

CATASTROPHE

LAW, POLITICS,
AND THE
HUMANITARIAN
IMPULSE

Edited by
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Environmental Right-to-Know and the Transmutations of Law

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Law does more than codify, regulate, and control; it also catalyzes and transmutes, provoking cascading social and cultural effects, particularly when the force of law is informational.¹ Consider the case of Diane Wilson, mother of five, fourth-generation shrimp boat captain in Calhoun County on the Texas Gulf Coast. In 1989, she was forty years old, had more than enough to do, and had more than enough to worry about. Shrimping had never been an easy way to make a living, but it was getting harder. The catch was down and game warden surveillance was up, and there was a brown algae creeping across the surface of San Antonio Bay.² The fish suffocated and the shrimpers went further into debt. Environmental regulations were not a shrimper's friend, however. Indeed, a fair amount of energy and creativity went in to efforts to avoid game warden surveillance. Local fish houses where the catch was held for sale had subtle systems for alerting shrimpers if wardens were lingering on the docks or were parked around the corner. Environmental regulations directed at local industry did not have many supporters either. The local chemical industry was the place to work if you really wanted to earn money. Union Carbide had a plant in Calhoun County, as did DuPont, BP, Alcoa, and Formosa Plastics.

On a hot afternoon in 1989, Diane was in her brother's fish house, which she managed with a friend. A shrimper brought in a local newspaper reporting that Calhoun County, population 15,000, was the most polluted county in the United States. (See figure 5.1.) The news was based on the first year of reporting from the U.S. Toxic Release Inventory (TRI), mandated in 1986 as part of the so-called Community Right-to-Know Act, which was bundled into a reauthorization of the Superfund in response to the Bhopal disaster.³ The TRI is the centerpiece of what has become known as environmental right-to-know legislation, now considered a criti-

cal part of environmental governance around the world⁴ even as it is rolled back in the United States.⁵

At first, Diane joked about the news, but then it got under her skin, animating an extraordinary process of discovery and transmutation. With time, Diane not only learned about the pollution in her beloved San Antonio Bay, but she also learned about the way government and business

Figure 5.1

Scorecard
THE POLLUTION INFORMATION SITE

POLLUTION LOCATOR | Toxic Chemical Releases | Reports

Investigate Pollution Topics

TOXICS

- Toxic Chemical Releases
- Lead Hazards
- Superfund

AIR

- Smog and Particulates
- Hazardous Air Pollutants

WATER

- Clean Water Act
- Watershed Indicators

AGRICULTURE

- Animal Waste

ENVIRONMENTAL JUSTICE

- Community Center
- En Español

HEALTH HAZARDS

- Chemical Profiles
- Health Effects
- Regulations

UP TO YOUR COMMUNITY

GO >

SEARCH SCORECARD

Environmental Release Report: CALHOUN County, TX

- [Map Locating Toxic Chemical Releases](#)
- [2002 Rankings: Major Chemical Releases or Waste Generation in CALHOUN County](#)
- [Environmental Justice Analysis for CALHOUN County](#)
- [2002 TRI Pollution Releases Ranked by Ozone Depleting Potential](#)
- [2002 TRI Pollution Releases Ranked by Potential Human Health Risks](#)
- [2002 TRI Pollution Releases Sorted by Health Effect](#)
- [What We Don't Know About Chemical Safety and Harm](#)
- [TRI Data Summary](#)
- [Dioxin Compounds Summary](#)
- [TAKE ACTION →](#)
- [Links](#)

• **TRI Data Summary**

Environmental Releases, Transfers, and Production-Related Waste (Pounds from TRI sources)

