Release Inventory in Section 313 had the benefit, for its supporters, of being an even smaller target.

The initiative for including a passage that would decisively shape the form of TRI appears to have come from a Senate staffer. Ronald Outen, a staff member of the Senate Environment and Public Works Committee, wrote the passage of S. 51 introduced in March 1985 that required the establishment of a publicly accessible national toxic releases database. Outen thought such a database had challenging power ramifications and did not expect it to survive the legislative redrafting process.

> I always thought the database requirement was the most revolutionary aspect of the bill. There was no precedent in environmental law for a requirement that a regulatory agency build a database specifically for public access. I thought surely someone would recognize the power embedded in that requirement and that it would not survive (quoted in Bass, 1990:4).

Outen worked closely with a few EPA officials who supported the idea of a public access database to make sure that the database provision remained in each draft of the bill (Bass, 1990).

The Statute

Although this study focuses on the Toxics Release Inventory, the Inventory is only one of several major outcomes of EPCRA. The provisions implemented under EPCRA function in two interrelated ways. First, they set up emergency planning mechanisms, including means of providing useful information to emergency planners and fire departments. Second, they provide various means for community residents to find out about the presence of toxic chemicals in their communities, including those emissions reported to TRI.

The emergency planning sections of EPCRA ordered the establishment of new government planning bodies at state and local levels. The law requires that each state government establish a State Emergency Response Commission (SERC). In turn, the

SERCs must set up a Local Emergency Planning Committee (LEPC) in each locality of their states. Each LEPC must develop and annually update a plan to prepare and respond to local toxic chemical emergencies. The SERCs and LEPCs are, with a minor exception noted below, required to make publicly available information submitted to them by facilities.

Section 313 of EPCRA, the heart of TRI, orders facilities annually to report their toxic chemical releases into the environment to EPA. As information regarding a facility's routine chemical releases, TRI data is distinct from information reported under EPCRA's other four reporting requirements. The data in the other four reports (required in Sections 302, 304, 311 and 312) may be characterized as emergency information. The emergency reports are intended to help emergency planners try to avert accidents and to assist emergency workers, especially fire fighters, in the event of accidents.

Section 302 of EPCRA requires that any facility in the country with an extremely hazardous chemical[12] present on its premises over certain weight thresholds notify its LEPC and SERC. (EPCRA, Pub. L. No. 99-499, title III, sec. 302, 100 Stat. 1730). In addition, if there is an accidental off-site release of such a chemical, the facility must, under Section 304, immediately notify the community emergency coordinator of the LEPC (EPCRA, Pub. L. No. 99-499, title III, sec. 304, 100 Stat. 1733).

Section 311 of EPCRA requires facilities covered by the OSHA Hazardous Communication Standard (HCD) to keep its local fire department, LEPC and SERC informed in either one of two ways. A facility must either submit a list of chemicals on its premises grouped according to 20 different risk categories, or it must submit

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12 A list of 402 chemicals identified as extremely hazardous in a November 1985 EPA directive was used as the basis for identifying reportable chemicals in this section.

copies of Material Safety Data Sheets on hazardous chemicals that it produced for OSHA (EPCRA, Pub. L. No. 99-499, title III, sec. 311, 100 Stat. 1736).

Under Section 312, an OSHA-regulated facility must make annual reports to its LEPC. For HCD-reportable chemicals, these reports must indicate the maximum amount and average amount of chemicals kept on site during the year as well as the location of the chemicals inside the facility. A facility may opt to provide only aggregate (Tier I) rather than detailed (Tier II) information. The Tier I reporting option permits categorization of chemicals according to broad risk categories rather than by chemical name. Chemical locations may be indicated in a general rather than a specific manner. The more demanding Tier II option calls for identification of chemicals by name and specification of how and where the chemicals are stored. A facility must provide Tier II information if it is requested by the fire department, LEPC or SERC (EPCRA, Pub. L. No. 99-499, title III, sec. 312, 100 Stat. 1738).

The four emergency reports above are clearly intended to assist emergency planners and fire departments. Knowledge about which hazardous chemicals are located at a site, in what quantity and at what location can be helpful not only for planners in anticipating possible emergencies but for emergency workers in the midst of a crisis.

The law also grants the general public the right to gain access to all reports submitted by facilities to LEPCs and SERCs. Only information about the physical location of chemicals may, at a facility's request, be withheld from the general public. For the purpose of this study's focus on the relationship of knowledge and political power in community-based political conflicts, public acquisition of TRI data tends to be most pertinent. While emergency reports can help community members identify accident risks posed by the presence of hazardous chemicals inside facilities, only TRI data reveals the regular off-site presence of toxic chemicals in the communities surrounding facilities. By revealing on-going patterns of community pollution, TRI

data tend to provide more "stuff" of local conflict than do on-site data contained in the emergency reports.

EPCRA shapes the scope and limits of the public's right to access toxic release data by 1) defining who must report and what they must report, 2) indicating how information shall be publicly disseminated and 3) instituting means to enforce reporting and dissemination requirements. Discretionary powers granted in the law to EPA influence all of the above -- information content, dissemination and enforcement. EPA's implementation of the law and its exercise of these discretionary powers during implementation further shaped the scope and limits of the right to know.

A facility is required to report if all of the following four conditions apply: (EPCRA, Pub. L. No. 99-499, title III, sec. 313, 100 Stat. 1741)

1) It is classified as a manufacturer within Standard Industrial Code range 20 through 39.

2) It has 10 or more full-time employees.

3) It releases into the air, water or land a chemical on the list of about 320 reportable chemicals. This list was based on right-to-know laws in New Jersey and Maryland. Members of the public may petition EPA to add or delete chemicals from the list. EPA is granted authority to modify the list.

4) It uses 10,000 pounds or more a year of any chemical on the list. Or, it manufactures or processes 75,000 pounds or more of any chemical on the list for the report due in 1988; 50,000 for the 1989 report; 25,000 for the 1990 report.

A facility may seek to exempt itself from most EPCRA chemical reporting requirements by claiming that disclosure would force it to reveal trade secrets. The law specifies extensive review procedures for trade secret claims.

The law specifies that each chemical report from a facility shall

> (A) provide for the name and location of, and principal business activities at, the facility;
>
> (B) include an appropriate certification, signed by a senior official with management responsibility for the person or persons completing the report, regarding the accuracy and completeness of the report; and
>
> (C) provide for submission of each of the following items of information for each listed toxic chemical known to be present at the facility:
>
> (i) Whether the toxic chemical at the facility is manufactured, processed, or otherwise used, and the general category or categories of use of the chemical.
>
> (ii) An estimate of the maximum amounts (in ranges) of the toxic chemical present at the facility at any time during the preceding calendar year.
>
> (iii) For each wastestream, the waste treatment or disposal methods employed, and an estimate of the treatment efficiency typically achieved by such methods for that wastestream.
>
> (iv) The annual quantity of the toxic chemical entering each environmental medium (EPCRA, Pub. L. No. 99-499, title III, sec. 313, 100 Stat. 1741).

The general public has a right to access all information submitted by facilities under Title III, with the possible exception of the physical location of chemicals at a facility (EPCRA, Pub. L. No. 99-499, title III, sec. 324, 100 Stat. 1752).

Title III sets a legal precedent by mandating that the TRI database be online and publicly accessible. It orders the EPA to

> ...establish and maintain in a computer data base a national toxic chemical inventory based on data submitted to the Administrator under this section. The Administrator shall make these data accessible by computer telecommunication and other means to any person on a cost reimbursable basis (EPCRA, Pub. L. No. 99-499, title III, sec. 313, 100 Stat. 1741).

EPCRA gives some "teeth" to its reporting requirements by providing for citizen suits and for penalties against non-reporters. Citizens and government bodies can sue facilities for not submitting toxic chemical release forms (and other reports required by EPCRA). Fines of up to $25,000 a day may be levied against facilities that fail to file release forms.

Citizens may also sue government bodies that receive facility reports for not making them publicly available. The law also specifies that citizens may sue EPA for not responding to a petition to modify the list of reportable chemicals and for not

establishing the above computer database (EPCRA, Pub. L. No. 99-499, title III, sec. 326, 100 Stat. 1755).

The law gives EPA discretionary authority over changes to the list of reportable chemicals and to the Standard Industrial Classification Codes codes covered by the law. EPA may either add or delete chemicals or SIC codes from reporting criteria (EPCRA, Pub. L. No. 99-499, title III, sec. 313, 100 Stat. 1755).

Setting up the Toxic Release Inventory

The Toxic Release Inventory did not become publicly available until June 19, 1989. In the intervening 32 months following passage of the law, EPA laid the groundwork for its implementation. During this phase the outcome of TRI was far from certain. Outen recalled

> At the time the bill passed, only a handful of people knew that the TRI provision was in it. It seemed to have little support. Very few people, I think, recognized its potential. It was like a boulder pushed off a hillside. It might start a landslide, or it might just lodge somewhere and do nothing. For the first year after it passed I was far from certain it would amount to anything. (quoted by Bass, 1990:5)

The Working Group on the Right to Know, a coalition of environmental activists that lobbied EPA during the TRI implementation process, pressed EPA to provide online database access directly out of EPA. It hoped to establish a precedent for online access to EPA data that could eventually be extended to many of EPA's other in-house databases. EPA, however, opted to provide access through the National Library of Medicine, citing technical and informational reasons. It was noted that the NLM, unlike EPA, had technical expertise in providing online public access to computer databases because of its long experience with the Medical Literature Analysis and Retrieval System (MEDLARS), a system of public access to 28 public health-related databases. EPA also argued that, by placing TRI on MEDLARS, users could also access a series of MEDLARS databases on toxic chemicals known as TOXNET.

The Working Group on the Right to Know also pressed EPA to provide more than a 'bare-bones' data access system, requesting statistical analysis, mapping and various other features. EPA acknowledged a choice between three database designs, ranging from the bare minimum required by the law to levels with additional features. In the end, citing "funding constraints", EPA chose only to fulfill the minimum data access requirements of the law (Goldman, 1989:12).

EPA produced a list of 328 reportable toxic chemicals and created chemical release inventory forms -- known as Form Rs -- with 66 pieces of data to be submitted by each reporting facility for each reportable chemical. July 1, 1988 was set as the deadline for submission of the first toxic release data by industries to EPA and to the SERCs. Official public access to TRI began on June 19, 1989 when EPA inaugurated on-line computer access to the data. The database contained approximately 75,000 reports from 18,000 facilities (Elkins, 1989:6).

Online access to annual TRI filings is currently available on the National Library of Medicine's MEDLARS system for $18 to $25 an hour. RTK Net, a non-profit group provides on line access to several hundred users, including many environmental activists. It is supported through a combination of funding from EPA and foundation sources.

In addition to setting up online database access to the data as required by the law, EPA also made the national data set available on magnetic tape, compact disks (CD-ROMs) and microfiche. CD-ROMs were distributed to over 500 depository libraries and eight regional libraries. Data on individual states was made available on computer diskettes and on microfiche.

Use of TRI and the Toxic Power Relationship

Congress clearly intended that EPCRA help government officials develop grounds for regulating polluters and inform people living near reporting facilities about toxics released into their environments. As specified in the law

> The release forms required under this section are intended to provide information to the Federal, State, and local governments and the public, including citizens of communities surrounding covered facilities. The release form shall be available...to inform persons about releases of toxic chemicals to the environment; to assist governmental agencies, researchers, and other persons in the conduct of research and data gathering; to aid in the development of appropriate regulations, guidelines, and standards; and for other similar purposes (EPCRA, Pub. L. No. 99-499, title III, sec. 313, 100 Stat. 1741).[13]

Goldman predicted that other prospective users would be "environmental researchers, lawyers, pollution control equipment manufacturers, public libraries, hazardous waste brokers and transporters, real estate developers, insurance firms, etc" (1989:19).

Since the first unprocessed Form Rs became available in 1988, actual uses of TRI data have been wide-ranging and far-reaching. Used extensively by industries[14], government agencies[15, 16] and citizens opposed to toxic exposure, the Toxics Release

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[13] According to the General Accounting Office, Congress intended "that the TRI would give the public unprecedented access to environmental data that it could use to prompt industry to control emissions..[and] to serve as a tool for government regulators to better measure the success of environmental programs and to help them work with industry to identify ways to reduce pollution." (United States. General Accounting Office, 1991:2)

[14] The General Accounting Office study of TRI found that industry was the biggest user of the EPA's Toxics Release Inventory database (U.S. General Accounting Office, 1991:37-38).

[15] Charles Elkins, director of EPA's Office of Toxic Substances, indicated that the data were useful for identifying areas in need of research and official action. He wrote

> From a regulatory standpoint, the value of TRI data lies primarily in their ability to pinpoint specific facilities, industries, or geographic areas of particular concern for further investigation and follow-up action. (1989:6)

The data helped specific EPA offices in their functions. They help the Office of Water to spot water pollution permit violators and to set standards for water quality. They help the Office of Toxic Substances narrow down "candidates for regulatory investigation" and to "verify production estimates for asbestos and other regulated chemicals." They help the Pollution Prevention Office a means to assess its strategy and needs for further research needs (1989:5).

As an example of TRI's utility for his office, Elkins cited TRI reports on air releases of epichlorohydrin, a chemical that can cause liver or kidney damage or cause a fatal accumulation of fluid in the lungs. EPA had thought there were only 20 facilities in the country releasing the chemical into the air. The first cycle of TRI reports revealed, however, that were 70 separate emitters of the chemical. As a result, his office was "taking another look" at actions it might take (1989:5).

One direct consequence of TRI has been the 33/50 Program in which EPA asked TRI reporters to voluntarily cut their emissions of a selected 17 chemicals one-third by 1992 and a half by 1995.

[16] TRI-based publicity has also had an impact at the state level, especially in states with high national rankings for TRI releases. For example, "Louisiana, a state dominated by industry resistance to environmental regulation, passed its first comprehensive air pollution standards in the wake of the public outcry over data generated by the TRI" (Ochsner, 1992:72-73).

Inventory has received high praise from many observers and data users. EPA Administrator William K. Reilly stated that "The impact of TRI has far exceeded our expectations as a tool for improving environmental management. This is a great tribute to the vision of its Congressional sponsors."[17] Elsewhere Reilly noted "The Toxics Release Inventory is fast becoming one of the most powerful tools we have to reduce toxic emissions" (quoted in Holusha, 1991b). New York Times' reporters have hailed TRI as "one of the most potent tools of the state and Federal governments, as well as community groups, for identifying the nation's largest polluters and putting pressure on them to reduce emissions" (Schneider, 1991b:A32) and as "nothing less than a 'revolution' in how society deals with dangerous substances" (Shabecoff, 1988 quoted in Goldman, 1989:1). Deborah A. Sheiman of National Resources Defense Council asserted that "The right-to-know law has done more to advance the cause of toxic air pollution control than twenty years of the Clean Air Act" (1990:21). TRI regulations have served as model legislation for other countries.[18] At the time of this writing (1995), the EPA is in its sixth annual cycle of public dissemination of TRI reports.

More relevant to this study, TRI-based knowledge has been identified as an important factor in an increase in community-based pollution protests.

> A new form of environmental protest is spreading through the country as thousands of people band together in small community groups. Their target is usually pollution by local industrial plants, employers traditionally respected but now reviled as poisoners of the neighborhood.
>
> People with no previous interest in environmental issues or other civic affairs are often leaders of these grass-roots efforts. Since their targets are frequently smokestacks visible from their front doors, the new protests include many from the working class in addition to more affluent people who can afford to live farther away (Suro, 1989).

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[17] Quoted in Working Notes on Community Right-to-Know newsletter, November, 1990, page 1.

[18] Canada and several European countries have begun programs modeled after TRI. At the 1992 Earth Summit in Rio de Janeiro, 170 countries stated support for the principle of the citizens' right to know about community-based toxic releases.

The relatively limited purpose of this study is to use the TRI-related community-based conflicts presented in the next three chapters to explore the relationship between knowledge and political power. What is pertinent here is to briefly consider the effect that EPCRA's authorization of TRI had on the toxic power relationship at the community level. What potentialities did TRI introduce into the toxic power relation that did not exist before?

As suggested in Chapter 1, the scale of toxic power relations ranges from the neighborhood up to the national and even the international level. The first thing that must be noted about TRI as a window on national toxic power relations in the United States is its relatively tiny focus. If A refers to that class of persons who make toxic use decisions and B to that class of persons adversely affected by toxic use decisions, TRI offers only a small picture of the overall toxic power relation between A and B. Neither the number of chemicals covered nor the classification of toxic users was sufficiently broad to satisfy toxic opponents. TRI, they said, exposed only the "tip of the toxic iceberg."[19] An Office of Technology Assessment study estimated that the Toxic Release Inventory failed to document as much as 95% of the country's total toxic emissions (U.S. General Accounting Office, 1991:3). Environmental author and activist, Benjamin Goldman asked

> Why should only 400 out of 60,000 chemicals in commerce be included in TRI? Why should chemicals be measured solely in pounds when some are thousands of times more toxic than others? Why should acute poisons be compared with carcinogens?...Why should military and urban sources of toxic air releases not be compared with industrial sources? (Goldman, 1990:11)

As labor unionist Eric Frumin told attendees of an EPA conference on TRI, "We all know that the existing TRI has loopholes big enough to sail the Exxon Valdez through" (Frumin, 1992:7).

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[19] Rob Stewart, U.S. Public Research Interest Group, workshop at the Right to Know More Conference. The "tip of the toxic iceberg" was a phrase used by various participants at the conference. Tape recorded by author, Washington, D.C., February 1, 1992.

Granted the incomplete scope of TRI, how did toxic release reporting requirements constrain or create possibilities in that portion of the toxic power relation embraced by the law?

When EPCRA became law in 1986, it restructured the toxic power relationship to the extent that it ended manufacturers prerogative to withhold information that could be politically useful to people who were tangibly or unwittingly exposed to toxic chemicals that they used or released into the environment. Through the state, B (toxic exposure opponents) increased their potential leverage against A (the nearly 18,000 toxic users that chose to comply with the law). On a national scale, the law granted new opportunities for B and deprived A of an old capacity, its power to withhold information.

As is normally the case in a hotly contested outcome, the passage of EPCRA and the authorization of TRI in 1986 was neither as good nor as bad as it might have been for either party. Nevertheless, it was a major victory for anti-toxic activists and a resounding defeat for industry. When it ordered all manufacturers in the country with 10 or more employees to disclose for public dissemination their releases of toxic chemicals, the state effectively intervened in the general interests of B. High-polluting industries had nothing to gain from informing the public about their toxic releases (what their economists would label a "negative externality") and plenty to lose. Possible results included greater vigilance from regulatory agencies, bad publicity, and conflict with environmentalists and local communities. A certain result was the loss of time and money. Industries found themselves saddled with the kind of paperwork burden that the Reagan Office of Management and Budget had been slashing from many programs in its deregulatory measures. The EPA estimated that first year industry reporting costs nationwide would total about $591 million, or about $13,000 per facility (and $9,000 per facility in subsequent years) (Hadden, 1989:165). Charles Elkins, EPA director of the Office of Toxic Substances, estimated that a single facility

would require two employees working a total of 400 full time hours in order to complete the forms (Grillo Olson, 1988:8). A relatively small firm in Harriman, New York found this to be an underestimate, requiring 1400 hours valued at $40,000 in order to complete its first year reports (Grillo Olson, 1988:8).[20]

As a victory by B over A, EPCRA shows the weakness of Lukes' unilateral model of power and the need for an interactive model more along the lines proposed by Gaventa. And, in a way not explicitly addressed by Gaventa, there is a need to understand B's actions not only as challenges to A's power, but as exercises of power by B over A. There is a need for a power model that defines B's successful challenge to A's power as a form of empowerment.

If for no other reason, the present analysis needs to incorporate a concept of empowerment because empowerment was one of the intended goals of EPCRA. While not explicitly stated, citizen empowerment was an integral part of Congress' intent in passing EPCRA. According to Rest, Congress hoped that "local communities would become better prepared to handle chemical emergencies and that they would become empowered to participate in the control of hazardous chemicals within their borders in order to prevent future harm" (1990:v). The intent to empower at the local level is suggested by the formal inclusion of "Community Right-to-Know" in the title of EPCRA. Congress gave some substance to its "intent to empower" (1990:43) by enabling citizens to access toxic release data and to sue facilities that failed to report releases covered by the law (1990:16).[21] The requirements to include media and

[20] The time-consuming nature of Form R reporting has much to do with the numerous emissions calculations required from each facility. For each reportable chemical, facilities must estimate the number of pounds discharged annually as fugitive air emissions, air stack releases, and discharges to streams or water bodies. Facilities must also estimate the annual amount of each chemical released into the land through underground injection, on-site landfills, land treatment, surface impoundment or by other means. Facilities must also report the number of pounds transferred as waste to off-site locations and the kind of waste treatment method used.

[21] Along with citizen empowerment, Rest lists three other statutory goals of EPCRA: emergency preparedness, accident prevention, and pollution prevention (Rest, 1990:vi).

community group representatives on Local Emergency Planning Committees also showed an intent to give citizens some power over local emergency planning activities.

The capacity of A most fundamentally affected by the toxic release reporting requirements of EPCRA was its power to conceal chemical-specific information regarding its toxic releases into the environment.[22] Party A had been able to use this concealment capacity to its advantage in all three dimensions of power. Where B was unaware of toxic exposure, the law now removed A's third dimension ability to limit the B's consciousness of exposure. Where B already had pollution grievances but did not know chemical character of their exposure, the law removed a second dimension advantage of A to obscure definition of the problem on the public agenda. Similarly, A's capacity to conceal the specific nature of toxic use decisions helped preserve its first dimension prerogatives to make those decisions.

The potentially advantageous effects of the right to know for B (exposed parties) mirrored the disadvantages experienced by A (toxics users). Where, unbeknownst to B, there had been a latent conflict, B gained the capacity to discover the existence of its toxic exposure could and thereby overcome B's third dimension control. In the second dimension, new or longstanding parties to overt conflict gained the capacity to obtain information that could serve as ammunition to gain public and political credibility for grievances. In the first dimension, B became capable of acquiring knowledge that

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[22] One of the foundations of the facilities' capacity to conceal chemical-specific information had been their trade secret arguments. During debate over passage of the law, industry opponents made much of trade secrecy rights and trade secret claims were permitted under the law. TRI effectively revealed the shaky foundations of these arguments and virtually eliminated industries' capacity to use them any longer. Among the 74,000 Form Rs submitted in the first cycle, only about 200 made trade secret claims. Following EPA review, most of the 200 claims were withdrawn or denied according to Edward J. Hanley, director of EPA Office of Information Resources Management (1989:4).

The vacuity of the trade secret argument had become clear to right-to-know advocates in the 1970s' debates over workplace disclosure of chemical information. For example, during National Labor Relations Board deliberations in that period, one company conceded that trade secrets were not really an issue. Firms wishing to learn the chemical components used by competitors could always use reverse engineering, or determine the chemicals through lab analysis (Morse, 1987:562).

might be compelling enough for B to win effective redress from government or facility decision-makers for toxic exposure grievances.

Some benefits of EPCRA accrued for B soon after passage of the law. Fear of regular, annual TRI-related publicity prompted some companies to voluntarily commit themselves to toxic use reduction schedules before the public inauguration of TRI. According to the Working Group on the Right to Know, "Right-to-know reporting rules for toxic releases have spawned an unusual competition among the nation's leading manufacturers: the rush to reduce. Company after company has taken the pledge to cut industrial toxic emissions." The chair of Monsanto Chemical, for example, publicly pledged in June 1988 that by 1992 Monsanto would cut its air pollution to 90% of the level it reported to TRI for 1987 (Working Notes on Community Right-to-Know, December 1990:1).

For a year or two after the inauguration of TRI, the large amounts of toxic chemicals reported released had great news value. As bad publicity for A, this sometimes created a public climate favorable to B. The national tone was set by the EPA early on. On April 12, 1989, in the EPA's first public comment on the initial cycle of Form R submissions, an EPA spokesperson called the release amounts "unacceptably high and far beyond the expectations of agency specialists...The numbers are startling. You can't look at these numbers and not say there must be a way this country can do its business better..." (Weisskopf, 1989:A33). Best situated to exercise the new capacities created by the law were already established environmental and public interest organizations. At national, state and city levels, many of these groups produced analyses of toxic releases, often ranking and targeting for anti-toxic action the largest polluters.

For national toxic opponents, special potential existed in the fact that a single public access computer data base contained the release data for the entire country. It made possible a great variety of national analyses that could, in turn, allow local

communities to view their situations in a national perspective. For environmental activists, TRI has become one of the building blocks for a political strategy called Toxic Use Reduction (TUR). TUR aims at the heart of toxic power by pressing toxic users to significantly reduce or eliminate their use of specific toxic chemicals. TRI data is an indispensable part of such a strategy because annual release reports provide criteria by which to determine whether or not emission reductions are occurring.

The fact that organized anti-toxic groups had been well-situated to make political use of TRI was reflected in the enthusiasm expressed by anti-toxic activists from around the country who attended the national Right to Know More Conference in Washington in February 1992. Although typically couching praise in criticism, some members of public interest organizations who had used TRI data to target polluters spoke in adulatory tones when referring to the TRI program. Speaking informally, Ted Smith, director of the Silicon Valley Toxics Coalition, said

> What we're really dealing with here is the power of information, the power that can lead to structural changes, that can help us bring about the environmental justice and democracy that we're really working for. I think it [EPCRA] is one of the most important laws that's ever been passed. It allows us to get that kind of information out to people.[23]

Rob Stewart, a member of the U.S. Public Interest Research Group in Washington, told a workshop at the conference that

> TRI is an incredible advocacy tool that can be used to support particular toxic control measures as well as what we're really after which is toxic use reduction or prevention. The real trick is to realize that those people opposed to such things knew back in 1986 when they were lobbying fiercely against the right to know that this information is probably the most powerful information that we have.[24]

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[23] Tape recorded by author, Washington, D.C., February 1, 1992. Smith was one of the first anti-toxic activists in the country to make effective political use of the data. Well in advance of the TRI's national release, Smith obtained from a state agency data for Santa Clara County in the fall of 1988. Publicity given to the Coalition's report on the county's "Dirty Dozen" marked the beginning of a series of local conflicts over the content and extent of TRI-reported releases.

[24] Tape recorded by author, Washington, D.C., February 1, 1992. As a member of the New Jersey Public Interest Research Group in Trenton, Stewart produced analyses of toxic releases in New Jersey using data obtained through TRI and through the New Jersey right-to-know law. According to Stewart,

Jim Jenal, director of the Clean Air Program of Citizens for a Better Environment in Los Angeles, spoke to conference attendees about

> the truly miraculous nature of what we're doing. We're working with a law compelling some of the most powerful corporate entities in the world, literally, to turn over to us information that casts them in a very bad light.[25]

In the past several years, anti-toxic activists have found the mere size of reported releases have lost much of their public "punch". For one thing, the overall amounts of releases reported by industries have declined. Various reasons are cited for the decline. Many environmentalists allege that reported decreases in toxic releases are "phantom reductions" or "paper reductions." They result, it is argued, from loopholes in reporting requirements or lack of means to make companies accountable for the accuracy of their reports. The economic recession and cutbacks in manufacturing during recent reporting periods are also used to explain the reductions. Industries, on the other hand, have used the reductions to their political advantage, taking credit for improved environmental records.

Conclusion

Environmental organizations that participated in the long toxics right-to-know struggle and other public interest groups with a strong organizational base were often well-situated to develop TRI data and use it to politically engage polluters. The rich body of experience accumulated by such groups in their use of the data offers much research material for empirical analysts. This study, however, focuses on community-based groups directly exposed to environmental toxic releases reported to TRI. Members of these groups were not in any way predisposed to use TRI data by broad environmental concerns. This levels the playing field, as it were, to citizens whose

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these analyses were key tools in lobbying efforts that succeeded in passing the strongest pollution control measure in the country and one of the country's strictest toxic use reduction laws.

25 Tape recorded by author, Washington, D.C., February 1, 1992. Jenal developed Los Angeles TRI data used in a campaign against ozone-depleting chemicals and in efforts to press specific companies to reduce their toxic releases.

opposition to toxic exposure was based not on political or career commitments but exclusively on the misfortune of living within the immediate vicinity of toxic air releases. It is hoped that, in this way, the study will be relevant to a broader class of political knowledge situations in which average citizens confront knowledge problems that test their capacities to transform knowledge into a tool of political empowerment.

Chapter 3: The Northfield, Minnesota Case

The Northfield Story

This chapter explores the relationship between political power and TRI-related knowledge in the case of protests against human exposure to a probable carcinogen used by the Sheldahl Corporation in Northfield, Minnesota. Compared to the auxiliary role that TRI-related knowledge played in the empowerment of protesters in Brooklyn (Chapter 4) and the null role in Marcus Hook (Chapter 5), this chapter finds that such knowledge played a seminal role in Northfield.

The chapter is divided into two sections. The first section tells the story of the political conflict over human exposure to methylene chloride, a probable carcinogen, while the chemical was either used inside Sheldahl or emitted into the air outside the facility. The second section uses Lukes' three dimensions of power framework as a point of departure for a power-based interpretation of events as they concern the use of TRI-related knowledge. It tests the utility of this framework for analysis of the politically empowering value of knowledge in the case of the above conflict.

Northfield Summary of Events

As early as 1979, excessive exposure to methylene chloride was an official grievance of members of the Amalgamated Clothing and Textile Workers Union (ACTWU) at the Northfield, Minnesota plant of Sheldahl, Inc. When, in the mid-1980s, animals tests indicated that methylene chloride was a carcinogen, ACTWU's Local 1481 pressed the company to reduce or eliminate its use of the chemical. While the union succeeded in getting the company to monitor health effects of worker exposure to various chemicals in 1987, the company refused to reduce its use of methylene chloride.

In 1989, the media in Northfield and the nearby Twin Cities reported a Natural Resource Defense Council (NRDC) analysis of the first TRI data. The report indicated

that Sheldahl's emissions of methylene chloride made it one of the country's largest emitters of airborne carcinogens. This news was a revelation to most people in the community and sparked organized opposition. A heated conflict ensued over local exposure to methylene chloride. After initial friction among union workers and community opponents, a coalition formed that included the labor union, community groups and scientists from local colleges who helped conduct risk assessments. The company announced that it had already developed a plan to reduce its use of the chemical after the initial publicity given to the NRDC report. After groping for an opposition strategy, opponents of exposure to the chemical agreed that the company's toxic use reduction plan was basically viable. Thereafter, the coalition played a significant role in shaping a union contract and a state pollution permit that formally committed Sheldahl to implement its toxic use reduction plan. TRI reports available through 1991 indicate major reductions in airborne releases of methylene chloride by Sheldahl in 1990 and 1991.

Background

Northfield, Minnesota is a small college town located in a rural area about 40 miles south of Minneapolis and St. Paul. Among its 14,500 residents are 3,000 students attending Carleton College and St. Olaf College and several hundred Ph.D.-toting faculty members, including dozens of scientists.

Sheldahl is a publicly-owned producer of flexible electronic circuit boards for the automobile, aerospace and defense industries. The two colleges and Sheldahl are the top employers in Northfield.

Many of the manufacturing operations at Sheldahl's two Northfield plants involve the use of toxic chemicals. The 700 members of Local 1481 of ACTWU had a long history of grievances against the company regarding their exposure to toxics. A union analyst who informally surveyed health complaints among Sheldahl workers in 1984 noted:

> They reported eye injuries, rashes, "getting high", headaches (constant), nausea, vomiting, weekly bouts of eye tearing, eye and nose irritation, nose pain, irritability at midday, loss of breath, racing heart[1].

Sheldahl's use of methylene chloride dated back to the late 1950s (Battig, Interview) and was vital to its laminating and coating operations. Workers at the facility had many tangible symptoms from their exposure to methylene chloride in the workplace. Terry Martin worked at Sheldahl for 14 years, was a president of Local 1481 and, at this writing, is a full time ACTWU staff member in St. Paul, Minnesota. She described her reactions to methylene chloride exposure as follows:

> If you got it on your skin it was very cold and it dried your skin off considerably. It was like it took all the oil right off your skin. Also the fumes would cause a "high" or dizziness. You'd go outside and get some air and you'd be OK. But you still might feel a little nauseous (Interview).

Blood tests of workers conducted at various points in the 1980s revealed high rates of exposure to methylene chloride.[2]

Odorless and colorless smokestack emissions also exposed residents in the surrounding community to the chemical but at levels lower than workers. Unable to see or smell the outdoor emissions, people in the vicinity did not report or complain about physical reactions and, for three decades, never knew they existed.

During most of the period that Sheldahl used methylene chloride in Northfield, the chemical had not been associated with cancer. EPA did not designate the chemical a probable carcinogen until 1985. At that time EPA pledged but failed to regulate the airborne emissions of methylene chloride and ten other chemicals it labeled as known or probable carcinogens (Sheiman, 1990:19). When confronted by community opponents with EPA's 1985 determination after the 1989 disclosure, "the company had difficulty explaining why it had not alerted the community...Particularly embarrassing

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[1] From unsigned, handwritten notes regarding conditions of Sheldahl workers contained in files of the ACTWU Safety and Health Department in New York City dated January 25, 1984.

[2] Methylene chloride mimics carbon monoxide in its effect on the blood and can be measured in the bloodstream (Frumin, Interview).

to Sheldahl in this regard was the fact that its Health and Safety Officer, a man who was acutely aware of the problem, had been chair of the Northfield Environmental Quality Commission...and he had never disclosed the emissions and their cancer link to the Commission" (Casper, Undated:A2).

Disputes between ACTWU Local 1481 and Sheldahl management over the issue of toxic chemical exposure in the workplace date back to the late 1970s. The Local requested various OSHA inspections and, in conjunction with its national office in New York, developed programs educating workers on how to deal with hazardous chemicals.

In 1979, Matthew Gillen from ACTWU's national office in New York analyzed toxic chemical hazards for the Sheldahl Local. He recommended minimal exposure to three chemicals used at the facilities known to be carcinogens but indicated that methylene chloride "has not caused cancer in any studies." Regarding methylene chloride, he recommended the Local try to get Sheldahl to adhere to the lowest exposure levels recommended at that time.[3]

In November 1980, the Local's James P. Mangan wrote to Sheldahl management requesting detailed information on chemicals and toxic agents used at its Northfield facilities, including the trade name, the chemical name, the location of its use, and air monitoring results.[4] Sheldahl's personnel director, Beverly Brumbagh, responded that

> We do not believe any constructive purpose would be served by supplying lists of chemicals, their corresponding data sheets, and departments where they are used.: (1) it is a changing list, (2) the crux is not what we use but in what quantities, when, how and under what circumstances and conditions, (3) some of this information is of a confidential trade secret nature as regards competition and (4) unfortunately, lists and names too easily lend themselves to improper

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[3] "Summary of Toxic Chemical Hazards" signed by Matthew (ACTWU, New York) on 8/15/79. Letter from Gillen to James P. Mangan (ACTWU, Twin City Joint Board, Minneapolis), 8/27/79.

[4] Letter from Mangan to Sheldahl, 11/7/80.

use and can thereby generate more confusion and uncertainty than understanding.[5]

Five months later, in a partial concession, the firm sent the union a list disclosing some information about chemicals in use at the factory.[6]

The Local's Richard Metcalf recalled that, in the early 1980s, "OSHA inspectors proclaimed that chemical hazes hanging over entire departments were 'acceptable and within legal limits'. In short, we found ourselves trapped like other workers across the industrial landscape. We were dealing with chemicals that were dangerous, but within the inadequate regulations set by OSHA" (1990:8).

In February 1984, the union requested a NIOSH evaluation of chemical hazards facing workers at Sheldahl. In a series of site visits that year, NIOSH took environmental samples and conducted medical tests of workers. In November, it issued a report that found excessive worker exposure to lead and methylene chloride in two departments of the facility. It recommended that Sheldahl substitute another solvent for methylene chloride, improve ventilation, respirators and gloves for workers, implement a medical monitoring program and take various other precautions (Almaguer and Seligman, 1985).

The first hard evidence associating methylene chloride with cancer emerged from a draft report by the National Toxicology Program (NTP) released in February 1985. The NTP study found that rats and mice exposed to methylene chloride developed cancer. The final report came out in early 1986 (Frumin, Interview).

The results of the NTP study triggered a series of letters between union local representative Pat Cronin and Sheldahl's personnel director Beverly Brumbagh.[7] In

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[5] Letter from Beverly M. Brumbagh (Sheldahl personnel director) to Mangan, 11/24/80 .

[6] Letter from Brumbagh to Mangan, 4/24/81. The list included names of some chemicals (including methylene chloride), their manufacturers and their composition.

[7] Eric Frumin, ACTWU's national director of Health and Safety helped draft much of this correspondence (Frumin, Interview).

April 1986, Cronin expressed concern to Brumbagh that "clear evidence" existed that methylene chloride caused cancer in mice and rats.[8] Brumbagh responded that the NIOSH report was misleading, and noted that "Without methylene chloride the company would not be able to continue most of its laminating and coating operations."[9] In June 1986, Cronin informed Brumbagh that OSHA had now listed methylene chloride as a carcinogen and that this must be reflected in Material Safety Data Sheets.[10] In a July letter, Brumbagh acknowledged that tumors had been found in mice exposed to methylene chloride but he questioned whether they were malignant.[11] Spelling out the cancer risk posed by methylene chloride, Cronin responded "it is apparent the company is still grasping for excuses to avoid the additional effort required to further reduce our members' exposure to methylene chloride."[12]

In November 1986, an industrial hygienist from ACTWU's New York headquarters performed air tests inside Sheldahl. He found methylene chloride present below the 500 parts per million (ppm) limit set by OSHA but above the 75 ppm limit backed by NIOSH.[13]

In its 1987 contract negotiations, the union local made safety, health and medical monitoring a top priority. As part of the 1987 contract, the company agreed to undertake medical monitoring of workers for excessive exposure to toxics.

Because of the varied toxic exposure problems experienced by workers, the company's agreement to monitor workers' health was an achievement for the union.

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[8] Letter from Cronin to Brumbagh, 4/9/86.

[9] Letter from Brumbagh to Cronin, 4/18/86.

[10] Letter from Cronin to Brumbagh, 6/2/86.

[11] Letter from Brumbagh to Cronin, 7/11/86.

[12] Letter from Cronin to Brumbagh, 9/22/86.

[13] Letter from Mitchell Brathwaite (industrial hygienist at ACTWU, New York) to Cronin, 12/15/86.

But because of cancer's long incubation period and because no medical tests are capable of detecting the onset of liver cancer (the kind of cancer associated with methylene chloride), the monitoring program had no direct bearing on the question of methylene chloride as a cancer risk to members of Local 1481. As the union became embroiled in details over how the medical monitoring program would be implemented[14], many immediate, tangible health problems came to the forefront. One Local member complained at the time that "Management has been dragging their feet [on medical testing program]...Why are there people with constant sore throats, sinus infections, recurring bronchitis, eye irritations and headaches?"[15] In spite of more immediate health concerns, however, the issue of methylene chloride as a cancer risk was "continuous" for the Local during the late 1980s (Martin, Interview).

In February 1989, Eric Frumin, ACTWU's national director of Occupational Safety and Health in New York, had worrisome news for Local 1481. Frumin informed Richard Metcalf, the manager of ACTWU's Twin City Joint Board of evidence that methylene chloride had caused cancer in workers. He wrote that

> ...there is recent evidence from the Celanese Co. that exposure to methylene chloride has been linked to high rates of fatal cancer among industrial workers (in this case, the members of ACTWU Local 1093 in Rock Hill, S.C.; see enclosed clipping). We are getting more details on this from Celanese, and I will forward them to you shortly.[16]

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[14] Questions that union and management grappled with in ironing out how to implement a monitoring program included the following: Should tests be biological or medical? How should test results be handled, especially if they are positive? What about confidentiality? How should workers be surveyed? How many workers should be tested and which ones? Who should do the testing? (Letter from Brumbagh to Cronin, 6/18/87; letter from the Local's Richard Metcalf to Sheldahl's David Miller, 10/14/88).

[15] Union member Diane Mayfield in a 1989 Local 1481 newsletter.

[16] Letter from Frumin to Metcalf, 2/27/89. In a 9/27/90 letter, Frumin referred Randy Smith of the Wall Street Journal to a report in the Scandinavian Journal of Work Environment and Health that "found a 5-fold excess of 'liver and biliary tract cancer' and a 20-fold excess 'biliary tract cancer' among ACTWU members exposed to methylene chloride at a Hoechst-Celanese synthetic fiber plant in South Carolina.

From the time that methylene chloride was first associated with cancer until mid-1989, the company's public position on the question of methylene chloride remained the same. It refused to acknowledge that the chemical was a carcinogen or to negotiate any change in its use. According to Frumin "We couldn't make a dent in the company's view of the cancer risk... The company was implacable. The best we could get was an agreement with the company to set up a medical screening program" (Frumin, Interview). In spite of the animal tests and in spite of "an 8-fold increase in the rate of death from liver cancer" among ACTWU workers in South Carolina, the company and its suppliers stuck to "the Big Lie" (Frumin, 1992:3).

Unbeknownst to the community and to the union, Sheldahl had submitted to the MPCA an Air Emissions Reduction Plan to cut its use of methylene chloride during the month prior to the NRDC report and the TRI inauguration. The plan proposed a 40% reduction in the use of methylene chloride by 1990 and a 90% reduction by 1993 (Sheiman, 1990:19). While Sheldahl considered the plan public once it was submitted to state agency (Battig, Interview), the union and the community only learned of the plan after the NRDC story had hit the papers in Minnesota. On the day following its coverage of the NRDC report, the St. Paul Pioneer Press Dispatch reported Sheldahl's plan in an article headlined "Sheldahl to Cut Emissions 90% in Next 3 Years". It stated that

> Officials of Sheldahl Inc. acknowledged Tuesday that toxic emissions from its Northfield plant represent a serious problem, but said the firm plans to reduce its emissions by 90 percent over the next three years.
>
> Mark Ester, a company spokesman, said Sheldahl presented a plan last month to the Minnesota Pollution Control Agency to curb its release of methylene chloride (St. Paul Pioneer Press Dispatch, 1989).

The union and community residents later learned that such a plan had been conceived by Sheldahl as early as April 1988.

The NRDC Report: Community Discovery of Toxic Exposure

EPA scheduled inauguration of the Toxics Release Inventory and its online TRI database for June 19, 1989. In anticipation of this event, Debby Sheiman of the Natural Resources Defense Council requested from EPA all TRI data on airborne releases of eleven known or probable carcinogens that EPA had promised but failed to regulate in 1985. EPA's Office of Toxic Substances supplied the data to the NRDC on personal computer diskette. Analysis of the data posed many technical hurdles for Sheiman and other NRDC staffers who had only recently begun using computers (Interview). It was ready for release on June 19, the same day as the inauguration of the Toxics Release Inventory. On that day, the NRDC announced their report at a press conference. Entitled "A Who's Who of American Toxic Air Polluters: A Guide to More than 1500 Factories in 46 States Emitting Cancer-Causing Chemicals", it stated that "industry is using the atmosphere as a garbage dump to dispose of hundreds of millions of pounds of cancer-causing chemicals that are unregulated under the Clean Air Act."

Among the listings in the report was a table of the 125 facilities around the country with the largest airborne releases of a single carcinogen in 1987. Eastman Kodak in Rochester, New York topped the list with 8,920,000 pounds of methylene chloride releases. Sheldahl's Northfield facility, with 794,000 pounds of methylene chloride emissions, was listed as the largest single carcinogen emitter in Minnesota and the 45th largest in the country.

On the day following the NRDC press conference, the St. Paul Pioneer Press Dispatch published a page two article written by its Washington correspondent entitled "Environmental Council Ranks Air Polluters in State, Nation." It began:

> A Northfield, Minn., company was among the worst in the nation at pumping known and suspected cancer-causing chemicals into the air in 1987, according to a report released Monday...

> Sheldahl Inc. of Northfield ranked 45th among industrial sources of airborne cancer-causing chemicals across the country, according to government figures compiled by the Natural Resources Defense Council, a private environmental group in Washington, D.C.
>
> The company emitted 794,000 pounds of methylene chloride. The chemical, which is used as a metal degreaser, paint remover and in aerosols, is listed by the Environmental Protection Agency as a probable cause of cancer. It also can harm the cardiovascular system and the central nervous system and may hurt the kidneys and liver (Thomma, 1989).

An accompanying article on the same page called "List of Cancer-Causing Pollutants" referred to the "EPA report on cancer-causing chemicals released into the air in 1987." It listed 18 other Minnesota companies that released methylene chloride in lesser quantities than Sheldahl and releases of four other cancer-causing chemicals by other Minnesota companies.

On the same day, Northfield residents who picked up USA Today found that Sheldahl had put their town on the map in a listing of the "top 100 plants emitting cancer-causing chemicals." The USA Today list was also based on the NRDC analysis.

The NRDC report and the publicity that it received in Northfield jolted many community members and moved them to action.

> This was shocking news that provoked an immediate community response. At the request of the City Council, Sheldahl convened an informational meeting at the plant that attracted an overflow crowd of concerned citizens (Casper, Undated:A1).
>
> The meeting featured sometimes hostile exchanges and a proposed company plan. Yes, the company was aware of evidence linking methylene chloride to cancer in rodent experiments that led to its designation in 1985 as 'a probable human carcinogen', but there was 'no proof' that it caused cancer in humans, although there was some suggestive evidence of a link in epidemiological studies of workers at two other plants. At one point, the company public relations man who was leading the discussion asserted that 400 tons a year was within the legal limit. But when a citizen asked just what that limit was, he sheepishly admitted there was no legal limit on methylene chloride emissions (Casper, Undated:A2).

Sheldahl's high national ranking as a methylene chloride emitter and the 600 tons of the chemical released into the air in one year also came as news to the union. Local 1481's Richard Metcalf recalled the NRDC-related news as "another bombshell" (Metcalf, 1990:8). One Local member indicated at the time that "the recent revelations

on the actual amount of methylene chloride being used in the plants and the amounts being emitted into the air came as a surprise."[17]

In response to the NRDC report, two citizen groups -- Clean Air for Northfield (CAN) and the Air Toxics Study Group -- quickly organized. As ACTWU's Metcalf observed,

> The EPA release caused an immediate reaction in the Northfield, Minnesota community. Environmental groups sprang up overnight (Metcalf, 1990:8).

By one account,

> Citizen response in Northfield, a community with a history of civic activism, was swift. Several community groups were organized: Jacob Freeze, a painter, began by circulating a petition amongst those who lived in the Viking Terrace Trailer Camp near the plant; a community-wide meeting resulted in the formation of Clean Air in Northfield (CAN), a citizen action group chaired by Frank Wolf; and physics professor Mike Casper organized students and faculty at Carleton and St. Olaf's Colleges into the Air Toxics Study Group to help sift through the health studies, emissions models, and exposure and risk assessments" (Sheiman, 1990:19).

Clean Air in Northfield formed soon after the informational meeting.

> The initial impetus came from women on the east side of town, near Carleton College, who had noticed what seemed to be an abnormally high incidence of cancer among women they knew in Northfield. Prior to the Sheldahl news, there had been what might be characterized as an undercurrent of concern; soon after the TRI announcement, Sue Lloyd called a small group together to discuss whether there might be something to this concern, whether methylene chloride might be the cause and what they might do about it (Casper, Undated:A3).

Frank Wolf, a retired Carleton mathematics professor and longtime resident of Northfield, was not in town when the NRDC report hit the news. When he returned in early July, however, he was invited to chair the initial organizing meeting of CAN. Active in protests against the Vietnam War and in the local Democratic-Farmer-Labor Party caucus, Wolf describes himself as "politically concerned." He had chaired many committees at Carleton, including the first Northfield chapter of the American

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[17] Unsigned, undated comment on stationery of ACTWU's Twin City Board Local 1481 situated with ACTWU records on the summer of 1989.

Association of University Professors. Wolf was elected the president of CAN at the organizing meeting (Interview).

CAN had a core group or executive committee of about 12 people. Attendance at public meetings ranged from about 40 to 75 people. The core group met regularly with the Air Toxics Study Group (Wolf, Interview).

The news occurred at a strategically advantageous time for opponents of the releases because facility's five year permit to pollute was up for renewal before the Minnesota Pollution Control Agency (MPCA). While the permit would not expire for another year, Sheldahl had installed a catalytic incinerator and had to amend its permit in order to start up the incinerator (Casper, Undated:A3). The organizers of CAN seized upon the opportunity.

> These politically astute women immediately recognized the permit process as the leverage point they needed. Under the MPCA rules they still had time to request a public hearing on the permit application. That would provide a formal proceeding for educating the community about what was known about the risks from methylene chloride emissions and to allow Northfield citizens to influence directly the contents of the permit...The permit became the focus of local organizing (Casper, Undated:A3).

These organizing efforts had several concrete results. The MPCA, at the urging of two local members of the state legislature, postponed issuance of the permit until the issue of methylene chloride releases could be examined. And the city council passed a resolution calling on the MPCA to require in the permit that Sheldahl reduce methylene chloride emissions through a recovery method, or by capping smokestack releases of the chemical (Sheiman, 1990:19).

The situation for formation of the Air Toxics Study Group could hardly have been more ripe. At the time of the NRDC release, Barry ('Mike') Casper, a physics professor at Carleton, was ruminating about the curriculum for a student project he had just started called "Information, Representative Democracy and Political Empowerment." Earlier that year, he had attended a meeting about public access to government information where Gary Bass, the director of OMB Watch and one of the

founders of the RTK Net, spoke about the Toxics Release Inventory. "It seemed to me that there might be implications for our project but I had no idea that a Northfield company would be fingered, as it were, by TRI" (Casper, Interview).

On the day that the NRDC report regarding Sheldahl appeared in the newspaper, Casper and his wife were vacationing on Madeline Island in Lake Superior with friend Paul Wellstone, a newly declared candidate for the U.S. Senate, and his wife. Wellstone pointed out the article on Sheldahl's emissions to Casper who soon realized that Sheldahl's toxic release data provided good working material for his student group. He went to the only phone on the island and called his two summer interns. The students traveled 40 miles to the Minneapolis Public Library where they obtained a computer printout of all Sheldahl emissions reported to TRI (Casper, Interview).

The students' study project soon became the Air Toxics Study Group. It was joined by eight to a dozen biologists, chemists, mathematicians and physicists from the two local colleges. The specific goal of the group was to study and assess the risks posed by Sheldahl's methylene chloride emissions but it was more broadly conceived by Casper as "an experiment in what the expertise and resources of a local college or university might contribute to the empowerment of local citizens" (Casper, Undated:A4).

The ATSG worked intensely for the rest of the summer and into the fall. It soon discovered that its risk assessment effort posed a considerable challenge. "What we found immediately was that we didn't know much and it was very hard to find the answers" (Casper, Interview). In locating relevant health and computer modeling literature, two staff members of the MPCA -- an epidemiologist and a specialist in building computer models of pollution exposure -- proved to be very helpful.

First the group looked into the animal data and human data on the known health effects of methylene chloride.

> It turns out that what's known is quite uncertain. We could understand why they listed it as a probable human carcinogen but in terms of the risk to the community we had to integrate that with how much is coming out of the plant and therefore which direction did the wind blow and therefore what kind of exposure is the community getting (Casper, Interview).

In order to grapple with factors like wind, degree of exposure, extent of toxicity and level of risk, the group turned to computer modeling. By the end of the summer, the group felt that it "knew what could be understood about most of those questions" (Casper, Interview).

Sheldahl, seeking to obviate direct pressure from members of CAN, tried to use the ATSG as an intermediary between it and CAN.

> Sheldahl tried to put us between them and the citizen's group. The citizens' group was asking them questions and demanding answers. Initially Sheldahl said that they would speak to the Air Toxics Study Group about these technical issues and that they wouldn't respond directly to the questions and demands of the citizens' group. And so the first thing that happened was that we had to extricate ourselves from that situation. I said we would not play that role. What the citizens' group was asking was perfectly legitimate inquiries, the kind of dialogue that ought to take place directly between them and Sheldahl...We almost found ourselves getting in the way of the kind of pressure that Sheldahl should be experiencing. (Casper, Interview)

The most pressing questions in the search for a solution to the problem was the extent and the immediacy of the risk posed by the methylene chloride releases.

One approach was to view any level of exposure as a significant risk. The NRDC's position on exposure, as published in the St. Paul Pioneer Press Dispatch on July 13, 1989 made this argument.

> "There's no safe level of exposure" to methylene chloride or other chemicals that cause cancer, said Deborah Sheiman of the Natural Resources Defense Council. "There's no level that isn't going to increase your risk of cancer" (Coleman, 1989).[18]

In this vein, some local opponents assumed that any solution involving exposure was unsafe and that the only safe solution was to promptly terminate emissions. Such a formulation left little room for the kind of compromise that eventually proved

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[18] Elsewhere, the NRDC's Sheiman noted "For carcinogenic chemicals, there are no known safe levels of exposure that will not increase the risk of cancer." (1990:19)

necessary in order to reach a mutually agreeable solution. Closing the plant was one obvious way to achieve this end. "A few were sufficiently alarmed to suggest at the outset that closing down the plant should be seriously considered." This view was "extreme", however, and never gained support (Casper, Undated:B2).

The Northfield community did not, of course, speak with one voice. For some, Sheldahl's initial proposal to get its methylene chloride emissions down to 40 tons over five years was reasonable. To some in the community, this seemed a satisfactory solution and a satisfactory time frame, especially to those who saw the concern over the emissions as a tempest in a teapot. In their view, the risk to the community from methylene chloride was probably far less than other risks the citizens of Northfield routinely accepted in the normal course of their daily lives (Casper, Undated:B1).

A local retired chemistry professor who chaired the Northfield Environmental Quality Commission dismissed the risk presented by the releases and criticized the opposition in a local newspaper column (Casper, Undated:B1). Weighing in on the side of the anti-critics was the fact that the types of cancer found in Northfield were sufficiently different that they were "not likely to be attributable to methylene chloride" (Casper, Interview).

Members of CAN felt that if there were risks of any sort, Sheldahl was responsible and should be able to guarantee safe air to the community. Casper noted

> If large quantities of a suspected carcinogen were polluting the Northfield air, they felt the risks to the community had to be taken seriously and dealt with expeditiously. Suspicious of 'experts' who would minimize the risks when the evidence was uncertain, they believed the burden of proof should be on the company, not the citizens. And they would err on the side of caution (Casper, Undated:B1).

Asked how extensive methylene chloride exposure was in the community, CAN chair Wolf said "It depends on what level of methylene chloride you took seriously." Based on a study conducted by Sheldahl consultants, Wolf said "A good part of the

town at various times was covered with what I would consider relatively high levels of methylene chloride in the air" (Interview).

One obvious way to prevent methylene chloride from polluting the air was to prevent it from coming out the smokestack. This meant "recapturing the methylene chloride before it could escape from the plant" (Casper, Undated:B2). CAN member Jacob Freeze organized a petition calling for adoption of the recapture method among people in the mobile home park next to the plant. This option developed much support in the community (Casper, Undated:B2).

More significant public and political support developed for a recycling approach.

> Gary Spessard, a St. Olaf chemist and ATSG member who was about to become the new chair of the Environmental Quality Commission, told the city council that recycling methylene chloride was the environmentally-sound approach to dealing with the problem (Casper, Undated:B2).

The city council unanimously adopted his advice. "While the City Council resolution lacked the force of public law, it clearly reflected the predominant public sentiment" (Casper, Undated:B2).

The MPCA issued a public health criterion that Sheldahl had to meet in order to receive its pollution permit. As Casper put it, "The estimated lifetime risk to a hypothetical 'maximally-exposed individual' outside the plant boundary from methylene chloride had to be less than one chance in one hundred thousand of getting cancer" (Undated:B3).

Consultants hired by Sheldahl to study how to achieve that safety level found that the risk would exceed one in 100,000 even with 40 tons projected for release in the fifth year of reductions. The consultants proposed an "Interim Dispersion Improvement" plan. By this method, Sheldahl would "increase the height of the stack and install more powerful fans to blow the methylene chloride out at a higher velocity so it would disperse more widely over the community" (Casper, Undated:B3). This

plan failed to receive a warm public reception when it was published in the Northfield News. Some people feared that a higher stack would disperse carcinogens more widely through the air of Northfield (Casper, Undated:B3). At the time, the plan was dropped.

The Worker-Community Coalition

Underlying the initial organizing activities by CAN and the ATSG was the mistaken assumption that the only danger posed by methylene chloride was its presence in the community's air. Workers' exposure to methylene chloride and other hazardous chemicals inside the Sheldahl plant had not been an issue.

At the time that community protests over methylene chloride emerged, the union local still listed workplace exposure to the chemical as one of their grievances. News of the airborne emissions also created worker concern about exposure outside the plant. Workers "also needed the emissions stopped because many of them and their families lived in the two trailer parks and the apartment house right next to the plant" (Frumin, 1992:4-5).

Of greater immediate concern to workers was job security. Sheldahl had recently transferred a small part of its operations to a new facility in South Dakota. The possible loss of jobs to non-union workers at the South Dakota site was a primary concern of Sheldahl workers in Northfield. While both community members and workers now shared concern about exposure to the same chemical and some common ground might be struck, it was also possible that "overly zealous citizens protesting pollution" would be a liability (Casper, Undated:A5).

In mid-summer of 1989, ACTWU members working at Sheldahl and community opponents agreed to meet. The event was, according to Casper, "kind of a fiasco." CAN's Jacob Freeze ("never known as a diplomat") accused workers of knowing about the problem and never letting the community know (Casper, Undated:A5). "He also intimated that a solution we should be looking at is closing

down the plant" (Casper, Interview). The regional director of ACTWU Richard Metcalf responded angrily "Those are our jobs." The meeting turned into a "shouting match" and "broke up on a sour note" (Casper, Interview; Undated:A6). ACTWU's Frumin observed regarding those who called for shutting down the plant "These few showed no apparent concern for the welfare of 1,200 company employees and their families who had no other options when it came to looking for comparable jobs with decent pay and health insurance" (Frumin, 1992:4, emphasis in original).

Soon after this "disastrous meeting" (Casper, Undated:A7), Northfield's Bob Vanasek, speaker of the Minnesota House of Representatives, accepted an invitation to speak with members of CAN. When informed by the group about the meeting with the workers, Vanasek issued a pointed warning. A rift with the workers would be "a political kiss of death" (Casper, Undated:A7). Both CAN and the ATSG realized that damage control would be necessary.

In a series of fence mending meetings, CAN and ASTG met again with workers and their union representatives. The most important of these, in Casper's view, was the one attended by Eric Frumin, the national director of occupational safety and health for ACTWU since 1980 and the chair of the U.S. Department of Labor Statistics Labor Advisory Committee on Occupational Safety and Health Statistics.

Frumin arrived in Northfield at the end of July as the union was renegotiating its contract with Sheldahl, due to expire on October 31st. Frumin recalled "By the time I got out there, it was a pretty tense situation. There were community residents advocating either shutting the plant down or the cork in the bottle strategy both of which from our point of view were completely unacceptable and irresponsible" (Frumin, Interview).

On July 31, Frumin and other union representatives met with Sheldahl officials. David Miller of Sheldahl informed the union representatives that Sheldahl had formed an Air Emissions Group in April 1988 to consider ways of reducing methylene chloride

emissions. In October 1988, the Air Emissions Group agreed on the goal of gradually eliminating methylene chloride in spite of the lack of data on cancer risks for humans. In April 1989, it decided to aim for a 40% reduction by 1990.[19]

Never having been officially informed about it before, the union members were surprised to learn about the Air Emissions Group. In a second meeting that day among union local people, Richard Metcalf expressed amazement that the company was now acting to reduce methylene chloride. "Why now?", he asked, speculating that it was a result of the Title III right-to-know law.[20]

What most struck Frumin about the meeting with Sheldahl was "That we had a way out." Frumin saw the company's toxic use reduction plan as a credible alternative that -- as long as they could get the company to stick to it -- would allow them to keep the union intact, to keep jobs, and to avoid hostile relations with the company and the community (Interview).

After meeting with workers and Sheldahl officials, Frumin addressed a joint meeting of CAN, the ATSG and union leaders. In Casper's view, "Frumin and leaders of ACTWU Local 1481 saw the community concern as an opportunity to go beyond monitoring to actually reducing the risk to workers and the community activists as potential allies in that quest" (Undated:C1). Frumin argued convincingly that workers were far more at risk than members of the community. He cited a new study of worker exposure to methylene chloride done at a plant in South Carolina that indicated serious risk of cancer.

> ...Frumin saw cancer from methylene chloride as a clear and present danger. And those most at risk were the workers in Sheldahl's West Facility, whose average exposure was a hundred or more times that of those outside the plant (Casper, Undated:C1).

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[19] Based on handwritten notes of meeting kept by Eric Frumin.

[20] Based on handwritten notes of meeting kept by Eric Frumin.

Frumin also argued that the best method for resolving the problem was the toxic use reduction plan initially proposed by Sheldahl. He criticized the "cork in bottle" recapture approach since the workers are trapped inside the bottle. He also criticized the recycling approach sponsored by the City Council which failed to consider continued exposure of workers. Frumin argued in favor of Sheldahl's phase down plan that included the search for a non-carcinogenic alternative. Given what was known of methylene chloride toxicity, he felt that the five year reduction and elimination plan was reasonable.

Frumin managed to convince key community opponents of methylene chloride both of the viability of the Sheldhal's plan and of the need for community collaboration with the union.

> For many of us involved in the search for an appropriate community response, Frumin's perspective had a profound effect on our subsequent thinking. And his visit ushered in a cooperative effort involving workers from the union, scientists from the ATSG and citizens from CAN (Casper, Undated:C2).

Once the methylene chloride problem was no longer defined only as "airborne community exposure" but as all human exposure in Northfield inside and outside the plant worker, community cooperation became the basis of future efforts to find a solution.

As the citizen groups came full circle on Sheldahl's proposed toxic use reduction plan -- first rejecting it, now accepting it in principle -- it learned for the first time that such an approach was a goal of the national environmental movement. This realization was reinforced in a talk given by Barry Commoner in Northfield on Earth Day the next spring (Casper, Undated:C2).

However, worker and community opponents of the methylene chloride use and exposure were not convinced that Sheldahl would actually implement the plan. Members of the coalition concluded that they must keep Sheldahl's feet to the fire, by

keeping the issue alive and pressing for formal, legally-binding assurances that the company would stick to and implement its plan.

While CAN was prepared to use the Sheldahl plan as the basis for negotiations, it had two reservations. First, a five year phase down time was too long. Wolf said "We thought that the plan wasn't fast enough" (Interview). For this school of thought, "If the battle cry was not to be STOP NOW!, at least it should be STOP SOON!" (Casper, Undated:B2). The other remaining issue in CAN's view was that, according to the Sheldahl-sponsored study referred to earlier, levels of exposure close to the plant were so high that they produced physical symptoms like headaches and eye tearing. CAN concluded that the higher smokestack originally proposed by the Sheldahl consultant was also necessary (Wolf, Interview).

The union ultimately welcomed expansion of the conflict beyond the walls of the factory. According to Richard Metcalf of Local 1481,

> The infusion of more people and more information, however, was a great lift and brought fundamental changes. Use of the collective bargaining relationship helped to provide information about what was going on in the plant. Use of the EPA and environmental forces helped to provide research and support on the outside. The use of the media helped to turn up the heat on the issues.
>
> Numerous leaflets were issued to the work force, hearings were held, and [there were] joint labor-environmental events... (Metcalf, 1990:8)

When community members closed ranks with the workers, the Air Toxics Study Group broadened its focus on the question of methylene chloride exposure risks to include Sheldahl's workers. A senior physics major at Carleton, David Allaway, working with the ATSG, conducted a study that found workers' exposure to be 25 times greater than community exposure. The study was widely publicized. In Casper's view the union was "emboldened by this public attention" and thereafter decided to stipulate adherence to the use reduction plan as part of its labor contract (Undated:C5). In the view of ACTWU's Frumin, the Minnesota Pollution Control Agency was "an unreliable enforcer" (Interview). The fact that Sheldahl had submitted a plan to state

officials was not credible to the union. This in turn led Local 1481 to demand that Sheldahl formally commit itself in the upcoming contract to make the phase down its top capital investment priority.

The company balked at the proposal to include the phase down plan in the union contract. A week before the contract expired, a labor union paper in St. Paul described the quandary of the various actors in the conflict. There were

> ...workers concerned about the chemical but also their jobs, a community intent on removing the hazard, a company that has tried to respond to the concerns but also makes it clear that it would not hesitate to move out of the state, and a government hampered by a system of conflicting agencies and regulations (Kucera and Nealis, 1989).

The situation was tense as the midnight October 31 contract deadline approached. Negotiations stalemated over two issues: the toxic use reduction plan and sub-contracting of workers (Martin, Interview). CAN members were prepared to join a picket line along with union members. At the last moment, the company agreed to reopen discussions, extending the contract deadline one week to midnight November 6.

During the second round of discussions, the union ratified a two year contract. A November 6, 1989 "memorandum of understanding" between Sheldahl and the union committed the company to implement the methylene chloride reduction plan and to make its implementation the "number one" capital improvements priority of the company. A labor-management committee would oversee implementation of the plan and "to the extent necessary" meet with "representatives of community and civic organizations and interested local citizens to review the progress of the reduction/elimination plan..." The company also agreed to test levels of methylene chloride exposure inside and outside the plant on at least a quarterly basis.[21]

After the union's success, CAN concentrated its attention on renewal of Sheldahl's pollution permit by the MPCA. CAN called for a permit that would require

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21 "Sheldahl/ACTWU Contract Settlement", November 6, 1989.

Sheldahl to phase down its use of methylene chloride at a faster rate. CAN also picked up on a little-noticed conclusion in an earlier study commissioned by Sheldhal -- that physical symptoms of methylene chloride exposure were sometimes experienced by people in the immediate vicinity of the plant. Referring to the study, Wolf noted

> Outside the compound where the plant is, quite often the concentrations of methylene chloride in the air were enough to cause unpleasantness right there -- tearing of the eyes, headaches, things like that (Interview).

CAN demanded a higher smokestack that would disperse emissions sufficiently to avoid physical symptoms of methylene chloride exposure outside the plant (Wolf, Interview). CAN also called for devices to monitor methylene chloride emissions in the area surrounding the plant.

The MPCA issued its permit to Sheldahl on April 23, 1991. It required Sheldahl to reduce its methylene chloride emissions to 28 tons by 1995 and eliminate use of methylene chloride by the year 2000 (Laszewski, 1991).

CAN was not satisfied with the permit. It had failed to speed up the reduction plan and or to install monitoring devices in neighborhoods. Wolf told the Minneapolis Star Tribune "We are dismayed and upset. We still feel you should be more demanding" (April 24, 1991). The plan did, however, require that Sheldahl increase the height of its stack and prohibited the use of other solvents suspected of causing cancer. CAN announced that it would not oppose the permit and disbanded soon after the permit renewal.

By all accounts, Sheldahl has been adhering to or even exceeding its methylene chloride use reduction plan (Interview, Wolf; Interview, Frumin; Interview, Martin). In 1993, the latest TRI data recorded significant reductions over the period from 1987 through 1991 (see Table 3.1).

Table 3.1 Sheldahl's Airborne Releases (in pounds) of Methylene Chloride: 1987-1991[22]

1987	1988	1989	1990	1991
794,000	776,000	800,000	371,000	181,000

Parties on both sides of the conflict have basked in the successful outcome. The dramatic turnabout made Northfield a cause celebre among many toxic right-to-know advocates, law-makers and activists. And Sheldahl has received praise for its handling of the situation. In 1992, for example, the company received the Governor's Award for Excellence in Pollution Prevention at a Minnesota conference on pollution prevention (St. Paul Pioneer Press Dispatch, February 8, 1992)..

Now legally bound to its reduction plan in the union contract and in the state permit, Sheldahl also knows that it is accountable to the community on the issue. "If they don't stick to it", said Wolf, "they know there will be a local outcry" (Wolf, Interview).

Political Power and TRI-related Knowledge in Northfield

The remainder of the chapter develops a power-based interpretation of the conflict recounted above for the purpose of exploring the relationship between power and TRI-related knowledge. The concepts and issues in power theory discussed in Chapter 1 are used as a point of departure for this discussion.

The Latent Conflict

When Sheldahl began exposing workers in its factory and people in the community of Northfield to a carcinogen in the late 1950s, it began affecting those people exposed to significant risk of cancer in a manner contrary to their interests. The power conflict remained latent while people exposed were unaware of and not actively opposed to the situation. Overt conflict over the cancer issue emerged when workers

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22 Each annual air release total is the sum of the smokestack release amount and the fugitive release amount. The latter is released through leaky valves, pipes and other means and, except for 1991, constitutes a very small percentage of the total. The data was retrieved from the Toxic Release Inventory database on Right to Know Net computer conferencing network.

first learned of the cancer risk in 1985. This conflict expanded into the community when community members became aware that they were being exposed to a carcinogen in 1989.

The above formulation already raises two fundamental power theory issues: the problem of determining "interests" and the question of whether power should be attributed to impersonal structures at the time when no one was aware of the carcinogenic property of the chemical. If power is to be defined as an instance of one party harming another's interests, a determination of interest violation is required in order to qualify the conflict for power analysis.

Whether vital interests were at stake for people exposed to methylene chloride in Northfield hinged on questions like the parts per million of the chemical inhaled by people exposed and the exposure amounts believed to be safe or unsafe. It was an issue about which reasonable people differed.

On the face of it, the Northfield case appears to pass Lukes' test of violation of interests.[23] The required counterfactual is provided by the community opposition that developed when residents were presented with a conscious choice regarding their exposure. When people became aware of the Sheldahl's actions and were free to acquiesce, a significant number of people chose not to. And third dimension power mechanisms that prevented people from protesting earlier can be identified in the form of decisions by the company and the environmental officials not to reveal earlier to the community its exposure to a probable carcinogen.

As Lukes' critics have pointed out, however, determining "real interests" on the basis of what people would have done otherwise is not a strong empirical argument. The fact that community opposition emerged does not by itself prove that the

[23] It will be remembered that Lukes proposed a twofold empirical test for whether real interests have been violated. First, would people given the opportunity to have acted otherwise done so? Does any counterfactual provide evidence that people would have acted otherwise? Second, can a decision-making mechanism be identified that prevented people from acting otherwise (1974:41-42)?

community's interests were at stake. To argue that it did is not to build the definition of "real interests" on an empirical argument -- as Lukes claims -- but to return to a Weberian assumption that real interests are determined by subjective belief of actors regarding the legitimacy or non-legitimacy of a given action. These beliefs may themselves be shaped by factors inconsistent with people's "real interests."[24] Merely because people protested when they learned about the methylene chloride releases is not a sufficient reason to argue that there were solid grounds to claim a violation of interests. A better way of determining such a violation is to ask not how people would have acted otherwise but what action, given all the facts of the case, was in people's best interests. This also introduces a subjective and ultimately debatable interpretation -- that of the analyst -- but, as long as the analyst has considered the merits of diverse interpretations, it marks an improvement on Lukes' single source method. And, as long as real interests are still in dispute, Lukes' second test for the exercise of power -- identification of a decision-making mechanism -- becomes irrelevant because it does not necessarily concern the exercise of power.

The 1985 laboratory tests that caused cancer in animals, the cases of cancer among workers in South Carolina, the fact that the measurements of exposure inside the plant exceeded NIOSH criteria, and the fact that the measurements and projections of exposure outside the plant exceeded exposure criteria proposed by the MPCA were sound bases for an argument of violation of interests by those exposed to methylene chloride.

This concluded, it is now possible to assert that the Northfield case involved an exercise of power. Party A (those responsible for the use of methylene chloride)

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[24] In his critique of Lukes, Bradshaw argued that "B's hypothesized independence of A's power fails to rule out the likelihood of B's continued subjection to other sources of power which, even though opposed to A, may still be inimical to B" (1976:121).

exercised power over party B (those exposed to the chemical) because A affected B in a manner contrary to B's interests.

Traced back to its origins, the Northfield conflict raises the issue of structure and agency. Should power be attributed to impersonal structures as well as to individuals who make decisions at institutional, organizational and other levels? In Northfield, this question posed itself in the following manner: During the period prior to the discovery of methylene chloride's carcinogenic properties did relatively blind and impersonal structural forces exert power over the people exposed in Northfield -- or was power only exerted when responsible authorities or officials became aware of the harm caused by methylene chloride but neither informed those exposed nor took action to limit or eliminate the exposure? During the period of general societal ignorance regarding the carcinogenic properties of the chemical, was power exerted over people exposed to the chemical?

During the first decades of methylene chloride use by the company, when society was unaware of the carcinogenic properties of methylene chloride, structural factors may be said to have dominated the still latent conflict. Prior to laboratory tests of methylene chloride that produced cancer in animals, relatively blind structural forces constrained the awareness and behavior of all parties. It could be argued that people exposed to the carcinogen during this period were subject to a structural injustice in the face of which human agents were relatively powerless.[25] As opposed to a power conflict, it might be called a third dimension structural conflict between existing societal structures and people exposed to the chemical. As in a third dimension power conflict, the barriers created by the structural conflict prevented people adversely

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[25] It is important to emphasize the relative powerlessness of human agents in this circumstance. It would not be surprising if other knowledge or research on the matter was able to uncover instances in which individuals could have but did not take remedial actions. Nevertheless, these individuals, might have been operating in a 1950s or 1960s structural milieu, not as conducive to advocacy for a safe environment as would later be the case.

affected by methylene chloride exposure from discovering their best interests. While this manner of interpreting the situation dissociates the exercise of power from impersonal structures, it in no way obviates criticism of any structural injustice that might have been at the root of the problem. It merely chooses to call such structural forces by a name other than power.

Inside the workplace, Sheldahl's use of methylene chloride created immediate health problems for workers and produced overt, second dimension conflict in the form of workers' complaints. The organizational capacity possessed by the workers through their union gave them a means to lodge a formal complaint with the company over their exposure to methylene chloride and other toxic chemicals and to demand appropriate health and safety measures. On this issue, the union achieved some first dimension empowerment when the company agreed to a medical monitoring program in 1987. Prior to discovery of the cancer link, workers opposing their exposure to methylene chloride may be said to have been simultaneously involved in a second dimension power conflict regarding known toxic effects of the chemical and a third dimension structural conflict regarding unknown carcinogenic effects of the chemical.

The shift from a structural conflict to a power conflict began with the National Toxicology Program's discovery of the cancer risk posed by methylene chloride in 1985.[26] For the first time, this discovery raised questions of human responsibility and political power -- "political" because the use of methylene chloride was supported by state authority. The violation of interests experienced by those exposed to the chemical carried with it, as events would make clear, grounds for appeal to state authority at federal, state and local levels.

As environmental regulators learned about the cancer risk, traces of individual and institutional responsibility begin to emerge, most notably when EPA acknowledged

[26] If there were "non-decisions" that purposely blocked earlier research into the carcinogenic properties of the chemical, one could date the birth of a power conflict even earlier.

the dangers of methylene chloride, pledged to regulate it and failed to do so. EPA officials could not plead ignorance regarding the need to regulate human environmental exposure to methylene chloride. EPA's failure to alert people exposed to the risks about the danger made it an actor in the third dimension power conflict. Its pledge to regulate the chemical but its eventual failure to do so constituted purely symbolic reassurance (Edelman, 1964, 1985:41-43), a third dimension form of manipulation.

When the union local learned about the NTP discovery of cancer risk, workers ceased to be the unconscious party of a third dimension structural conflict. The union quickly informed Sheldahl of the discovery and made cancer risk a formal grievance with the company. A second dimension struggle over the significance of the issue ensued.

Once Sheldahl realized that it was releasing a chemical identified as a probable carcinogen, it failed to notify any one in the community about the risk -- in spite of that fact that its Health and Safety Officer had an opportunity to do so as chair of the Northfield Environmental Quality Commission. This marked the beginning of a latent, third dimension conflict between Sheldahl and the community. Sheldhal exercised a third dimension power over the community by preventing the community from discovering its interests. By withholding its knowledge of a cancer risk from the community, the company exercised third dimension power over the community. Northfield community members ceased to be party to a third dimension structural conflict and became the unconscious party of a third dimension political conflict.

Assuming, as this analysis does, that the interests of those exposed to the chemical were violated, the laws and regulations that protected Sheldahl's actions were an integral part of the violation.

The frank acknowledgment to the St. Paul daily by a plant spokesman that the emissions were "a serious problem" immediately following the NRDC report revealed a perception on the part of Sheldahl that its releases were a valid target of criticism. This

supports characterization of Sheldahl's failure to alert the community of the problem as a conscious withholding of information, or as a third dimension power exercise.

What is to be made of the methylene chloride use reduction plan developed by Sheldahl before the community conflict arose, a plan largely accepted by most parties in the end? What prompted the company to start developing such a plan as early as April 1988? Although the company had never had any air pollution complaints before the NRDC report[27] and its methylene chloride air releases were within legal state limits, why did the company form a team whose explicit goal was to reduce its methylene chloride air emissions? Did Sheldahl have a premonition of the kind of public outcry that actually developed and act to forestall that possibility? Did the company, in effect, heed Schattschneider's advice that "The best point at which to manage conflict is before its starts" (1960, 1975:15).

According to a Sheldahl spokesman, concern about publicity did not prompt the company to begin formulating the plan since the company had already been submitting that information to the MPCA for seven years. Rather it was motivated by the health and safety information that was accumulating on methylene chloride and the reductions in recommended safety limit exposures (Battig, Interview). In other words, the public's interest was the overriding concern of the company.

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[27] Prior to the NRDC report, there had been no community-based concern or action regarding Sheldahl as a polluter. "Nobody thought about any emissions from Sheldahl before that outside of the people who worked at the plant" (Casper, Interview). Before the publicity, CAN's president had heard of no air pollution complaints regarding Sheldahl or any illnesses in the town suspected to have been caused by environmental factors. Nor had he heard about the toxic exposure grievances of Sheldahl workers (Wolf, Interview). Sheldahl indicated that it had never had any complaints about air pollution before the TRI data became public (Battig, Interview). The fact that the airborne methylene chloride releases were colorless and odorless helps explain why no conflict surfaced over the issue at an earlier stage.

While the company deserves credit for foresight[28], the notion that its motives were purely altruistic deserves scrutiny. If health concerns were the overriding motive of the company and the reasons for such concern were far greater in the workplace than in the environment, why did the company develop what it called an "Air Emission Reduction Plan"? While the company denies that the prospect of community knowledge about the airborne emissions influenced its decision to develop the plan, one is hard put to explain the company's new found concern about a community air pollution problem that had never been a public issue.

Community and union opponents of methylene chloride exposure interviewed by the author unanimously suspect that fear of TRI-related publicity played a role in the company's decision to develop its reduction plan. ATSG Chair Casper suggested that Sheldahl, aware of the controversial nature of the methylene chloride and aware of the imminent public release of the Form R data it had submitted to EPA in 1987, decided that it had to have a plan ready in order to counter any bad publicity.

> ...probably in part because of the anticipated public release of this information by the TRI, the company sought urgently to develop non-toxic substitutes for methylene chloride so as to have an emissions reduction plan prepared when the people of Northfield did find out (Casper, 1993:248).

Elsewhere Casper noted:

> Sheldahl planners had been trying to develop means of dealing with the methylene chloride emissions problem and they were aware that the public would find out about it in the spring of 1989 when the newly established TRI was scheduled to go public. They were prepared with a plan (Casper, Undated:A2).

Wolf also suspected that concern about publicity was a factor in the company's early action on a reduction strategy.

> I think they were really concerned when they knew it was going to be published. They knew that TRI was coming out. Even if TRI was not

[28] In the view of ACTWU's Frumin, "You've got to give them credit for putting some people to work who had the smarts to figure out how to stop using methylene chloride. If that hadn't happened this thing could have generated into a real mess... " Without the plan, everyone would have been bound on a "collision course" (Frumin, Interview).

> published yet, it was going to have an impact because they know that it's available to the public (Wolf, Interview).

Asked if fear of publicity resulting from EPCRA disclosures could have influenced Sheldahl's decision to develop the plan, Frumin said that in his mind the answer is "definitively yes" but that only the company could say how it had been an influence (Frumin, Interview).

Union local member Martin said

> After dealing with them for several years on this issue, I think they knew that we were not going to let them get away with it and that they had to do something. I'm sure they also realized that the community would also be involved. They knew they had to do something. I think that's why they put together the plan. They knew it was not just going to be blowing over. I don't think they expected that it was going to go to the extent that it did - that they would have to put it into our contract and report quarterly to the community the results of the tests. It probably went further than what they had planned (Interview).

Short of detailed knowledge regarding Sheldahl's internal deliberations on the matter, no persuasive answer to these questions seems possible. It seems plausible, however, and is of analytical interest to entertain the prospect that Sheldahl prepared the plan because it feared that the scope of the conflict it faced with the union over methylene chloride exposure could widen into the community following public release of the TRI data in June of 1989. Following are some circumstantial arguments in favor a "preemptive scenario." In this picture of events, Sheldahl, faced with the prospect of the public exercising its new power to know and fearing the consequences, produced a plan to preempt public opposition that might arise to its use of methylene chloride.

After EPCRA became law in October 1986, Sheldahl, which already faced a conflict with workers over the cancer risk posed by methylene chloride, had plenty of time to consider whether the problem could spill over into the public and political arenas once people in the community became aware of the releases. Sheldahl and other EPCRA reporters felt the practical effects of the law as they worked to meet the first reporting deadlines in 1988. During this same general period, Sheldahl conceived of its reduction plan. The chemical inventory reports intended for emergency planners

were due in March 1988. The toxic chemical release reports that would constitute TRI were due on July 1, 1988. The company began exploring how to eliminate its air emissions of methylene chloride in April 1988 and formed an Air Emissions Reduction Team in October 1988. In a "preemptive scenario", Sheldahl's work on producing the reports it was required to submit under EPCRA could have been a factor in causing it to ponder the ramifications of public knowledge and to develop its plan.

In contemplating the possible political effects of public knowledge in Northfield, Sheldahl could have considered either or both of two prospects. On the one hand, the labor union might spread its concern about methylene chloride's carcinogenic property into the community once the TRI data were released. On the other hand, the community had a known capacity for civic activism and might turn methylene chloride exposure into an issue if it discovered the association with cancer on its own.

The fact that the two college faculties included many individuals with a history of political activity and there was some history of civic activism in the town may have made the prospect of community knowledge regarding the carcinogenic releases a more credible threat to Sheldhal than it did to TRI reporters in many other communities. CAN chair Frank Wolf stated

> With two colleges and two faculties that go with them, there's a willingness to get involved in things. There was tentative planning [before the methylene chloride protests] for moving the Minneapolis airport closer to Northfield and pretty quickly a group formed to oppose that...There were some local protests among townspeople during the Vietnam War. It's not a den of activism by any means but both faculties have people who are politically concerned. (Interview).

Wolf described people in Northfield as "fairly active politically" (Interview). The Democratic-Farmer-Labor (DFL) Party and the Independent Republican Party shape partisan politics in the town. Both parties use caucus systems that are notable for their high degree of local participation compared to party systems in most other parts of the country. Wolf, a DFL activist, said that the Northfield caucuses are typically well-attended.

Educational programs at the local colleges have given the town a national reputation as a training ground for community organizers. Reflecting this inclination was the rather extraordinary fact that, precisely at the moment of the release of the NRDC report, college activists were poised to undertake "an experiment in what the expertise and resources of a local college or university might contribute to the empowerment of local citizens" (Casper, Undated:A4). The title of the project -- "Information, Representative Democracy and Political Empowerment" -- is almost a premonition of the events to come.

Events were to show that the anti-toxic members of the community were politically well-connected:

* the City Council's call for an informational meeting with Sheldahl immediately after the NRDC report was covered
* one of members of the ATSG became the chair of the city's Northfield Environmental Quality Commission
* City Council adopting support of recycling method suggested by the person above
* action by state legislators to assure the public character of the MPCA's permitting process
* CAN's meeting with the local state representative, speaker of the Minnesota House of Representatives

Interpreted in power terms, the "preemptive scenario" would suggest that anticipated possession of the new power to know by actual (union) and potential (community) opponents of methylene chloride exposure caused Sheldahl to develop its toxic use reduction plan. In this scenario, worker and community opponents were empowered by the existence if not yet the use of the Community Right-to-Know Act. Although the conflict was still latent for community members, the law gave the community power that it did not have before.

But the community's power came not only from the law but from its unique capacity to use the law. Sheldahl's owners and managers may have felt that, whatever the consequences of public knowledge about carcinogenic exposure might be elsewhere, it was bound to be a hot potato in the Northfield community. Already faced with a conflict with a union willing to stand up for its members on the issue of cancer and methylene chloride, it now faced the prospect that the same issue could spill over into a community with a known capacity for civic activism. In a preemptive scenario, unionized workers and a community with known capacity for political organizing exercised passive power over Sheldahl when Sheldahl decided to produce its plan.

In the preemptive scenario, Sheldahl's toxic use reduction plan was tangible evidence of the challengers' empowerment. The capacity to know gave the community -- even while a subject or latent actor in a power conflict -- and the union the power to cause the facility to take action toward resolution of the conflict.

Whatever its motivations, by developing a plan, Sheldahl situated itself well for the coming conflict. With a plan in hand, the company was to a significant degree able to manage the political course of events after the conflict broke into the open.