Year	Air Releases	Water Releases	Land Releases	Underground Injection	Total Environmental Releases	Total Off-Site Transfers	Total Production-Related Waste
1989	9,891,377	1,926,855	2,842,120	77,782,250	92,432,602	66,754	NA
1990	3,668,587	13,073	111,984	65,251,083	68,964,727	43,523	NA
1991	3,051,810	49,053	24,821	32,430,887	35,556,571	402,122	NA
1992	2,860,970	50,519	12,710	28,963,776	31,895,975	20,038,537	211,027,755
1993	2,347,060	84,616	37,400	26,767,584	29,236,660	15,888,279	155,710,379
1994	2,788,182	43,286	21,844	20,531,246	23,384,558	10,180,217	137,345,576
1995	2,033,621	21,873	117,168	11,247,640	14,121,978	11,131,802	128,392,750
1996	2,632,735	6,264	20,017	12,894,900	15,724,802	12,748,878	166,029,789
1997	3,086,750	14,551	9,445	10,537,100	14,083,831	11,732,032	237,014,482
1998	3,086,750	19,491	42,658	13,554,969	16,703,879	23,468,300	334,408,200
1999	2,569,468	16,530	6,630	12,244,978	14,837,746	11,992,339	247,382,802
2000	3,317,447	185,862	9,771	13,869,117	17,373,197	9,670,325	285,470,298
2001	2,986,029	115,077	15,639	16,716,347	19,833,092	14,555,070	332,338,878
2002	2,415,358	104,193	152,083	14,479,282	17,150,915	4,759,728	186,565,190
2003	2,214,936	1,285,226	176,943	18,133,869	22,810,974	1,060,718	209,885,431

NA means that no data are available because "Total-Production Related Waste" was not reported until 1991.

“work” and about the way environmental politics is entangled with information politics. She also learned to make connections that others easily miss, moving from Calhoun County, Texas, to Bhopal, India, to Baghdad, Iraq, all the while insisting that she is “nobody in particular.”⁶

Diane Wilson’s story illustrates how environmental right-to-know legislation works, beyond its effects on corporate behavior and despite problems with information accuracy, completeness, and circulation. My argument responds both to those who applaud and to those who criticize right-to-know initiatives. It also responds to accelerating interest in reducing vulnerability to disaster, evident in response to Hurricane Katrina and the 2006 Indian Ocean tsunami, for example, and among people concerned about global warming.⁷

Critiques of right-to know initiatives tend to focus on problems with the information made available. Analysis reveals that information is often incomplete, unaudited, inaccurate, and delayed in its circulation. This way of thinking about how environmental right-to-know works underestimates the way people actually work with information and around information gaps, often with keen awareness that “transparency” is not the same as “full disclosure.” It is thus critical to pay attention to information practices downstream of disclosure as well as to what information—even if imperfect—can reveal and motivate.

Information, it turns out, is not only of substantive value (valuable because of its potential truth content) but also because of what can be called semiotic value. Any piece of information—even if partial or lacking verification—can draw people into processes of inquiry, driven by recognition of potential but unrealized information density, of interests undergirding information gaps, and of varied ways information, even if questionable, can be used, such as for comparisons across space and time.⁸ Information thus creates *capacity* to understand and respond to problems, routine and catastrophic.⁹

Those who applaud right-to-know legislation often focus on its effects on the behavior of polluting firms. Right-to-know is said to work because it has a direct effect on pollution outcomes. This critically important point is reason enough to support right-to-know initiatives. This way of thinking about how right-to-know works, however, misses more circuitous social and cultural effects, which dramatically implicate how environmental issues will be dealt with in the future. These social and cultural effects are particularly important to consider when trying to reduce vulnerability to disaster, events that fundamentally destabilize established ways of

thinking and acting. Disaster, by definition, deprives people of any star (dis-aster) to orient themselves, overwhelming their ability to make sense of things. Information about “what is going on” is often lacking and is always politically charged. Cultivating critical information practices is thus a key part of disaster prevention and response.

Right-to-know legislation has dramatically increased the quantity and types of environmental risk information in circulation. In what follows, the social and cultural import of such legislation and the practical implications for disaster preparedness in particular are discussed. Enhanced information density does not itself provide answers; it animates rather than dictates activity, propelling people to recognize problems and identify points of intervention. Enhanced information density produces new points of view and draws into visibility the many scales and types of systems in play in the production of risk and in all efforts to reduce it. Initiatives that enhance information density—such as environmental right-to-know legislation—should thus be conceived as critical components of risk reduction and as significant drivers of cultural production and ethical-political movement.