For union and community opponents, however, a mere plan was not a solution to the problem. In early meetings between ATSG members and Sheldahl representatives, Casper noted that Sheldahl planners stressed that "the reduction schedule had to be regarded as a 'plan', not a 'commitment'" (Casper, Undated:A2-A3). Although Sheldahl had submitted the plan to the MPCA, ACTWU's Frumin, as noted earlier, considered the MPCA "an unreliable enforcer" (Interview). The Local's Richard Metcalf observed that "Before the contract, many people didn't have confidence that Sheldahl would reduce its use of toxics" (Working Group on the Community Right-to-Know newsletter, September-October 1991). For community and union opponents, the crux of the conflict became the political issue of enforcement, first through a legally binding union contract and next through regulatory action by the

MPCA. By mobilizing action toward state enforcement of the plan through the legal and regulatory systems, the opponents of methylene chloride exposure sought to exercise political power over Sheldahl. While Sheldahl had voluntarily submitted the plan, it balked on being forced to adhere to the plan. The battle of wills over voluntary or mandatory implementation of the plan lay at the heart of the overt stage of the power conflict.

The Overt Conflict

The National Resources Defense Council in Washington was an actor on the national stage of the toxic power relation. As part of the national anti-toxics coalition (B-national) that lobbied for EPCRA (Bass, 1990:6), it had exercised first dimension power over toxics-using manufacturers (A-national) when the coalition succeeded in getting the state to mandate public disclosure of toxic releases.

When the NRDC acquired TRI data on nationwide air emissions of known or suspected carcinogens, B-national became empowered in the third dimension to the extent that such information had been secret prior to that point. Its decision to fire "the opening salvo in terms of the toxic release information" (Sheiman, Interview) by releasing the information to Washington's national press corps was a second dimension empowerment effort by B-national against A-national carcinogen emitters, an effort to place such emissions on the agenda as matters of significant concern for national lawmakers and regulators. Another potential outcome of this effort was empowerment of B-locals. Such news could be empowering for Bs in the third dimension if they had been unaware of the releases, transforming latent into overt conflict. In any case, Bs could use such information as first and second dimension ammunition for any ongoing or new conflict with A-locals.

For B-Northfield (all people in Northfield exposed to methylene chloride), the NRDC's national action had beneficial side-effects in all three dimensions of power. First, it deprived A-local (Northfield) of the third dimension power to keep the

community in the dark about a toxic power conflict that it had been party to, dating back to when Sheldahl learned of the cancer risk posed by the chemical in the mid-1980s. By producing discovery of the conflict, it simultaneously empowered the community in the third dimension. And it provided the seed for all subsequent knowledge-building efforts regarding the significance of the toxic exposure and what should be done about it in first and second dimension political arenas. As Wolf indicated, the media coverage of the report "initiated the whole thing" (Interview). It sparked expansion of the conflict beyond the relatively closed confines of Sheldahl's workplace into the open confines of the Northfield News, the Northfield City Council, the Minnesota Pollution Control Agency and other public arenas. For union members, the NRDC report marked a decisive expansion in the scope of overt conflict. For community members, the discovery produced by the NRDC report marked the end of latent and the beginning of overt conflict. Had Sheldahl not been required to publicly disclose its methylene chloride releases through the CRTKA, the conflict would very probably have remained latent.

In and of themselves, the raw Form R data submitted to TRI by Sheldahl only weakly hinted of a possible power conflict by virtue of the fact that all reported emissions were "toxic". The TRI data base, however, offered no help in understanding this toxicity. Casper stated that "...my students had to travel 40 miles to the Minneapolis Public Library to access the data, and nothing in what they found indicated that methylene chloride was a carcinogen. Without the NRDC report, it is problematic that citizen concern would have been triggered" (1993:248).

Before the raw TRI data acquired by the NRDC from EPA could become politically empowering for the Northfield community, the NRDC first had to use the data to construct a case that Sheldahl's toxic releases in Northfield violated the best interests of the Northfield community and to communicate its case to the people of Northfield. It needed in other words to build a picture of a power conflict of some

significance and that picture had to make its way into the minds of the community. To build this picture, the NRDC added value to the raw data by linking it to other knowledge, namely that 1) methylene chloride is a probable carcinogen, 2) EPA had pledged to regulate emissions of the chemical but had never done so and 3) the amount of the carcinogenic releases by Sheldahl ranked high nationally (number 45) and was the highest in the state of Minnesota. The carcinogenic properties of the chemical, the failure of public authority to regulate a chemical it acknowledged to be in need of regulation, and the relative significance of the releases on a national scale turned a very weak case for a power conflict into a strong and, in Northfield, a compelling one. The picture conveyed by the NRDC report was that of power being exercised in a non-legitimate manner over members of the community by Sheldahl and by environmental authorities. Some fortuitous local press coverage of the NRDC's report was necessary in order for this picture of events to reach Northfield.

Conceivably, the community might have discovered that Sheldahl was releasing airborne pollutants without knowing their toxicity or carcinogenic properties. It might have discovered that Sheldahl was exposing the community to carcinogens without knowing that the exposure ranked high on a national or statewide level. To discover all these things simultaneously created a compelling picture of conflict of interests that shocked and mobilized some citizens of the community into action.

As noted in the first chapter, Gaventa accounted for B as an actor in the overt stage of a conflict by suggesting that B may formulate issues and strategies in the third dimension, mobilize upon issues and act against barriers created by A in the second dimension and engage A in "open conflict with competing resources over clearly defined issues" in the first dimension (Gaventa, 1980:21). In this formulation, Gaventa effectively broadened Lukes' definition of the third dimension to include not only latent but overt conflict. The remainder of this chapter filters facts from the Northfield case through this framework and tests its utility.

Whereas actions in the first and second dimensions were directed outward toward other potential or actual participants in the conflict, the third dimension was an arena of internal reflection for prospective and actual participants in the conflict. Conceived of as the domain in which subjects in the power conflict determine their interests, the third dimension continued to be an integral part of the conflict long after it ceased to be latent.

In the third dimension of conflict the most radical question in Northfield concerned whether there was any basis for a conflict in the first place. Were people's "real interests" really at stake?[29] Aware that it had been exposed to carcinogens by Sheldahl, B could now undertake a third dimension learning process to more closely assess the nature of its interests. As a college community with research facilities and politically active scientists and students, Northfield had an impressive third dimension capacity to build an understanding of its interests even prior to the overt conflict. When the NRDC report activated people who shared in this capacity, B became able to exercise a third dimension power to a) define the problem and b) identify strategies for its resolution. Through independent questioning and research, B would seek to better understand the risks posed by its exposure and to develop political and technical strategies for remedial action.

While discovery of the power conflict advanced the community's knowledge, it also produced considerable uncertainty. In trying to cope with this uncertainty, EPA's manner of presenting the TRI data was not helpful.

> The TRI failed to provide information to answer what are obviously the crucial questions that citizens will ask immediately. Among these questions are: What are the toxic effects of the chemical? What is my family's exposure? What is the risk? What they really want to know is 'Is this something I should be worried about?' If the public does not have credible ways of addressing those questions, the TRI is like crying 'Fire!' in a crowded theater. Not only did the

[29] Because power is defined here to involve a violation of the interests of one party, a violation of interests must be established in order to justify a "power" analysis. It was already concluded above that such a violation existed in the Northfield case.

> TRI not provide answers, it did not provide any guidance as to how to go about finding answers (Casper, 1993:248).

Many communities would remain powerless in the face of such uncertainty and find it overwhelming. Challengers in Northfield demonstrated an exceptional capacity to cope with and reduce the uncertainty that followed in the wake of the discovery.

> Our group of chemists, biologists, physicists and mathematicians spent weeks tracking down the scientific evidence that would shed light on the answers to those questions for methylene chloride in Northfield, and much more time developing primitive models and then pressing for the appropriate modeling efforts that needed to be performed (Casper, 1993:248).

The initial focus produced by the discovery was problematic in two ways. First, for average citizens with little experience in dealing with the inevitably technical and scientific issues raised by industrial pollution, the focus produced by the discovery offered little sense of direction and exposed the power deficiencies of the citizen groups. For the people who decided to do battle, it was as if they were paratroopers air-dropped onto a foreign terrain with no sense of where to turn. Ready for action, they found themselves "groping in the technical, economic and political thicket for the right response" (Casper, Undated:A7). The range of suggested responses varied all the way from closing down the plant to bottling up the smokestack to recycling releases. While Sheldahl's toxic use reduction plan would eventually acquire credibility in the community, great mistrust of Sheldahl accompanied the initial discovery and caused protesters to be skeptical and suspicious of Sheldahl's plan. Unaware of other options, aroused citizens aimed for elimination or reduction of the emissions rather than for a reduction in chemical usage which appeared to involve "unacceptable delay" (Casper, Undated:B4).

The second problem with the initial focus was that it biased attention toward airborne community exposure to methylene chloride away from a more balanced picture that would include the even higher rates of workplace exposure. This focus can be traced back to the institutional lines of authority separating the regulation of workplace and environmental issues. The Toxics Release Inventory only focuses

attention on problems within the EPA's jurisdiction and that begins "outside the plant boundary" (Casper, Undated:A5).

> The TRI provided no information at all about exposure and risk to those citizens of the community that were most exposed and most at risk -- the workers at the plant. In a curious and very important way, this biased the politics of the protest toward demanding pollution control solutions and away from what the national environmental community consensus sees as the most appropriate response: toxic use reduction (Casper, 1993:248-249).

> ...the net effect in Northfield was to focus the initial community discussion and citizen organizing around only one part of the methylene chloride problem, neglecting, at least at first, the risk to the workers inside the plant (Casper, Undated:A5).

These institutional barriers were replicated at the state level in the MPCA's authority over the environment and the Department of Labor and Industry's responsibility for workplace safety and health issues.

Other barriers existed by virtue of the different socio-economic backgrounds of the citizen groups and the workers. The founders of CAN were "by and large, well-educated and affluent." The workers were "generally less well-educated and less well-off economically" (Casper, Undated:A6).

Organized opponents to the releases became engaged in a third dimension learning process in which their understanding of their interests developed and changed, as did accordingly their perceptions of what needed to be done in order to defend them. There was a "full range of policies that were considered in Northfield's search for solutions to its methylene chloride problem" (Casper, Undated:B1). As internal deliberations, these policies represented third dimension explorations by B. As these policies were actively pursued by B in the political arena, they represented empowerment efforts in the first and second dimensions.

The initial discovery would structure and focus their attention on the problem as depicted by the NRDC and shape their initial strategies for action. The questioning and research they subsequently undertook would produce new information that would restructure and refocus their attention and shape new strategies for action.

While the discovery of the power conflict was a step forward for the community, it structured and focused the community's attention on a problem in need of solution. And, "what might be appropriate solutions to the 'methylene chloride problem' depended on how the problem was defined" (Casper, Undated:B1).

The knowledge acquired and developed by B in the third dimension determined political actions to be taken by the challengers and provided political ammunition to target at decision-makers and agenda-setters. From these forays into the first and second dimensions of the conflict, third dimension learning processes continued as feedback from public debates.

Particular capacities and actions had multiple effects across the various dimensions of power.

While Sheldahl was prepared to publicly admit at the outset of overt conflict that methylene chloride emissions constituted "a serious problem" (St. Paul Pioneer Press Dispatch, 1989), some conflict was waged on its behalf by people who for whatever reason publicly argued that the risk posed by the releases was insignificant and community concern was a tempest in a teapot. For example, the newspaper article by a local professor arguing that the conflict was a tempest in a teapot potentially benefited A in its second and third dimension effects on B (Casper, Undated:B1). In the second dimension, it could persuade public decision makers to give short shrift to the issue. In the third dimension, it could persuade individuals in the community to discount any threat to their interests and to refrain from involvement in the conflict.

Similarly, public actions by the organized opposition could have had multiple effects. Taking inspiration from the Chamber of Commerce greeting sign at the city line that read "Welcome to Northfield -- Home of Cows, Colleges and Contentment", CAN produced signs and tee-shirts pronouncing Northfield to be the "Home of Cows, Colleges and Carcinogens" (Casper, Undated:A3). Trading smartly on terms -- "carcinogens" displace "contentment" -- the CAN motto captured the spirit of violated

interests felt by the group. Communication of the motto through signs and tee-shirts was directed at the rest of the community and at decision-makers. It had possible second and third dimension functions. Everyone who bought and wore such a tee-shirt in public sight expanded the second dimension of the conflict. As a symbolic form of communication to potential allies among the community, it was also a third dimension effort to win over to the opposition the hearts and minds of other community members.

The "prominent local coverage" (Casper, Undated:B1) was a means for people to internally reflect on the issue at the same time that it was a means of keeping the issue on the public agenda.

Sheldahl the pivotal decision-maker in the conflict revealed at the outset, with its public acknowledgment of a "serious problem" and its toxic use reduction plan, that it would not wage a second dimension struggle to keep the matter off the public and political agenda. In effect, it conceded fundamental ground in the second dimension to the protesters. This concession could also have had third dimension effects, convincing some people on the sidelines that their interests were indeed at stake.

While the company had its plan ready to address the problem, it did not present that plan to the union prior to the TRI publicity. In the union's view, therefore, the company's concession that a cancer risk existed only came in the wake of and as a result of TRI-related publicity. According to Frumin, "We couldn't move the company to accept the cancer risk until the TRI data came out" (Frumin, Interview). Martin indicated that the union felt that it had made some progress on the issue of methylene chloride as a cancer risk by obtaining from the company better ventilation and rubber gloves for workers exposed to the chemical. But not until the TRI publicity did the union gain "leverage" to go further.

> We were making some headway into it but it really wasn't until more studies came out that we progressed further...There were several years that we were going at the company for prevention and even elimination [of methylene chloride] but it wasn't until the reports came out as to exactly how much they

> were emitting into the air that we really had some leverage in doing anything by getting the community and more facts out there (Martin, Interview).

By making an issue of exposure to methylene chloride at levels much lower than what workers were exposed to, community opponents had inadvertently strengthened the hand of the union. After the TRI publicity, according to Martin,

> It wasn't just us. It was the whole community after them. Our position was "If you're emitting 400 tons of that into the air, what are you doing inside the plant? Workers are going to be exposed to higher amounts of it" (Martin, Interview).

In the union's view, in other words, the NRDC report led to acknowledgment by the company of the validity of cancer concerns and also highlighted the particular gravity of their own exposure by comparison with the significant but lesser exposure experienced by the community. This constituted major headway for the union in the second dimension of its conflict with the company.

In the first dimension, what was "just a plan" became both a state-mandated permit and a legally required labor contract. The success of the challengers in compelling the company to adhere to its plan through legal and regulatory means constituted a first dimension empowerment.

Over the company's initial objections, the labor union contract made company adherence to the plan legally binding. In Frumin view, "The new contract puts the union in position to enforce use reduction. The union acts as the Environmental Protection Agency" (Working Group on Community Right to Know newsletter, September-October 1991). The key aspect of the contract, according to Frumin, was the requirement that the company make the plan its top capital investment priority (Interview). This assured that the plan would not remain "a mere plan." Through the state authority underlying the legal system, the union had effectively exercised political power over the company. As the challengers in the power conflict, this constituted for the union and its community allies a form of political empowerment.

In April 1991, when the MPCA required in its pollution permit that Sheldahl adhere to its use reduction schedule, the MPCA ironically ruled against levels of pollution that were, according to its rules, legal. It was the first time that the MPCA had ever told a company to eliminate use of a chemical that it had not yet regulated as an air toxic (Laszewski, 1991). This is further testimony to the first dimension empowerment level reached by Northfield opponents.

The fact that Northfield was a college town that included many scientists and the fact that some of these scientists constituted one of the groups opposed to methylene chloride exposure was an important asset for the opposition. According to Wolf,

> I think it made a big difference having people like the Air Toxics Study Group, technical people from the college available so that it wasn't so easy for the Minnesota Health Department and Sheldahl to pooh-pooh it and say "Look, we're taking care of this. You don't know what you're talking about." There were physicists, chemists, statisticians, mathematicians who were really concerned and couldn't quite be shoved off quite so easily. So I think that it's the fact that it was a college town with technical people involved made a big difference (Interview).

On the face of it, methylene chloride exposure was a simple issue of cancer risk and required no expertise to understand. But, as technical issues entered into the debate -- such as parts per million of exposure inside and outside the workplace or the computer modeling of community exposure levels at varying distances and under changing winds -- members of the ATSG were as scientists able to bring into the first dimension of conflict a special capacity for rational persuasion.

In the end, a unique labor-community coalition was able to win legal and regulatory authority to force the company to do something that was not otherwise required by any laws or regulations.

The facts of the Northfield case warrant a definition of power that embraces both an actor's capacities and its actions. Sheldahl's use of methylene chloride and the various actions that led to and constituted organized opposition to such usage, all had capacitative dimensions that affected the other party in the conflict. Sheldahl's power

lay not only in its capacity to use methylene chloride as it wished but in its actual use of the chemical. The community's power lay not only in the actions that it took to discover, understand and assert its interests but in its capacities to do the same. It would appear that capacity and action are symbiotic and cannot be considered apart from one another.

Central to the entire conflict through its latent and overt phases until the final outcome was knowledge of cancer risk. Without such knowledge, the conflict would never have existed. The Northfield case suggests the need for a definition of power that accounts for how knowledge functions to 1) draw the line between impersonal structural forces and the exercise of political power, 2) trigger the shift from latent to overt conflict, 3) play an ongoing role in understanding and acting on one's interests in a) defining the nature of the problem, b) identifying a solution, c) developing a strategy for achieving that solution and d) developing arguments that serve as political ammunition during the overt conflict.

A fundamental issue of the power conflict not incorporated in either Lukes' unilateral or Gaventa's interactive three dimensional models of power is the question of how a power actor becomes an actor and the extent to which a party's power depends upon its organizational strength. In Northfield, actions taken in all three dimensions of power depended on the reality that workers were formally organized as a labor union, that organizing capacities were present in the community, that workers and the community groups eventually formed a coalition. The third dimension capacities of both the union and the community to research the toxicological issues posed by methylene chloride exposure rested upon their underlying organizational strength -- the national ACTWU health and safety office in the case of the union and the college infrastructure in the case of the Air Toxics Study Group. Likewise, actions taken in first and second dimensions political arenas by methylene chloride opponents presumed some degree of organizational capacity.

One fundamental power theory issue raised by the question of organizational capacity is whether power should be more broadly defined to include what Arendt called the ability "to act in concert" (Arendt, 1969, 1986:64). In Northfield, should the union's and the community groups' ability to act in concert as separate and later as allied organizations be accounted for in any power analysis? While Arendt restricted power to a consensual role, should power be more broadly defined to include consensual as well as conflictual capacities? These questions are addressed in the final chapter.

Chapter 4: The Boerum Hill-South Brooklyn, New York Case

The Boerum Hill-South Brooklyn Clean Air Committee Story

This chapter explores the relationship between political power and TRI-related knowledge in the case of a dispute over noxious odors between the Boerum Hill-South Brooklyn Clean Air Committee (CAC) and the Ulano Corporation in Brooklyn, New York. It assesses the political empowerment utility of TRI data for anti-pollution activists who lived next to the facility that ranked as New York City's top industrial air polluter in 1987 and 1988. Compared to the seminal role that TRI-related knowledge played in Northfield (Chapter 3) and the null role in Marcus Hook (Chapter 5), this chapter finds that such knowledge played a auxiliary or peripheral role in the empowerment of protesters.

The chapter is divided into two sections. The first section tells the story of the political conflict over community exposure to toxic chemicals emitted into the air outside the facility. The second section uses Lukes' three dimensions of power framework as a point of departure to develop a power-based interpretation of events as they concern the use of TRI-related knowledge. It tests the utility of this framework for analysis of the politically empowering value of knowledge in the case of the above conflict.

As early as the 1970s, some residents of the Boerum Hill section of Brooklyn, New York, had organized to oppose airborne chemical releases from a plant in their neighborhood owned by the Ulano Corporation, a photographic materials manufacturer. After public release of Ulano's Form R reports in 1988, TRI information made its way to the CAC by a variety of means and processed in various different ways. Depending on how the information was or was not developed, the politically-empowering utility of the information ranged from useless to quite valuable. Least useful were raw TRI data. Most useful was an analysis of New York City's TRI data by a consumer research

group showing that Ulano had the largest reported toxic releases in the city. Ulano's high ranking internally energized and motivated the Committee and, in conjunction with the above research group, empowered it to more broadly publicize its complaints, to acquire more political allies over a broader political spectrum, and to more effectively advance its agenda.

New York City is not ranked among the most polluted cities in the United States. However, its past air pollution problems rank among the worst in the country. In 1953, 1963 and 1966, the city faced smog crises that are now routinely recorded in the annals of 20th century pollution disasters (Edelstein, 1988:2). And the city continues to experience pollution problems of serious consequence. One journalist recently noted that:

> New York's air ranks second in ozone pollution to that of Los Angeles, and carbon monoxide is also a problem. Much of this comes from automobiles. Some comes from factories, oil refineries and power stations. Some drifts in from other states. The entire city is in violation of Clean Air Act ozone and carbon monoxide standards at least 40 days a year. (Rist, 1990)

While New York State has regulated manufacturers' toxic emissions through a permit process established by the state's Environmental Conservation Law, information regarding such emissions has not been easily or conveniently accessible to the public. TRI data provided the first convenient and relatively comprehensive public source of information regarding such emissions in New York State.

TRI data are a limited means to assess toxic release problems in New York City. Among major emitters of toxic pollution in the city exempt from TRI reporting are dry cleaners, automotive body shops, airports, public utilities and public incinerators.

New York City's declining industrial base and its rise as a service center have ushered it into a post-industrial era. This fact led many to expect the amount of TRI-reported releases in the city to be low. Indeed, New York City's emission totals do not

stand out by comparison with TRI release amounts reported in other cities.[1] Nevertheless, the city's release figures were the source of some surprise and concern. In 1988, local environmental agency officials expressed amazement to the New York Post when informed of the amounts of releases first reported under EPCRA ("Air Peril Surprises City Officials" by McKenna, 1988b). And a report by public interest activists assessing citywide TRI data (discussed in detail later in this chapter) received extensive publicity in 1990, building legitimacy for concern about the local release figures.

Ulano Corporation is a manufacturer of arts supplies and photographic materials used in photo screening processes. A Ulano promotion brochure calls itself "the World's Leading Manufacturer of Screen Printing Films and Emulsions." It has been operating in Brooklyn since the 1940s and in the Boerum Hill neighborhood since 1959. It is family-owned, markets to other industries, and has a non-union work force.

The Ulano factory is located in a densely populated residential area. The factory is directly flanked by a housing project, a church, the church's recreation center, and rows of multi-residence brownstones. Within a block radius are the P.S. 38 elementary school and the Sara Jay Hale High School and within two blocks is another church and a Headstart program, all amidst residential dwellings.

> P.S. 38, an elementary school, and Sara Jay Hale High School, are both one block away. A Headstart program meets two blocks away, and a day care center that has both pre-schoolers and senior citizens attending is located three blocks away (Nic and Inabinett, 1990:10).

At the time that Ulano established itself in Boerum Hill, residents of the neighborhood were predominantly low income Puerto Ricans. While low income housing projects still border the area, white professional families who have restored

[1] TRI-reported release totals in New York City have stayed well below 10 million pounds a year. This was considerably lower than the largest reported municipal releases in the country. In 1989, for example, the highest 50 municipal release totals in the country ranged from 212 million pounds in Alvin, Texas to almost 17 million pounds in Savannah, Georgia (U.S. Environmental Protection Agency, 1991:60).

brownstones have brought "gentrification" to much of the area. The lines of a Boerum Hill historic district were deliberately drawn to include restored brownstone areas and to exclude the low income housing projects.

Knowledge about the existence of a pollution problem did not require any special dissemination of information in the community. The problem forcefully made itself known to Boerum Hill residents in the form of pungent odors like "nail polish" or "lacquer thinner" (Letham, Interview; Califf, Interview). Residents also used descriptions like "rotten eggs", "paint thinner", "sewage", "sweet rubber" and "strong glue."[2] In 1988, one woman indicated that "the fumes and nail-polish smell are [often] so overpowering when I come home from work between 5:00 and 6:00 P.M. that my throat burns by the time I get to the front door."[3]

Whether one could smell the Ulano fumes depended on a number of factors. People living within a two or three block radius from the plant were often affected but residents within a block radius were most likely to notice the smell. Other factors like prevailing winds, temperature, and the timing of smokestack releases also determined whether one happened to be in the path of a release. Warm weather and open windows increased the likelihood that nearby residents noticed the releases while indoors. The condition became aggravated in summer months when temperature inversions limited air circulation and trapped releases.

Residents attributed nausea, headaches, the aggravation of existing respiratory problems and a variety of other health problems to inhalation of these fumes. Group

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[2] A December 28, 1986 memo from Anthony Vera of the Brooklyn Lung Association in the records of the Clean Air Committee lists these odor descriptions from "odor report cards" that were developed by the Association and filled in and mailed to the Association by Boerum Hill residents. The descriptions above were included in 32 postcard reports sent from January 1986 through June 1986. The memo also noted that residents mailed 165 cards during 1984 and 92 during 1985.

[3] Letter from Renee-Noelle Felice of Brooklyn Lung Association to the DEC, February 4, 1988.

activists also suspected more serious problems resulting from the community's chemical exposure, including brain tumors and deaths.

Edie Reese, active in group protests in the late 1970s, moved into an apartment whose back windows directly faced the Ulano smokestack on the same block in the fall of 1977. She did not notice the smell until keeping the windows open the following June. That month, her 6 year old daughter fell ill for about two weeks, running a high fever. Checkups conducted during several visits to a hospital emergency room and tests run by her pediatrician failed to diagnose the nature of the problem. Similar problems experienced by her daughter in June of the next two or three years reinforced her suspicion that the fumes from Ulano were the cause. "When the windows were open and the wind was blowing in our direction, the smell made us physically ill. It would make us feel nauseous and dizzy" (Reese, Interview).

Fearsome nicknames by which people inside the plant referred to coating enclosures through which air emissions were released into the neighborhood somehow matched the alarm felt by neighbors exposed to the releases. They were called Big Brother #1, Big Brother #2 and Little Monster.[4]

Organized community opposition to airborne chemical releases from the Ulano Corporation dated back to the 1970s. All opposition formed in direct response to physical discomforts and illnesses experienced by community residents who inhaled chemical releases from the Ulano factory.

Opponents to odors on Wyckoff Street, one of the streets exposed to Ulano emissions, were active for several years in the mid-1970s. The company promised the Wyckoff Street group that it would raise its stacks high enough so that they would not

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[4] Reference contained in Department of Environmental Conservation files on Ulano, inspected by author under a New York State Freedom of Information Act Request. (Long Island City, New York; October 6, 1993).

affect the area. But the group ceased its activity and fumes from the Ulano persisted (Letham, Interview).

Dick Letham organized the Boerum Hill-South Brooklyn Clean Air Committee (CAC) in 1979. He and others in the group attributed serious health problems to the Ulano emissions. Letham wondered whether the death of his wife in 1978 from a brain tumor was due to their decade-long exposure to Ulano emissions (Letham, Interview). He and Edie Reese believed that there were other instances of brain tumors in the neighborhood (Letham, Interview; Reese, Interview). "I was aware that there were other people in the neighborhood that had developed brain tumors -- quite a number within a 2 or 3 block radius. And I got very angry that the factory was fouling up the air and possibly causing serious health hazards" (Letham, Interview). A woman who belonged to the group organized by Letham in 1979 and whose residence had windows facing the Ulano factory had two sons being treated for respiratory problems. An attorney involved with both the Wyckoff Street group and the CAC suffered from emphysema, requiring regular use of an inhaler. Group activists suspect that the death of the attorney in 1987 was linked to long-term exposure to Ulano releases.

Dick Letham lived one and a half blocks from the plant. One day in 1979, he and a friend found the smell intolerable and went to the factory to register their protest. They were given a tour of the factory and then ushered into the president's office. "He knew we were angry enough to put some pressure on him through governmental agencies, which we proceeded to do" (Letham, Interview).

Following this confrontation with the president of Ulano, Letham organized the Clean Air Committee. For more than a decade, later under the leadership of Jane Califf, the group tried to mobilize their neighbors into a force that could cause government agencies to bring Ulano's emissions under control. According to Reverend Paul Matson of Lutheran Bethelehem Church, who provided space for many CAC meetings from 1982 onward, meetings tended to occur monthly or bimonthly.

Attendance at meetings averaged about 10 people, "with 30 at the height, in the down periods maybe five" (Matson, Interview).

Letham found the company to be unresponsive. "They stonewalled us and said they were in compliance" (Letham, Interview). After six years of inconclusive effort, Letham grew weary of directing the CAC. In 1985, Jane Califf took over as the main organizer of the group. Califf had been active in the 1960s civil rights movement and protests against the anti-Vietnam. She participated on an anti-displacement committee that fought eviction of tenants in the neighborhood.

There were a variety of obstacles to building a strong neighborhood base. Ulano was able to play good neighbor for some residents either as an employer or supporter of community organizations. Letham partly attributes his group's failure to involve poor black and Hispanic residents of the community to fact that Ulano "hired their teenagers, sponsored a baseball team, and made donations to the black Baptist church across the street when the church protested about the factory." At one of the housing projects, Ulano sponsored an athletic club, providing them with "Ulano" tee-shirts. According to Letham, Ulano "was very effective in co-opting those people" (Interview).

The company used its power to hire and fire in order to cool flames over the emissions conflict. John Gibbs, the organizer of the first protest group was a Ulano employee, but was fired after organizing the group (Letham, Interview). One member of Letham's group was hired at Ulano and thereafter ceased his participation. After the group approached the leader of the tenant association in the local housing project, her teenage daughter "suddenly got a job there" (Letham, Interview).

Jane Califf noted that property owners did not want to make an issue out of the pollution. They were "not interested in our information because their property values would lower. They didn't like the fact that a newsletter was put out in which the lead

article said 'Living in Boerum Hill may be hazardous to your health' " (Califf, Interview).

Letham reported a disappointing turnout at neighborhood demonstrations. "We were not able to generate what I thought was a significant community protest. At our best demonstration on the street here we had maybe 30 people out of a community of thousands that were impacted by it. We didn't have the manpower to go door-to-door although we tried" (Letham, Interview).

Throughout most of the 1980s, publicity received by Boerum Hill opponents of the releases remained local to Brooklyn. In the early 1980s, Letham recalls coverage of his group's activities in letters to the editor of a local neighborhood newspaper, The Phoenix, and in the Brooklyn section of The Daily News but never in any mass dailies of the city. One of the local papers published photos of CAC members protesting in front of Ulano with gas masks on (Califf, Interview).

Early efforts by the CAC to identify the names of the chemicals being released by Ulano were unsuccessful. On a number of occasions, the group met with a Ulano staff scientist who offered reassurances to the group that the releases were harmless to the community. When asked to disclose the identity of chemicals being released through their smokestack, Ulano used the standard industry response as its excuse for withholding the information. "The company steadfastly refused to give out any chemical components to their formula because it was a trade secret" (Letham, Interview). Like industries throughout the country that were being increasingly pressed by neighbors and state legislators to identify their environmental releases, Ulano claimed that release of the information would give its competitors an unfair advantage.[5]

[5] When, in 1987, Ulano refrained from asserting trade secret rights upon submitting its first Form Rs to the EPA, it admitted in effect that it had no grounds for making a trade secrecy case. As noted in the prior chapter, legislative debates and experiences subsequent to implementation of the federal and state right-to-know laws have exposed the untenability of most trade secret arguments. When submitting release reports to the EPA and state agencies, few facilities have made trade secret claims and, upon official review, a minuscule number have been granted reporting exemptions (Hanley, 1989:4).

Because of the permit process set up by the state's Environmental Conservation Law, Ulano had already been forced to identify its chemical emissions to the DEC. However, when the Boerum Hill group requested this information from the DEC, agency officials used the same tack as Ulano in withholding the information. "DEC protected them [Ulano] and refused to give us their formula" on the grounds that it was a trade secret (Letham, Interview).

At one point in the early 1980s, the group managed to identify the major chemicals released by Ulano. During oral communications with one of the group members, a DEC official either leaked or inadvertently revealed that Ulano's primary releases consisted of toluene and methyl ethyl ketone (Letham, Interview).

The immediate utility of knowing the chemicals[6] was that it allowed the group to more directly address its health concerns and to enter into a learning process that would result in a higher, more sophisticated level of knowledge that the group attempted to use to advance its position in the conflict. One member of the group headed by Dick Letham was a high school chemistry teacher. Adept at explaining chemicals to lay people, he helped the group develop its chemical-related knowledge base, particularly regarding health problems known to result from exposure to these chemicals. A hospital administrator in the Letham group contacted health officials and doctors through her job who came to talk to the group about its concerns with specific chemical exposures. Letham recalls "many such contacts" (Interview).

The fact that some Committee members had developed greater technical sophistication meant that new members faced a learning curve when they came to

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[6] Because the Clean Air Committee managed to acquire the chemical names long before its legal right to know had been secured, this case study does not illustrate the utility of chemical identification made through TRI data. Nevertheless, the practical utility of the information derives much more from the information itself than the means by which it was acquired. Therefore, the experiences of the Clean Air Committee related here concerning the utility of chemical names still serve the purpose of this chapter. That is, these experiences help illuminate the utility of one kind of information made available through the CRTKA, namely the identity of chemicals.

meetings. Reverend Paul Matson of the Bethlehem Lutheran Church began providing space for group meetings in 1982 and ended up joining the group after sitting in on meetings. He remained active through the 1990s. At his first meetings in 1982, Matson recalls a challenging level of technical discourse.

> They were using the names of the chemicals right off the bat in the meetings. It took me a good year to understand the conversation. It was like a foreign language to me (Matson, Interview).

This higher level of knowledge gave the group more solid grounds on which to confront Ulano directly. The group was, for example, able to use the chemical names to press the staff scientist with more specific questions. Letham noted that:

> As we got more sophisticated in terms of understanding the formulas and which components were dangerous, we narrowed down our questions. And they kept saying there was no proof that they were carcinogenic. They denied toxicity of these chemicals in the parts per million that they were putting them out (Interview).

Ability to enter into more technical discourse also enhanced the group's power to "get their foot in the door" of offices of regulatory agencies staffed by health experts and chemical engineers.

In 1984, the group found a helpful ally in the Brooklyn Lung Association. The Association provided the group with hundreds of 'odor report cards' which the group distributed among members and neighbors. Residents carried the postage paid cards in the neighborhood and, when fumes were noticeable, noted where they were, the time, the weather conditions, and what it smelled like. They mailed the cards back to the Association which entered the information in a computer and mailed it to state and city officials. Jane Califf credits this kind of pressure with the fact that the DEC kept Ulano on its priority list of factories to monitor.

DEC records include a regular correspondence between BLA officers and the DEC between 1985 and 1988. The DEC's Michael Kormanik wrote the BLA's Anthony Vera in March 1985 that "odors are detectable only in the block where Ulano is situated" and "by June 1985, only the side of the street where Ulano Corp is situated

would experience any odors." He said that, with random visits by inspectors, the "extent of this monitoring is unprecedented."[7]

Most of the CAC's efforts to achieve effective control over Ulano's emissions had to be directed at the state's Department of Environmental Conservation (DEC). Established in the late 1960s, the DEC was responsible for regulation of industrial pollution and authorization of pollution permits. Appeals to other officials by the CAC, such as city council members, were usually for the purpose of putting pressure on DEC to take remedial action.[8]

One of the first actions taken by the Letham group after forming in 1979 was to request an inspection by the state Department of Environmental Conservation (DEC). Subsequently, in 1980, a state inspector spent a week walking through the community, literally sniffing out the problem. Letham recalls that "The report totally corroborated what we had been saying." However, the group was frustrated in its hopes that the state report would be useful ammunition in pressing forward its case. "We never got any satisfaction from that report. We kept referring to it. It never seemed to carry any weight" (Letham, Interview).

The Committee found that the state agency was set up to communicate strictly with industries but not with the general public. It had no "mechanism to deal with community complaints" (Letham, Interview).

In its files on Ulano, DEC appears to have limited its investigation of odor problems in the neighborhood to random "sniffing" checks by inspectors. These often revealed no problem, producing comments like "No odors" (March 31, 1986) or "No

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[7] March 19, 1985 letter from Michael Kormanik to Anthony Vera.

[8] For example, in November 1988, the CAC wrote to the DEC demanding action on Ulano's emissions and also sent a copy to Councilman Abe Gerges. Gerges in turn wrote a letter to DEC supporting the CAC's requests. (Based on DEC files inspected by author under Freedom of Information Act Request).

odors were observed on Nov 20, 1986", or that the inspector who visited the location on August 25, 1988 "did not detect fumes or odors while he was there."[9]

One of the only wedges the Committee found that it had was regulation of chemicals affecting the ozone layer. Under pressure to implement the federal Clean Air Act, New York State issued limits on emissions of chemicals that depleted ozone in 1981. Toluene, the main offender in the Boerum Hill neighborhood, also happened to be a chemical that damaged the ozone layer. On September 20, 1981, DEC ruled that Ulano must reduce its emissions of certain ozone depleting chemicals to specified levels by several target dates that ranged as far into the future as 1988. Its toluene emissions had to be no more than 127,000 pounds a month by May 31, 1981 and 96,400 pounds a month by June 30, 1985.[10]

The CAC understood that Ulano was being used as a test case for DEC's implementation of the new state rules and wondered if its protests had played a part. "Now I think they [Ulano] became the test case because of the pressure that we as a community were putting on, but we don't know that for sure" (Letham, Interview).

According to Michael Kormanik, the DEC engineer responsible for enforcement of state air pollution standards in New York City, there were two means by which Ulano could reduce its emissions to levels acceptable under the Clean Air Act. It could either reformulate its solvents so that they contained the required lower amounts of volatile organic compounds. Or they could attain the lower amounts by incinerating the solvents permitting them to use similar or even greater levels of solvent concentrations (Interview). Under the 1981 consent order, DEC ordered Ulano to achieve the reduced emissions through the reformulation method.

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[9] References contained in DEC files on date noted in footnote above.

[10] References contained in DEC files inspected by author under Freedom of Information Act Request on date noted in footnote above.

In August 11, 1987, EPA officials conducted an inspection at Ulano. It found the company using 5.81 pounds of VOC per gallon rather than the 2.9 pounds it was permitted under the DEC consent order. On the same day, EPA wrote Kormanik requesting a copy of an emission plan that Ulano was unable to produce at the inspection. On September 16, 1987, EPA notified the president of Ulano that it had to supply detailed information on its surface coating emissions. Unsatisfied with the effectiveness of DEC's measures to bring Ulano into compliance, EPA decided to overrule DEC's 1981 reformulation agreement with Ulano. On February 23, 1988, EPA issued Ulano a Notice of Violation of the Clean Air Act, requiring that the company incinerate its solvents.[11]

Ulano balked at the cost of an incinerator. After being threatened with non-compliance penalties by EPA in August 1988, Ulano submitted a purchase order for an incinerator on December 16, 1988. It was delivered on May 15, 1989. A Ulano consultant notified DEC on June 2, 1989 that the incinerator had been hoisted onto the roof of the facility and that it would be in full operation by August 1.

With the incinerator in place on a Ulano rooftop, the Committee expected it to go into operation at any time and finally resolve the neighborhood pollution problem. Most parties expected that the incinerator would burn and eliminate most of the toxic content of emissions before they passed through the smokestack. However, a bureaucratic clash prevented Ulano from actually operating the incinerator. The device installed by Ulano could only incinerate 95% of toxics. This suited the EPA but not New York State which had tightened its standards in 1988 to require 98% incineration.

In the spring of 1990, the incinerator was still caught in a bureaucratic limbo. The Committee initiated contacts with the press and was able to generate bad publicity for the regulators. A Newsday piece entitled "Brooklyn Closeup: Pollution Solution

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[11] Copies of all EPA communications were contained in DEC files.

Bound in Red Tape" (April 3, 1990) recounted the stalemate between DEC and EPA regulators. An EPA official told Newsday that the 98% requirement was "probably higher than is reasonable" and could not be achieved through existing technology. "It's incredible," Jane Califf told the Newsday reporter. "It's been a ten-year fight to get the company to stop polluting the air. And now, when they finally install the incinerator, they can't pull the switch."

When TRI data made its way to the Committee in various forms, the most salient issue on the Committee's agenda was to get Ulano to install and use an incinerator.

Toxic Release Inventory Data on Ulano Corporation

The deadline for submission of the Form Rs to the EPA and to state agencies during the first cycle of reporting was July 1, 1988. For journalists covering state capital or environmental politics, the stacks of Form Rs that had accumulated in the offices of their state environmental agencies offered an opportunity for a "scoop". The first and only journalist from a New York City daily to report on the first TRI reports for the city was Chris McKenna of the New York Post. Stationed at the state desk in Albany, McKenna recalls encountering "boxes and boxes..of thick documents" from industries all around the state when he arrived at the DEC offices to go through the Form Rs. He spent several full work days going through all the boxes in order to locate reports from New York City industries (McKenna, Interview).

On July 25, 1988, the Post published what would be the first of two articles. It was located prominently at the top of page 2 with the headline "LICENSE TO SPILL: Big Apple factories spewing chemicals-- and it's legal." A box insert read "POST EXCLUSIVE." McKenna's report included the following:

> New York City factories legally poured tons of dangerous chemicals into the environment last year, a review of official government documents by the Post has found.

> Those chemicals -- released through smoke stacks, air vents, into sewers and, in one case, directly into a Staten Island stream -- included deadly cyanide, solvents and heavy metals such as lead, barium, zinc and nickel.
>
> Many of the chemicals have been linked with various forms of cancer and other illnesses...
>
> [The reports were] mandated for the first time this year by the federal Environmental Protection Agency...
>
> One of the pollutants named most frequently in the reports, toluene -- a solvent used mainly as a cleaning agent -- was released by at least seven large manufacturers...
>
> ...[a DEC official] was surprised by the reported amounts of toxics released.
>
> Ulano Corp. of Brooklyn was apparently the city's largest toluene polluter, emitting a whopping 310,000 pounds of the chemical through its smokestacks last year.

The next day McKenna wrote a follow-up piece headlined "AIR PERIL SURPRISES CITY OFFICIALS." It read:

> City environmental officials admit they were caught by surprise yesterday by new information showing that tons of chemicals are being pumped unchecked into the air by large manufacturers.
>
> "We weren't aware of the large numbers," Dept. of Environmental Protection spokesman Andrew McCarthy told the Post, which broke the story of legal toxic chemical emissions yesterday...
>
> The Post's information came from the offending companies themselves, which were required under a new federal regulation to make the disclosure.

The second piece did not mention Ulano but listed releases from 16 city facilities, 14 of which were not mentioned in the prior article.

McKenna recalled "We got a good ride out of it on that story because I do remember getting a bunch of calls [from facility neighbors] on it. You know that's the kind of stuff that's right in your neighborhood so people are kind of concerned about it" (Interview).

The first Post article had a dramatic impact on the Clean Air Committee. As a consequence of the report, Jane Califf noted "We sprang into action again."[12] She

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12 From notes of an undated lecture given by Jane Califf in records of the Clean Air Committee.

recalled "Suddenly about 1989 [sic], the New York Post had an article called something like 'Companies Spewing Toxics into the Air -- and It's Legal.' A reporter looking at the data saw Ulano was the number one air polluter [sic]. We felt that was terrible after all we had been through. That sort of mobilized us even more. We sent to Albany and EPA in DC for the data and got it. So we began to use that to try to strategize what to do" (Califf, Interview).[13]

Matson recalls the Post article "very vividly." Prior to the article, the group had been "relatively inactive." The committee was receiving reports from DEC indicating that the company was in compliance with the DEC consent order. While the smell continued, it seemed to be "dramatically reduced." The article, however, made the Committee feel that the problem was more serious than they had been led to believe. In Matson's recollection, Ulano was "named at the top of the article as the worst in the city." It had an energizing impact on the committee and "renewed efforts to get the state more active in the whole thing...There were phone calls, a lot of meetings as I recall and a concern that we should get back on the case again. With the article itself, it kind of spurred the troops to get more involved" (Matson, Interview).[14]

For average citizens wishing to exercise their right to know and to access TRI data on neighboring reporting facilities, one simple resource is required: information about how to contact a governmental body legally required to disseminate the information to the public. A shortcoming in the July 1988 Post articles was that they failed to mention the Community Right-to-Know Act and the fact that the law had

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[13] Two facts became blurred in the interviewee's recollection of events that had occurred four years prior to the interview. She dated the article from 1989 instead of 1988. More significantly, she thought that the article had identified Ulano as the top air polluter in the city when in fact, after his brief purview of the data, McKenna only felt confident enough to call Ulano "apparently the city's largest toluene polluter." What is clear, however, is that the Post's July 25 TRI coverage had a tangible impact on the committee.

[14] Matson's memory that the article described Ulano as "the worst in the city" also exaggerates the actual reference which only called it "apparently the city's largest toluene polluter."

granted the public the right to request and receive the release data from federal, state and local governmental sources. However, the Committee eventually discovered the public disclosure provisions of the Community Right-to-Know Act and related contact information on its own. In her recollection, Jane Califf associates the Post article and subsequently sending for TRI data. This suggests that they could have learned of the Right to Know as a result of inquiries into the fact that the EPA and state officials had the data as reported by the Post. Committee records suggest, however, that there was a delay of as much as a year between the July 1988 Post coverage and formal requests by the Committee for TRI data. An August 21, 1989 letter from the Committee acknowledges having received TRI data from the State Emergency Response Commission (SERC) several months earlier. And, on September 6, 1989, the EPA responded to a Committee request with three facility profile reports on Ulano and a fact sheet on other means to obtain TRI data.

The utility of the data forwarded by the agencies appears to have been virtually nil. In her August 21 letter to the SERC, Jane Califf wrote:

> A few months ago, we requested a summary of the report submitted by Ulano Corporation on their toxic emissions. You sent us one page that we did not understand, and now we have misplaced...

The raw TRI data forwarded by the state was therefore incomprehensible to the Committee.[15]

The Role of the Consumer Policy Institute

After the cursory look given to citywide New York City TRI data by the Post in July 1988, the citywide data received no attention of public or political consequence until the Consumer Policy Institute (CPI) released its study of the data almost two years later.

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[15] In an effort to replicate the kind of report lost by the Committee, the author submitted an identical request for data to the DEC. It is replicated in Appendix C and discussed more in the analytical section of this chapter.

The Consumer Policy Institute is the research arm of the Consumer Union, the publisher of Consumer Reports. It is located in Mount Vernon, New York directly across the northern border of New York City. After the chemical disaster at Dow Chemical in Bhopal, India, the Institute's director Jean Halloran turned research attention toward toxic chemical accident risks abroad and in the United States.[16] In 1988 and 1989, the Institute conducted a study of such risks in New Jersey using TRI data.

Originally, Halloran and CPI researchers figured that New York City did not merit attention, assuming a small industrial base in the city. In 1989, however, CPI decided to ask New York City's DEP for TRI data on the city. When a large stack of computer printouts from the DEP arrived in mid-1989, Halloran recalls "We looked at it and said 'This is amazing. There's a lot of toxic polluters here in NYC.'" (Halloran, Interview).

As they had when the Post reporter browsed the city TRI numbers in July 1988, the Ulano release figures drew the attention of CPI. "Looking at this data, it immediately became clear that Ulano stood out from the crowd in terms of having the biggest emissions." Halloran remembers noting the "huge amount of toluene" emitted by Ulano. This immediately prompted her to inquire about toluene. She telephoned one of the Consumer Union's staff chemists who was located across the street in a product testing center. He read her a passage on toluene from one of his reference books (Halloran, Interview).

Within a day or two after receiving the printouts from the DEP, Halloran and two other Institute employees added up the release totals on an adding machine. It took less than one hour. They determined that there was a citywide total of about two

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[16] Substantial portions of the following discussion on the role of the Consumer Policy Institute are based on taped phone interviews conducted with Jean Halloran on March 31, 1993 and September 15, 1993.

million pounds of toxic air emissions from about 60 sources. It was enough to erase their earlier assumptions about the insignificance of toxics in New York City. They decided at that point to seek funding to produce and publicize a report on toxic air pollution in New York City.

CPI noted to potential funders that its preliminary review of the data showed that about two million pounds of toxics had been released into the air by New York City industries in 1987. She believes that this amount and the expectation that New York City's industrial air pollution would be minuscule helped acquire funding. "I think it is what caused the funders to give us money. They were as taken aback as we were." When she went to funders Halloran also noted the irony of having done research on grass roots activities based around the country and discovering that, as a resident of Brooklyn living not far from Ulano, "All of the sudden I find that I'm the grass roots" (Halloran, Interview).

CPI did not begin its study of New York City TRI data until a grant came through about a half year later in December 1989. At that point, CPI received $35,000 from New York Community Trust to produce and publish within six months a report on New York City TRI data. Through May of 1990, when the report was released, Halloran estimates the work time required to complete the report involved two people working half-time for six-months, at least one month of her own time, at least a half month of clerical time, and another half-month of work by persons with various expertise.

As a resident of Brooklyn, Halloran had become aware of the Clean Air Committee's protests against Ulano through a paper in her neighborhood. CPI contacted the Committee hoping they might be able to contribute to their research on Ulano.

> When we contacted them, we learned that they did not know and had not looked at the TRI data. They were unaware and quite shocked that this was the biggest toxic polluter in New York City. They knew it was bad. They knew they had a

> problem. They didn't know it was the worst in New York City (Halloran, Interview).

Halloran, who had done public interest work for 20 years and is "very familiar with press people" worked out a press strategy with the CAC "that we thought would serve both of our interests very well." The goal of the project was to "create public awareness on the issue", so they "wanted to release this report and get as much press attention to it as we could" (Interview).

At their press conference on the morning of May 22, 1990, the CPI released a 36-page report entitled "Toxic Air Pollution from New York City Industry." In attendance were reporters from the major dailies and at least one television crew. Abe Gerges, city councilman for the Boerum Hill district who had supported the Clean Air Committee protests in various ways, accepted CPI's invitation to attend the press conference.

The main thrust of the report was to identify the city's worst air polluters as determined by annual amounts of reported toxic releases into the air. Of 66 reporting facilities, it highlighted the "target ten", eight of which accounted for two-thirds of all releases in the city. The other two members of the "target ten" had the largest reported air releases in their respective boroughs. The report provided toxicological information from the New Jersey "Hazardous Substances Fact Sheets" on some chemicals, including toluene.

Topping the "target ten" list was Ulano, identified as "the City's worst toxic air polluter" (Nic and Inabinett, 1990:iii). The report stated:

> Ulano was the largest industrial source of toxic chemical air emissions in New York City (333,250 lbs.) in 1988, alone accounting for 17 percent of reported toxic air emissions. For that year, Ulano reported emitting two highly toxic chemicals, 2-butanone (methyl ethyl ketone) (32,250 lbs.) and toluene (301,000 lbs.). Ulano's emissions were by far the highest reported in the City, accounting for more than half of all the emissions of toluene citywide and more than four times those of the next worst source of this solvent (Nic and Inabinett, 1990:9).

Ulano's status at the top of the list was reported in most of the media coverage given the report. On paper at least, the report had transformed Ulano emissions from a neighborhood level issue to a citywide issue.

On May 23, 1990, the day following the CPI news conference, the New York Times, the Daily News, New York Newsday and the Staten Island Advance dedicated articles to the CPI report. The Associated Press also released a report on the conference that was picked up by at least one newspaper -- the Trenton Times in New Jersey. Two less regularly published Brooklyn neighborhood papers also covered the conference in their next editions.

All headlines of the dailies were based on rankings produced by the CPI with TRI data. Four of the papers highlighted the eight polluters accounting for two-thirds of the total reported in the city. In its Brooklyn and Staten Island section, the Daily News chose to spotlight Ulano (see Table 4.1).

Table 4.1 TRI-based Newspaper Headlines in the New York City Area, May 23, 1990

"Film firm called top air fouler."	New York Daily News
"8 Factories Called New York's Top Polluters in '88"	New York Times
"Group Hits 8 Companies For Discharging Toxins"	New York Newsday
"Group names city's worst air polluters"	Staten Island Advance
"Consumer group names 'dirty eight'"	Trenton Times (AP dispatch)

The articles that mentioned Ulano reported conclusions that CPI had developed using TRI data (see Table 4.1). The Times reported

> The biggest toxic chemical emitter in the city, the institute said, was the Ulano Corporation...In 1988, the most recent year for which data are available, Ulano accounted for about 17 percent of the city's toxic air pollution, the institute said.

Both the "biggest" ranking and the "17 percent" figure were conclusions based directly on CPI's analysis of TRI data.

Commenting on Ulano and Brooklyn, New York Newsday wrote

> Led by a Brooklyn photo chemical maker, city factories are coughing nearly 2 million pounds of toxic smoke into the air a year, posing a health risk to residents close to the plants, a consumer advocacy group said yesterday...Topping the list is the Ulano Corp. in Boerum Hill,

> Brooklyn....Brooklyn is the most polluted borough, with more than half the city's toxic emissions...

TRI-dependent conclusions included Ulano's top ranking, Brooklyn's top borough ranking and the citywide total.

Table 4.2 TRI-based News Coverage in the New York City Area, May 23, 1990

	Daily News	Newsday	Staten Island Advance	Times	Trenton Times (AP release)
Ulano's top ranking	X	X	X	X	X
Ulano's 17% of reported releases	X		X	X	
Brooklyn's top ranking	X	X			
Health risks associated with reported releases	X	X		X	
Total number of companies	X		X	X	
Eight facilities account for two-thirds of total			X	X	X
Above eight facilities named		X		X	
City release total in 1988	X		X	X	
Citywide data does not include significant non-industrial sources of toxics			X	X	X
Community Right-to-Know Act			X	X	
Ulano releases are about 300,000 pounds	X	X			

In its Brooklyn and Staten Island section, the Daily News made Ulano central to its story, writing that,

> The Consumer Policy Institute, a watchdog agency for Consumers Union, charged yesterday that the worst air polluter in the city is the Ulano Corp., a Boerum Hill firm that supplies photographic chemicals...Ulano topped a list of

> 66 companies that spewed 1.93 million pounds of 48 toxic chemicals into the air in 1988...The report contends that Ulano was responsible for 17% of the total toxic emissions in 1988.

Again, conclusions such as "the worst air polluter" and "17% of the total" were based upon analysis of city level TRI data.

CPI also planned means to generate TV coverage for the report. Halloran felt that "we would probably get better TV coverage if they had something to film at the site, particularly people who were concerned, people who were potential victims, people who this facility was having an impact on" (Halloran, Interview). Members of the Committee agreed to make themselves and some affected neighbors available for TV crews in front of Ulano at 2:00 P.M. "They were quite happy with that idea because they also realized that if there was press attention to the fact that this is not only a bad plant for them, it was the worst polluter in the city, that maybe there would be more action on it" (Halloran, Interview).

Jane Califf recalls that CPI asked "if we could be outside the factory with picket signs to create a photo opportunity...So we agreed that we would be available at 2 P.M." (Califf, Interview).

At 2 P.M., a news crew from WNBC-TV taped interviews with Ulano neighbors, including members of the Clean Air Committee, who were picketing in front of factory. Jane Califf recalls "quite a bit of filming" with about six to eight protesters present who were active in the Committee or lived in the neighborhood (Califf, Interview).

That evening, WNBC-TV aired a substantial piece on both the CPI report and the Boerum Hill protesters. "We were the number one story," Jane Califf recalls (Califf, Interview). Jean Halloran remembers "a very nice long piece" in which "our data was given in voice over with visuals of the plant and of the people" (Halloran, Interview).

Soon after the airing of the story that evening, an official from the New York City DEC located in Long Island City phoned WNBC-TV and stated that Ulano had to begin using its incinerator by July 18 or it would be shut down. The station reported the call on its late evening news.

From the perspective of the CPI and the CAC, it appeared that the TV news coverage had actually caused the DEC to cease its insistence on the 98% incineration rate and to order Ulano to start the incinerator. As discussed later, DEC had in fact issued its violation notice to Ulano on the Friday prior to the Tuesday CPI press conference. (This conspicuously close timing is analyzed more closely in the analysis section of this chapter).

After the flurry of publicity in May over Ulano's top ranking and the shutdown threat by DEC, the Committee did not assume victory. The incinerator still had to be turned on and, after that, monitoring would have to determine if, in fact, the problem had been resolved.

Asked whether the number one ranking was of any value to the Committee after the CPI report was released, Jane Califf said "Sure. There were more neighborhood people." Also, members of the city council, including their council representative Abe Gerges, got more involved. A state assemblyman wrote a supportive letter for them. "These politicians would rather do nothing, but when the evidence piles up on your side and you call them up, they suddenly feel like they have to say something. Otherwise they look a little bit negligent" (Interview).

According to Dick Letham, Ulano's top ranking "gave us a good deal of ammunition in terms of pressuring officials to make something happen", noting that Ulano's incinerator went into operation "shortly after that" (Interview).

Paul Matson stated that the number one ranking was "very helpful to re-energize people and for pulling in other community people from the planning board and whatever...I remember producing circulars with that [the ranking as the city's top

polluter] on them and distributing them around the community and calling for a meeting including the planning board at that point" (Interview).

Asked whether the top ranking helped on outreach at any broader levels, Matson noted that, during this period, there was a new responsiveness from environmental agency officials that had been lacking. "When we tried to get meetings earlier on with the folks from the environmental bureaucracy, it was very difficult. All of a sudden there was a responsiveness that wasn't there" (Matson, Interview).

The Committee used the TRI-based publicity as a scope-widening tool in gaining the involvement of the local Community Board #2 in the issue. Past efforts to involve the Board had been unsuccessful. On May 16, 1990, Jane Califf used the opportunity of the pending CPI press conference to urge the board to take up the issue. Noting the CPI press conference scheduled for May 22, she observed that "It would be sad if CB2 still remains quiet on the issue given all the evidence." After the publicity created by the CPI press release, the Committee had no problem in getting the Community Board to sponsor a July 17, 1990 meeting that focused on the Ulano issue.

Prior to the meeting, Committee members disseminated a flyer in the community calling people to the Community Board meeting. The flyer noted that the CPI report "found Ulano to be the #1 industrial air polluter in New York City. TV cameras and news reporters came to our neighborhood, interviewed members of the Clean Air Committee and others, and the story was widely covered on radio, TV and in the newspapers." About 100 people attended the July 17 Community Board meeting, including two DEC officials.

By late in the summer of 1990, Jane Califf was speaking in terms far more optimistic than she ever had before, referring to "our victory over the Ulano factory" (Newsday, August 27, 1990). Because the smell had ceased and never reappeared, the Committee assumed that it had also succeeded in its effort against Ulano's toxic air releases.

What issues and events drove the conflict over Ulano's emission remain subject to dispute.

Letham expressed the belief that protests by the CAC made DEC decide to make Ulano a test case in compliance with the federal Clean Air Act. "Now I think they became the test case because of the pressure that we as a community were putting on, but we don't know that for sure" (Interview).

Asked if community complaints influenced DEC's priorities over Ulano, the DEC's Kormanik said

> Not really, because Ulano was one of the larger VOC sources. What we were trying to do was to 'get the biggest bang for the buck' (Interview).

In other words, the agency, trying to efficiently apply scarce resources, regulated Ulano's emissions of the ozone-related volatile organic compounds and coincidentally dealt with a health issue at the same time, giving it more "bang for the buck." This still leaves open the possibility that community protests could have been a factor in the agency's actions. If there had been no community complaints, regulation of Ulano would not have brought as much "bang for the buck."

DEC also claimed that Ulano's top city ranking as an air polluter among TRI reporters "had no bearing" on making Ulano's releases a larger issue for the agency. According to Kormanik, air pollution regulations guided agency actions against Ulano (Interview).

Ulano concurred with DEC that the issue underlying its emissions was never toxicity but ozone depleting emissions. Bitterly complaining of the costs imposed on the company by the dispute, Ulano set forth its position on the community conflict page in a 1991 letter to an environmental group.[17] Ulano vice-president A.W. Willenbrock wrote that

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[17] The Environmental Exchange in Washington invited Ulano to comment on an article it planned to publish regarding the community conflict. Ulano responded in a November 21, 1991 letter, a copy of which is contained in DEC files.

> ...It is true that prolonged exposure to high concentrations of toluene can cause health problems. But Ulano's measured, verified emissions levels were orders of magnitude below any such concentrations and the "Committee" knew this. The key point is that the regulation here has always been under Ambient Air Standards -- not toxicity. The issue has thus been ozone layer depletion...
>
> The end result of all this is that Ulano's compliance has taken a huge toll on our company. Greatly increased costs for product has put us out of competition in this market segment (once more than 50% of our business). We have lost a lion's share to Japanese and European competitors operating without emissions regulations at all. Our work force has gone down by more than 50 jobs (over 20% of overall employees) of local people and remaining employees at all levels have suffered financially as well.
>
> The "Committee" obviously wants to take the major credit here, but in reality their effect was minimal at best; to a certainty, the same regulations would have occurred with or without them.
>
> The last point, that of odor, is of no moment. Odor was a problem in the past, though not nearly as characterized. The "Committee" reacted to harmless (though not pleasant) odor as "proof" of health hazards... (emphasis in original).

DEC's and Ulano's views of the conflict stand in stark contrast to the CAC's interpretation of events already noted above. For the Committee, the health problems, its role as gadfly over the years and, in the end, the role of TRI-related citywide publicity were all critical to the course of the conflict. The power-based analysis that follows sorts out these opposing claims.

Political Power and TRI-related Knowledge in Boerum Hill

The remainder of the chapter develops a power-based interpretation of the conflict recounted above for the purpose of exploring the relationship between power and TRI-related knowledge. The concepts and issues in power theory discussed in Chapter 1 are used as a point of departure for this discussion.

The conflict between the Ulano Corporation and the Clean Air Committee over noxious odors in the Boerum Hill neighborhood qualifies as a power dispute because the interests of both parties were clearly at odds. The company had an economic interest in releasing the offending chemicals into the air and members of the community experienced tangible health problems as a result of the releases. It was a political

power conflict because the question of state support for either side was critical throughout the process.

The power conflict pitted the Ulano Corporation in its capacity as an air polluter and the Department of Environmental Conservation in its capacity as a pollution regulator against the Clean Air Committee and associated neighbors who asserted their right to pollution-free, healthy air. Ulano exercised power over the local community when it polluted the air inhaled by local residents, often causing them physical discomfort and illness. Whether the health interests of community protesters were genuinely at stake was consistently disputed by Ulano. On health grounds, state rules supported Ulano's right to pollute and undermined the interest violation claims of the protesters. Indeed, in the view of Ulano and regulators, the conflict was driven by rules governing ozone depletion and not by the health concerns of the community. In this view, the conflict that mattered was that between state-supported national-B ozone protectors and local-A polluter. Any regulatory intervention whether by DEC or EPA was a matter of national-B exercising power over local-A. Local-B was an extraneous actor in this view. The fact that smells opposed by local-B were largely eliminated in the end was a coincidental by-product of the national ozone conflict to which local-B was not a party. In this view, any empowering political utility of TRI-related knowledge in the conflict also falls to the wayside because local-B's role in the conflict is in question.

Irrespective of the CAC's ultimate role, the facts available to this analyst suggest that community protesters in the conflict had sufficient grounds on which to argue interest violation and that this, in turn, qualifies their dispute with Ulano for power conflict analysis. Based on the known toxicological effects of toluene and other chemicals used by Ulano, Ulano's releases did not create a cancer risk as some protesters suspected. However, toluene exposure is known to cause dizziness, respiratory irritation, liver and kidney damage, blood disease, and complications for the

central nervous system. While no health study ever established a relationship between the fumes and ill effects experienced by neighbors, almost 15 years of protests over noxious odors, nausea, headaches and the aggravation of existing respiratory problems, believed on occasion to have been fatal, demonstrated a consistent pattern of interest violation. The many hundreds of complaints transmitted over several years to the DEC with the support of the Brooklyn Lung Association dramatized the persistence and seriousness of the problem.

The opening balance of power favored the facility over the Committee in several respects. As an employer and sponsor of a neighborhood baseball team, Ulano exercised power over some residents who had to consider the conflict of interests that would result from any opposition they might express to the plant's pollution. Ulano's power to enforce worker loyalty was enhanced by the fact that workers were not unionized and were subject to arbitrary firings. Without a labor union, conditions did not favor formal independent communication between workers and the CAC regarding exposure to toxic chemicals inside and outside the plant.

The Committee's capacity to generate community support was constrained by the diminishing impact of the smells beyond a one or two block radius. The capacity of the Committee to generate bad publicity was constrained by the typical mass media structure of a major metropolitan area. Ill-defined smell complaints by a small group of residents had little news value for news editors trying to capture the attention of millions of readers or viewers in dozens of municipalities extending beyond New York City to Long Island, New Jersey and Connecticut. Furthermore, the company's vulnerability to any bad publicity the Committee could generate was not great. As a specialty producer for other manufacturers, the firm did not need to cultivate a public image for consumers and, as a privately-owned firm, it was not subject to a rise or fall in stock prices or to concerns of stock holders.

The leverage points available to the Committee through state intervention -- regulation of Ulano by the DEC and the EPA -- were weak. DEC's saw its "public" as the facilities it regulated. It was neither accustomed nor organized to deal with the complaints of residents. Neither the state nor federal agency had legal grounds for forcing Ulano to reduce the emissions in question merely on the basis of neighborhood complaints. Only the national law on ozone protection and the complementary New York State law provided a means for regulatory intervention. DEC's weakness as an enforcement agency was revealed when the EPA determined in 1988 that DEC had not adequately enforced its 1981 compliance scheme with Ulano and decided to intervene directly in the case.

Ulano workers had little capacity or vested interest in supporting or collaborating with the CAC. First, as part of a non-union work force, workers with toxic exposure complaints had to act as individuals rather than as an organized group that could formally demand redress of grievances. This deprived them of the possibility of becoming a power actor in toxic power relations. It made them relatively powerless. Without the capacity to act as a organized group, workers also had no formal ability to interact with the CAC. Generally, as an unorganized force, workers were likely to value job security over the risks of making an issue of how toxic power was exercised by the facility inside or outside the plant.

Ulano's relatively constant pollution during the 1970s and 1980s in the face of community opposition reflected its ability to prevail in the first dimension of power conflict. From the outset, these first dimension actions and their seriousness were a matter of second dimension dispute. Boerum Hill residents experienced Ulano's pollution as a tangible physical assault perpetrated by a known actor. This placed the conflict squarely within a second dimension arena from the start. Therefore, Ulano did not and could not exercise third dimension power by concealing the existence of the power conflict from residents. However, third dimension conflict remained salient to

the extent that it concerned CAC members' deeper understanding of the conflict, how their interests were affected by it and what strategies they might pursue to seek remediation.

Third dimension conflict persisted through facility efforts to limit what the community learned about the conflict. When Ulano and DEC refused in the early 1980s to disclose to the CAC the names of chemicals emitted by the facility, they exercised a third dimension control over the consciousness of members of the CAC, limiting their ability to assess their interests in the conflict. The inadvertent discovery of the chemical names (toluene and methyl ethly ketone) by the CAC in the early 1980s[18] deprived Ulano and the DEC of access to this third dimension mechanism and, correspondingly, constituted a third dimension increase in strategic advantage for the CAC. The names of the chemicals were a potentially empowering tool for the CAC within the third dimension because it gave them means to increase their own consciousness in a realm in which community ignorance had been strategically advantageous to Ulano. When the CAC used the chemical names to build concrete knowledge about potential health hazards, it increased its third dimension capacity to understand its interests and to formulate strategies for political arenas. This health-related knowledge gave the CAC a foundation for new second dimension efforts to elevate the seriousness of the issue with Ulano and the DEC.

In spite of the breakthrough represented by the CAC's development of toxicological knowledge of the chemicals, efforts to use this knowledge as a means to persuade decision-makers to take their complaints seriously did not meet with success. This resource was therefore not successfully transformed into an empowerment tool.

DEC held out to the CAC its 1981 consent decree on ozone control as the means by which its grievances were being resolved. This amounted to third dimension

[18] The CAC's acquisition of the chemical names may be broadly interpreted as TRI-related knowledge (and therefore central to this study) because this knowledge later became available through TRI.

symbolic reassurance because events proved that DEC failed to adequately enforce its decree.

TRI-related knowledge was used in a clear way in 1988. During the period prior to the New York Post's July 1988 coverage of the first TRI reports from city facilities, the Committee had been lulled into a third dimension complacency by DEC assurances that the facility was complying with the consent order and that the seriousness of the problem had significantly diminished. The Post's fingering of Ulano as "apparently the city's largest toluene polluter" dramatically reawakened the committee. The CAC's sanguine mood gave way to a revival of deep concern that the problem persisted and required more organized protest. The Post report also provided a vital psychological "lift" to overcome the "burn out" that commonly afflicts protracted and inconclusive struggles. The internally energizing "spark" provided by the Post report appears to have been based on a number of factors. Not only did the article name Ulano as a prime offender but it raised serious health concerns and questioned the legality of spewing toxics into the environment. This was an important affirmation and validation of the Committee members' own feelings that Ulano caused real health problems, that Ulano had no legal right to pollute the air, and that, in doing so, it had violated their own right to clean air.

The Post report also provided the Committee with ammunition to renew its efforts to gain public and official recognition in the second dimension. The report was useful as a second dimension tool because it constituted the first citywide media attention given to pollution from the Ulano facility. Part of Ulano's power to deal with the Committee came from its ability to contain the issue at the neighborhood level. By calling Ulano "apparently the city's largest toluene polluter", the Post's TRI report offered the Committee its first concrete hope that the issue could break beyond the boundaries of Boerum Hill and become a citywide issue. The Committee used this reference in trying to win official respect for its complaints. Jane Califf quoted the

Post article in a November 11, 1988 letter to a DEC official in which she stated that "we are beginning a strong organizing campaign again in South Brooklyn to educate the community on this health hazard." She also sent copies of (or "CCed") the letter to Councilman Abe Gurges and the Community Board #2 Health Committee. In response to Califf's letter the DEC official noted that the Ulano case was under legal enforcement and referred her to the DEC's attorney. Similarly, Councilman Gerges was referred to DEC's attorney when he wrote DEC about Ulano's pollution after receiving the copy of Califf's letter. On December 28, 1988 the CAC sent to DEC's regional director a letter and a copy of the Post article, highlighting in red the passage that called Ulano "apparently the city's largest toluene polluter." The letter also included brief descriptions of the health risks posed by toluene, ethanol, and methyl ethly ketone.[19] The above letters from the Committee were essentially second dimension efforts to gain a significant spot on DEC's agenda.

Another function served by the Post piece was to alert the Committee about the existence of a new resource that it might acquire: information regarding Ulano's releases. Although the Community Right-to-Know Act had been passed almost two years earlier, the Committee only learned for the first time from the Post report that Ulano was forced to disclose its release information to EPA. While the Post failed to mention the Act and the fact that it mandated public access to the data, it appears that inquiries by the CAC resulting from the Post article caused it to discover its own right to know under the law.

The TRI raw data submitted by Ulano proved to be incomprehensible and useless to the Committee. (After the New York SERC forwarded Ulano TRI data, the Committee responded to the SERC that "we did not understand" the information).

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[19] Subsequent to a request made under the New York State Freedom of Information law, the three letters referred to in this paragraph were inspected by the author at the New York City headquarters of the DEC on October 16, 1993.

That TRI data poses a formidable challenge in understanding to the average citizen concerned about toxics exposure can be ascertained by examining the contents of three New York SERC TRI Data Facility Reports on Ulano[20] (see Appendix C for a copy of the SERC's Ulano TRI reports). The reports are a mix of raw TRI data and slightly developed TRI data that could prove useful to experienced users of the data but leave many others in the dark. The SERC has added some value to the raw Form R data that is helpful for all users. Some single digit codes for the environmental medium of the release (entered by facilities on Form Rs and maintained on agency databases) are clearly interpreted as "air emissions", "discharges to water" and so forth. However, other media descriptions such as "surface impoundment" and "discharge to POTW" [Publicly Owned Treater of Waste] are unlikely to be understood by the general public. Single digit codes for the maximum amount stored on site (an amount of interest to emergency personnel who need to deal with toxic fumes in the case of fires and explosions and to neighbors who subsequently risk exposure) are also interpreted but with less clarity due to the use of "K" to signify 1,000, "M" to mean 1,000,000, and "- <" to indicate less than or equal. Unexplained acronyms like "POTW", "RCIS #", "RCRA #", "SPDES Permit #" and "CAS Number" are bound to be a source of confusion for members of the general public.[21] Remembering that information has no inherent utility but is a function of the subjective circumstances of

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[20] In an attempt to reasonably replicate the DEC summary sheet misplaced by the Committee, the author submitted the following single sentence request to the SERC care of the DEC: "Please send me summary information on all toxic release reports submitted by the Ulano Corporation in Brooklyn, New York." Mailed July 19, 1993, the SERC responded promptly on July 23. Although this request was made almost five years after the Committee made its request, it seems reasonable to assume that if the comprehensibility of New York SERC TRI reports had changed in any way that it would have improved in the interim.

[21] The information sent by the SERC was incomplete in at least two ways. It failed to include any data from the first cycle of reporting in 1987. And it failed to mention a fourth toxic chemical that Ulano reported using in 1988 and 1989. For both years, Ulano reported sending 750 pounds of dibutyl phthalate to a publicly-owned waste treatment facility, storing on site between 1,000 and 9,999 pounds in 1988 and between 10,000 and 999,999 pounds in 1989.

each user of information (Taylor, 1986), it may be useful to compare the utility of the SERC reports for a member of the general public and data users with more special knowledge.

No health risk information accompanies the three chemicals cited in the reports -- toluene, n-butly alcohol, 2-butanone (methyl ethyl ketone). While there is no easy way to explain toxicological concerns associated with chemicals, the average citizen exercising the Community Right to Know may still feel empty-handed after acquiring such information, as did members of the Committee when they received the SERC report.

Committee members appear to have been tripped up by the SERC report at the most basic level -- that of comprehending basic terminology. Their right to know turned out to be the right to know unintelligible data. But, even if they had understood the report, of what use might it have been? The Committee had long since identified the two chemicals released into the air in greatest quantities and had educated themselves about the adverse health effects associated with inhaling them. They already knew that their nausea, headaches and some other more serious health problems in the neighborhood could be explained by inhalation of toluene. The Committee used this knowledge when keeping pressure on the agencies to take action.

There appear to be constraints on how single facility data can be used to expand the scope of conflict -- and Boerum Hill residents, already several years into organized action, seemed to have run up against them. While plausible associations made between community health problems and specific chemical releases could and did help the committee involve health authorities and environmental regulators in their conflict, the Committee's existing knowledge base only allowed them to portray the problem as one of local significance.

Localized report data suffer from a fundamental limitation, namely their isolation from report data of other facilities. The single most politically powerful piece

of information that the Committee received in their TRI reports in 1989 was that Ulano had released 310,000 pounds of toluene through its smokestacks. But the information only became powerful when it was compared with the releases reported by over 60 other facilities in New York City. Only then was it determined that Ulano had the largest reported toxic air releases in the city. But the Committee lacked the many organizational and financial resources needed to make such a comparison.

Mistrust is another problem facing community use of TRI data. Asked to comment on Ulano's ranking as the top air polluter in New York City, Jane Califf stated "Even that is annoying because that's what the factory reports itself." As Reich demonstrated, toxic victims who organize against toxic exposure typically experience less than forthright and honest communication with the sources of pollution. A spirit of mistrust subsequently develops between neighbors and facilities. Inasmuch as TRI data are equated with "facility-talk", they can face serious credibility problems in the eyes of community members.

From the perspective of the CPI and the CAC, it appeared that the TV news coverage had actually caused the DEC to cease its insistence on the 98% incineration rate and to order Ulano to start the incinerator. As Jane Califf recalled "Ulano and the state, I guess, got very embarrassed upon hearing the 6 o'clock news and called the station at 10 o'clock. They said they just got this call from the DEC that if Ulano doesn't turn its incinerator on by July 18 that they will suffer penalties." Asked if publicity had caused the reaction, Califf responded "Yes, it was the only reason. They would still be arguing if we hadn't gotten on TV and that report hadn't come out."

A story on the conflict by Washington-based environmental advocates also emphasized the role of the TV publicity in resolving the incineration dispute. It claimed

that "Their (the CAC's) salvation was the toxic release information they were finally able to obtain using federal right-to-know powers."[22]

Actual events present a less triumphant but not necessarily ineffectual role for publicity given TRI data by the CPI report. DEC ordered Ulano to start up its incinerator not on Tuesday May 22 after the publicity but four days earlier on Friday May 18.

DEC records suggest that regulators eagerness to resolve the incinerator issue derived from earlier embarrassing publicity over the bureaucratic stalemate between DEC and EPA. DEC kept in its files a copy of a March 15, 1990 piece called "Boerum Hill holds its nose (& its temper)" and an April 3, 1990 Newsday piece entitled "Pollution Solution Bound in Red Tape." Both articles noted the stalemate over DEC's 98% standard and EPA's 95% standard. The Newsday article revealed officials in each agency passing the buck to the other agency (Jetter, 1990), although, with room to bend on its standard, the ball was clearly in DEC's court. On the day following the Newsday piece, five DEC officials met with five other individuals at the regional EPA to discuss the issue of revising the New York State plan for implementing the Clean Air Act as it applied in the Ulano case. On April 9, the Long Island City branch of DEC drafted a Notice of Violation ordering Ulano to start up its incinerator, effectively overriding the 98% DEC standard. Issuance of the violation was held up by DEC in Albany which suggested on May 11 to deny the permit to operate the incinerator because it failed to comply with state standards. A May 18 fax from Albany finally cleared the way for the Notice of Violation that bypassed the state standard. It was issued the same day. Clearly sensitive about the timing of the notice,

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22 September-October 1991 Working Group on Community Right to Know newsletter.

the DEC official who hand-delivered the notice to Ulano noted for the record in a May 29 memo that he had done so on May 18.[23]

The May 18 Notice of Violation ordered Ulano to shut down its operations if it failed either "to cease emissions from all surface coating lines within 5 days of service of this Notice" or, by July 18, 1990, to "commence operation of control equipment."

The date of the "Notice of Violation" only became known to the CAC and CPI much later.[24] Given the fact that the DEC only issued its order to Ulano to start the incinerator on the Friday prior to the Tuesday publicity and that neither the CAC nor the CPI had been notified of such an order, it is understandable that both the CAC and the CPI credited issuance of the order to the publicity. However, there appear to be no grounds to dispute the authenticity of the May 18 date of the Notice of Violation.

In power terms, versions of the Ulano story that credited the CPI publicity with DEC's order to start up the incinerator suggested that bad publicity actively exerted power over DEC, prompting it to issue the order. This was not the case. It is entirely possible, however, that the CPI report exercised at least some passive or potential power over DEC officials as they rushed to issue the notice of violation. CPI had worked with DEC over a period of months during the course of its research. "We had been communicating with them for months about how we were doing the report. We had requested air permit data for one thing for a number of facilities directly from DEC officials. And we had interviewed them. I'm sure we had interviewed them specifically about the Ulano situation to try to get an up-to-date picture on the legal situation." Because the press release date was set well in advance, because CPI had worked closely

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23 All references in this paragraph are based on DEC records inspected by the author.

24 News of this notice only became known to the Clean Air Committee later in the year, when Ulano sent a copy of the order to an environmental group in Washington, protesting the fact that the Clean Air Committee was receiving credit for pressuring the company to cease its emissions. CPI's Jean Halloran was unaware of the notice until informed of its existence by the author during the September 15, 1993 interview.

with the DEC during its research, and because of the probability that DEC officials were invited to the press conference, Halloran stated "I'm sure they knew the release date" (Halloran, Interview).

Looking for discrepancies between DEC's data and the TRI data, DEC had long since examined the city's TRI air release data and had found none (Kormanik, Interview). It knew, in other words, just as Halloran did after a brief glance at the TRI data, that Ulano stood out from the crowd and was bound to attract attention in any analysis of the data.

It appears that the Notice of Violation would have come with or without the TRI-related CPI publicity that occurred on May 22. In all likelihood, however, anticipation of the publicity was one more pressing reason for DEC to act quickly. The citywide barrage of publicity that came with the CPI report was like nothing the Ulano case has received before or since. If the publicity that came with the CPI thrust DEC into the spotlight still caught in a bureaucratic bind with no clear sense of direction, DEC would have felt the public heat as never before. The order was issued just in time to avoid such an outcome. DEC was prepared to deal with the publicity most probably because they anticipated continued embarrassment if they were unprepared.

In summary, the earlier Daily News and Newsday articles turned on the public heat over the issue of starting up the incinerator, embarrassing regulators. The April 4 meeting at EPA to attempt to resolve the Ulano incinerator issue clearly came in response to this publicity. In effect, the publicity exerted active power over the regulators and left DEC officials scurrying for a prompt resolution in the form of a Notice of Violation. Aware of the coming CPI's coming release of report that would highlight the Ulano case, DEC officials would have realized that such a report would turn up the public heat on them another notch. The anticipation of the CPI publicity likely exercised some passive power over DEC officials as they rushed to issue their order to Ulano forthwith.

The TRI-based identification of Ulano as the city's top air polluter had clear political utility for the Committee following the great wave of publicity generated by the CPI report. While DEC's startup order to Ulano was a first dimension exercise of power over Ulano, there was still unfinished business in the first dimension, namely the implementation of the order. Ulano's ranking was one of a variety of tools it now pulled from its first dimension empowerment toolbox. It gained Community Board support for a public meeting on the issue. It produced a high turnout at meeting, distributing flyers in the neighborhood citing Ulano as "the #1 industrial air polluter in New York City." It gained Community Board assistance in monitoring implementation of the DEC startup order.

Conclusion

The Clean Air Committee faced major legal and institutional obstacles to securing respect for its complaints among policy agenda setters in the second dimension of power. Without legal or regulatory bases for limiting Ulano's emissions on public health grounds, the Committee had to piggyback on regulations designed for protection of the ozone layer. Over time it used community organizing and varied political communications including letter writing campaigns and generation of media coverage to press for implementation of the anti-ozone provisions against Ulano. TRI-based knowledge became politically useful for this purpose at several junctures. The Committee used the names of the chemicals released by the company to develop toxicological knowledge.[25] This knowledge had third dimension utility in deepening group members' understanding of their core health concerns. They also used this knowledge in efforts to establish the political legitimacy of their complaints. In the face of strong institutional obstacles, these efforts did not meet with success.

[25] Only in hindsight was acquisition of the names of the chemicals TRI-related. The Committee learned the names long before the toxics right to know. Nevertheless, Committee's acquisition of the chemical names is comparable to the experience of first acquiring the information through the Toxics Release Inventory. Ulano eventually disclosed the same chemical names through TRI.

In the case of both the Post article and the widely publicized top pollution ranking for Ulano, the public identification of Ulano as a major emitter of toxic chemicals was of great second arena value to the Committee precisely because it ran counter to the official position that denied any legal or public health grounds for regulation of Ulano. Although its group membership was relatively small, the fact that it was organized at all allowed the Clean Air Committee to work to sustain the public spotlight in both instances. The Committee used these reports as vindication of its core health concerns before agency officials. Going "by the book", however, these officials continued to effectively deny the validity of such concerns. It also used the reports in efforts to mobilize community support for effective control of Ulano's emissions. In particular, the Committee used to good effect Ulano's ranking as the city's top industrial air polluter in organizing and turning out a large attendance at a meeting on the issue sponsored by the local Community Board.

Chapter 5: The Marcus Hook, Pennsylvania Case

The Marcus Hook Story

This chapter explores the relationship between political power and TRI-related knowledge in the case of residents of Marcus Hook, Pennsylvania, a small town whose one square mile is three-quarters occupied by industry. Compared to the auxiliary role that TRI-related knowledge played in the empowerment of protesters in Brooklyn (Chapter 4) and the seminal role in Northfield (Chapter 3), this chapter finds that such knowledge played a null role in Marcus Hook.

The case of Marcus Hook was purposely selected for this study as an example of an unsuccessful effort to make political use of TRI-related knowledge, or as a non-case of politically empowering community-based use of TRI. If this study limited itself to behavioral research methods, obvious difficulties would confront the analysis of such non-behavior. While there are empirical bases for looking at actual efforts to make use of TRI-related knowledge in Marcus Hook, the lack of any extended usage places limits on use of the behavioral analysis. It is necessary therefore to build a picture of the various political and social patterns that plausibly hindered effective use of TRI-related knowledge in Marcus Hook.

The chapter is divided into two sections. The first section provides background on Marcus Hook and the tells the story of a pollution-related political conflict that emerged in 1990. The second section, using Lukes' three dimensions of power framework as a point of departure of a power-based interpretation of events as they concern the use of TRI-related knowledge. It tests the utility of this framework for analysis of the politics of knowledge in the case of the above conflict.

Summary of Events in Marcus Hook

On the face of it, toxics right-to-know legislation was tailor-made for communities like Marcus Hook, Pennsylvania. With two large oil refineries and one

chemical plant in its midst and a variety of other industrial polluters in its vicinity, the small mostly white working-class community of about 2,500 residents has long suffered exposure to toxic chemical releases.[1] Various statistical analyses have found significantly higher rates of fatal illnesses in Marcus Hook than in the county and the state, suggesting a possible link to its higher pollution levels. Some residents suspect pollution from local industries could have caused cancer and other illnesses in their families or among neighbors.