This chapter describes how environmental right-to-know emerged in the wake of the Bhopal disaster, in a context riven by faith that greater access to information would solve a range of social ills. It next provides a brief overview of the informing of environmental policy in the United States and elsewhere. Diane Wilson’s story is then used to illustrate what can be thought of as the wayward, transmutational effects of law. This overarching argument returns in the conclusion, emphasizing how right-to-know has prompted information practices, social connections, and political movements that have changed the order of things in the environmental field, in ways that should be protected and leveraged.¹⁰

Bhopal and the Information Society¹¹

An information society, according to Wikipedia, is a society “in which the creation, distribution, diffusion, use, integration and manipulation of information is significant economic, political and cultural activity.”¹² Although theorized at least since the 1960s,¹³ such a society really began to take shape—and to be popularly recognized as such—in the 1980s. Throughout that decade, the density of information circulation increased exponentially. There were both technical and legal grounds for this expansion. The costs of telecommunications fell dramatically, pushed by a 1984

decision by the U.S. judiciary to break up AT&T. Cell phone networks were established in the United States, and both FedEx and Microsoft reached "tipping points" that led to explosive growth.¹⁴ Home computer use grew, and Pacman fever spread. Information-processing capabilities came to be expected and even to be considered a right. Investment in information circulation as the solution to a range of problems intensified.

The 1980s were also years of crisis. Debt crisis ripped across the developing world. Famine devastated Ethiopia. President Ronald Reagan reigned in the United States. There also was a ripple of industrial disasters: Bhopal in 1984, Chernobyl in 1986, *Exxon Valdez* in 1989. Information deficits were visible aspects of them all.

The story of Bhopal is particularly telling. Poor circulation of information exacerbated the disaster in many ways. Circulation of information between Union Carbide's headquarters in the United States and its Indian subsidiary was problematic, as was circulation of information between workers and managers in the plant. Information systems within the plant did not help, either; many were not functional the night of the gas leak, in part due to lack of maintenance resulting from plans to dismantle the plant and move it to another country as part of a major corporate restructuring intended to prepare the company for a globalizing economy. Indeed, on the very day Union Carbide had to hold a press conference announcing the Bhopal disaster, a press conference had already been scheduled to tell journalists how the company had restructured for a global era.¹⁵

No alarm announced the release of forty tons of toxic gas over the sleeping city of Bhopal on December 3, 1984. Because there was no evacuation plan, many people ran into the wind. Doctors were told by Union Carbide representatives that methyl isocyanate, the bulk chemical released, could be treated with antacids and water washing of eyes. Up to 10,000 people died within the first few days after the gas leak, and up to 600,000 were exposed. When U.S. Representative Steven Solarz (D-NY) visited Bhopal shortly after the gas leak, he was shocked to find that the mayor of Bhopal had no idea of the potential dangers posed by the plant.¹⁶

Senator Frank Lautenberg (D-NJ) outlined questions raised by the Bhopal disaster on the first day of the Ninety-ninth Congress: What percentage of the U.S. public lives in close proximity to facilities that produce or use hazardous chemicals? Is it known what these materials are and what hazards they present to adjacent communities? How adequate are emergency procedures established by federal and state governments to respond to environmental disasters? The overarching question was basic:

Can "Bhopal" happen here, in the United States? Union Carbide said that it could not, emphasizing the low probability of simultaneous multiple systems failure as occurred in Bhopal, but skepticism could not be contained.¹⁷

Representative Henry Waxman (D-CA) emphasized this shift in perspective in congressional hearings ten days after the gas leak in Bhopal:

We're being told on the one hand that it's a sealed system. But on the other, all these chemicals are leaking into the air on a routine basis. I find that troubling. The federal government doesn't know anything about it and that's outrageous enough. The state government hasn't the ability to regulate. We rely on you to regulate yourself. And if you are regulating yourself, it doesn't seem to me that your own people know why these chemicals are going into the air and what effect they're having on the public.¹⁸