The first analyses of TRI data for Pennsylvania confirmed the common belief that Marcus Hook had exceptionally high pollution levels. Early in 1990, the Delaware Valley Toxic Coalition (DVTC) distributed TRI-based assessments of community pollution problems to local parents who had organized against noxious odors at local elementary schools. Several media reports and DVTC fliers used TRI data to indicate possible chemical-specific health risks from pollution in Marcus Hook. However, neither TRI-based media reports nor TRI-based analyses distributed locally found an active niche in the political life of community residents. While local officials recently set up some means to help residents deal with acute odor incidents, TRI data and TRI-related knowledge have had little or no political value for residents of Marcus Hook.

This chapter is divided into two sections. The first section depicts pollution politics in Marcus Hook and the circumstances under which TRI-related knowledge became available there. The second section interprets events from the perspective of the three dimensions of power. It aims to build a plausible explanation for why community-based action against pollution has been limited to exceptional odor problems and why other issues that TRI-related knowledge could have supported, such

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[1] In a computer search, the author identified 129 Philadelphia Inquirer articles that mentioned Marcus Hook in the context of pollution or toxicity issues. The search located articles that included the terms "Marcus Hook" and either "toxic" or "pollut". It scanned articles from January 1983 through early 1994 on Knowledge Index's full text database. Many of these articles are referred to in this chapter.

as pollution-related health problems and toxic use reduction, have failed to take political root in the community.

Marcus Hook Background

Marcus Hook is the third oldest town in Pennsylvania. Its location on the Delaware River, easily accessible to seafaring vessels, has shaped much of its history. First settled by voyagers from Europe in 1655, the town became a haven for pirates around the turn of the 18th century. The legendary Blackbeard and his cohorts made Marcus Hook their home while plundering seagoing vessels heading into Philadelphia and Trenton and back out to Delaware Bay. At the time, Marcus Hook's main street was known as Discord Lane. Included in its rich and more illustrious history are stories from the Revolutionary War era and from the time of the "underground railway" when local people assisted blacks fleeing slavery (Miller, 1986; 1992).

In this century, Marcus Hook has become a major industrial center. The current waterfront refineries of Sun Oil Refinery Company and British Petroleum (originally Sinclair Refinery Company) were set up in 1901 and 1925, respectively. Able to receive raw materials from ocean vessels, industries have developed oil products at local sites and delivered them by sea and land to major markets in the eastern United States. In 1931, the country's first pipeline to move oil refinery products directly to market linked Marcus Hook and Cleveland. The Sun refinery is now also connected by pipeline to Syracuse, New York and to a distribution terminal in Newark, New Jersey.

Eight miles from the southwestern corner of Philadelphia, Marcus Hook has strong media, cultural and economic links with Philadelphia. Philadelphia broadcast stations regularly cover major events affecting Marcus Hook and vicinity. Both the Philadelphia Inquirer and the Delaware County Daily Times compete for readers in the area.

Marcus Hook's petroleum refining facilities account for two of the seven oil refineries serving the Philadelphia area. With the largest petroleum-refining capacity

on the East Coast, the area refineries are vital to the economic infrastructure not only of Philadelphia but of the entire region.

In addition to its Marcus Hook facility, Sun owns a refinery in south Philadelphia. At the time of this writing, Sun's proposed purchase of Chevron's Philadelphia refinery prompted expressions of concern by consumer groups about Sun's "potential stranglehold" of the Philadelphia petroleum market. The Federal Trade Commission was examining the Sun proposal (Maykuth, 1994b).

The BP and Sun refineries in Marcus Hook receive crude oil shipments from around the world. The 1990 Gulf War adversely impacted neither facility. At the time, BP's operation manager stated "We run mainly sweet, low-sulfur oil from the North Sea, West Africa and South America." At the same time, a Sun spokesman said that the embargo on Iraqi oil would affect only four percent of its oil supply and "will make little difference because we buy from the entire world crude market" (Bivens, 1990).

Based on sales, BP America and Sun Oil rank respectively as the country's 40th and 79th largest corporations and as the 5th and 12th largest oil refiners. In Pennsylvania, Sun's national sales made it the fourth largest corporation headquartered in the state. When combined with the sales of a Sun subsidiary ranked sixth, Sun is the largest corporation with its home base in Pennsylvania (Dun and Bradstreet, 1993).

Other industries located in Marcus Hook are General Chemical Corporation, a chemical manufacturer, and Congoleum, a producer of vinyl floor coverings. K.S. Processing, a medical waste disposal firm, recently closed amidst disputes over the safety of its disposal methods.

Three-quarters of Marcus Hook's one square mile land area is occupied by industry. The Sun refinery occupies a full half of the town (Dorbian, Interview).

Marcus Hook might be depicted as a slim peninsula of row homes, duplexes and small stores jutting into a sea of oil tanks. At the tip of the "peninsula" is an attractive

bench-lined park on the Delaware River. From the park's edge, one can see the docks of British Petroleum to one side (the northeast) and the Sun Oil docks to the other (the southwest). A small war memorial monument in the park lists the names of local men who died in the Vietnam War. The main artery of the "peninsula" is Market Street. As one moves inward on the "peninsula" to Second and Market and Third and Market small homes line either side of the street and, at either end of the cross streets, is an ocean of oil cylinders. From Fourth to Eighth Street, along the east side of Market, is the Marcus Hook Elementary School. Brief closings of the school in 1988 and 1990 due to noxious odors sparked the town's first organized protests against pollution. BP oil tanks line the eastern border of the school and its playgrounds. To the west, a single strip of residential blocks separates the school from Sun Oil.

Continuing north to 10th and Market, the town center, the base of "the peninsula" broadens to the east beyond the BP boundaries into a commercial row lined by small stores. A couple blocks west on Greene is the municipal building that serves as Marcus Hook's public library, police department, and seat of government. The second floor portal of the Greek column building offers a view to the south and west of wave after wave of oil drums in the Sun complex, about thirty within the line of sight. From any of a dozen smokestacks, one might see smoke curling skyward. At the property's distant river edge, one may see an oil tanker peaking above the tops of the oil drums. Out of view from the municipal portal along the northernmost boundary of the Sun complex is another residential area that includes the Linwood Elementary School, also closed on account of foul odors for brief periods in 1988 and 1990.

According to the 1990 Census, Marcus Hook had 987 dwellings housing 2,546 people. All but 140 residents were white. Its median household income was $22,723, median family income was $29,183 and per capita income was $10,031. The percentage living below the poverty line, 14%, was relatively high for the county.

The people who live and work in Marcus Hook are no strangers to industrial accidents. Among the major accidents confronted in Marcus Hook over the years have been an October 1946 fire at Sun that killed 11 people, a 1956 ammonia plant explosion and a 1975 collision of ships that set off a series of disastrous explosions.

The last incident, labeled "the worst tragedy in the history of Marcus Hook" by a local chronicler (Miller, 1986; 1992), left an indelible mark on the collective psyche of Marcus Hook. Many local people were evacuated as a result of the explosion or injured fighting the fires that followed the collision. Shortly after midnight on January 31, 1975, the Corinthos, a Liberian tanker, was unloading 400,000 barrels of Algerian crude oil at the BP dock in Marcus Hook. The Edgar M. Queeny, an American tanker loaded with 30,000 pounds of phenol, a gaseous compound used as feed stock base, was departing the New Jersey Monsanto facility directly across the river. The Queeny made a steering error and rammed into the Corinthos while 300,000 barrels were still in its hull. A series of fiery explosions split the 754 foot Corinthos in two, killing much of the crew. The resulting fireball lit the midnight sky as far as twenty miles away. 350 families were evacuated from Marcus Hook, then a town of about 3500. Many water fowl died downstream in massive oil slicks.

Because the Corinthos explosion was so devastating, early reports only speculated about the number of people on or near the ship at the time who had been killed. Initial reports spoke of at least 35 injured, including a dozen firefighters. A year and a half later, after the body of a crew member was discovered while dismantling the tangled engine room, the death toll stood at 38.

In July of 1975, the Corinthos accident prompted a Congressional investigation.[2]

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[2] Most details of the Corinthos explosion were culled from AP wire stories that appeared in the New York Times in 1975 on January 31, February 1, February 4, February 6 and on August 27, 1976.

Smaller accidents are an expected routine in and around oil refineries. The number of oil refineries operating in the United States dropped from 324 in 1981 to 202 in 1991. High production demands on the remaining refineries sometimes presses them toward full capacity, substantially increasing the risk of accidents. From 1990 through mid-1991, four relatively small fires at Sun's Philadelphia and Marcus Hook refineries caused over $100,000 damage each. "No matter how safe you try to make it, it's dangerous," said a Sun spokesman (Martinez, 1991:G1).

More recent accidents in or around Marcus Hook included an oil spill while a barge was refueling a Romanian ship in May 1991, a toxic gas leak from Allied Signal on the town's Delaware border forcing the evacuation of dozens of residents in October 1992, and a Sun Oil tank explosion that injured 17 workers and spilled oil into the Delaware in March 1994.

Air Pollution

Air pollution is no news to the residents of Marcus Hook. For as long as anyone can remember, polluted air has been a local fact of life. Opinion differs on whether current air quality is the source of ongoing health problems. Except for parental protests over odor-caused illnesses among school children in 1990, people who attribute health problems to local pollution have not organized or succeeded in placing their grievances on the local political agenda. In the wake of the 1990 protests, local officials organized an Environmental Advisory Council that has opened lines of communication between residents and industries. The EAC has dealt with acute odor incidents but has not made an issue of regular toxic chemical releases.

Many decades of soot and pollution odors in Marcus Hook created an image problem for the town that haunts it to this day. A Philadelphia Inquirer article reporting recent improvements in the town referred to "Marcus Hook, that grimy target of Philadelphia's jokes" (Thompson, 1990). One common barb was that Marcus Hook was the "armpit of Delaware County." In the mid-1970s, Philadelphia Magazine,

when designating one of its annual best and worst distinctions, called Marcus Hook the worst half hour drive from Center City Philadelphia (Dorbian, Interview).

Of little help to Marcus Hook's reputation in the 1970s was the fact that the Pagans, a national motorcycle gang, had made the town its headquarters. The riverside Discord Lane of the pirates' days had long since been renamed Second Street, but the discord remained. Most of the 36 businesses in the town at the time were bars patronized by gang members. Representative Curt Weldon (R-PA), elected mayor on a reform ticket in 1978, recalled that gang members had infiltrated the police force and made the streets unsafe (Thompson, 1990). Marcus Hook had a public image as a center of crime and grime.

Bruce Dorbian, the current Borough Manager, called Marcus Hook prior to 1978

> a community suffering from a severe case of economic and social decline...The number of businesses in the town had decreased from the high of about 78 in the late 1950s to around 34 in 1978 (Interview).

In 1978 a reform ticket won city government and initiated a community development scheme that met with success on many fronts. The power of the gangs was undercut and many new small businesses were attracted to the town. By the late 1980s, reports that there were 117 businesses in the town or over three times more than in 1978. Dorbian proudly refers to the town as a Renaissance community (Interview).

Whatever current air quality may be, there is a consensus that the sight and smell of air pollution is significantly less than it used to be. People who know what pollution was like in Marcus Hook several decades back make it clear to outsiders that it is not as bad as it used to be. A journalist who reported that "surprise odors are a way of life" in Marcus Hook was told by a lifetime resident in her sixties that "it's not one-quarter of what it used to be. It's much better" (Mayer, 1989a).

Another journalist reported:

> Patricia Lakin, a library assistant at the Marcus Hook Elementary School and a 30-year resident, remembers walking out of her home 20 years ago and getting the rotten-egg smell daily. "Now I don't get it," she said. "In fact, I haven't smelled the odors in more than 10 years. The air is much cleaner now than it was" (Thompson, 1990).

Residents who spoke with the author confirmed these views. Elementary school principal Paul Blanford remembers driving near the refineries with his parents in the 1950s.

> You could not see a thing through the pollution. You couldn't see your hand in front of you with the pollution in Trainer and Marcus Hook...They have done a significant job of cleaning up the air in this entire area. Significantly. (Blanford, Interview).

A life-long resident reported "In years gone by things have improved. I've seen a great improvement" (Everngham, Interview). A woman in her thirties who also has lived in Marcus Hook all her life told the author that, while she was growing up, her family could not hang laundry out to dry because of the soot. That is no longer the case.

The improvement in air quality in the area is most likely attributable to implementation of Clean Air Act since the early 1970s. In reviewing Philadelphia area pollution data for recent decades, Greg Schirm of the Delaware Valley Toxics Coalition found a sea change in emission levels that corresponds with the passage and implementation of the Act (Interview).

The random visitor to Marcus Hook may or may not notice some air pollution depending on the particular circumstances of the day. During two visits to Marcus Hook in May 1994, the author saw and smelled some air pollution. On the first day, he saw white smoke coming from one of the dozen or so stacks visible from municipal building but saw no smoke from the same location on the second day. On the first day he smelled no pollution. On the second day, however, he noted a soft steady gasoline-like smell adrift in strong southwest winds blowing from the direction of the Sun Refinery. After a quarter hour walking outdoors the smell slightly unsettled his stomach. At about the same time, the librarian referred to above, said, when asked,

that she smelled nothing -- in spite of the fact that the library windows were open to the wind coming from the Sun facility directly across the street.

One type of air pollution accident to which local people have become accustomed is a sudden oil spray over the vicinity, what the Delaware County Daily Times called a "sliming." At the Sun plant, safety valves occasionally blow, releasing into the air a spray of "a slimy gas-oil mixture" that showers cars and homes with a grimy soot, especially in Lower Chichester, a town bordering Marcus Hook and Sun. "Sun plant slimes five-block area" was a newspaper headline that described such an incident in 1990 (Roberts, 1990a).

In the spring of 1990, while Marcus Hook and neighboring towns were in the media spotlight due to odor-caused school closings, several Sun-based "slimings" of cars and houses received attention that they ordinarily do not get. On February 20, "a big black cloud of soot leapt from the smokestacks...Sun gave free car washes." A March 21 incident "spewed black grit onto cars" and about 75 homes (Roberts, 1990a). On April 1, a "glitch" caused a "slurry oil -- a dark heavy substance similar to syrup" to rain over the area (Quinn, 1990). It splattered many homes and about 150 vehicles, including a Lower Chichester police car. Explaining the anger caused by the incidents, the town's police chief noted "When the greatest investment you've ever purchased -- your home, or your property, or your vehicle -- has this continuing to happen to it, of course you're going to be mad" (Roberts, 1990b). At that point, Sun's insurance company was reportedly paying $159 for each car paint repair job required by the above incidents (Horne, 1990).

The last incident did not occur without some forewarning. Two days earlier, many area residents had received an apologetic letter from Sun's president David E. Knoll cautioning that "it is almost impossible to avoid incidents of this nature" (Roberts, 1990b). According to residents informally polled by the author during May

1994 visits, oil spray incidents still occur. Sun's Ten Plant is a particular source of problems.

Like changes in the weather, residents have come to expect occasional accidents in the form of acute odor incidents and oil spray problems resulting from equipment problems at the refineries. Paul Blanford, the principal of the Marcus Hook and Linwood Elementary Schools, stated

> They have done a significant job of cleaning up the air in this entire area. Significantly. But if you are in an area highly industrialized such as we are, you are going to have mishaps. I don't believe any of these companies would intentionally put anything out into the air to harm us. They don't want to do that. But there are things going out into the air. As long as there are businesses like this and we're in an industrialized area, it will happen. (Blanford, Interview)

Linda Cobourn, a Marcus Hook coordinator of PAPA and an original member of the EAC, observed

> I don't think unless somebody goes outside and says 'Oh the air is really sick today. It makes me feel really ill' that anybody ever stops to think about it. Most of us are aware when Sun's Ten Plant blows its stack, that it's going to have some problems. It's going to cause the flame to shoot up. Things like that are going to happen. I guess maybe we're just a little too blase (Cobourn, Interview).

Bruce Dorbian, the borough manager of Marcus Hook, noted

> It's an industrial town. There will be accidents (Interview).

In mid-1989, the Philadelphia Inquirer reported that Marcus Hook's Sun and BP facilities were the county's top air pollution violators. Sun had earned "the worst air-emissions record in Delaware County, according to records of the state's Department of Environmental Resources. In the last two and a half years, the Marcus Hook refinery has been fined 25 times, for a total of more than $160,000." Over the same period, BP Oil Co., with 11 violations, had been the second most-fined firm in the county (Mayer, 1989b).

When the first EPCRA-mandated data became public in the Philadelphia area, it showed, to no one's surprise, that the amounts of toxic chemicals stored and released in

the area around Marcus Hook were exceptionally high. As Greg Schirm of the DVTC noted

> The TRI data only confirmed what we already believed about Marcus Hook. That is, when you have two oil refineries and four chemical plants, you have lots of toxic air pollution in a very small concentrated area. And the TRI quantified that. But it didn't tell us anything new, in the sense that we weren't discovering that there was a lot of air pollution in Marcus Hook (Interview).

In October 1988, soon after companies had complied with the EPCRA mandate to notify emergency planners about chemicals stored on their premises, the Philadelphia Inquirer reported:

> Predictably, the largest amounts of chemicals are stored by companies along the Delaware River. British Petroleum's refinery in Marcus Hook, for instance, keeps up to 400,000 gallons of hydrofluoric acid, 6,020 gallons of sulfuric acid and seven 1-ton cylinders of chlorine, according to the records it gave the county (Mayer, 1988b).

In January 1989, another Philadelphia Inquirer piece took a look at the first TRI reports. Delaware County and, within the county, Marcus Hook stood out. Noting that the county had toxic releases of 5 million pounds into the air and 10 million pounds into its water system, it reported

> ...air-quality experts say, the results confirm what many suspected all along, if only by sniffing: Local industry releases thousands of pounds of toxic chemicals into the air and water each year.
>
> In 1987, for instance:
>
> * Sun Co. leaked 30,000 pounds, or a tank car's worth, of sterilizer from its refinery. The sterilizer, ethylene oxide, is known to cause cancer in humans.
>
> * BP Oil Co.'s refinery spewed 58,000 pounds of benzene from its smokestacks. Benzene appears to cause blood cancers, says Jack Knauber, a toxicologist for the state Department of Environmental Resources....
>
> Like most older, industrialized areas, the county is filled with strange smells, which announce themselves from the moment visitors ride along I-95 from Wilmington.
>
> There are acrid smells, sweet smells, and smells that some residents simply call "rotten egg" and "wet flannel."
>
> In Marcus Hook, a small borough nestled between two towering oil refineries, surprise odors are a way of life.

> "Noises, smells, spills - we've put up with it all," said one resident, a 66-year-old widow who has lived in Marcus Hook all her life. "When you live next to these places, you have to expect it."
>
> But, added the woman, who asked not to be named, "it's not one-quarter of what it used to be. It's much better."...
>
> But there are hot spots, and chief sources are the area's two refineries, say air-quality experts. In Marcus Hook and Trainer Boroughs, Sun and BP produce what is probably a higher concentration of emissions than many other places around the region...
>
> In 1987, the two refineries together pumped about 152,000 pounds of carcinogens into the atmosphere, according to records. That would be enough to fill five railroad tank cars (Mayer, 1989a).

In August 1989, Marcus Hook's BP refinery made it onto a TRI-based national "Toxic 500" list produced by the National Wildlife Federation. Reporting the list, the Inquirer noted that BP, with 5.6 million pounds of toxic releases reported to TRI, was ranked 255th in the country for total releases (Hebert and Gaul, 1989).

In September 1989, the Inquirer reported a TRI analysis of five Philadelphia area counties produced by the Delaware Valley Toxics Coalition. Greg Schirm of the DVTC told the paper "I think for the first time, this gives us an idea of the dimensions of the toxic emissions in this region." The amount of toxic releases in Marcus Hook was surpassed only by Philadelphia and Bristol. Two facilities in the Marcus Hook area, Congoleum and Witco, were noted to have among the highest releases in the region (Jaffe, 1989b).

Has air pollution been a source of health problems or risks in Marcus Hook and vicinity? While no epidemiological studies on residents of Marcus Hook have established a causal link between pollution and illness, various statistical analyses suggest that relatively high rates of fatal illnesses in Marcus Hook could be related to its higher pollution levels. A journalist who grew up in neighboring Linwood and covered pollution issues in the area for about 15 years reported in the Delaware County Daily Times that

> Deaths due to such lung conditions as bronchitis, emphysema and asthma in the highly industrialized area from 1984 through 1986 were almost double the state

> average -- almost triple in Marcus Hook, according to Pennsylvania Health Data Center statistics (Mengers, 1990).

In Tinicum, another industrial town a few miles up the river from Marcus Hook, statistical analysis of figures obtained from the Pennsylvania Department of Health showed excess lung cancer deaths in the town (148 percent higher than expected among women) and excess bladder cancer among men. Prompted by high occurrences of cancer in their midst, over 200 Tinicum residents met with their state and federal Representatives to demand an investigation into possible causes. The actions of Tinicum residents were publicized in the Philadelphia Inquirer (Janco, 1987a; Janco, 1987b).

In the spring of 1990, the DVTC, distributed to local parents protesting odors in local schools an analysis based on figures from the Pennsylvania Health Data Center that indicated a cancer death rate in the Marcus Hook area 30% higher than the state's and 24% higher than the county's. It also noted that the area's lung disease death rate was 75% higher than the state's and 54% higher than the county's.

After the release of TRI, various chemical-specific health risks tied to environmental releases in Marcus Hook received local publicity. A former EPA toxicologist told an Inquirer reporter who was analyzing the first set of local TRI data that "Around Philadelphia, there are probably more carcinogens in the Marcus Hook area than anywhere" (Mayer, 1989a).

Several days after odors forced school closings in February 1990, the Philadelphia Inquirer reported (for "those who seek facts beyond the evidence from their eyes and noses") that a DVTC analysis of TRI data found that 99 percent of airborne carcinogens in Delaware County were released in Marcus Hook, Eddystone and Chester. It stated that

> 98 percent of the toxic chemicals released into the county in 1987 came from smokestacks, chemical tanks and pipes between Marcus Hook and Chester.

The study also says:

> * Industries in three communities - Marcus Hook, Eddystone and Chester - contributed 99 percent of the cancer-causing chemicals released into the air in Delaware County.
>
> * Industries in Chester, Marcus Hook and Trainer contributed 99 percent of the nearly 3 million pounds of toxic chemicals flushed into the county's sewers.
>
> * Six companies, topped by Congoleum Corp. in Marcus Hook, emitted more than 95 percent of the toxic chemicals released into the air in Delaware County in 1987 (Mayer, 1990a).

The DVTC disseminated information on air pollution in Marcus Hook to protesting parents in March 1990 indicating that four local industries reported releasing into the air 140,000 pounds of benzene, a known carcinogen.

In April 1990, the Delaware County Daily Times reported that an NRDC analysis of TRI data found Congoleum was the fourth biggest air polluter in the county, with 80 percent of its emissions coming from a chemical capable of causing mental problems and brain damage (Weisensee, 1990). It reported that

> Congoleum Corp. in Marcus Hook released more than two million pounds of toxic chemicals into the air in 1988, according to a study released yesterday...Congoleum, which manufactures floor coverings, was fourth among Pennsylvania air polluters. Eighty-two percent of its toxic emissions came from trichloroethane. High levels of the chemical can cause brain damage and death and repeated exposure can cause fatigue, memory loss, headaches, irritability, mental confusion and depression, according to the EPA (Weisensee, 1990).

In July 1990, the Delaware County Daily Times reported that Citizen Action had concluded from an analysis of TRI data that people in Marcus Hook and Chester ran a special risk of developing cancer and other illnesses (Ellis, 1990). Entitled "Air quality ripped, Group: Marcus Hook, Chester have high levels of toxic pollutants", the piece stated

> People in Marcus Hook and Chester are at particularly high risk of developing cancer and other illnesses because of high concentrations of toxic pollutants in the air they breathe, according to a report released here yesterday...Marcus Hook also ranked high -- third -- in the amount of airborne toxic chemicals known or suspected of causing birth defects.

According to the report, Marcus Hook had the fourth and nearby Chester the tenth highest amounts of toxic air releases in the state.

Occurrences of cancer and other illnesses in Marcus Hook have caused some residents to believe or suspect a link between health problems and pollution exposure. Linda Cobourn asserted "We do have problems related to pollution and cancer deaths." While neither she nor her family members have experienced any chronic health problems during her 18 years in Marcus Hook, she indicated that she knew a couple of people "who lived across from Congoleum who came down with cancer and felt it was directly related to Congoleum. I don't know. I'm not a medical doctor. I have no way of knowing if that's true or not" (Cobourn, Interview).

The author got a taste of some local opinion regarding pollution and health while eating at the Marcus Hook Diner. (The windows of the diner look directly into the Sun complex and the sea of oil drums). A waitress, who has lived in the town all her life, told the author that some of her neighbors came down with cancer and blamed it on BP Oil. A woman at the counter said that she suffers from chronic headaches and a raspy throat but she always feels better when she travels south. Whenever she returns to Marcus Hook, she has to take Tylenol (unrecorded conversation May 6, 1994).

In a 1990 letter to the editor, one resident, referring to oil spray problems from Sun Oil, expressed health concerns and suggested an appeal to "higher authorities."

> The communities of Linwood, Marcus Hook and Trainer have great concern for whatever is in the air. If it is burning the paint off our cars, imagine what it is doing to our lungs. And the $159 that Sun Oil Company is giving to repair paint jobs on cars will not replace our lives. And if the Sun Oil Company won't do anything about it, we should take it to the higher authorities. Just remember this, if what's in the air is eating away paint and our ozone layers, what is it doing to our lives? (Horne, 1990)

With the exception of the 1990 protests discussed below, opposition to pollution in Marcus Hook has not been well organized and focused. It has taken the form of short-lived "eruptions of public anger" (Schirm, Interview), complaints registered with regulatory agencies[3], and unsuccessful community organizing efforts.

[3] A local chronicler published a July 17, 1980 photo of federal government technicians monitoring air pollution atop the municipal building in response to complaints from residents (Miller, 1992:109).

A local activist named Joe Hooker developed a reputation as a gadfly on pollution problems. According to Schirm, Hooker is "legendary in Marcus Hook as a sort of a one man environmental organization" (Interview). While efforts were underway to establish Philadelphia's right-to-know law in the early 1980s, Hooker worked with Jerry Balter of the Public Interest Law Center and the Delaware Valley Citizens' Council for Clean Air to obtain for local residents plant tours of Sun Oil. The efforts were unsuccessful. Hooker also tried to organize a group of "Watchdogs" to monitor pollution. He "was dismissed from the Lower Chichester air pollution board after he pinpointed a local violator" (Mengers, 1990).

Hooker "grew up across from Congoleum and watched his father die of a rare form of blood and liver cancer" (Mengers, 1990). He developed a reputation as an angry loner, sometimes undiplomatic in the way he made his case. According to Jerry Balter,

> Joe Hooker was thought of as a nut because Joe was avid about trying to stop pollution. Joe was not talking about closing things down -- but Joe had a way of talking that would make you think that's what he had in mind (Balter, Interview).

Joe Hooker has apparently not been the only person to face difficulty in organizing the community against pollution. According to Cobourn,

> We do have people who when they first move here, feel that something needs to be done about it. Sometimes they do try to do something about it but they don't get a lot of cooperation from the rest of the residents because most people just are willing to put up with it (Interview).

Indeed, the community has developed a reputation for "putting up with it." An Inquirer journalist covering opposition to the odors that caused the school closings in 1990 noted that

> For years, the small towns of Marcus Hook and Lower Chichester have been known for their mute acceptance of the strange smells and occasional dustings of soot that emanate from local industry. Like Sherpa villages clustered at the foot of the Himalayas, the towns seemed to accept their fate as part of their location beneath the enormous towers of the Sun and BP Oil Co. refineries, and beside other companies such as the Congoleum Corp...(Mayer, 1990b).

The "putting up" attitude is often acknowledged, sometimes with an air of fatalism. A 66-year-old lifetime resident of Marcus Hook told a journalist "Noises, smells, spills - we've put up with it all. When you live next to these places, you have to expect it" (Mayer, 1989a). Asked about the pollution, one woman told the author "I've lived here all my life...You just put up with it."[4]

Asked whether there were any local concerns about the long-term effects of pollution, Cobourn told the author

> I don't think people worry so much about the long-range effects. I think we're all kind of philosophical about here in Marcus Hook. BP's oil lines go all over Delaware City...If BP goes, we're all going to go. So I guess we don't think a great deal about it. There are positive things to living in a small community this size, so I guess we tend to focus on them more than on the negative things. When the Corinthos explodes out there on the waterfront people think 'Yeah, well we've got to leave' (Interview).

A Delaware County Daily Times journalist who grew up in neighboring Linwood and had for many years covered the area's pollution issues, wrote a commentary entitled "A pollutant called indifference." She recalled that as a grade school student

> I got used to the stink of the linoleum factory across the street. I remember looking out my second grade classroom window and watching the curls of black refinery smoke on the horizon.
>
> As a young adult taking the train from Marcus Hook to Philadelphia, I became accustomed to the odor of what smelled like a cat litter box emanating from the surrounding oil and chemical companies.
>
> And as a reporter who has written about the relentless pollution on the Delaware County's riverfront for almost 15 years, I've gotten used to the public shrugging its shoulders (Mengers, 1990).

In 1988, odors caused nausea and other ill feelings among students at the Marcus Hook and Linwood grade schools. Subsequently, the Marcus Hook school was closed for two weeks while "healthy building" experts examined the school. The official explanation for the 1988 odors -- the recirculation of stale air by a faulty

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[4] Unrecorded conversation, noted briefly after conversation on May 6, 1994.

ventilation system in the school -- strained the credulity of anyone who pondered the immense oil refineries to either side of the school (Mayer, 1988a). It was as if the marshall, called to the site of a shooting, found a man riddled with bullets surrounded by a gang of men with smoking guns. The marshall meekly pronounced that the man had shot himself.

When parents "loyally" sent their children back to school after odor incidents in 1988, it reinforced the image of a community passive in the face of obvious industrial pollution problems. One journalist wrote that a local 38 year old woman teacher at Marcus Hook Elementary

> has smelled the smells since childhood. Rotten egg, rotten onion and something one person calls "wet flannel" - they are the occasional odors Marcus Hook residents accept as the price of living next to oil refineries and chemical plants.
>
> "You get immune to it after a while. You learn to take the good with the bad."
>
> It is with that kind of loyalty that [the teacher] and others plan to return to school Monday, two weeks after Marcus Hook's latest run-in with air problems - a mysterious illness that forced the closing of the borough's only elementary school (Mayer, 1988a).

While criticizing local indifference, Mengers stated that "in all fairness, she understands it." What the members of the small, relatively poor community "put up with" includes an array of powerful government and industrial forces. For example, Mengers called NIOSH and Center for Disease Control support for the faulty ventilation system theory as "the biggest insult government has handed the residents of Marcus Hook and the Chichester area in recent years" (1990). She also called to task local leaders, writing that

> Since many of them and their relatives work for local industry, the local politicians have feared biting the hand that feeds them. They have feared losing business and subsequent taxes.
>
> But in their fear they have allowed zoning variances to accommodate increasing intrusion by industry in their communities. In their fear they have accepted apologies from local industries, but not demanded solutions...

> A former Marcus Hook mayor actually ordered a member of the Delaware Valley Clean Air Council to stop surveying residents about their air pollution complaints (1990).

Mengers recounted an experience with BP officials in the early 1980s after she published a report about a "filtering material that the plant had literally spewed on nearby Marcus Hook residents." The plant manager invited her for a plant tour.

> I arrived to find a room full of executives from the refinery's home office in Ohio, waiting for me. The plant manager started the 'tour' with the question, "Do you know the price of a gallon of gas? Would you like to see it go higher?'
>
> The implication was that if emissions were to be properly controlled, the consumer would have to pay. It's the same kind of logic employers have used when employees have been told there jobs would be endangered if money was spent to properly control industrial processes.
>
> In short, it is a way of warning people not to complain about potentially life-threatening pollution (Mengers, 1990).

State regulatory control over local pollution rests with the DER. Based many miles away in Norristown, DER officials are generally unable to arrive in time to check out acute odor incidents. In 1989, the Inquirer reported that the DER office responsible for the Marcus Hook area had earned a reputation among environmentalists for being lax in its enforcement of pollution laws. Among many examples cited by critics of the DER was its handling of BP Oil in Marcus Hook after BP had dumped 470 million tons of improperly treated wastewater into tributaries that feed into the Delaware. The DER fined BP $107,000 and a maximum of $5000 a month for any future violations. Judging the DER penalty inadequate, the EPA and the U.S. Department of Justice initiated a separate suit. It resulted in a far stiffer $11 million fine for the same violation (Jaffe, 1989a).

From a local perspective, distinguishing what is toxic from what is regulated sometimes raises problems of an Orwellian Doublespeak variety. A DER representative, for example, "admitted that sickening fumes were coming from Congoleum, but there was no evidence the fumes were toxic" (Mengers, 1990).

1990 school closings

In the spring of 1990, noxious fumes once again prompted closings of the schools bordering the Sun Oil refinery.

Linda Cobourn, whose twelve year old son was at Marcus Hook elementary, in 1988, said

> When it happened again in '90, I think every parent in the school thought "This is twice. You can't do this to us." The parents really did get very upset (Cobourn, Interview).

Subsequent protests by parents marked a major exception if not necessarily a turning point in the town's history of passiveness. Unsatisfied with official failure to explain the source of the problem, parents conducted a boycott or "sickout" when the schools reopened. In conjunction with Greg Schirm of the DVTC and Jerry Balter of the Public Interest Law Center, some parents formed Parents Against Pollution in the Air, or PAPA. The new group boldly confronted the three local municipalities with demands for measures that could have fundamentally altered the balance of power in local toxic politics. Key among the demands was a call by PAPA for the establishment of local regulatory power over polluting industries.

For three months, the school odors and parents' protests made headlines in Delaware County and Philadelphia (see Table 5.1). The journalist who compared Marcus Hook's historical relation to Sun and BP to that of a Sherpa village accepting its fate in the shadow of the Himalayas in the same article called the parents' protests in the spring of 1990 "a small revolution in the making" (Mayer, 1990b).

Early in 1990, Jerry Balter of the Public Interest Law Center received an invitation from Joe Hooker to attend a meeting in the Marcus Hook area of parents protesting odors at the schools. When he and Greg Schirm of the DVTC arrived at the meeting, they were invited to speak to the two or three hundred people in attendance. After the meeting, they made contact with a 8 or 9 people who expressed an interest in developing some ongoing strategy. To Balter and Schirm, it seemed like a propitious

moment to build some kind of permanent capacity among residents to deal with local pollution problems.

Table 5.1 Newspaper Headlines on Parents' Odor Protests in the Phildelphia Area, Spring 1990

Neighbors are at odds with Delco oil refinery	Philadelphia Inquirer, March 11, 1990.
Shut it down! Parents want odor-plagued Hook school closed	Delaware County Daily Times. March 21, 1990.
2 schools closed: 50 students, dozen teachers sickened by 'suffocating' stench in Hook	Delaware County Daily Times. March 22, 1990
Pupils are sent home after fumes linked to oil refinery cause sickness	Philadelphia Inquirer. March 22, 1990.
DER: Sun may be source: State probing sulfur stench	Delaware County Daily Times. March 23, 1990.
Hook schools boycott called: Hook parents asked to keep youngsters home	Delaware County Sunday Times. March 25, 1990.
Hook parents: Most report kids sick	Delaware County Sunday Times. March 25, 1990.
Seniors sickened by Hook stench	Delaware County Daily Times. March 26, 1990.
Sickout in Hook: 41% skip school	Delaware County Sunday Times. March 27, 1990.
Raising a stink: Sulfur dioxide among odors found outside school	Delaware County Daily Times. March 27, 1990.
11 students ill as school is reopened	Philadelphia Inquirer. March 27, 1990.
Gripes aired: Trainer residents want odor-plagued school shut	Delaware County Daily Times. March 28, 1990.
Illness blamed on Sun, DER: Firm to face charges	Delaware County Daily Times. March 29, 1990.
Hi-tech sniffer can't ID stink	Delaware County Daily Times. March 30, 1990.
DER blames refinery for ill wind at school	Philadelphia Inquirer. March 30, 1990.
Odor takes its toll on aide	Delaware County Daily Times. April 2, 1990.
Pupils tune in to stink: Youngsters inspired to sniff out rap-sody	Delaware County Daily Times. April 2, 1990.
Hook wants help for odor patroller	Delaware County Daily Times. April 3, 1990.
Solution stinks: Environmentalists pan Hook school odor filters	Delaware County Daily Times. April 4, 1990.
Teachers cite 'worst' stink, principal downplays 'whiffs'	Delaware County Daily Times. April 6, 1990.
'Fatigue' chases Head Start kids: Youngsters moved outside at Hook	Delaware County Sunday Times. April 8, 1990.
Parents air odor effort	Delaware County Sunday Times. April 8, 1990.

Greg Schirm of the DVTC and Jerry Balter of the Public Interest Law Center (PILC) share an office complex occupied by a variety of public interest groups in Center City Philadelphia. As indicated in Chapter 2, the DVTC and the PILC were central actors in the political coalition of Philadelphia labor unions, environmentalists and community groups that, in 1981, successfully passed the world's first law

guaranteeing public access to data on airborne industrial releases of toxic chemicals. Balter was the lawyer who represented environmental groups in the negotiations that drafted the Philadelphia and New Jersey right-to-know laws (see Chapter 2). As a member of PHILAPOSH, Schirm, now the director of DVTC, was also involved in efforts to pass and implement the original Philadelphia right-to-know law. For the likes of Balter and Schirm, the fact that local regulatory authority by small communities like Marcus Hook and its neighbors had no precedent was, by itself, a lame excuse for not pursuing such a strategy.

Balter and Schirm have collaborated with many Philadelphia area community groups in efforts to reduce or eliminate environmental hazards. In some of these efforts, they have used TRI data. In 1990, they made effective political use of TRI data when assisting parents who were long concerned about noxious fumes from a rubber factory (Aldan Rubber) that sickened their children in the adjacent grade school. With the data, they identified toluene as the precise chemical causing the fumes (a chemical not disclosed under the Philadelphia right-to-know law). A citywide analysis of the data by the DVTC also indicated that the plant was one of the biggest air polluters in Philadelphia. Armed with a precise target, the parents mobilized and were able to press city regulators to bring the releases under effective control.

In the spring of 1994, Schirm and Balter were using TRI data along with various other information sources to support environmental justice claims made by two African-American communities in the Philadelphia area.

The DVTC and PILC have brought suits against facilities that have failed to file reports legally mandated by EPCRA. In 1994, the DVTC was totally funded through monetary settlements won through these suits.

PAPA was born out of communications among Balter, Schirm and the parents who met for the first time after the meeting noted above. Schirm observed that the

parents anger over the school odors had little sense of direction and that he and Balter played a seminal role in developing a substantive strategy for PAPA (Interview).

According to Schirm, the key demand made by PAPA was for

> a local regulatory system, a system locally controlled where people could make complaints about air pollution problems, where there could be investigative authority, some sort of authority to penalize companies (Interview).

The goal was to develop an office jointly funded by Marcus Hook, Trainer and Linwood with

> the authority to respond to complaints of citizens, to conduct investigations, to go onto industrial property, to try to find the source of problems, to report these problems to the state environmental agency, and hopefully to give it the authority to shut down processes, to make some kinds of demands on the companies...We wanted the companies to pay for air monitors on their properties and in the communities that would detect the various kinds of substances being released so we would have some objective information about what was going on (Schirm, Interview).

As Balter put it, "What we were really trying to get to was some local governmental ability to enforce the air pollution control laws." An officer in the local police department, for example, could have been given authority to make on-site investigations and to levy penalties for violations (Interview).

At the outset, Schirm thought that TRI data could be useful in their efforts.

> One of the things we tried to do in terms of organizing the community was, like at Aldan, to put out information about the TRI releases in the community -- which were really extreme. We put together fact sheets and various kinds of information emphasizing the quantity of toxic releases and the potential health effects of some of the chemicals being released in large quantities (Interview).

On March 18, 1990, Greg Schirm of DVTC produced a four page TRI-based factsheet entitled "Industrial Air Pollution in the Marcus Hook Area" for PAPA members. The first page assessed the most currently available (1987) TRI reports.

> The Marcus Hook area, including Trainer and Linwood, has one of the highest concentrations of industrial air pollution in the Delaware Valley. In 1987, the four large industrial plants -- Congoleum, Witco, BP Oil and Sun - released 4.7 million pounds of toxic chemicals into the air. This amount is more than 75% of the industrial air pollution reported in all of Delaware Country for that year.
>
> The air toxics released by the four plants include chemicals that can cause acute effects, such as eye, nose or throat irritation, and others that may have serious

> chronic effects. For example, over 140,000 pounds of carcinogens, chemicals that may cause cancer, were emitted by the four plants in 1987, including over 100,000 pounds of benzene from the two refineries. Other chemicals that may cause developmental, reproductive, or neurological effects were released in larger amounts.

The remaining three pages of the factsheet listed two TRI-based chemical lists. The first list identified the 43 chemicals reported released in the area in 1987 and the amounts of each chemical emitted to the air, water, land, sewage treatment plants, or to public or private treatment or disposal facilities. The last table detailed each company's air releases by chemical, totaling the air releases of each company. Both tables indicated whether each chemical had been associated with one or more of a dozen health or environmental effects in the following categories: carcinogenic, mutagenic, developmental toxicity, reproductive toxicity, neurotoxicity, acute toxicity, chronic toxicity, environmental toxicity, biocumulative, persistent, greenhouse gas, and ozone depleter.

The handout also indicated that, from 1985 through 1989, "Sun received 47 citations and paid over $246,000 in fines" for pollution violations.

During the same period, the DVTC also distributed a single sheet entitled "Draft Report on Cancer and Pulmonary Disease Mortality: Marcus Hook, Trainer and Linwood." It noted that the cancer death rate in the area was 30% higher than the state's and 24% higher than the county's. It also noted that the area's lung disease death rate was 75% higher than the state's and 54% higher than the county's.

Schirm hoped that TRI data would play a part in helping residents to learn about and begin to deal with the overall pollution problem.

> I thought the TRI data would be useful in terms of educating the community about the nature of the air pollution problem that they were living with. I saw the school closing as a catalyst for getting people to think about and hopefully deal with the overall air pollution. I thought the TRI data would be useful in terms of giving people some concrete information about the volume of chemicals, the kinds of chemicals, the wide variety of chemicals and the types of effects that those chemicals would cause that were being released into the community (Interview).

More specifically, Schirm hoped that the TRI data might have "shock value" that would motivate people to take action and also give them political ammunition for achieving their major goals.

> At the outset, I saw the TRI data sort of like the school closings -- to not only educate people about what's going on but also to make them angry that "We're being subjected to all these chemicals." So I was hoping that it would have some shock value. But secondly, I was hoping that it would give people some ammunition, so that when they went to the state environmental agency, when they went to their local borough council meeting, they could say "We've lived with this for years but we never knew what was pouring out of these plants. It's not just the kind of stuff we can see and smell but it's also all these chemicals and its not just these refineries but the chemical plants that we haven't really focused our attention on but that are emitting as large a quantity of chemicals as the refineries in some instances." So [I hoped] that it would both shock people into an awareness that there are some serious potential effects here and also give them some concrete information they could take to local officials (Interview).

Schirm recalled that the TRI data did have some shock value and was used to a limited extent.

> People were horrified. People would then take the information generally from the reports and sort of repeat it in public forums. Some people would talk about 'the amount of toxic chemicals we're being subjected to' (Interview).

When asked if the TRI-related knowledge and handouts had any use in their efforts, Balter responded

> The answer directly is I don't think it had any use. We had perhaps some political use to it. For instance, when we were meeting with the various governmental agencies I think we used that material to try to convince them they ought to be putting in an enforcement agency which you see they would have to pay for (Interview).

Balter also recalled suggesting to residents that they bring such chemical-specific information to their doctors.

> We told people that they should take this kind of material to their doctors, let the doctors know this is what they're being exposed to so that if there is a particular problem they could see what the cause of it might be (Interview).

Schirm also hoped that TRI data would eventually assist a local regulatory body of the sort they aimed to establish.

> I thought that if we could get any permanent grass roots organization that they could track any progress on the part of the companies in reducing air pollution

> through the TRI data. [It would] give them a handle on whether or not there is any improvement in the air pollution problem. We didn't get that far (Interview).

What was missing in Schirm's view?

> A lot of things. It's an almost entirely white working class community where many people work at the refineries or family members work at the refineries and have been there for decades. It's a community when there have been serious problems, we and other groups who have tried to organize there have found it difficult to sustain this kind of activity. In a lot of ethnic working class communities in Philadelphia, there's an attitude that you live with this stuff and there's nothing you can do about it...We were down there in 1980 and various times when there were publicized incidents and we weren't able to really sustain any kind of activity. Once the other problems at the school dissipated, people's anger started to dissipate. We weren't able to develop the kind of leadership among people in the community that could have sustained some kind of organization (Interview).

In the end, TRI-related knowledge was used little or not at all by community members. Nor were PAPA's long-term objectives achieved.

> I would have to say although we had some success in terms of dealing with the odor problem at the school, I don't think the TRI data really played much of a role in the whole project there. We were hoping to try to deal with some of the other problems and at the same time build a sort of community environmental organization that could be sustained and then begin to look at some of the releases from the industries there and develop some ways of putting pressure on those industries to reduce their releases. Frankly, it never got to that stage (Interview).

Most parents remained focused on the immediate nuisance aspect of the odor problem at the schools and did not turn their attention to the overall pollution issue in the area. Schirm jettisoned hopes that TRI data would help focus community concern on the big picture.

> Our use of TRI data became secondary in Marcus Hook compared to dealing explicitly with the problem of odors in the schools. TRI data was never the primary focus of what we were trying to do in Marcus Hook (Interview).

When shown the March 18, 1990 factsheet and asked to recall what she thought of it, Linda Cobourn, the Marcus Hook coordinator for PAPA, stated

> I'll admit that I was very little impressed with these because they don't mean a great deal to me unless Jerry would sit down and explain them to us. They were just numbers...I know the statistics are important but they never meant a great deal to me because I'm not a chemist (Interview).

Regarding efforts to focus on "the bigger picture", Cobourn recalls

> That was one of PAPA's big concerns to see if we could do some research on long-range effects of exposure to these type of things. Jerry had pulled some figures and some facts together for us. But as far as I know nothing really much came of it. There are people who have lived in Marcus Hook for 80 years and who are doing really well. We do have problems related to pollution and cancer deaths (Interview).

Asked if there had ever been efforts to negotiate chemical use or chemical emission reduction, Cobourn stated

> No, it has never come to that. When all these printouts were being passed around, the EPA would say 'This is not a dangerous level. You are allowed to have this much. This is OK.' And none of us being chemists, none of us being environmental specialists, we were forced to go with Greg Schirm and what he would say and what Jerry would say. Jerry at one time had mentioned the possibility to us of, as a community, taking action against the industries. But it didn't come to that. The only reason I can think that it didn't was that we were just more concerned about our kids at the time. And I guess we were just focused on the present than we were on long-reaching effects. You live in an industrialized area. I guess most of us feel there's just not a great deal we can do about BP, about Sun, about Allied Chemical. So the best we can do is have a line of communication with them (Interview).

Asked if the TRI-related handouts had any use, Cobourn stated

> I would say it's not useful because a lot of it is not understood. Most people in Marcus Hook as dear and wonderful as they are not very highly educated. A lot of them are older people...We don't have a high level of the type of education that would enable somebody to understand these types of things. And because it's the kind of community where people have tended to live here for a long time, they just tend to be more accepting (Interview).

When Borough Manager Bruce Dorbian learned of TRI, he began requesting and receiving reports from the EPA each year.

> I recall a number of times calling EPA, asking for the information, having to call back numerous times to get it. Also, it was always behind...(Interview).

He noted the difficulty in interpreting the data.

> I'm not sure I would know there's a problem if I saw it in the eye. If I read it, I'm not sure I would I know. I'm not a chemist. I'm not a scientist...You read these things and hear that the amount of pounds of a certain substance being emitted is now instead of 300,000 pounds, it's now 200,000 pounds. Well, is that good? What does that mean?
>
> When I got the reports, I would get on the phone with somebody from EPA, one of their technological people, and ask them to explain what this stuff is. I could spend hours on phone. You'd get some appreciation for it (Dorbian, Interview).

Rather than the overall pollution problem, the primary issues in the spring 1990 protests turned out to be the identification of the source of the odors that closed the schools and assurance that the problem would not recur. Cobourn stated "All we ever wanted to do was find out what was causing the odor and stop it. Nobody ever wanted Sun Oil to pull up ranks and move" (Interview).

An official DER report issued in August 1990 failed to identify the source of the problem. TRI data failed to help in any way. The report

> included data from the Toxics Release Inventory...but added that none of the substances identified as possible sources of the odor are included in the [TRI] reports (Anderson, 1990).

By the fall, when the odor had failed to resurface, PAPA and its demands for a local regulatory body also drifted away.

As might be expected, PAPA's call for industry-financed local regulatory authority over pollution met stiff resistance. PAPA members faced opposition from friends and neighbors who had ties of loyalty to local industries and from image-conscious local officials. After working hard to engineer an image of the community that would attract new businesses, local officials were especially upset by Marcus Hook's newly resurrected renown for foul odors.

The TRI-related knowledge -- that Schirm saw supporting PAPA's efforts to establish local power over pollution problems -- suffered the same fate as PAPA overall. After briefly entering the political arena, both ultimately passed into history.

The spring protests, however, had succeeded in placing the issue of some pollution-related body representing the local boroughs on the agendas of local political leaders. Local officials became involved in developing an alternative to the structure proposed by PAPA. Borough Manager Bruce Dorbian first explored Good Neighbor agreements of the sort advocated by many environmentalists. While Sun showed a willingness to cooperate, "Not everybody wanted to come in and sign formal documents" (Interview). At that point, Dorbian explored an option available under

Pennsylvania law to form an Environmental Advisory Council (EAC). The idea was to form a citizen body that, in monthly public sessions, would meet with industry representatives to discuss any environmental issues.

> We thought that the effectiveness of anything that we put together would be better done with citizens working cooperatively with industries on a positive basis instead of government working from the top down....
>
> We felt there was a need for a group to pull the various parties together in order that information could be shared and residents could be educated about what was happening in the community about environmental issues and that they ought to get involved in their communities in a positive way. And we asked the businesses in town to come together and talk to each other and be involved with our EAC (Interview).

In a form of inter-borough cooperation that PAPA members had been told would be impossible (Schirm, Interview), Marcus Hook and other local boroughs passed ordinances establishing an EAC for the area.

> Now, whatever information we get from the state environmental people, if somebody is fined for emissions, if somebody is going in for a permit to expand emissions or put a new system in, that information is copied and given to the EAC so they can discuss it at their meetings. That way all the information is on the table (Dorbian, Interview).

Original members of the EAC included some of the PAPA organizers, such as Linda Cobourn. According to her the EAC has become like "the liaison between the major companies and the people." The current chair of the EAC Cheryl Everngham said

> Before 1988, when we originally had this problem, the industry was like a mystery to me. I've lived here my whole life. It was like 'Oh God, what's on the other side of that fence. Nobody knows. It was like a big secret.' You couldn't pick up the phone if you saw black smoke and call somebody and say "What's going on over there?"

Now, she said, "The communication lines are open."

It would appear that there is not widespread participation in EAC meetings, although its meetings are open and publicly announced.[5]

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[5] A woman who complained that local pollution caused her regular headaches while chatting with the author in Marcus Hook Diner said she had not heard of the EAC and "It doesn't help." (Unrecorded conversation, May 6, 1994).

One means by which the community has achieved a means to deal with acute odor incidents is through permanent, 24 hour-a-day monitors of hydrogen sulfide and sulfur dioxide at the Marcus Hook Elementary School. The monitors transmit data directly to the DER. School principal Paul Blanford can ask the DER to fax him monitoring data for any specific date and time.

> I can point on my map to where all the businesses are and what kind of odor and smell I'm going to get out of each one of those businesses. And then when the wind comes along, that's when I contact them (Blanford, Interview).

Blanford offered the following example of how the monitoring system has worked successfully.

> We had a severe sulfur odor whiffing through the building. The wind was coming from the northeast. I contacted Sun. I contacted BP. I requested a printout.
>
> Pat Prosser from BP came over. We were able to look at the printout and find the wind direction. We saw the higher sulfur levels, and although they were within the limits, you could see that there were higher parts per billion (not per million). We went to my map and we calculated the degrees on the map to see exactly where it was coming from. At that point he said 'Paul, I think I have the answer.' He picked up the phone and contacted his services at BP and within 10 or 15 minutes the odor stopped.
>
> We found that it was a ship off-loading high sulfur Arabian crude. As they backed out into the channel, they were filling their holes with ballast water. And, when they did, they were burping out high sulfur and it was blowing directly into my building. That's the perfect example of how we are able to utilize that material through the DER, put our brains together and stop the source.
>
> Since then, they are only buying crude oil from companies with separate ballast tanks. In other words they do not fill their empty oil tanks with water any more, they have a separate ballast tank so they do not have to burp out that high sulfur (Blanford, Interview).

Cobourn cited the same incident as an example of how the EAC had worked well. She said "It made a horrible stench down at the school. They did not have to evacuate but they could not let the children go out for recess." Soon after the BP representative and the school principal had determined the cause of the problem, the DER contacted EAC chair Cheryl Everngham to let her know what was going on. "When we began to get phone calls from people, we knew what happened. It was

emissions from the boat; it wasn't from BP. It was being taken care of" (Cobourn, Interview).

Although the EAC has not attempted to negotiate any pollution reductions with companies and has none of the regulatory authority called for in the initial PAPA demands, its ability to gain cooperation of companies in dealing with acute odor incidents has given members who participated in the 1990 protests some sense of achievement and efficaciousness. Former PAPA members also point to the installation of the monitors at the school in the wake of the 1990 protests as a measure of some success.

Asked about Marcus Hook's reputation for "putting up", the current EAC chair Cheryl Everngham stated

> I don't think we put up with it. I think since 1988 when it first began with the school, I think people are more aware of air pollution and if they see something that's not right, they're going to call the DER and complain about it and to find out what they're doing to prevent this in the future. Things are going to happen. There's not too much we can do about that other than keep the pressure on them and make sure that when something does happen that we can see that they do something to prevent it from happening again (Interview).

Cobourn sees the communication that the EAC has created between residents and industry representatives as a significant advance.

> When the school closed the first and second times, we had so little communication with the industry in the area. Things would happen. We would not know what had happened until you had read about it in the Daily Times. And now because of PAPA and most particularly because of the EAC, we have a very good talking dialogue with the industry representatives. We feel like we've been able to gain a lot of ground. We live in an industrialized area. We can't make them stop their business. But what we can do is make them aware that people live around here. If something happens we don't really want to slap a fine on you and have it paid to EPA. What helps us is if there's no need for a fine. Accidents happen. If something happens and a mistake is made, let us know. This way we're not wondering 'Are our children going to get sick?' If we know what it is we're dealing with, then we feel much better about things...
>
> You can fight City Hall to a certain extent and you can get something. And we have. We've got the EAC and we've gotten good communication with the industries. The truth is we can't make them stop their business (Interview).

Two addenda to the Marcus Hook story seem worth noting. First, Sun refrained from requesting reductions in its property taxes while the spring 1990 protests were at their height. In 1986, Sun claimed that its real estate should be valued at about $40 million rather than $127 million and began to phase-in a reevaluation of its property. After assessment appeals in 1986, 1988 and 1989, the fair market value had been marked down to $90 million (Mayer, 1990d). Sun explained forgoing an appeal in 1990 to one journalist as a "goodwill gesture" to the community (Roberts, 1990c). The same spokesman offered a more frank explanation to the Inquirer when he stated "In this climate, with this community, we just don't think it's the right thing to do" ("Dispute eclipses Sun's bid on reassessment" by Mayer, 1990d). Political power acquired by the community in this instance appears to have grown directly from the use of methods of defiance and institutional disruption like the school boycott[6].

Although Marcus Hook officials threatened to litigate a 1993 appeal, Sun was able to negotiate a reappraisal down to $52 million by March 1994. In an agreement with Marcus Hook and Lower Chichester, Sun was able to cut its local taxes by $839,776 a year. Because Sun provided half of Marcus Hook's tax base, the loss of tax revenue was painful for the municipality and the local school district (King, 1994).

Secondly, in order to defer pollution reduction measures in Marcus Hook, Sun, in February 1994, was engaged in an effort to identify cars on Pennsylvania highways with excessive pollution emissions and to pay for repairs on about 1000 cars.

> It's all part of the oil company's efforts to trade emission credits for more expensive improvements it would otherwise have to make at its area refineries...
>
> Sun hopes that state regulators will give the company credit for the pollutants that it removes by junking or repairing the cars.
>
> Such pollution credits would allow the company to defer repairs at its Philadelphia and Marcus Hook refineries (Maykuth, 1994a).

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6 Piven and Cloward have documented how relatively powerless groups have acquired political power by simply withdrawing customary and traditionally expected support for the political system (1977,1979).

Two related lessons might be drawn from these recent events. The company now has the leverage to ask and receive from the community painful cuts in its tax bill that it found politically inopportune to request while parents were up in arms against pollution. Secondly, the company can with apparent political impunity forgo pollution repairs at its Marcus Hook facility while achieving required pollution reductions by other means. Both cases reveal a political vacuum that would not likely exist if there were a local organized opposition force against pollution. While many things have changed in Marcus Hook, many other things remain the same.

Political Power and TRI-related Knowledge in Marcus Hook

The remainder of the chapter develops a power-based interpretation of the conflict recounted above for the purpose of exploring the relationship between power and TRI-related knowledge. The concepts and issues in power theory discussed in Chapter 1 are used as a point of departure for this discussion.

Evidence that pollution had produced a power conflict in Marcus Hook existed in the form of the long a history of sub-political grievances and complaints in the community regarding pollution. These grievances were evidence that, in the minds of some residents, polluting facilities were affecting them in a manner contrary to their interests. Various statistical analyses showing relatively higher rates of fatalities due to cancer fatality in the area provided independent support for the notion that a toxic power relationship existed.

Second dimension power questions had therefore long existed about the degree to which pollution was or was not admitted into the political arena as an issue. Accompanying the failure of pollution victims to successfully organize and make any political progress on the issue (with the qualified exception of the EAC) was the development of a fatalistic and quiescent attitude regarding the problem. In accordance with Gaventa, such fatalism is best analyzed as a third dimension sense of powerlessness. It was the indirect product of the historical persistence of the facilities

to have their way in matters of local pollution and of the corresponding chronic failure of local complaints to advance beyond the private and personal sub-political level.

Part and parcel of the conditions that produced powerlessness was a drastic inequity between the parties to the conflict. There is a striking power contrast in a tiny relatively poor white working class enclave sandwiched between two oil refiners that are economic actors on the world stage. The resources of residents pale by comparison with the political, financial, and knowledge resources available to such major corporate entities.

The TRI-provisions of EPCRA changed the toxic power relationship in the Marcus Hook area by forcing local industries for the first time to publicly name and quantify specific toxic chemical environmental releases. Facilities had refrained from revealing such information in the past and only disclosed it under compulsion. Prior to that point, latent or potential conflict (in the third dimension) underlay ignorance about the levels or types of toxic releases. While there was grumbling about pollution overall (representing second dimension conflict), detail of the sort revealed by TRI remained a third dimension matter. Theoretically, each substantial release of a toxic chemical into the local environment represented a potential political issue in and of itself. For example, the fact that BP Oil released 58,000 pounds of a known carcinogen, benzene, was a latent issue when the Philadelphia Inquirer reported it in 1989 and when the DVTC distributed that information to protesters in 1990. The central question of this chapter is why such chemical specific releases remained latent issues after local residents learned about them. Why did TRI-related knowledge have little effect on the community's consciousness and attitude regarding the toxic power relationship between industries and the community? Even if some residents did start to make an issue in public fora about 'the amount of toxic chemicals we're being subjected to' (as recalled by Schirm), why did pollution overall and discrete toxic chemical exposures in particular fail to become political issues? As noted in Chapter 2, TRI data has become

one of the building blocks of a Toxic Use Reduction (TUR) strategy for environmental activists. What stood in the way of such a development in Marcus Hook? Although the Environmental Advisory Commission and the means to monitor the air near the elementary school constitute a significant political breakthrough for residents on the issue of acute odor incidents, why have levels and types of toxic releases (i.e. the kind of information made available by TRI) kept safely -- for the facilities -- out of the political arena.

The educational and political advocacy functions that Greg Schirm hoped TRI-related knowledge would have had for community members are easily conceived within the three dimensional schema. Schirm hoped that TRI-based knowledge would function in two ways. First, it might "shock" people and give them a detailed education on the nature of toxic chemical exposures in the Marcus Hook area. This would have constituted a form of third dimension empowerment by enabling them to discover precise toxic exposures they had no prior knowledge of, as well as helping them deepen or clarify their political understanding of the complex local toxic power relations. Second, once informed or educated, local protesters could have used this information as political ammunition. In the second dimension, TRI-based arguments regarding overall and specific pollution problems could have helped empower residents to place PAPA demands on the agenda of local authorities. In the first dimension, such arguments could have helped win decisions in favor of those demands and in pressing for their implementation.

First, it could be argued that problems internal to TRI as a regulatory program data or linked to the manner of its dissemination were at fault in Marcus Hook. One could argue for example that due to the limited scope of toxic chemicals covered under the law, TRI data did not adequately record the nature of the toxic power relationship. Schirm observed

> What we didn't have at the time was non-TRI data on the emission of criteria pollutants which may be as much if not more of a problem than the list of chemicals on the TRI list (Interview).

Because local facilities were not required to report "criteria pollutants" to TRI, the TRI data lacked records on sulfur dioxide, the most probable source of the odor incidents at the schools in 1990 and one of the two chemicals for which the DER installed round-the-clock monitors. Schirm only learned about extraordinarily high levels of sulfur dioxide releases when he came across the information in DER records. Had TRI succeeded in identifying the culprit in 1990 , it would certainly have achieved a higher profile and may have found more users.

The manner in which TRI information was interpreted and presented to local protesters by the DVTC in 1990 could have been one factor in why the information did not "take hold." Schirm had second thoughts about how well he and Balter had presented the data to people in the area, stating "We didn't use the TRI data effectively, I think" (Interview). Schirm never identified or proposed a political focus on a narrower set of the 43 chemicals and assorted health risks included on the factsheet that he distributed in Marcus Hook. Perhaps the data could have been presented in a way that seemed less overwhelming or closer to discrete, viable political issues.

The DVTC reached out to and met with representatives of the separate Organization of Atomic and Chemical Workers Union locals at Sun Oil and British Petroleum. Although on occasion the Sun Oil union lent meeting space at its center to PAPA, the unions decided not to get directly involved in the efforts of PAPA. The issue of ill-defined odors at the schools never had the same urgency for the union workers, most of whom lived outside Marcus Hook[7], that it had for parents.

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[7] While the bulk of the work force at the refineries used to live nearby, the relatively high income now received by refinery union workers (15 to 29 dollars an hour) enables them to afford better housing than they would have in Marcus Hook. According to a count done by the Borough Manager Dorbian, only 15 or 20 of the 1200 employees at the Sun refinery now live in Marcus Hook. Once local residents get a refinery job, they generally opt to move out of Marcus Hook. Dorbian described Marcus Hook as "a

The DVTC never learned whether the unions had ongoing grievances with their employers over exposure to any chemicals (Schirm, Interview). This combined with the fact that PAPA never rallied around opposition to airborne exposure to any specific chemical left little ground on which a labor-community coalition might form.

While it might be argued that there was no natural home for TRI-related issues in the area (that perhaps the situation really had improved so much that only acute odor incidents and other accidents were an issue), the well known history of local pollution problems as confirmed by the relatively large TRI numbers militates against this assumption. Assertions that air quality was not an issue seem best categorized as obfuscations of a chronic reality or rationalizations for inaction.

One obstacle in the way of turning various TRI analyses publicized in local media or distributed by the DVTC into local political ammunition was their minimal news value. As both journalists and information theorists know, information that everyone knows has no news value.[8] One possible value of TRI data -- to inform people about high levels of air pollution -- was negated in Marcus Hook by the fact that it merely confirmed what everybody already suspected. By itself, the big totals were not the kind of information that could advance people's understanding of toxic power. Their lack of news value made them difficult to translate into useful political ammunition. The various TRI newspaper reports citing high release amounts and rankings appear to have fallen in the "So-what-else-is-new" category and quickly faded from collective memory.

But even if Schirm or other environmental or health specialists had been able to offer to local residents a compelling picture of some chemical-specific release issue that

community of row homes and twins with very few single homes and very little ground. People want to move further out" (Interview).

[8] In Shannon and Weaver's statistical theory of information, less uncertainty ("Will the sun rise tomorrow?") produces less information whereas more uncertainty ("What is the color of a cabbage rose?") is the basis for acquiring more information (Shannon and Weaver, 1949).

also seemed like powerful political ammunition, there were many other conditions unfavorable to the effective use of the knowledge.

Two primary conditions posed significant obstacles to any challenge to the power of polluters and, by inference, to any politically empowering use of TRI-related knowledge in Marcus Hook. The first is the legacy of powerlessness and fatalism among residents that left them ill-prepared to build political knowledge critical of the local powers-that-be and use it effectively in the political arena. Secondly, established political perceptions and varied counter-forces among residents, local officials and the facilities -- and sometimes internalized by residents -- were knee-jerk ready to respond to any challenge to the toxic power relationship and produce a hostile climate for any efforts to make an issue of pollution. Those members of PAPA who dared venture where hardly anyone had gone before -- into the political arena against local polluters -- faced a hostile climate rooted in basic assumptions that pollution was a matter that, for everyone's best interest, had better go unchallenged. In the end, PAPA's goals were not entirely diverted but they were contained in a manner that was far less threatening to the toxic power of industries.

The general state of pollution was a highly tangible problem well-known to all parties (third dimension). Local polluters could no more hope to conceal from residents or visitors the general fact of pollution than they could expect to deprive people of their senses of sight and smell. It was possible, however, for power wielders to limit community members' understanding or ability to learn about the problem in direct and indirect ways. Fatalistic perceptions of people in the community can, as Gaventa observed, be analyzed as a direct consequence of actions taken by power wielders to control their perceptions and as an indirect consequence of their relatively powerless situation (1980:192).

Growing up in Marcus Hook, lifetime resident Everngham always thought of "what's on the other side of that fence" as a "mystery" or a "big secret" (prior to

development of the EAC). The facilities actively contributed to local ignorance about themselves. Third dimension power exercise was evident in facilities' resistance to community efforts to learn more about their operations through facility visits. Both third and second dimension exercise of power was evident in active discouragement of publicity about pollution (as demonstrated by the Mengers experience with BP and by an earlier mayor's order to stop a pollution complaints survey).

Throughout this century, pollution has been a fact of life in Marcus Hook. Any dissent over pollution has largely taken the form of personal grumbling and the occasional individual complaints to officials. These complaints have rarely had any impact. The "put up with it" attitude found in Marcus Hook does not reflect consent with pollution but a feeling of powerlessness, a sense that one can't do anything about it. Fatalism, as Gaventa observed, is an indirect consequence of inequitable power relations that remain over time immune to successful challenge.

> ...the conceptions of the powerless may alter as an adaptive response to continual defeat. If the victories of A over B in the first dimension of power lead to non-challenge of B due to the anticipation of the reactions of A, as in the second-dimensional case, then, over time, the calculated withdrawal by B may lead to an unconscious pattern of withdrawal, maintained not by fear of power of A but by a sense of powerlessness within B, regardless of A's condition. A sense of powerlessness may manifest itself as extensive fatalism, self-deprecation, or undue apathy about one's situation (1980:17).

The scarce options available to members of a low income community commonly contribute to the growth of a sense of powerlessness. In Marcus Hook, even if people don't love it, they cannot necessarily leave it. One lifetime resident told the author that residential property values were generally about $20,000. This makes it impossible to consider gaining enough from the sale of a house to move elsewhere in the county where property values typically range in six or seven digit figures.

Even in the physical space of the town, there is a sense of the inescapable. In a power conflict based on physical risk and harm, the cramped physical quarters, with accident-prone industries occupying three quarters of the town's surface, bespeak an

overwhelming physical presence of those with the power to pollute. Over time, the daily sights and smells of industry are a constant reminder of one's inevitable association with toxic power. Among people who grew up under such circumstances, it is not surprising to discover an assumption that "they" have the power to do as they will and "you just put up with it."

One major political liability born of the legacy of powerlessness is lack of civic experience. Schirm reported that most Afro-American communities and ethnic communities with which he worked in Philadelphia possessed some capacity for civic organization. These communities had a keener sense of organizing for political protest than he found in Marcus Hook. From the outset, members of such communities understood the importance of matters like setting up a committee, creating a set of demands, going door-to-door to build support, holding demonstrations, and inviting the media to protests. "They have the tools", said Schirm. In Marcus Hook

> people didn't understand what it meant to set up a local citizen organization, or how you would go about it. It all seemed foreign to them. It was absolutely amazing. It became clear early on that a lot of work needed to be done here, more than the time we could put in. It needed to be sort of full-time community organizing if the community could reach the point of dealing on their own with issues.
>
> These are white working-class communities where there was no history of activism and we knew it was going to be very difficult to sort of keep people in motion over this issue (Interview).

While the generally lower educational levels in the town did not make residents incapable of building knowledge needed for engagement in toxic politics, the legacy of fatalism in the community could have lowered confidence levels needed to tackle toxicological issues. This was reflected in Cobourn's remark that "We don't have a high level of the type of education that would enable somebody to understand these types of things" (Interview). Dramatically reflecting low capacities to build knowledge important for toxic politics was the fact that the local library, looking out over a sea of Sun Oil petroleum drums, did not contain a toxicology reference book.

Another problem feeding into the fatalism regarding pollution in the area is its complexity. However TRI data on local polluters was presented, there was a complexity inherent in the picture that emerged that posed a formidable challenge to anyone who wished to transform the information from "just numbers" (Cobourn, Interview) into something that could alter priorities and compel people into political action. Anyone who cared to make pollution an issue in the Marcus Hook area had to take on a veritable armada of polluters. According to the TRI data distributed to protesters in 1990, the area's four major TRI reporters released nearly 5 tons of 43 different chemicals into the local air in 1987. The number of facilities, the number of chemicals released, and the number of possible effects made it difficult to selectively focus, concentrate on and target a specific polluter for releasing a specific chemical. This sense of indecipherable complexity likely fed into the sense of powerlessness or incapacity to confront the polluters.

Some responsibility for PAPA's inability to focus on TRI-based chemical-specific political issues lies with the DVTC. In the advice it gave to PAPA, the DVTC never targeted specific TRI-reported chemical releases as possible political issues.

"You just put up with it" remarks are born out of an historical experience of powerlessness regarding the problem of pollution. Financial inability to leave the community, an ingrained physical sense of inescapable polluters, and a void in civic experience that would make challenge more possible have all contributed to a sense that pollution is part of one's fate. People who first settle in the community thinking something should be done about the pollution soon confronted the prevailing fatalism or "culture of silence" (Freire, 1970) and fall into the cycle of inaction.

In 1990, the school odor protests and the formation of PAPA appeared to mark an historic break with the community's quiescent past. Most dramatic and fundamental was PAPA's call for local regulatory authority over the polluters. TRI-related knowledge, Schirm thought, would both help people appreciate the need to demand

such fundamental change and offer them a source of ammunition with which to fight for the change.

While the legacy of fatalism was a powerful constraint on the recognition and development of any TRI-related political issues, as noted above, established structures in the toxic power relationship were poised to actively resist any local challenges to pollution. Other residents, local officials and the facilities all had reason to try to end or contain the PAPA challenge of 1990.

Residents who had hopes or plans of selling their homes had a material interest in opposing pollution protests. As one resident noted while the media spotlight was on Marcus Hook in 1988 due to the odor-caused school closing,

> A neighbor of mine has been trying to sell her house before this started. It's hard to sell a house in the Hook, but when this started, she just took it off the market because nobody wanted to look at it (Scott, 1988).

Another factor mitigating against pollution protest among residents were ties to or dependence upon the facilities. While fewer residents were employed at the refineries than in the past (possibly accounting for much of the strength behind the 1990 protest), a legacy of loyalty persisted among current workers and former workers who still reside in the community. In the fabric of a small community these strands of loyalty were often not much more than a doormat away. As former PAPA coordinator, Cobourn noted

> We have a lot of people who live in Marcus Hook who still have connections to Sun Oil Company, who still feel they owe their life's blood to Sun Oil. In fact, when I began getting involved with PAPA, my father-in-law who had been working with Sun all his working life until he retired from Sun was very upset with me because he felt I was going to put Sun Oil in a bad light by speaking out as I was speaking out and doing what I was doing. He was very animate about it. He said 'You can't do that to Sun. Sun is my company. You are not allowed to do that to Sun.' A lot of people in this borough still have ties to Sun or to BP and they feel more loyalty than people do for their companies these days, that's for sure. Yes, I think a lot of them were reluctant to try to go against Sun Oil or BP (Interview).

Since the late 1970s, the key theme among local political officials has been community development through the establishment of new job-producing businesses.

The town's crime and grime image had been a persistent obstacle to such a strategy. When, for months at a time in the spring of 1990, the media carried reports about an odor-plagued borough with activists warring against pollution, the image of grime once again loomed large, constituting, in the eyes of officials, a threat to community development. An editorial page cartoon that appeared in the Delaware County Daily Times on April 4, 1990, depicting a gas mask in the window of a Marcus Hook school supplies store, prompted protest letters (April 15, 1990) from Marcus Hook's mayor and a councilman. The mayor's attempt to recycle the ventilation theory of school odors would appear to reflect a preference to deny rather than to confront the problem of pollution (Mayer, 1990c).

Borough Manager Dorbian told Delaware County Daily Times "This story just feeds on itself. Everything that we've done in the past 12 years has been eroded." Dorbian said that a mortgage lender had requested verification from the borough that there were no toxic emissions in the air before granting a loan to an applicant (Monchecourt, 1990).

Cobourn recalled that "At the beginning, there was concern that one of the purposes of PAPA was going to be to give Marcus Hook a bad name" (Interview).

Regarding friction related to community development concerns, Schirm noted

> There were some pretty acrimonious political fights, lots of pressure being put on people to sort of back off from this sort of thing. Marcus Hook has undergone a sort of renaissance in the last decade or so, community development projects and that sort of thing. Politicians started talking about how this kind of activity is going to be detrimental to the efforts of the community to get projects and grants... They [PAPA members] were getting lots of pressure from neighbors and friends...There were some angry exchanges between people from the Marcus Hook borough council, their local executive, and PAPA over the whole question of whether or not these were really serious issues that needed to be addressed or whether these were minor issues whose major impact was on Marcus Hook's attempts to rehabilitate itself as a community. What was it doing to property values, what was it doing to the efforts of Marcus Hook to bring in more jobs...There were lots of allegations that this was disrupting a process that had been set in motion a few years before to try to really make improvements in the community, that people would move out, that property values would decline, that people wouldn't locate jobs in Marcus Hook (Interview).

So tender were local officials about Marcus Hook's "crime and grime" image that they purposely excluded from a 1992 centennial celebration any mention of Blackbeard the pirate. In an article entitled "Avast! Marcus Hook is trying to sink its ties to Blackbeard", the Inquirer explained "Marcus Hook has been trying to promote an image more conducive to attracting new business and industry, and Blackbeard is out, blackballed in the name of progress" (O'Neill, 1992). It is not hard to imagine why local leaders fearful of association with an 18th century pirate would also be averse to publicity linking the town with cancer-causing substances like benzene or mutagens like ethylene oxide.

PAPA's proposal for local environmental regulatory authority over polluters -- to be paid for by the polluters themselves -- represented a fundamental challenge to existing toxic power relations. While large cities like Philadelphia and New York City have some regulatory authority over polluters, there is no precedent for small communities like Marcus Hook and its neighbors to establish authority over local polluters. While such a proposal was still on the table, it represented what the Inquirer labeled, in reference to the general protests of the parents, "a small revolution in the making" (Mayer, 1990b).

The fate of TRI usage in Marcus Hook was probably linked to the fate of this, PAPA's most challenging demand. The call for local regulatory authority over polluters apparently sent local authorities scrambling for ways to deflect arguments in favor of PAPA's vision (i.e. arguments that depended on TRI-related knowledge) and to develop the far more limited alternative that eventually emerged in the form of the EAC. If TRI was to be ammunition for the establishment of an entity that was unacceptable to the local powers that be, then TRI-based arguments could also expect a hostile reception.

It would appear, however, that the PAPA proposal for an official entity jolted local officials and industries and has had an enduring impact. The idea of involving

Marcus Hook, Trainer and Linwood (in Lower Chichester) in a single body was based on simple appreciation of the physical boundaries joining industry and community. It had a certain undeniable logic. When they originally proposed it, PAPA members were told that such unprecedented interborough cooperation would be impossible (Schirm, Interview). Whether or not the EAC is only a shell of what PAPA originally intended, the formal structure of EAC, encompassing all three boroughs, clearly drew inspiration from the PAPA proposal.

Even if the EAC fell short of instituting local regulatory authority over polluters, it made 1990 protesters "feel like we've been able to gain a lot of ground" (Cobourn, Interview). The change wrought by the EAC was the beginning of direct communication between industry representatives and local residents. In terms of the toxic power relationship and the industries' power to pollute, it appears to have been more a symbolic than a substantive change. That is, the issue of reductions in toxic releases remains non-negotiable.

It might be argued, however, that the EAC represented a "crack" in a formerly unaccountable toxic power relation. If so, this shift -- and the concession it represented by the industries -- may be partly attributed to the fact that community residents and local officials have less dependence on local industries than they did in the past.

Fewer Marcus Hook residents owe their jobs to local industries than used to be the case. At last count, according to the borough manager, only 15 or 20 of Sun's 1200 employees lived in Marcus Hook whereas major portions of residents used to be employed at the refineries. People who can afford to leave Marcus Hook apparently do. ("People want to move further out" according to Dorbian). A local job at relatively high paying union-backed wages tends to be a ticket out of the town (Dorbian, Interview). Politicians are also less dependent on the industries than they used to be. In the past, both politicians and many of their relatives were employed at

the refineries. Both residents and elected officials "were reluctant to complain to those folks who were putting food on their table" (Dorbian, Interview).

In speculating about the basis of protests in 1990, a Sun official cited the decline in employment of local residents as well as antipathy due to tax reassessments. Sun spokesman Jeff Peters

> frets that there is less sympathy for Sun in general these days because the company has won a series of tax reassessments, and because less than 10 percent of its employees now live in Marcus Hook or Lower Chichester, "whereas, 20 years ago, probably a majority of (the people in those towns') work forces would be employed here" (Mayer, 1990c).

The explanation for how and why the EAC picked up where PAPA drifted off deserves more research and attention than the current study has been able to give it. It appears, however, that PAPA's potential was fundamentally undercut in two ways. First, in early May 1990, Marcus Hook and Sun Company officials agreed on a general strategy that would establish a committee enabling communication between community members and local industries. At the time, neither Sun nor Marcus Hook spokespersons would comment when asked whether PAPA members would be invited to be part of the committee (Roberts, 1990d).

The second way in which PAPA was undercut was in maneuvering that took place to separate local PAPA members from their key environmentalist advisors, Balter and Schirm. Accusations made by local officials that Balter and Schirm were outside agitators were a clear means to encourage PAPA members to distance themselves from the pair. Although a former PAPA member suggested to Schirm that he speak at the first EAC meeting, Schirm never received an invitation to attend the meeting. After several unsuccessful attempts to reach the person by phone, Schirm said "My working assumption at that point was that 'This thing is being co-opted for political purposes'" (Interview). Several former members of PAPA became the first community representatives on the EAC. Balter and Schirm no longer had any contact with them.

Even if hopes for community empowering uses of TRI-related knowledge had already grown slim at that point, they virtually vanished when Balter and Schirm ceased to be part of the local political action. The right-to-know expertise of the pair ranged from experience with early legal struggles to pass right-to-know laws to in-depth knowledge on TRI-reported releases for the entire state of Pennsylvania.[9] Had PAPA members persisted in trying to educate themselves about the overall nature of the pollution problem in the area with Balter and Schirm as advisors, chances would have greatly increased that the group would have turned to any number of chemical specific political issues that were ripe in the TRI data (e.g. chemical releases that posed the risk of cancer or various lung diseases). This scenario was foreclosed by the local political maneuvering that produced the EAC.

Lacking formal authority for holding industries accountable (first dimension), the EAC may be said to serve informational (third dimension) and public communication (second dimension) functions of some sort. The critical defining feature of the EAC is the domain of issues it limits itself to. Dorbian, whose office initiated development of the EAC, said that, in the search for setting up some sort of relationship between industries and residents, "We didn't want to be confrontational" (Interview). The outcome appears to be a group with a working assumption that relevant pollution issues in Marcus Hook are limited to acute odor incidents and any other accident-caused problems. On such issues, industries have made themselves informally accountable to community representatives. While this is a significant departure from tradition in the relationship between industry and community, toxic use decisions remain unaccountable. Toxic chemical use reduction -- an issue likely to be dependent on TRI-related knowledge -- has never been on the agenda of the EAC.

[9] The reader is reminded that Balter drafted the 1981 Philadelphia right-to-know law and the 1983 New Jersey right-to-know law that served as the model for EPCRA in 1986. At the request of the National Resources Defense Council, Schirm produced a statewide analysis of the first annual cycle of TRI reports submitted by Pennsylvania industries.

From the perspective of the contemporary environmental movement, this means that the heart of the toxic power relationship remains intact. To the extent that the EAC firmly establishes the expectation in the community that toxic use reduction is non-negotiable, it functions as a second dimension barrier for citizen involvement in the toxic politics of Marcus Hook and the neighboring communities.

Conclusion

In summary, TRI-related knowledge represented the potential stuff of numerous toxic power conflicts in the Marcus Hook area. For local residents, the potentially empowering role of TRI data lay in providing the basis for a detailed and growing understanding of the toxic power relationship in the area and also for pressing subsequent TRI-related political issues forward politically. The legacy of fatalism, lack of knowledge-building resources and the weakness of local civic capacity eventually allowed an agenda served by such knowledge to be outmaneuvered by political actors among local officials and facilities.

Why have members of EAC not used the forum to challenge general pollution levels or specific toxic use decisions by industry? Whether the reason lies in the friendly, first name camaraderie that has developed between EAC members and industry reps, in the legacy of fatalism that instilled limits in the will to challenge, or in some other factor, the community probably has greater capacity to confront industry than it has ever had in the past. Given the right combination of unsettling events between community and industry and good hard evidence regarding the source of the problem, it would not be surprising to hear one day that residents of Marcus Hook were taking effective aim at toxic use decisions of local industries.

Chapter 6: TRI-related Knowledge and Political Power

This study was undertaken as an effort to better understand the relationship between knowledge and political power. For this purpose, three community-based political power conflicts have been examined in which knowledge derived from the Toxics Release Inventory played a role. Two sets of questions described at the outset have guided this effort, one conceptual or descriptive, the other theoretical or explanatory. The first has to do with developing a framework appropriate for researching and analyzing the functions of knowledge in political power conflicts. The power-based interpretations of the community conflicts in the last section of each case study chapter began this task. The second set of questions focuses on how to explain when and why challengers in each of these case study conflicts could use TRI-related knowledge as a tool for empowerment. Why was such knowledge more or less politically useful for the groups in this study? Why did it play a seminal role in Northfield, an auxiliary role in Boerum Hill and no role in Marcus Hook?

This chapter reviews analytical needs that emerged out of the case studies and proposes a definition of power and a related analytical framework that appears best-suited to address these needs. In the process, it compares and offers explanations for the differing political utility of TRI-related knowledge in each case.

The Cases

In Northfield, after members of the community discovered that Sheldahl had been releasing high quantities of a carcinogen into the air, two groups formed to jointly oppose the releases, Clean Air in Northfield (CAN) and the Air Toxics Study Group (ATSG). The ATSG was a group of scientists and science students based at the local colleges that set out to determine the health risks posed by the releases. Among other things, it used the amount of releases reported to TRI and information about environmental conditions to develop computer models that projected the likely degree

of community exposure. The community opponents used the information to argue for the end of the releases.

A major function of TRI data in Northfield was to facilitate a coalition between the new community opponents of methylene chloride exposure and an organized constituency that had already opposed such exposure for almost four years, the labor union at Sheldahl. The TRI data, when associated with the carcinogenic properties of methylene chloride, allowed two separate subordinate parties in the toxic power relation to discover their common interest in opposing exposure to the chemical. After a labor-community coalition developed, a member of the ASTG conducted a study that showed significantly higher levels of exposure by the workers inside the plant. This study received local publicity and provided the union with more ammunition to press its case with the company.

As a political power struggle, the conflict in Northfield centered on two issues: 1) forcing the company to adhere to its toxic use reduction plan as part of its labor contract with the union and 2) compelling the company to adhere to some version of the same plan as a condition of receiving its state pollution permit. Both the November 1990 labor contract and the April 1991 pollution permit required the company to implement a plan to reduce and ultimately eliminate its used of methylene chloride.