Waxman argued that it was a discredit to the Environmental Protection Agency (EPA) that it did not know what was going on, pointing out that "EPA didn't mention the fact that there are no standards because EPA hasn't set any. After 14 years it has regulated only eight toxic pollutants. Methyl isocyanate is not considered a hazardous pollutant. . . . Aren't 2,500 deaths enough to convince EPA that methyl isocyanate is hazardous?" Waxman also described the contradictory process by which hazards "count": "EPA doesn't call something a hazard until it's ready to regulate it and it doesn't regulate something until it calls it a hazard. EPA has been chasing its tail for far too long."¹⁹

Waxman's response to the Bhopal disaster draws out many issues still being worked out today: lack of information about risks both within the companies that produce them and within government agencies; the dependence of government agencies on companies for knowledge about risks; the grave importance of what is officially listed as hazardous. Most basic of all, however, was recognition that the industrial complexes that dot and interconnect the contemporary landscape are open, rather than sealed, systems. In other words, these systems routinely leak and occasionally blow up. "Information strategies" have been a key part of our response.

"Information strategies"—efforts, often led by governments, to increase the availability of information on a particular phenomena—are being instituted around the world as a way of dealing with complex problems within democratic frameworks. Such is the case in the environmental domain, where information strategies are now relied on to address pollution, loss of biodiversity, climate change, and a range of other issues

involving entangled social, technical, and natural systems.

Information strategies can be traced historically in various ways: to Kantian constructions of the subject who knows and therein becomes both capable and responsible; to Mill's arguments in *On Liberty* about the need for informed decisions and subsequent need for freedom of the press; to passage of the U.S. Freedom of Information Act and the growth of the consumer rights movement in the 1970s; through rhetorics of "transparency" that have upheld democratization campaigns as well as efforts to build markets since the late 1980s.

Information strategies are structured by ideas about the effects of information circulation and about the (ethical) good of such effects. In short, more information in more hands is assumed to be a good thing. This can imply a rational actor model of behavior and democracy: information strategies increase the knowledge base from which judgments and decisions are derived, resulting in rational actors and rational societies. Other logics, based on quite different constructs of what is real and possible, are also possible. Information strategies can, for example, be perceived as an imperfect but best possible way to respond to high levels of uncertainty about both the present and the future: circulate lots of information to lots of people, hoping that (as connectivity theorists put it) dumb parts become a smart network.

Information strategies were not new in the 1980s, even within the environmental domain. The 1970 National Environmental Policy Act, for example, led to the publication of annual reports on the environment for the president and Congress and mandated that all federal agencies publish environmental impact statements before starting new projects. Belief in such strategies accelerated in the 1980s as the information era intensified. Simultaneously, protection of human health became the explicit goal of environmental legislation for the first time.²⁰ Efforts to protect environmental health thus became entangled with the beliefs and technologies of information, and the "right to know" became a dominant legislative strategy for protecting human health.²¹

Informing Environmental Policy

"Information strategies" for dealing with environmental risk became the explicit focus of law in the United States in 1986 through passage of the Community Right-to-Know Act, Title III of the Superfund Amendments and Reauthorization Act. Widely regarded as the primary legislative

response to the Bhopal disaster in the United States, the act mandated a range of initiatives to support emergency planning and public access to information. High-risk facilities, for example, had to provide the information needed by local rescue personnel to plan emergency evacuations. By the time amendments to the Clean Air Act were passed in 1990, this requirement had evolved into a mandate for "worst-case scenarios" for 66,000 high-risk facilities around the United States.

Another key component of the 1986 Right-to-Know Act was the TRI, the first federal database that Congress said must be released to the public in a computer-readable format.²² The goal was to allow the EPA as well as citizens to track and evaluate routine emissions. A key effect has been recognition that information itself can be a hazard—to the public image of chemical companies in particular. In response, corporations have "gone green," and control over hazardous information has become almost as important as control over hazardous production itself.