In the Brooklyn case, noxious fumes emitted into the neighborhood by the Ulano Corporation prompted organized opposition as far back as the 1970s. In the face of regulations that protected the facility's emissions on health grounds, the community's Clean Air Committee (CAC) mobilized behind efforts to enforce ozone protection rules against the company. TRI-related knowledge intervened in the activities of the CAC in several distinct ways. When the CAC learned the names of the chemicals released from the plant, it was able to develop toxicological knowledge with the assistance of one group member who was a high school chemistry teacher and

another member who had contacts with the medical community.[1] In 1988, a newspaper report on the first TRI filings for New York City indicated that Ulano's emissions were among the most notable in the city. This news motivated group members to intensify their opposition efforts and became political ammunition for such efforts. Later that year, subsequent to a TRI request, the group received raw TRI data on Ulano from the state agency and found it of no value. In 1990, a national research group based in New York City conducted a study of TRI data for the city and found that Ulano was the city's top industrial air polluter. It is possible that the impending public release of the study was one of the factors that caused the state agency to break a bureaucratic logjam that had prevented Ulano from starting up an incinerator capable of ending significant toxic releases. After citywide publicity on Ulano's top ranking, the Committee used the ranking to mobilize community support for implementation of the state order to start up the incinerator. The incineration process solved the problem of toxic fumes in the neighborhood.

In the "null case" of Marcus Hook, longstanding pollution problems resulted from the presence of two major oil refineries and other industries. The small residential community in the vicinity had a reputation of passivity in the face of the major forms of pollution. Before and during an unprecedented eruption of organized protest against pollution in 1990, TRI-related knowledge arrived in the community in two ways: indirectly in the form of various news reports that confirmed the community's exceptionally high levels of toxic releases and more directly in the form of factsheets distributed by the Delaware Valley Toxics Coalition (DVTC) to members of Parents Against Polluted Air (PAPA). The DVTC hoped that TRI data would "shock" and educate people about the nature of the pollution problem in Marcus Hook

[1] Only in hindsight was acquisition of the names of the chemicals TRI-related. The Committee learned the names long before the toxics right to know. Nevertheless, Committee's acquisition of the chemical names is comparable to the experience of first acquiring the information through the Toxics Release Inventory. Ulano eventually disclosed the same chemical names through TRI.

and that people would use the information as ammunition to press local officials to set up local regulatory authority over polluters as called for by PAPA. In the long run, the DVTC hoped that such a regulatory authority would use TRI data to monitor emissions and press for specific reductions.

While some parents used TRI data several times in meetings with local officials to suggest the gravity of the overall pollution problem, the information failed to "take" in any way. The DVTC ceased to try to use the data when it became apparent that parents' concerns were limited to specific noxious odors at the local schools. One PAPA member summed up the general significance of TRI data in Marcus Hook as "just numbers" (Cobourn, Interview).

This study has concentrated on TRI-related knowledge as an intervening factor in the toxic power relationship. Applying Lukes' definition of power, toxic power was defined as an instance in which toxics user A affected B in a manner contrary to B's interests by exposing B to a toxic chemical. That is, toxic power is a unilateral action by party A that harms the interests of party B.

In the context of standing arguments in power theory such a view of power raises assorted questions. Isaac argues that power must be conceived not as an activity or form of behavior but as a capacity (1992). For Arendt, power reflects consensus not the conflict of interests evident in toxic power (1969,1986). Isaac again objects to power conceived as a stimulus-response phenomenon in which one party unilaterally affects another, proposing instead a reciprocal view in which all parties exert power (1992). With an eye on these conflicting claims about the nature of power and on analytical needs assembled from the case studies, this chapter proposes a reconceptualization of power that helps us understand the relationship between knowledge and power.

Steven Lukes' three dimensions of power framework (1974) as adapted by Gaventa (1980) was -- with important qualifications -- very useful for situating and

undertaking an analysis of the utility of knowledge in political power conflicts. By incorporating analysis of power over consciousness along with more established foci on power over decisions and agendas, Lukes' framework began to provide a means for considering the role of knowledge in power conflicts. Of particular value for this study was Lukes' notion of a third dimension of latent conflict where one party, seeking to avoid overt conflict, shapes the perceptions of another party so that it remains unaware that its interests have been transgressed. This approach was found to be an indispensable means to understand the origins of the power conflict in Northfield. The Northfield case demonstrated the analytical utility of the third dimension because it included decisions by power holders to withhold information that maintained the latent character of the conflict and prevented the emergence of the grievances that, with public knowledge, eventually moved the conflict onto the open public ground of the first and second dimensions. As Lukes complained, Bachrach and Baratz's second face of power in which grievances are an analytical prerequisite remains blind to a conflict whose origins predated public protest.

While assumptions regarding the unilateral exercise of power by B over A in Lukes' model limited its value for analysis of interaction between parties in a power conflict, Gaventa overcame this limitation by hypothesizing a reciprocal model of power conflict and provided the analyst with a means to account for B's participation in a power conflict. In the process, Gaventa also expanded the possibilities for analysis of the role of knowledge in power conflicts to include ways that B's consciousness may develop to its political advantage.

While Lukes' third dimension of power illuminated the fact that what people don't know can hurt them[2], it failed to cast light on the equally commonsensical proposition that what people learn can help them. Implicitly recognizing this

[2] A brief article on the Northfield case was entitled "What You Don't Know Can Hurt You..." (Sheiman, 1990).

shortcoming, Gaventa extended Lukes' third arena[3] into realms of overt conflict where, in the case of the challenger, "B must go through a process of issue and action formulation by which B develops consciousness of the needs, possibilities and strategies of challenge" (Gaventa, 1980:24, emphasis in original). In other words, a power challenger may develop greater understanding of its interests and what actions are in its interests through knowledge-building activities in the third arena. In the overt phase of a conflict, the third dimension can be characterized as an arena of internal reflection for the challengers.

This study provided only scant evidence with which to consider the "structure-agency" debate as it regards responsibility in the exercise of power. Where the issue arose -- with regard to defining the origins of power exercise in the Northfield conflict -- it was found most useful to require knowledge and intentionality as an attribute of power. In Northfield, the toxic power relation central to the conflict was the use of methylene chloride and subsequent human exposure to a carcinogen. Only when Sheldahl knowingly exposed others to a carcinogen did it exercise toxic power over the exposed parties. Before the National Toxicology Program found that methylene chloride caused cancer in laboratory animals, Sheldahl did not exercise toxic power over the workers and community people it exposed to the chemical, at least not in terms of cancer risk. Because workers experienced many tangible toxic effects from their exposure to methylene chloride, however, the company did exercise toxic power with regard to the many verifiable health problems that resulted from exposure.

In Brooklyn and Marcus Hook, where toxic effects were tangible, the question of responsibility for toxic power was more clear cut. While levels of toxicity were

[3] Up to this point, there has been no problem referring to "dimensions" of power. However, the increasingly common use of the term "dimension" by spatial analysts in political science makes use of the term awkward at best. While spatial analysis is not used in this work, three-dimensional diagrams are used below to help conceptualize some of the issues under study. While any number of terms might serve the purpose -- "face", "sphere", "realm" -- the remainder of this work refers to the three "arenas" of power.

considered legal in all cases and companies like Ulano used this legal cover to argue that levels of toxic exposure were insignificant, the various health problems in both cases directly attributable to exposure provided clear evidence of a toxic power relationship.

Three analytical needs emerged in this study that are not served by Lukes' model of power, Gaventa's development of Lukes' model, or by any single approach to power analysis. Through modifications of Gaventa's model, however, it is possible to address these needs within the "three arenas of power" framework. First, in order to better account for the power challenger's ongoing participation in power conflicts and for the challenger's possible or actual empowerment, further development of Gaventa's definition of power is needed. That is, power needs to be explicitly defined in a way that accounts for its exercise by either A or B. Second, some observed power effects resulted from an actor's capacities, not only from its behavior. This calls for clarification regarding the capacitative and behavioral bases of power. Finally, changes in the model are needed that link concerted action by a party with its engagement in conflict. The capacity of actors in this study to engage in conflict clearly depended on their ability to act in concert with others. The Lukesian model of power, however, emphasizes conflict at the expense of collective action. This calls for a view of power that acknowledges and integrates both the consensual and the conflictual bases of power[4].

The success of the toxics right-to-know movement in passing EPCRA (see Chapter 2) offered the first evidence that, in power relations between A and B, there is a need to account for B's successful exercise of power, or B's empowerment. Lukes' unilateral model of power does not allow for such a possibility. The passage of EPCRA against major industry opposition and the subsequent imposition of substantial

[4] In Chapter 1, it was noted that Arendt's consensual approach to power stands in stark contrast to Lukes' conflict-based definition of power.

reporting costs on industry was a major victory by the anti-toxics challenger in the national toxic power relation. The only way that Lukes' unilateral model of power might prove adequate to the task of analyzing such a development would be to play a shell game with A and B so that B becomes A, and vice versa. That is A (formerly B) exercised power over B (formerly A) because A's success in passing EPCRA harmed the interests of B. If one's purpose is to offer an isolated snapshot of discrete power actions, the unilateral model might be acceptable. However, clarity in the analysis of a protracted conflict demands that A remain A and B remain B during the entire course of the conflict. And, the legislative history of the toxics right-to-know movement shows that historical analysis of a power conflict cannot always assume that A will harm the interests of B in the end. With the passage of EPCRA's public disclosure requirements, B affected A in a manner contrary to A's interests. Power needs to be defined in a way that includes the possible success of B. More plainly, there is a need to account for B's successful challenge of A's power, or what can be defined as the empowerment of B.

The fact that citizen empowerment was one of the intended goals of EPCRA is another reason for incorporating the concept of empowerment into the present analytical framework. As noted in Chapter 2, Rest (1990) identified citizen empowerment (through measures including citizen access to TRI data) as one of EPCRA's four statutory goals.

The case studies undertaken here required some means to account for 1) B's possession of power, 2) B's efforts to exercise power and 3) B's successful challenge of A's power or for B's political empowerment. In the Northfield case, the challengers' success in forcing the facility to adhere to its toxic use reduction plan constituted a form of political empowerment. In the Brooklyn case, protracted efforts by the challengers to impose government control over the polluting facility require an analytical framework that accounts for B's efforts to exert political power over A. In

the Marcus Hook case, the challengers' proposal to impose local regulatory control over polluting facilities needs to be theoretically accounted for as an effort by B to exercise power over A, even though it failed to materialize.

Lukes' unilateral model of power is at best an ahistorical or atemporal description of a discrete political event in which A affects B in a manner contrary to B's interests. Although Gaventa helped account for B's active participation throughout the course of a political power conflict, he did not explicitly address B's possible exercise of power over A in his study of powerlessness. Gaventa's power model remains A-centered because B, at most, challenges or rebels against the power of A but B never exercises power over A. The current study requires that power be defined in a way that either party to a conflict is theoretically capable of exercising it. Successful challenge to toxic power needs to be accounted for as a form of political empowerment.

In Gaventa's scheme, only a minor refinement is needed in order to incorporate the prospect of B exercising power over A (or B's empowerment). Merely by stipulating that B may succeed in open conflict with A (in Figure 1.1), the empowerment of B is easily embraced within the Gaventa model. Given his focus on the phenomenon of powerlessness over a broader range of power relations, Gaventa understandably omitted such a prospect.

The Proposed Analytical Framework

More significant modifications in the Gaventa model are called for by the need to distinguish between capacitative and behavioral aspects of power and by the need to link a party's concerted action with its engagement in conflict. Before presenting the evidence for these needs, it is useful to introduce this study's proposed definition of power and its related analytical framework. In this manner, the remaining evidence can be viewed through the study's proposed model of power.

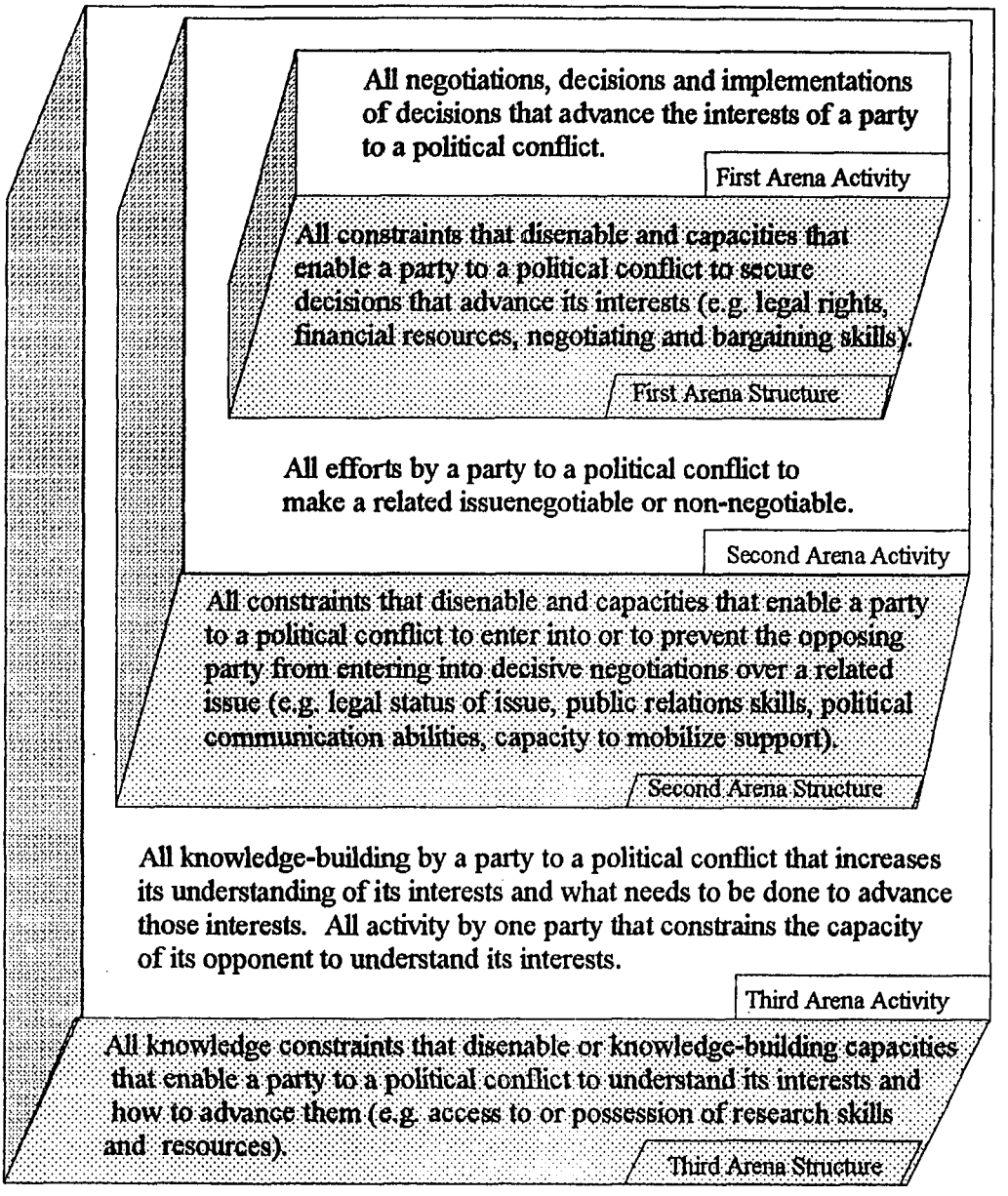
Satisfying the various analytical needs that emerged from the case research is the following definition of power: Whether potential or realized, power is a capacity to

understand and advance one's interests in concert with some even in the case of conflict with others. Power in this view is interactive because it applies to either the initiating or challenging party in a power conflict. It embraces the possibility that the challenger in a conflict may succeed or become empowered. Because capacity may be either potential or realized, it accounts for both capacitative and actualized manifestations of power. It links the capacity for concerted action with engagement in conflict. Finally, it facilitates analysis of the relationship between knowledge and power by making central to power the potential or actual development of knowledge regarding one's interests.

In this view, the capacity to understand and act in concert with others to advance one's interests is the basis for the exercise of power. In the Gaventa model it is already clear that a party's knowledge of its interests is key to an actor's ability to partake in overt conflict. Not explicitly accounted for in either Lukes' or Gaventa's approach is the capacity to act in concert. It is necessary to introduce the capacity to act in concert in order to account for how actors in power conflicts become actors in the first place. During a protracted conflict, the capacity to take concerted action is the "price of admission" to all three arenas of power. The ability to act in concert is required for a party to engage in political conflict. If a party is too disorganized, it can neither develop knowledge sufficient to advance its interests (in the third arena) nor press its case in overt political conflict in the first and second arenas. To undermine the ability of one's opponent to act in concert (e.g. to "divide and conquer") is to disempower it in all three arenas of power. Differences in the capacities of actors to understand and advance their interests appear to be the best predictor of the differing political utility of TRI-related knowledge during the course of the conflicts.

The model of power suggested by this definition is depicted in the Figure 6.1. In this view, the three arenas of power consist of three levels or tiers of power rising in pyramidal or hierarchical fashion. Broadly interpreted, power over consciousness lies

Figure 6.1 A Structural Model of the Three Arenas of Power



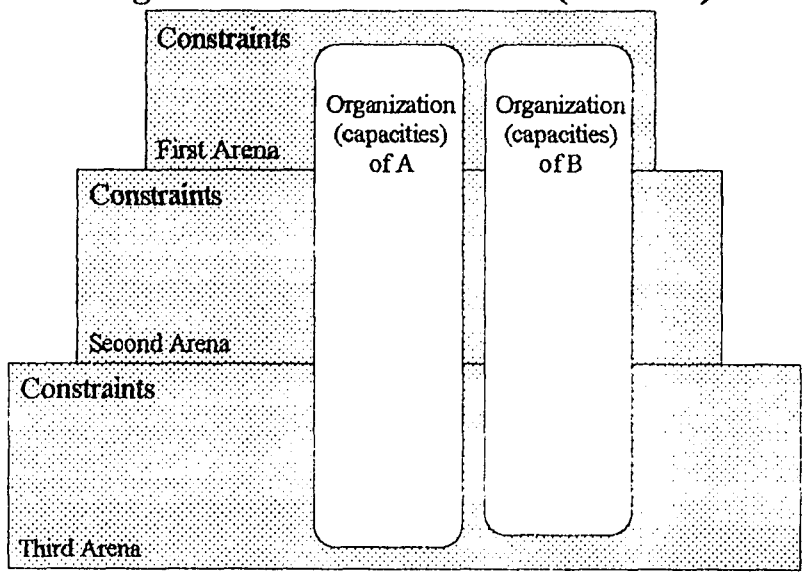
at the base of the pyramid, power over agendas at the intermediate level, and power over decisions at the top.

While the three power arenas are the same as in the Lukes-Gaventa approach, clear distinctions are drawn between the capacitative and manifest dimensions of power in each arena. In this view, the exercise of power and the capacities that underlie the exercise of power are distinct but symbiotically related in each arena, as illustrated in Figure 6.1. Each level of power is a distinct structure or sub-structure, visually depicted as a three-dimensional block. The surface area of each block may be conceived of as an activity plane on which certain conflict-related behaviors manifest themselves. The activity plane is in effect a platform or stage on which parties to a power conflict actively participate in the conflict. A strict behaviorist would restrict analysis to the phenomena that surface on these levels.

The capacities of parties in conflict to take action and the constraints on their capacities to act are symbolically located in the area underneath the activity plane of each sub-structure. Structure in this sense simultaneously constrains and makes possible the range of activity accessible to particular actors. Within these blocks, an actor may be hindered by the lack of or helped by the accessibility or possession of various capacities and resources. A direct view from the side (see Figure 6.2) reveals the integral character of each actor's capacity for concerted action cutting across all three arenas of power. This capacity is tantamount to an actor's organization, or the sum of all an actor's capacities for knowledge-building and advancing its interests. An actor's organization is the medium through which it exercises its political power.

In the first two arenas, empirically-verifiable behaviors surface on the activity planes as forms of concerted action -- typically various forms of political communication -- that advance a party's interests and set back the interests of its opponent. In the third arena, activity manifests itself in the form of knowledge-shaping or knowledge-building actions and subsequent knowledge that may hinder or improve

Figure 6.2 Structural Model (side view)



one of the party's awareness of its interests in the conflict.

While issues are formulated in the third arena, political action in the second arena aims to establish the public and political legitimacy of such issues. Such action is successful if people with agenda setting power admit such issues into the first arena negotiations. Success and failure in the second arena rise and fall on whether an issue becomes negotiable or remains non-negotiable. Political activity in the first arena consists of the actual negotiations on resolution of the conflict and the implementation of decisions.

Effective action within each arena calls for particular capacities. In the third arena, capacities for acquiring and building knowledge of one's interests are critical. Success in the intermediate or second arena of power depends on capacities for political organizing and political communication. These can include an actor's public relations and media skills, community organizing ability, or whatever one requires in order to establish one's organization (and therefore one's issue) as a "player" in the political

game. The pivotal decision-making and policy-implementation realm or the first arena lies at the top of the pyramid. Participation in this arena requires the powers accumulated at lower levels and capacities for lobbying, bargaining and negotiating. A rational choice theorist might characterize the costs associated with activity in each arena as learning costs (third arena), outreach and mobilization costs (second arena) and lobbying costs (first arena). In any event, the state of one's capacities or inabilities in each arena determines how low or high the costs of effective action may be.

The line between the third and the first two arenas delineates realms of political consciousness and realms of public political action. Stepping out from the "inward" realm of reflection, parties enter onto the public political stage in the two "outer" realms of power -- the second arena of agenda-making and the first arena of decision-making.

Within the third arena, a finer distinction may be drawn between the consciousness of actors with respect to their internal organization and with respect to their dealings with the "outside world". Both the polluters and the challengers of pollution in this study reflect inward toward their common interests and internal organization and outward toward their political environment, or toward the public political arenas where they must succeed if they are to advance their interests. In terms of their political consciousness, or their awareness of their political interests, it is useful therefore to distinguish between an "inner gaze" focused on a shared problem and an "outer gaze" focused on the strategic activity needed to confront that problem.

Gaventa accounted for the challenger's outer gaze when he located growing awareness of "the needs, possibilities and strategies of challenge" in the third arena (Gaventa, 1980:24). The inner gaze focuses on the core interests that potentially hold a group together. The ability to focus on these core concerns lay at the heart of each group's ability to take initial shape and to stay together. The ability to focus on these concerns in concert with others was vital to the formation and the continuity of each

group. If a political adversary can undermine and belittle such concerns, it can also destroy its opposition.

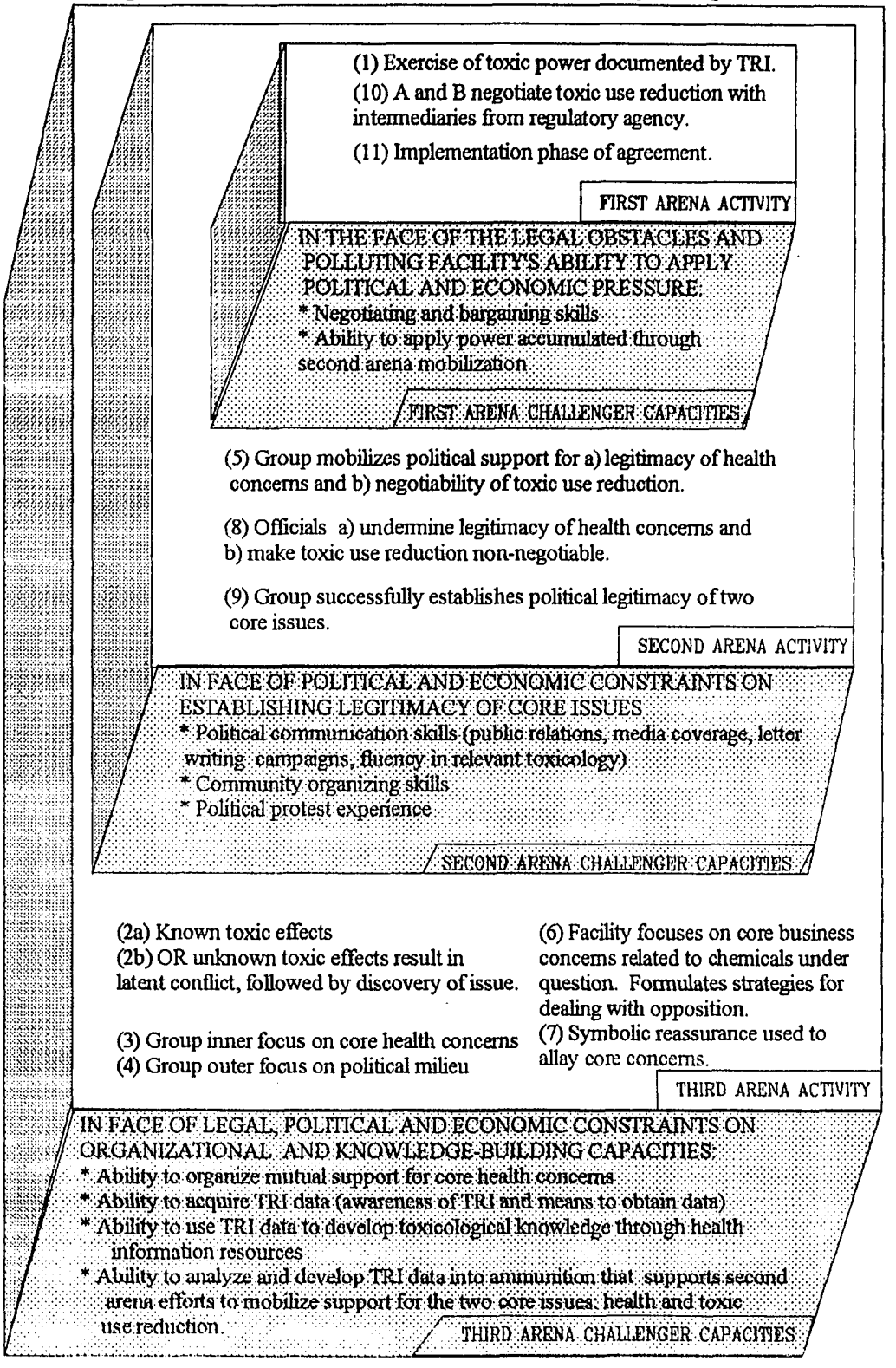
In a latent conflict as Lukes defined it, A exerts power over B in the capacitative dimension of the third arena by producing or maintaining constraints on the awareness of B that prevent B from developing consciousness of its violated interests. If and when such consciousness develops, a possibility accounted for by Gaventa, it manifests itself on the activity plane of the third arena. At this point, B may remain an isolated spectator in the conflict or it may join with people similarly affected to develop collective awareness and to take collective action.

Differences in the Political Utility of TRI-related Knowledge

The remainder of the chapter uses the structural model of the three arenas of power broadly to review the case material pertinent to use of TRI-related knowledge (see Figure 6.3). The specific capacities for concerted action in each arena best explain why TRI-related knowledge proved to be of greater or lesser political utility among the three conflicts. Evidence for the remaining two analytical needs -- the needs to reconcile the actual and potential exercise of power as well as the consensual and conflictual bases of power -- are incorporated into this review.

The following discussion starts at the top of the pyramid with the exercise of toxic power by the facilities and then builds an assessment of the challengers' power from the bottom up. At the base of the pyramid, challengers to toxic power must attain a level of internal organization sufficient to allow them to commonly identify core concerns and to build knowledge that will help them navigate their political milieus. At the intermediate level, challengers organize themselves into the political scene taking concerted action to sustain the political life of their issues. "At the top," in the pivotal arena of decision-making and implementation of decisions, an organization tries to negotiate a resolution to the power conflict.

Figure 6.3 TRI-related Conflict and Challenger Capacities



To organize the discussion in this sequence is not to suggest a stage model of political development in which actors must proceed successively from one level to another. Rather activity in one arena often feeds back into one or both of the other arenas. With respect to the development of politically useful knowledge, activity in the public (first and second) arenas of power tends to feed back on and build knowledge at the base (third arena) throughout the course of a conflict.

The toxic releases reported by facilities to TRI broadly fit the definition of toxic power as an instance in which one party exposed another to a toxic chemical. As empirically-verifiable actions, these toxic releases manifest themselves on the activity plane of the first arena. Underlying toxic release behaviors were capacities rooted in financial, technical and, most significantly for this study, legal resources. In the capacitative dimension of the first arena, the state either imposed legal constraints or granted legal authority to pollute. On grounds of public health, levels of releases reported to TRI by the facilities under study were legally protected. That is, no health threat to community members could be substantiated on the basis of exposure standards governing existing state or federal pollution laws. In Brooklyn, however, laws requiring ozone-protection coincided with control of the toluene emissions that were the major source of community health complaints. Due to the fact that an ozone protection agreement with the offending facility was poorly-enforced by the state agency, pollution opponents in all three cases effectively worked from ground zero in legal terms in trying to limit pollution. In each toxic power conflict, legal sanctions generally favored the facilities and placed a major burden on challengers who lacked any first arena statutory support for health protection through control of toxic releases.

Inasmuch as they constituted actions contrary to the interests of people exposed to them, the toxic releases produced toxic power conflicts. As regards environmental exposures experienced by the communities, tangible emissions in Brooklyn and Marcus Hook produced overt conflicts from the start. These conflicts manifested themselves on

the third arena activity plane in the awareness of residents (2a) and on the second arena activity plane in organized or sub-political grievances (5).

The Northfield conflict originated in a different way. In 1986, use of methylene chloride by Sheldahl (1) produced an overt second arena conflict over the issue of cancer risk between Sheldahl and members of ACTWU Local 1481 (5). The union's ability to bring the conflict to this stage depended on third arena research capacities possessed by its national Health and Safety Office and on second arena organizational capacities that allowed it to lodge formal grievances with the company.

At the same time that overt conflict surfaced between Sheldahl and the union local, a latent conflict arose between the facility and members of the community who remained unaware that they were being exposed to airborne carcinogens (2b). Failure to share the information about the carcinogen releases with the community made community members a latent party in the conflict. This failure was a notable omission both because the company was aware of significant health risks (Battig, Interview) and because the company's Health and Safety Officer, while chair of the Northfield Environmental Quality Commission, never informed the Commission about the issue (Casper, Undated:A2). During the latent phase of the community conflict, community members were situated within the structural base of the third arena where their capacity to understand their interests was constrained by Sheldahl's withholding of information.

In 1986, the state restructured third arena capacities at the national level to the advantage of parties exposed to toxics when, siding with the national anti-toxics movement, it passed the Emergency Planning and Community Right-to-Know Act. When implemented through the inauguration of the Toxics Release Inventory in 1989, the toxics right to know theoretically became a new capacity for all citizens, providing possible or actual parties to toxic power relations a means to discover or learn about their political interests. The Northfield case provided evidence of the need to account for the possibility that this new capacity had significant power effects. It is likely that

the public's capacity to know created through EPCRA was one of the key reasons that caused Sheldahl to develop its toxic use reduction plan even before the capacity was exercised. Sheldahl claimed that concerns about public health and not fear from possible negative fallout about community knowledge of its methylene chloride releases prompted it to develop its plan to reduce its methylene chloride use and releases (Battig, Interview). However, organized labor and community opponents to methylene chloride exposure consistently expressed the view that the existence of the toxics right-to-know law most likely caused Sheldahl to develop the plan prior to the public inauguration of the Toxics Release Inventory (Casper, 1993:248; Casper, Undated:A2; Frumin, Interview; Interview, Martin; Wolf, Interview). To account for this possibility in power terms, a "preemptive scenario" was proposed in Chapter 3. In this scenario, anticipated possession of the new power to know by actual union and potential community opponents of methylene chloride exposure caused Sheldahl to develop its toxic use reduction plan. In this view, worker and community opponents were empowered by the existence if not yet by the use of the Community Right-to-Know Act. Equally important was that the union and the community already possessed significant knowledge-building and organizational capacities that gave credibility to their ability to exploit politically the toxics right to know. Served by its national health and safety department, the union had already made an issue of cancer risk in the workplace due to methylene chloride exposure. Some members of the community, on the other hand, had a known capacity for civic activism and community organizing, having, for example, been part of anti-Vietnam War protests and opposition to moving the Minneapolis airport closer to Northfield. Also, the caucus-based party politics in the town and the state reflected a participatory political culture. In a preemptive scenario, unionized workers and a community with known capacity for political organizing exercised an anticipatory power over Sheldahl, causing the company to produce a plan aimed at preempting possible future protests. In this scenario, the

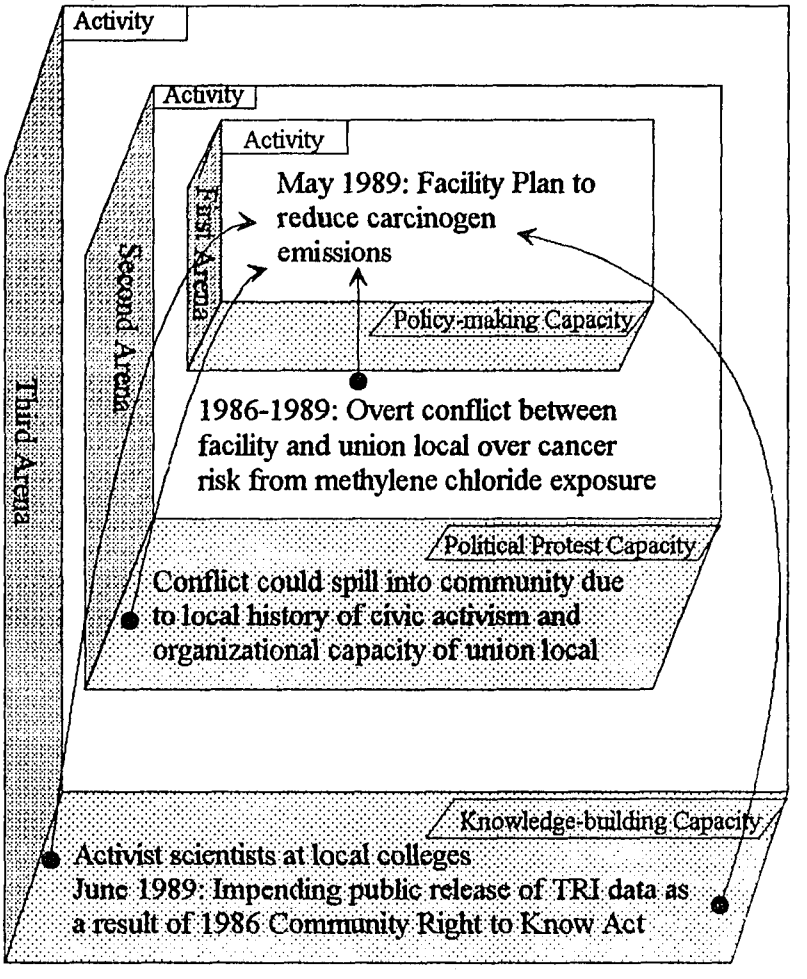
capacity for knowledge gave the community -- even while a subject or latent actor in a power conflict -- and the union the combined power to cause the facility to take action toward resolution of the conflict. In this interpretation, while the community had not yet exercised its right to know, its potential to exercise it influenced the action of the facility.

In terms of power effects, there are two ways to conceive of how the Community Right-to-Know Act and associated capacities of people exposed in Northfield may have led to Sheldahl's chemical use reduction plan. On the one had, the plan may be conceived as a serious movement toward resolution of the conflict. In this case, the plan may be viewed on the first arena activity plane (see Figure 6.4). Another way to conceive the situation is to consider the plan, less a serious decision than "just a plan" developed by the company as it purveyed the political milieu from its own third arena vantage point. Indeed, challengers in Northfield operated on this premise, assuming the need to attain first arena guarantees in the form of the labor contract and pollution permit that obliged Sheldahl to execute the plan. In this view, the power effects point not toward the first arena activity plane but toward the third arena activity plane where, through internal reflection, Sheldahl conceived and developed its toxic use reduction plan in response to the same factors indicated in the prior scenario.

The notion that the third arena may be viewed as a realm of A's consciousness as well as B's is not explicitly accounted for or explored by Gaventa. It appears, however, to be both a logical and useful extrapolation of the model. Firms when deciding to use toxics must deliberate internally on matching their business plans with their political environments. This logically occurs as the manufacturing entity relies on its research and development capacities to devise the best strategy to navigate its regulatory and political milieu.

Although EPCRA theoretically gave all citizens in the United States capacity to

Figure 6.4 The Northfield 'Preemptive Scenario'



discover or learn about toxic power relations to which they were party, it is more accurate to say that the law provided a data acquisition capacity that, considered in isolation, is politically useless. That is, the raw data of TRI reports lack sufficient context to help people exposed to releases to assess whether their interests have been violated. The law left to the public the burden of interpreting and developing the data into useful knowledge.

In Northfield and Brooklyn, pollution opponents directly exercised the toxics right to know by acquiring from government sources raw TRI data reported by the facilities in their respective communities. In all three instances in which TRI data was obtained in formats distributed by government sources, the recipients found the data to be of little or no practical value. Students associated with the Air Toxics Study Group in Northfield traveled to a government depository library in Minneapolis to acquire Sheldahl's TRI submissions. The ASTG was surprised to see that the data alone provided no hint of the cancer risk associated with the releases (Casper, 1993:248). After requesting and receiving a one page printout of Ulano's TRI data from the state Department of Environmental Conservation, the Brooklyn Clean Air Committee wrote the agency that "we did not understand" the information. Although organized pollution opponents in Marcus Hook never made formal right-to-know requests, the Borough Manager did. He confronted the common and difficult problem of trying to draw any useful conclusions from knowing how many pounds of a chemical were released in a given year (Dorbian, Interview).

Only where raw TRI data was acquired in combination with relevant third arena knowledge-building and second arena knowledge-communicating capacities did the toxics right to know begin to fulfill its potential to inform citizens about their political interests. Two groups with such capacities and therefore well poised from an organizational perspective to take political advantage of the toxics right to know were environmental journalists and local or national organizations that were more or less part of the national anti-toxics movement. These journalists or activists turned raw TRI data into a more useful form and communicated it through media and other means to various publics.

In all three cases studied here, acquisition of TRI-related knowledge by parties subject to community-scale toxic power depended at one point or another on direct or indirect communications from journalists or anti-toxic groups that had the third arena

capacity to associate raw TRI data with broader sets of knowledge and second arena capacity to communicate the knowledge product publicly in one fashion or another. In order to make the initial discovery about local carcinogen releases and the relative gravity of the problem, residents of Northfield depended on the NRDC's capacity to associate Sheldahl's TRI data with two broader data sets, airborne carcinogen releases nationally and for the state of Minnesota. They also benefited from the NRDC's public relation skills in communicating their report to the national press corps in Washington. The Brooklyn Clean Air Committee depended on journalistic work communicated through the New York Post in July 1988 and on the research and public relation skills of the Consumer Policy Institute in 1990. In both instances, the Committee depended on the capacities of outside entities to associate the facility's TRI data with the air emissions data set for the city of New York and with knowledge of toxic effects of chemicals emitted by the facility. Residents of Marcus Hook received TRI-related knowledge regarding their exposure to toxics through various newspaper reports and through direct communications with veterans of the national anti-toxics movement belonging to the Delaware Valley Toxics Coalition. People who developed and communicated TRI-related knowledge regarding Marcus Hook had to have the capacity to associate the local TRI reports with the TRI air release data sets for Delaware County and the state of Pennsylvania. The development of some TRI-related knowledge on Marcus Hook also depended on ability to relate the data with toxicological knowledge and county-level health data.

Viewed through the proposed analytical framework, all the above communications of TRI data or TRI-related knowledge constituted empirical third arena changes in the state of consciousness of the recipients. Where these communications were publicly transmitted through the media, they also constituted empirically-verifiable developments in the second arena. The critical differences among the cases had to do with the extent to which toxic power subjects were able to politically exploit

these momentary second arena communications and third arena knowledge changes. Like embers lit for a moment, these changes in perception could, for all practical political purposes, vanish the next. Where, however, capacities underlying each arena were awakened and exercised, they were kept alive. Whether these changes could be made to work to the political advantage of any of the recipients depended on how much power they possessed relative to the power of polluting facilities. That is, it depended on their capacity to understand and advance their interests in concert with people similarly affected and in the face of the polluters' power to advance their own interests. If a newspaper report indicated serious exposure to toxic releases in one's community, creating an opportunity to publicly sustain an issue, the issue could only survive in public if some underlying organizational capacity permitted mobilization around the issue and if obstacles created by countervailing forces could be overcome. If acquisition of toxic release data by pollution opponents presented an opportunity to better understand one's interests and to develop ammunition for advancing those interests, the opportunity could only be seized if third arena structural constraints were overcome and if underlying knowledge-building capacities were exploited.

Generally, pollution opponents in Northfield and Brooklyn were able to make the public communication and the private acquisition of TRI-related knowledge politically useful but Marcus Hook residents were not. And, the challengers in Northfield were able to more fully exploit these opportunities than those in Brooklyn. The reasons for these differences lay in the differing capacities required of challengers to take effective action in each arena of power relative to the corresponding capacities of polluters and pollution regulators.

First and foremost among the capacities to make these knowledge acquisitions and public communications politically useful was the capacity to focus on core concerns in concert with others (the inner gaze). Unless scattered private concerns were already the common concern of some existing group or organization or unless there was an

underlying capacity for developing such a focus, the changes produced by the communication of TRI-related knowledge were transitory. The distribution of these capacities across the three communities studied here appears to have been depended on the extent of the challenger's knowledge-seeking skills and civic experience.

At one point or another, all challengers in the conflicts found themselves agonizing over their personal stake in the face of pollution as unorganized individuals. Members of the Northfield community who learned that cancer is associated with methylene chloride exposure asked themselves what risk they and their families faced from Sheldhal's use of the chemical. Toxic releases from Ulano in Boerum Hill in Brooklyn regularly caused residents in the vicinity to wonder about health damage caused to themselves and their families. Over the years, people in Marcus Hook experienced or knew about cancer and various respiratory problems in the community and worried whether pollution from the many local industries had been the cause.

When TRI-related knowledge arrived in Northfield, existing concerns among some women in the community about cancer occurrences and an underlying capacity for reflection on common personal concerns were awakened. Tapping on a history of civic activism, concerned community members were able to sustain a focus on and to use the new information as a tool to deepen understanding of resulting core concerns. The existing organized focus on such concerns by the union local and the eventual development of shared community and worker concern strengthened the overall community concern and the capacity of all exposure opponents to sharpen their focus on the issue and keep it alive politically.

For over a decade, the small group of Brooklyn challengers sustained an organized focus on their common health concerns in spite of considerable resistance on the part of those responsible for the problem and in spite of considerable frustration over limited results. This tenacious spirit boded well for the arrival of new and potentially useful information such as the chemical identities, the Post report on Ulano,

and the top ranking of Ulano in the Consumer Policy Institute report. When the group sought and learned the identity of the chemicals released by the facility and developed knowledge of their specific health-related effects, it was able build stronger foundations for its concerns. The Post report in 1988 alerted the CAC to the gravity and continuing nature of Ulano's toluene releases. It had a motivational function, strengthening the "inner gaze" of the group during a period in which its concerns had been weakened by symbolic reassurances from the state agency that the problem was being resolved. It "spurred the troops to get more involved" (Matson, Interview). Later, in 1990, after over a decade of opposition, news that the company was the city's top industrial air polluter bolstered the group's convictions that its concerns had been well founded.

Under the prevailing fatalism in Marcus Hook -- the "you just put up with it" attitude -- no organized opposition had ever formed to confront polluters. The organization of PAPA in 1990 broke with this precedent. The presence of PAPA offered some hope that the TRI-related knowledge that arrived at the same time might become politically useful to the challengers. PAPA, however, narrowed its concerns to acute odor incidents at the local grade schools and could not develop a focus on the overall pollution problem documented by TRI. DVTC members observed a basic lack in self-organization skills among PAPA members, ranging from lack of community organizing skills to lack of know-how on matters as basic as running a meeting. For lack of any habit of common concern in the community, the various TRI-based newspaper reports that noted the town's exceptional pollution problems and direct communications and explanations of TRI data by DVTC members proved to be transitory.

Knowledge-building capacities were required if challengers were to use TRI-related knowledge to formulate issues and strategies, or to develop an outer gaze of their political environments. TRI data's potential as political ammunition depended on such knowledge-building capacities. In this regard, toxic challengers depended both on

capacities they possessed within their groups or communities and on alliances they were able to develop with what can loosely be called the national anti-toxics movement. Knowledge so developed sharpened not only the challengers' outer gaze on their political milieus but their inner gaze on their core concerns.

Challengers in Northfield clearly had knowledge-building capacities superior to those of the Brooklyn and Marcus Hook groups. Northfield's two local colleges and research facilities gave the Northfield community a remarkable capacity to tackle technical questions regarding methylene chloride exposure, questions that posed themselves not in terms of verifiable physical harm but in the more abstract and uncertain terms of assessing potential harm. Present in the community were scientists with histories of political activism who were capable of rising to this challenge. Forming the Air Toxics Study Group, they became, in effect, a research arm for CAN and later the labor union. This gave Northfield pollution opponents a strikingly independent ability to develop their own toxicological knowledge regarding the cancer risks posed by methylene chloride. However, the lack of any history of environmental activism in the community operated as a constraint on their ability to focus clearly on their political milieu. At the outset, the Northfield challengers experienced confusion and disorientation as they tried to select the most appropriate opposition political strategy. Community opponents were only able to decide on a strategy after tapping into the political expertise of the national anti-toxics movement. This occurred when the national health and safety director of the labor union persuaded community members that toxics use reduction -- the preferred strategy of the national anti-toxics movement -- was also the most likely solution to the Northfield conflict.

When the Brooklyn group used the chemical identities independently to develop toxicological knowledge, it demonstrated that resources available in most communities (a high school chemistry teacher and medical contacts at a local hospital) could be exploited by "lay people" in order to overcome the knowledge barriers posed by

scientific terms. As it developed particular knowledge on issues like parts per million of exposure, it could formulate issues in terms that were used in the regulatory political environment and develop ammunition for those fora.

Ulano's top ranking as New York City's industrial air polluter became a politically valuable piece of information for the Committee when it acquired the information in the spring of 1990. To obtain this information, the Committee depended on the fundraising and research capacities of its ally, the CPI which received a grant to analyze the information and publicize its results. Theoretically, the Committee could have acquired this information as early as July 1988 when the first batch of paper TRI reports arrived in Albany. At that point, the New York Post reporter who publicized the Albany filings, picked out Ulano as "apparently the city's largest toluene polluter." Had he performed a more thorough analysis -- a difficult task at the time, due to the paper format of the filings -- the Committee could have used the information almost two years earlier than it finally did in mid-1990. While the information became available in a more readily analyzed computer format in June 1989, the Committee, lacking its own independent research capacities, was not able to take advantage of the opportunity at that time.

In Marcus Hook, where TRI-related information remained "just numbers", knowledge-building resources were scarce. While the generally lower educational levels in the town did not make residents incapable of building knowledge needed for engagement in toxic politics, it could have lowered confidence levels needed to tackle toxicological issues. A former PAPA leader asserted, with reference to TRI data, "We don't have a high level of the type of education that would enable somebody to understand these types of things" (Cobourn, Interview). Reflecting low capacities to build knowledge important for toxic politics was the fact that the local library, looking out over a sea of Sun Oil petroleum drums, did not contain a toxicology reference book.

The fact that TRI-related knowledge never found a niche in the political life of Marcus Hook is ultimately attributable to the fact that no organized anti-pollution effort could sustain itself in the town. This was due to the lack of past political activity and due to the power of the Sun refinery and the local municipality to shape the substance of the permanent organization that developed in the wake of pollution protests. When, through political maneuvering, members of PAPA were cut off from the Delaware Valley Toxics Coalition the challengers lost what was probably their most valuable knowledge-building resource. Had a more independent kind of organization been sustained in the community it could have used TRI data as the basis for long term study into the health and air pollution problems in the community.

In Northfield, common interests in opposing exposure to methylene chloride developed on two separate fronts -- within the labor union and within the community. The organizational capacities of the union and of the two community organizations that emerged were needed to advance their respective interests independently of one another. When, in turn, members of the community and union discovered their common opposition to methylene chloride exposure, their organizational capacities enabled them to iron out differences among themselves and to form a common front, increasing their strength as actors in the public arenas of power. As a coalition, the labor and community groups shared powerful capacities to build knowledge of value for toxic politics: the union's national Health and Safety Department and the community's Air Toxics Study Group. Both groups could and did benefit from the other's knowledge-building arms.

In Brooklyn, workers at the facility had no labor union. Unlike ACTWU members in Northfield, they lacked health and safety research capacities and the means to lodge formal grievances. Therefore, no organized workplace constituency developed concerning workplace exposure to the same chemicals that community residents were exposed to through the air outside the plant. Unlike pollution opponents in Northfield,

the Brooklyn Committee never had the opportunity to enhance its strategic position through a coalition with another organized party to the toxic power relation.

In Marcus Hook, the DVTC reached out to and met with representatives of the separate Organization of Atomic and Chemical Workers Union locals at Sun Oil and British Petroleum. Although the Sun Oil union lent meeting space at its center to PAPA on several occasions, the unions never collaborated directly with PAPA. While the issue of ill-defined odors at the schools was strong enough to mobilize many parents, it never had the same urgency for the union workers, most of whom lived outside Marcus Hook.

TRI-based communications received by PAPA from the media and the DVTC tended to focus on multiple chemical releases and did not narrow the focus to any particular chemicals and health risks that could serve as the basis of political organizing. The DVTC never learned whether the unions had lodged grievances with their employers over exposure to any TRI-reportable chemicals. For lack of any chemical specific TRI-based political issues to rally around, there was never a basis for a community-labor coalition of the sort that developed in Northfield.

In the Northfield and Brooklyn cases, TRI-based knowledge had political utility because the challengers targeted specific TRI-reportable chemicals releases for significant reduction or elimination. Such targeting was easier to do in the former cases than it was in Marcus Hook. Even if Marcus Hook challengers had possessed greater knowledge-building capacities or had kept up their ties with the Delaware Valley Toxics Coalition, the knowledge-building challenge facing them would have been formidable. Members of the Marcus Hook community faced a toxic power relationship of far greater magnitude and complexity than the other two communities. In Northfield, community protesters focused on one facility (Sheldahl) and the release of one chemical (methylene chloride) that posed a single risk (cancer). In Boerum Hill, protesters focused on one facility (Ulano), the release of one and sometimes two

chemicals and on the clear ill-effects experienced by people in the vicinity. TRI data (distributed to local protesters by the DVTC in 1990) identified four separate TRI reporters in the area that released nearly 5 tons of 43 different chemicals into the local air in 1987. Protesters in Marcus Hook faced a veritable armada of polluters posing varied risks and producing probable ill-effects ranging from higher mortality rates to assorted respiratory problems. The policy conceived by the DVTC as the most appropriate response to the situation -- local regulatory authority over polluters -- was an ambitious goal. In light of the low organizational and knowledge-building capacities in the community, however, it may have been unrealistic to expect its achievement by the community at that particular juncture in time.

As toxic challengers venture out from the relatively sheltered third arena into the open conflict of the first two arenas (Figure 6.3), they need to create or sustain the political life of two related issues (5). First, they need to establish that their exposure to a chemical or group of chemicals has resulted in significant health problems or risks. Secondly, they need to make the significant reduction or elimination of the exposure to the responsible chemical or chemicals a negotiable issue. Once releases become negotiable, challengers gain admittance into the decisive first arena of power. There negotiation and bargaining capacities are needed to bring state power to bear on the reduction or elimination of exposure. Success is not just a matter of changing the behavior of polluting facilities but more fundamentally of restructuring the state-determined legal capacities to pollute so that facilities are legally constrained from engaging in the offending activity (10,11).

For the groups in this study, TRI-related knowledge functioned as a second arena resource in two ways. On the one hand, newspaper reports in all three communities (and one TV report in New York City) publicized chemical exposure health issues associated with TRI reports. This publicity created momentary opportunities to capitalize on the limelight and to keep these issues alive in the public

eye. On the other hand, knowledge directly acquired or fashioned by challengers during third arena knowledge-building processes was deployed in the public political arena in various ways. The effectiveness with which this occurred depended on the organizing or mobilizing capacity of the groups as well as the strength of the pro-facility forces that they encountered.

In the cases studied, Northfield had more success than the other two communities in pressing the two core issues -- the existence of chemical-related health problems and the need for reduced chemical exposure -- and in making TRI-based knowledge useful for that purpose. This can be attributed to greater capacities in the community for knowledge-building, community organizing, political communication and coalition-building and also to the more conciliatory position adopted by its adversary. While the Brooklyn Committee demonstrated resourcefulness in its use of TRI-related knowledge, major institutional obstacles prevented it from making toxic release reductions negotiable on health grounds. However, when the offending releases became subject to regulation on the grounds of ozone protection, the Committee used community organizing and publicity tactics to press officials to resolve the problem through enforcement of the ozone-related regulations. In pursuit of this goal, TRI-related knowledge became a useful auxiliary tool. In Pennsylvania, an underlying weakness in organizational capacity made pollution opponents vulnerable to powerful corporate opponents and unable to press their original agenda to establish a local regulatory body over area polluters. In this organizational vacuum, TRI-related knowledge could not be sustained or developed.

At the outset of the community debate in Northfield, the obstacles facing methylene chloride opponents were lowered by Sheldahl's acknowledgment that a "problem" existed. Even though Sheldahl could have used the legal cover provided it by existing environmental regulations, the three and a half year old dispute with the labor union over methylene chloride as a cancer risk appeared to "soften up" the

facility and create space for identical community complaints to take up lodging. This conciliatory position by Sheldahl was partly explained by the fact that it was ready at the time that TRI data became public in 1989 with a solution in the form of its plan to voluntarily reduce its emissions. When it began to develop its plan to stop using methylene chloride in 1988, the company in effect initiated a strategic retreat on the issue of methylene chloride exposure and cancer risk. Although it wished the plan to remain voluntary and did not wish to be compelled to execute it through the union contract or through the pollution permit, Sheldahl, when it ceded ground, ended up doing so in the direction of its own plan. As noted by Frumin (Interview), the challengers would have faced an entirely different and much more difficult situation if no such plan existed. Under those circumstances it is quite possible, for example, that the company would have pressed the legality of its releases under existing regulatory standards and a bitter, much harder to resolve conflict would have ensued.

Although Sheldahl relinquished some ground in the conflict from the outset, the issue of mandatory instead of voluntary implementation of the chemical use reduction plan produced substantive conflict. Sheldahl resisted mandatory measures because it was not fully confident that the plan would work (Martin, Interview) and it may not have made a firm decision to execute it of its own accord.

The June 1989 media coverage of Sheldahl's carcinogen emissions immediately struck a resonant chord in Northfield. Concerned citizens quickly revealed underlying capacities for mobilizing around a perceived threat to the community. Submerged networks emerged into the open. Activating the local political system on their behalf, concerned citizens pressed the city council to sponsor an "informational meeting." At the meeting, members of the public questioned Sheldahl officials about the releases. This meeting served the dual function of addressing core concerns of residents and keeping the issue alive in public.

The organizing and mobilizing capacities of Clean Air in Northfield were reflected in the background of its chair Frank Wolf. Wolf was an experienced organizer and activist and an articulate public spokesperson. He had been active in Vietnam War protests and was an activist in the caucuses of the local Democratic-Farmer-Labor Party. In addition to having chaired many committees at Carleton College, he had been chair of the first local chapter of American Association of University Professors.

The political skills of Wolf and the CAN organizers were evident in CAN's efficiency as a community organizing and political communication force. CAN maintained a mailing list of about 120 people to whom it mailed notices regarding public meetings. While about a dozen persons attended internal meetings of its executive committee, attendance at public meetings ranged from 40 to 75 people. The Northfield News attended and reported the public meetings (Wolf, Interview), resulting in "prominent local coverage" (Casper, Undated:B1). The cycle of public meetings and public news about the group helped establish the group as a "player" in the community and gave a healthy political life to the two key issues: questions of cancer risk from Sheldahl's emissions and the need for a strategy to reduce or eliminate the toxic emissions.

One aspect of participation in the politics of airborne toxics can be labeled "the parts per million" discourse. That is, assessment of health risks posed by human exposure to chemical substances often involves determining the quantity of a chemical in the air, measured by parts per million present in air samples. Whether pollution opponents develop their knowledge to the extent that they partake in "the parts per million" discourse is one measure of the extent to which they have developed knowledge and communications skills needed for participation in toxic politics.

In Northfield, methylene chloride exposure was prima facie a simple issue of cancer risk and required no expertise to understand. But, as technical issues entered

into the debate -- such as parts per million of exposure inside and outside the workplace or the computer modeling of community exposure levels at varying distances and under changing winds -- members of the ATSG as scientists had exceptional professional capacity to tackle the issues. The ASTG scientists already possessed or readily developed the technical knowledge to engage in the "parts per million" discourse. According to Wolf, the professional status of these scientists was helpful in pressing their case. This was true during the public debate in which the merits of the issue had yet to be publicly established and during the actual negotiations. Wolf stated that

> it wasn't so easy for the Minnesota Health Department and Sheldahl to pooh-pooh it and say "Look, we're taking care of this. You don't know what you're talking about." There were physicists, chemists, statisticians, mathematicians who were really concerned and couldn't quite be shoved off quite so easily (Wolf, Interview).

During state agency hearings on Sheldahl pollution permit, CAN argued that the parts per million of exposure to methylene chloride in the immediate vicinity of the Sheldahl smokestack exceeded safe levels. It urged raising the height of the smokestack in order to decrease the density of emissions. The state agency accepted CAN's arguments and ordered Sheldahl to increase the height of the smokestack (Wolf, Interview).

Through its power to strike, the union was able to move the issue of mandatory enforcement of the plan into the first arena. It only dared to do so, however, because of very successful community organizing in the second arena and the subsequent worker-community coalition that formed around core concerns in the third arena. Even though job security was a serious concern of workers in the Sheldahl-ACTWU negotiations, the union felt it had secured high enough ground to successfully press its longstanding demands regarding methylene chloride. The coalition with community organizations and the expanded scope of the conflict made it possible for the union to negotiate from a position of strength. As the midnight deadline approached and CAN members prepared to walk the picket line with workers, the company backed down and opened negotiations for another week. The workers' success in requiring the facility to

adhere to its methylene chloride use reduction plan also depended on the bargaining and negotiating skills acquired by union local members over many years of contract negotiations.

Over the more than ten years that it existed, the Brooklyn group faced major first and second arena constraints. It never gained official admission to the public arenas of conflict because its health complaints had no legal grounds and were not considered sufficient reason to regulate the company. Neither the facility nor the state agency -- in its official dealings with the facility -- acknowledged any grounds for neighborhood concern on the basis of toxicity and health threats. In effect, this organized the core issue of the Committee out of the public political arena.

Ozone protection measures coincidentally represented a solution to noxious neighborhood emissions. While denying that community protests influenced its regulation of the facility, an agency regulator said that enforcement of ozone regulations against Ulano provided "more bang for the buck" (Kormanik, Interview), obliquely suggesting that community protests were a factor in its actions.

The Committee proved very resourceful in developing its own ability to partake in the "parts per million" discourse. These skills were, however, to no avail as long as the standards of exposure used by regulators admitted of no health problem at the existing level of releases.

Ulano's emissions received TRI-based media publicity on two occasions. Although its group membership was relatively small, the fact that it was organized at all allowed the Clean Air Committee to work to sustain the public spotlight in both instances. The July 1988 Post article represented a second arena opportunity for two reasons. First, it called Ulano "apparently the city's largest toluene polluter." Secondly, the title of the article -- "License to Spill: Big Apple factories spewing chemicals -- and it's legal" (McKenna, 1988a) -- dramatized the second arena dilemma of the committee. The legality of the toxic releases allowed authorities to give short

shrift to their complaints. Yet their nemesis Ulano had been identified as one of the worst polluters in the city.[5] The Committee made copies of the article and mailed it to political representatives and agency officials. Along with a copy of the article mailed to the state environmental agency, the Committee noted "we are beginning a strong organizing campaign again in South Brooklyn to educate the community on this health hazard." That is, TRI-related information was a resource in efforts to keep the issue on the agenda of officials and to mobilize community support.

The May 1990 CPI report identified Ulano as the city's top industrial releaser of airborne toxics. The report received wide media coverage. The community organizing capacity of the Committee allowed it to sustain the political life of the issue. The Committee used the publicity as a community organizing tool, distributing flyers in the neighborhood citing Ulano as "the #1 industrial air polluter in New York City." The flyers helped produce a high turnout at a meeting sponsored by the Community Board to address the issue. The same meeting also had a first arena function because DEC officials responsible for implementing the incinerator start up order attended the meeting and took questions from the public. Inasmuch as the die was virtually cast at that point, officials probably had few qualms about appearing before a potentially angry public. Nevertheless, the show of force represented by the high turnout at the meeting was a way of keeping heat on officials to proceed with implementation of the start up order.

In the case of both the Post article and the widely publicized top pollution ranking for Ulano, the public identification of Ulano as a major emitter of toxic chemicals was of great second arena value to the Committee due to the legal and institutional obstacles that prevented the Committee from gaining legitimacy for its

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[5] The same data set actually indicated that Ulano was the largest industrial air polluter in the city. The difficulty of analyzing the hundreds of paper TRI submission forms apparently prevented the Post writer from arriving at that conclusion.

health complaints. In both instances, the Committee used these reports as vindication of its core health concerns before agency officials. Going "by the book", however, these officials continued to effectively deny the validity of such concerns.

The Brooklyn case provided evidence of the need to account for the possibility that second arena knowledge-communication capacities can contribute to significant power effects. DEC's order to Ulano to startup its incinerator appears to be have been influenced in part by anticipation of embarrassing TRI-related publicity generated by the Committee's ally, the Consumer Policy Institute. (It will be recalled that 98% incineration rates required by the state prevented Ulano from starting an incinerator capable of only 95% incineration. The Clean Air Committee called for immediate use of the incinerator). While no basis was found for some accounts that credited the DEC's startup order to TRI-related media coverage that identified Ulano as the city's top air polluter, the circumstances and timing of DEC's action suggested that the impending CPI-generated publicity was one of several factors in the outcome. DEC denied that its actions were ever influenced by Ulano's top TRI ranking (Kormanik, Interview). However, DEC records suggested that bad publicity resulting from newspaper coverage of an embarrassing bureaucratic logjam between DEC and EPA played a factor in DEC's efforts to bend its incineration rules so that the incinerator could be started. Aware of the upcoming CPI press conference on city TRI data and of Ulano's top TRI ranking, DEC was able to anticipate similar bad publicity that would result from the CPI report. DEC issued its order four days before the press conference, just in time to avoid such an outcome. Although it appears that the startup order would have come eventually with or without the TRI-related publicity generated by CPI, in all likelihood DEC's anticipation of the publicity was one more pressing reason for it to act quickly. When the CPI-generated publicity resulted in unprecedented city-wide media coverage that Ulano was the city's top industrial polluter, DEC was prepared to respond to inquiries from newspaper reporters with the

news that it had just ordered the plant to either shut down or to start up the incinerator. DEC also telephoned a TV station that reported the bureaucratic logjam between DEC and EPA (along with video footage of CAC protests outside the Ulano plant) to notify the station of the startup order.

Effective incineration of Ulano's emissions resolved the toxic power conflict in Boerum Hill. Precisely what political forces were behind this outcome is disputed. The facility and the state agency claim that the outcome was strictly a product of enforcing anti-ozone provisions of the Clean Air Act. Nevertheless, it is clear that the persistence of the Committee, particularly through embarrassing publicity it was able to generate, made it politically compelling for the DEC to resolve the problem. TRI-related knowledge had some auxiliary political value during at least three sets of events. This value is attributable to the sustained, organized focus that a small group of individuals maintained on its core health concerns and to the second arena organizing skills of the group. Without these capacities for concerted action, the momentary political opportunities represented by the arrival of TRI-related knowledge would have slipped away.

In Marcus Hook, second arena public mobilization around the overall state of pollution became a moot issue when PAPA ceased to press its stated goal of establishing a local regulatory authority over polluters. The demise of PAPA as an organization was due to weak third arena capacities to sustain organized concern regarding health problems created by the overall pollution problem and to the lack of mobilization and community-organizing capacity vital to second arena political success. A DVTC organizer noted that "people didn't understand what it meant to set up a local citizen organization, or how you would go about it" (Schirm, Interview). Lacking these capacities, there was no organizational force that could exploit or sustain the political life of TRI-based issues whether communicated through the media or directly to protesters by the DVTC.

The challenge to pollution originally represented by PAPA's proposal to establish local regulatory authority over polluters went to the heart of toxic power as it was exercised in the first arena. It would have restructured manufacturers legal capacity to pollute by introducing a local capacity to shape and enforce pollution regulations. At first PAPA promised to become an unprecedented form of independent civic organization for the community. The limited civic activism experience of the participants made it vulnerable to maneuvers by powerful forces that opposed setting up a local regulatory body. PAPA ultimately succumbed to an initiative by Sun Oil and the municipality to establish an official communication forum between facility representatives and residents. As the PAPA organization gave way to establishment of a communications forum between residents and facility representatives, local challengers lost sight of the more substantive original goal. The goal of regulating local polluters gave way to the establishment of an Environmental Advisory Commission that posed no threat to toxic use decisions by local industries. While TRI data would have been a useful tool for a local regulatory authority to monitor local emissions, it has not been useful for the communications forum.

As noted earlier, the annual release levels of toxic chemicals indicated in TRI reports are a useful means to document the first arena exercise of toxic power. As such, TRI data can be useful in the final resolution of toxic conflicts. In the two cases where there were resolutions -- Northfield and Brooklyn -- TRI data were useful in documenting the reduced releases of the chemicals in question.

In Northfield, the one case where challengers negotiated resolution of the conflict, TRI report data lay at the center of first arena negotiations. Sheldahl used anticipated emission levels to be reported to TRI as the framework for its emissions reduction plan. One of the major issues in negotiations between CAN and the facility was the rate at which the quantity of TRI-reportable emissions would be reduced. On this issue, the state agency accepted Sheldahl's reduction schedule. Since Sheldahl

began implementing its plan in 1989, TRI report data have been a means to monitor the effectiveness of implementation. Because implementation has gone ahead of schedule, the company has made a point of publicizing its TRI-reported emissions.

The pollution permit issued by the Minnesota agency to Sheldahl was remarkable for the fact that it required the phase-down and elimination of chemical emissions that were legal under its rules. It had never before disallowed emissions officially permitted by its standards. This is a tribute to the level of political power accumulated by the forces that opposed methylene chloride exposure in Northfield.

Conclusion

This study was undertaken as an effort to better understand the relationship between knowledge and political power. In order to operationalize such an analysis, power has been defined as the capacity to understand and advance one's interests in concert with some and in conflict with others. This view of power has been integrated into an analytical framework inspired by the Lukes-Gaventa three dimensions of power approach. The major modification proposed to the Lukes-Gaventa model is a clear distinction between the manifest activity during a conflict and the capacities underlying such activity. Differences in these capacities were found to be the best predictor of different political outcomes and more particularly of the differing political value of knowledge for challengers in the conflicts. At all points during an overt political conflict, one party performs a calculus based not only on what the opposing party knows and does but on what it is capable of knowing and doing. The proposed model of power facilitates analysis of this essential dynamic by clearly distinguishing among the capacity to know, the capacity to act, actual knowledge and empirically-verifiable actions.

For the political purposes of challengers in the toxic power conflicts studied here, TRI-related knowledge was most useful, indeed indispensable, in Northfield. In Brooklyn, such knowledge became an organizing resource at various points but the

final outcome was only partly, perhaps negligibly, affected by the intervention of the knowledge. TRI-related knowledge was least useful in Marcus Hook.

The best predictor of the differing political utility of TRI-related knowledge from case to case was 1) differences in the challengers' capacities to act in concert with people similarly affected, 2) the capacities of facilities to understand and advance their interests and 3) the level of government and facility resistance to the goals of the challengers. Challengers to toxic power who, prior to any use of TRI-based knowledge, had already accumulated power in the form of organizational- and knowledge-building capacities were best able to transform the knowledge into a tool of political empowerment.

Compared with the other two communities, the Northfield community clearly had superior organizational and knowledge-building capacities. These capacities appear to have moved the conflict toward resolution even during the latent phase of community conflict. During the overt community conflict in Northfield, these capacities enabled challengers to coalesce into a force that politically exploited TRI-related communications in an exceptionally effective manner. The resourcefulness of the Brooklyn Clean Air Committee showed that resources available to most communities can be exploited to permit independent learning of toxics exposure risks[6] and that even "shoestring-style" organizing capacities can go a long way in exploiting the political potential of new knowledge. However, second arena obstacles to establishing the legitimacy of community health complaints limited the value of TRI-based knowledge communications in the Brooklyn case. In Marcus Hook, TRI-based knowledge had no political effects due to lack of organizational and knowledge-building capacities

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[6] It will be recalled that one member of the Committee was a high school chemistry teacher and another was a hospital worker with ties to the medical and health community. These members or specialists contacted by these members helped the Committee to better understand the toxicological and health-related questions raised by their exposure to toluene and methyl-ethyl ketone. Most communities have the potential to tap into this kind of expertise.

commensurate with the scope of the problem and with the strength of countervailing forces.

* * *

While government-mandated public disclosure of toxic release information has been a significant achievement for anti-toxic activists, the toxics right to know needs to be conceived not merely as a right to obtain release data but as the right of citizens to understand how releases to which they are exposed affect their interests. Measured against this standard, the struggle to achieve the toxics right to know has only begun. While public availability of toxics emission data promised to arm exposure victims with a mighty weapon in ongoing or subsequent battles against releases, this study has shown that effective understanding is a function of the knowledge-building and organizational capacities of those who would use the data to press facilities to minimize or eliminate their exposure. This has placed an enormous burden on average citizens who, lacking the special knowledge of toxics and the organizational resources more readily available to facilities, confront formidable obstacles to understanding their interests and how to defend them. Under these circumstances, the right to know all too easily becomes the right to access meaningless and useless data.

While the focus of this study in no way embraces the full range and diversity of circumstances that confront community residents who try to use release data to challenge their exposure to industrial toxics, it is nevertheless possible to derive some lessons from the case studies regarding community-based initiatives and state responsibility as a guarantor of the right to know.

First, even within current constraints facing community-based efforts, certain measures are possible that could facilitate third arena development of core concerns and political strategy by community groups. Where, as in the Pennsylvania case, serious multiple-exposure problems are clear but a means to attack them is not, chemical-specific health concerns need to be clearly identified and developed. Where available

time and resources permit, members of the broader anti-toxics movement can provide community members with health agency studies, toxicological data, and contacts with residents of other communities similarly affected. Where, as in the Minnesota case, local knowledge-building and organizational forces are strong, strategic expertise from experienced anti-toxics activists can be vital in selecting a viable conflict resolution strategy.

Secondly, there are a variety of ways in which the state -- as the collector, producer and distributor of the data -- can become a better guarantor of the right to know. If citizens' right to know is to be conceived not merely as a right to access raw data but to understand what they mean regarding their interests, the government needs to shape the right to know in ways that facilitate citizen knowledge-building.

In the spirit of the First Amendment, it is healthy to maintain traditional caution against state intervention in public communication. Toxic release communications from the state could all too easily be designed to serve the interests of state agencies or the emitting facilities. In the case of the toxic right to know, however, it is clear that the state has an indispensable role. It was impossible to secure this right without state action. Societal actors had neither the authority to compel facilities to disclose the information nor the resources to collect and disseminate the information nationwide. And, in the absence of market factors that might encourage their broader dissemination, toxic release data can only reach the public through state initiative[7]. The challenge is to strike a balance between the need for state action to remediate public ignorance and

[7] Unlike some other government-collected information -- like market-related Census data and reports to the Securities and Exchange Commission on corporate quarterly earnings -- toxic release data do not attract investment from private sector information developers and distributors. Where commercial developers disseminate government data, the pricing and affordability of the data raise the questions of cost-prohibitive access and inequitable distribution. For more than a decade, these questions have been at the heart of conflict between the Information Industry Association (IIA) and the American Library Association (ALA). The IIA advocates the vendors' prerogative to disseminate government data and the ALA argues that government data should be treated as a freely accessible public good. TRI data have not become embroiled in this debate because they lack commercial value in the eyes of the information industry.

uncertainty regarding exposure to toxics and the public need independently to clarify its interests.

As illustrated in the New York case, the political strength or weakness of toxics release knowledge depends first and foremost on the legal status of the releases. Wherever possible the state needs to define legal liability for environmental toxic exposure and its health consequences. To obtain knowledge of a legal violation, gives the challengers secure footing in second arena efforts to establish the public legitimacy of the issue and in gaining entry to first arena negotiations.

The scope of data collected by the state enhances or constrains the ability of challengers to marshall knowledge relevant to immediate problems. In the Pennsylvania case, data were available on a host of chemicals released in the area but not the one substance eventually believed to have been the cause of the odor incidents that closed the schools. The state needs to broaden reporting requirements to include all substances that pose a threat to public health.[8]

Raw emissions data that merely name the chemical and the annual amount released impose unnecessary knowledge-building burdens on citizens. Toxicology data (like the fact sheets disseminated by the state of New Jersey) need to be provided along with the data. It is also possible to involve companies in the burden of developing health risk knowledge and to disseminate maps that illustrate risks in the areas surrounding facilities[9]. Also, health agencies need to assist communities that, as in the

[8] In November 1994, EPA made emissions of 286 more chemicals reportable to the Toxics Release Inventory. While this action marked significant progress, EPA postponed decisions regarding 40 other chemicals and has yet to consider many other highly toxic substances that fall below reporting thresholds (Working Notes on the Community Right-to-Know, November-December 1994:1).

[9] California's 1987 Toxic Hotspots Act required emitters of airborne toxics to use available health data to produce and disseminate Health Risk Assessments. Since 1994, these assessments include maps illustrating the degree of risks for particular illnesses in the vicinity of facilities. According to Paula Forbis of San Diego's Environmental Health Coalition, maps illustrating cancer and other health risks near facilities "are the first visual data about routine toxic releases that have been made publicly available. Because of this, they are very powerful tools" (Working Notes on the Community Right-to-Know, September-October 1994:3).

New York case, experience clear and prolonged toxic consequences from exposure to industrial releases yet have no scientific evidence to support their grievances.

In the case of EPCRA, it is appropriate to ask if the right to know may benefit from the ongoing technical revolution in the development of information and telecommunications technologies. EPCRA was not only the world's first national toxics right-to-know statute and a model for subsequent laws in various other countries but it was a pioneering piece of legislation in a technical sense. It established the first government-mandated online public access database. As such, EPA's Toxic Release Inventory has much riding on its success or failure. Many people have looked toward TRI for answers to critical questions regarding the potential of new information technology as a tool of democracy. To date, however, the online TRI system has not been the "revolutionary" development that some expected or hoped it might become. Although varied users have benefited from the official online system housed at the National Library of Medicine (U.S. General Accounting Office, 1991:38-40), the most important technical feature of TRI has been the compilation and storage of the data in a single national computer database. As demonstrated in the case studies, this database has been the source of geographic- and chemical-specific computer-based data sets that lend themselves to useful comparative analysis and identification of significant releases. In the Minnesota case, the development of politically useful knowledge depended on a computer-generated data set on national carcinogen emissions (Chapter 3). In the New York City case (Chapter 4), a data set on city level air emissions was the key to discovery that an old source of neighborhood discontent released more toxics into the air than any other facility in the city. In the Pennsylvania case, county-level and metropolitan-area data sets confirmed common assumptions that the community in question faced the largest release amounts in the region.

Beyond centralized computer storage of the data, state adoption of other technical policies could enhance citizen's right to know. For example, the requirement

of computer-readable Form Rs could improve the timeliness of TRI data dissemination. Currently, there is an almost two year gap between the data's collection and its release, due in large part to the need to enter manually data submitted on paper Form Rs. Canada's TRI-inspired National Pollutant Release Inventory bypassed the need for manual data entry when it required facilities to report their emissions in an electronic format that can be read directly into the central database. EPA could also circumvent time-consuming entry work by mandating computer disk or electronic mail submissions of Form R data.

An innovative online data base and computer conferencing system supported by EPA and private funding called RTK Net offers a glimpse of some technical enhancements from which the online TRI system could benefit. Now only accessible to a couple hundred users due to limited funding, RTK Net brings together computer conferencing, electronic mail, document-downloading and data base retrieval and downloading in a single system. One of RTK Net's computer conferences -- regarding toxic exposure health issues -- allows users of the system to post questions, comments and responses to other users or simply to read others' communications. Through the RTK Net's electronic mail, users including EPA officials, industry representatives and anti-toxic activists are able to communicate directly with one another on any matter they wish. RTK Net stores an enormous amount of documents, including official EPA communications and publications by toxics right-to-know activists that users can locate with keyword searches and download to their own computers. Like the official online TRI system, RTK Net makes it possible to retrieve TRI release data. But RTK Net users can also relate toxicology and census information to the release data they retrieve.

For lawmakers who now face the challenge of redefining citizen information rights in an era of phenomenal advances in information technology, RTK Net offers a useful lesson: through current technology, it is not only possible for citizens remotely to retrieve vital political data; they can also gain access to knowledge-building

environments that can facilitate their understanding of the data they acquire. In the light of these technical developments, citizens' right to know needs to be defined to include the right to access electronic environments where they can build the knowledge they need to protect and advance their rights. While no amount of technical sophistication in the TRI program can take the place of community knowledge-building capacities, additional data processing and telecommunication techniques in the program could conceivably lessen the formidable learning burden currently facing challengers to toxic exposure. If made easy to use and broadly accessible in places like public libraries, these tools could help victims of toxic exposure focus more clearly on core concerns and political strategies. While the problem of state control over public communication remains, the proper balance can be achieved if the state merely facilitates rather than controls the kind of communications that take place.

In the author's mind, there is no more fitting image to summarize the issues raised in this study than the vast sea of smokestacks and oil tanks in the Sun Oil refinery complex visible from high on the steps of the Marcus Hook public library. Millions of citizens now look out over skies, waters and grounds through which toxic particles are entering their bodies. Due to the vantage points erected by public authority like the Toxics Release Inventory, they can now see and understand more than they ever could in the past about what is actually happening and how it affects their interests. But TRI data that are "just numbers" for a Marcus Hook librarian, or incomprehensible to a Brooklyn activist, or of no help to Northfield residents in understanding cancer risk are clearly insufficient to satisfy the citizens' right to know. While nothing can substitute for local growth in community abilities to build knowledge and organization, the state needs to facilitate such growth by making accessible environments -- electronic and non-electronic -- in which citizens can more readily achieve an understanding of where their best interests lie.

Appendices

Appendix A: Interviews

All interviews were conducted by the author and tape recorded. Dates marked with an asterisk indicate a phone interview. All other interviews took place in person. Cities note the location of the interviewee.

Balter, Jerry. Legal Staff, Public Interest Law Center. Philadelphia, PA. May 5, 1994.

Battig, B.J. Corporate Manager of Health, Safety and the Environment, Sheldahl, Inc. Northfield, MN. July 21, 1994*.

Blanford, Paul. Principal, Marcus Hook Elementary School. Marcus Hook, PA. May 9, 1994.

Califf, Jane. Organizer, Boerum Hill-South Brooklyn Clean Air Committee. Brooklyn, NY. October 2, 1992*, March 5, 1993.

Casper, Mike. Chair, Air Toxics Study Group in Northfield, Minnesota. Chicago, IL. March 30, 1993.

Cobourn, Linda. Member, Parents Against Pollution in the Air; Environmental Advisory Council. Marcus Hook, PA. May 6, 1994.

Dorbian, Bruce. Borough Manager. Marcus Hook, PA. May 9, 1994.

Everngham, Cheryl. Member, Parents Against Pollution in the Air; Chair, Environmental Advisory Council. Marcus Hook, PA. May 7, 1994*.

Frumin, Eric. Director, Health and Safety Department, national office of Amalgamated Clothing and Textile Workers Union. New York, NY. May 27, 1994.

Gerges, Abe. City Councilman. Brooklyn, NY. September 20, 1993*.

Halloran, Jean. Director, Consumer Policy Institute. Mount Vernon, NY. March 31, 1993*, September 15, 1993*.

Kormanik, Michael. Regional Pollution Control Engineer. Long Island City, NY. May 19, 1993*.

Letham, Dick. Organizer, Boerum Hill-South Brooklyn Clean Air Committee. Brooklyn, NY. November 11, 1992.

Martin, Terry. Staff, Amalgamated Clothing and Textile Workers Union Twin City Joint Board. St. Paul, MN. June 29, 1994*.

Matson, Paul. Member, Boerum Hill-South Brooklyn Clean Air Committee. Brooklyn, NY. September 17, 1993*.

McKenna, Chris. Albany desk New York Post reporter. Albany, NY. April 30, 1993*.

Reese, Edie. Boerum Hill resident and active opponent of odors from Ulano, Inc. (late 1970s). Brooklyn, NY. September 17, 1993*.

Sheiman, Deborah. Staff, National Resources Defense Council. Washington, D.C. June 28, 1994*.

Schirm, Greg. Executive Director, Delaware Valley Toxics Coalition. Philadelphia, PA. January 27, 1994*; April 18, 1994; August 29, 1994*.

Warren, Barbara. Staff, Consumer Policy Institute. New York, NY. December 10, 1992.

Wolf, Frank. Chair, Clean Air In Northfield. Northfield, MN. July 7, 1994*.

Appendix B: Acronyms

ACTWU	Amalgamated Clothing and Textile Workers Union
ASTG	Air Toxics Study Group (Northfield, MN)
CRTKA	Community Right-to-Know Act
CAC	Clean Air Committee (Boerum Hill-South Brooklyn, NY)
CAN	Clean Air in Northfield
CPI	Consumer Policy Institute
DEC	Department of Environmental Conservation (State of New York)
DER	Department of Environmental Resources (State of Pennsylvania)
EAC	Environmental Advisory Council (Marcus Hook, PA)
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-know Act
HCD	Hazardous Communication Standard
LEPC	Local Emergency Planning Committee
MPCA	Minnesota Pollution Control Agency
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PAPA	Parents Against Pollution in the Air (Marcus Hook, PA)
SARA	Superfund Amendments and Reauthorization Act
SERC	State Emergency Response Commission
TRI	Toxics Release Inventory

New York State Department of Environmental Conservation
SARA Title III, Toxic Release Inventory Data, Facility Report
July 23, 1993

Site : ULANO CORP.-601 BERGEN ST.FACILITY)
601 BERGEN ST.
BROOKLYN, NY 11238
County: KINGS
Sortkey : 611080

Public Contact : SOLOMON BORODKIN
Phone : (718) 622-5200
SIC Code : 3999
POTW Used : NYC DEPT ENV PROT-BUR WSTWATR TREATMNT
Receiving Waterbodies : EAST RIVER

RCIS # :
EPA TRI # : 11238LNCRP601BE
Air Emmissions Permit # : 6100000399
RCRA # : 001725878
SPDES Permit # :

Form R Submitted : 0

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	71363 (90) N-BUTYL ALCOHOL 100 - < 1 K	71363 (89) N-BUTYL ALCOHOL 100 - < 1 K	108883 (91) TOLUENE 10 K+ - < 100 K	108883 (90) TOLUENE 100 - < 1 K	108883 (89) TOLUENE 100 K+ - < 1 M	108883 (88) TOLUENE Invalid Amount
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	11 - 499	None	11 - 499	11 - 499	1 - 499	1 - 499
Stack or Point.....	0	0	None	0	0	0
DISCHARGES TO WATER						
Water 1.....	0	0	None	0	0	0
Water 2.....	0	0	None	0	0	0
Water 3.....	0	0	None	0	0	0
UNDERGROUND INJECTION.....	0	0	None	0	0	0
RELEASES TO LAND						
On Site Landfill.....	0	0	None	0	0	0
Application Farming.....	0	0	None	0	0	0
Surface Impoundment.....	0	0	None	0	0	0
Other Disposal.....	0	0	None	0	0	
OFF SITE TRANSFERS IN WASTE						
Discharge to POTW.....		0	None	1 - 10	0	0
In State Transfers.....	0	0	0	0	0	30,000
Out of State Trans.....	6,000	11,500	13,000	14,000	27,000	0
Spills.....			None			

New York State Department of Environmental Conservation
SARA Title III, Toxic Release Inventory Data, Facility Report
July 23, 1993

Site : ULANO CORP.-280 BERGAN ST. FACILITY
280 BERGAN ST.
BROOKLYN, NY 11217
County: KINGS
Sortkey : 611070

Public Contact : SOLOMON BORODKIN
Phone : (718) 622-5200
SIC Code : 3999
POTW Used : NYC DEPT ENV PROT-BUR WSTWATR TREATMNT
Receiving Waterbodies : EAST RIVER

RCIS # : 2610300077
EPA TRI # : 11217LNCRP280BE
Air Emmissions Permit # : 6100000399
RCRA # : 091576538
SPDES Permit # :

Form R Submitted : 0

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	108883 (90) TOLUENE 100 - < 1 K	108883 (89) TOLUENE 100 - < 1 K	108883 (88) TOLUENE Invalid Amount			
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	11 - 499	None	None			
Stack or Point.....	86,700	245,300	300,000			
DISCHARGES TO WATER						
Water 1.....	0	0	0			
Water 2.....	0	0	0			
Water 3.....	0	0	0			
UNDERGROUND INJECTION.....	0	0	0			
RELEASES TO LAND						
On Site Landfill.....	0	0	0			
Application Farming.....	0	0	0			
Surface Impoundment.....	0	0	0			
Other Disposal.....	0	0				
OFF SITE TRANSFERS IN WASTE						
Discharge to POTW.....		0	0			
In State Transfers.....	0	0	5,000			
Out of State Trans.....	7,000	11,500	0			
Spills.....						

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