The effects of distributing TRI data in the United States have been enormous, sparking environmental initiatives within corporations, in the communities affected by pollution, and by national and international environmental groups.²³ The first round of U.S. TRI data was submitted in July 1988. The president of Monsanto was so taken aback by the figures disclosed that he pledged to reduce emissions by 90 percent over the next five years. The next year, the Chemical Manufacturers Association initiated its Responsible Care program, a "public commitment" to run safe plants voluntarily beyond compliance with the law. The National Wildlife Federation responded to Responsible Care by denouncing purported progress on emissions reduction as "phantom reductions" attributable to new accounting measures and creative information manipulation.²⁴ Environmentalism became a struggle over how things would be categorized, counted, and represented, graphically as well as politically.

Initiatives similar to those mobilized in the United States by right-to-know legislation have now been developed around the world, as recommended in Agenda 21, the guidelines for sustainable development agreed to at the 1992 Earth Summit. Informational strategies have become a major focus at the World Bank and within United Nations' programs. In Europe, the right to know is the focus of the Aarhus Convention, a United Nations/European Economic Commission (UN/EEC) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. Originally signed in Aarhus, Denmark, in the summer of 1998, this convention establishes legally binding

instruments guiding the creation of national Pollutant Release and Transfer Registers (PRTRs) in the UN/EEC region as recommended by Chapter 19 of Agenda 21. PRTRs are databases containing information about pollution from industrial facilities, similar to the U.S. TRI.²⁵ Environmental organizations such as the WorldWatch Institute consider PRTRs a priority because they “pinpoint the most affected communities, and the most polluting industries, thereby identifying targets for action.”²⁶

Right-to-know initiatives raise difficult questions: What information must be provided to fulfill the right to know about the environment? How must information be provided? Must information be accessible through the Internet? Has access been realized if information is not organized for efficient use and correlated with other information that reveals its significance? Is the right to know, in effect, the right to computer models and interactive, Internet-based maps? Must scientific knowledge be stable and uncontested to be useful? How much science can “ordinary citizens” take? What are citizens likely to do with environmental risk information? Will they remain reasonable?²⁷

An Unreasonable Woman

After reading news of the first TRI report in 1989, it was not long before Diane Wilson called a lawyer and—following his instructions—called a meeting. To get ready, Diane made a few calls. One plant official told her to call someone else. “We’re not in the information business, lady. We make chemicals. We build jobs and make better lives for people in this country,” he said. Another plant official acknowledged that they were now required by law to provide information to local authorities, but “not to every Tom, Dick, and Harry on the telephone.” So Diana called the Calhoun County emergency coordinator. “It’s lies!” the coordinator yelled. “That article’s nothing but a twisted pack of lies instigated by people wanting to make something out of nothing! It’s their job to rile up people. That’s how they make their money!” “The Toxic Release Inventory is a national report,” Diane replied, “a government report.” The emergency coordinator told her to get her facts straight and joked that Diane did not even know what a wastewater permit was.²⁸

Diane then had to find a new place for a meeting. She had reserved a room in the Seadrift city hall, but the woman in charge came out to the fish house one day and told Diane that she would need to find another place. The woman said that the city was trying to get a grant and that the

meeting wouldn't look good. "It's sending a red flag up in Washington," she said. Someone also called Diane's brother Sanchez and told him to make his sister back off. "But it's just a simple meeting," Diane replied.²⁹ Then she got a letter, with a question for a message that read, "Ms. Wilson, Are you aware of this?" The letter was attached to a newspaper clipping with a public notice about a chemical plant Diane had never heard of, Formosa Plastics. Diane did not know how to make sense of it, so she called her lawyer. He ask for the full company name and permit number and told Diane that they could request a copy of the permit from Austin. Then they could ask for a public hearing.

A few days later, Formosa was local news. A television reporter spoke about a Dallas newspaper article that claimed that Formosa was a persistent violator of the Clean Water Act. Then a Formosa representative came on screen and insisted that the allegation was not true and that the company had never dumped into Cox's Creek or any other creek. Diane called the television reporter and asked if it was true that the Formosa did not dump anything. "That's what they say," she was told. Then she called the Dallas newspaper reporter who had written the Formosa story and asked him if the story was true. "Sure," he said. "Can't print it unless it's true." He had copies of EPA documents citing Formosa for wastewater violations, and he would send them to Diane. She could not believe that "they can lie on TV news. And it is alright!"

Such was the beginning of the amazing education Diane has gotten in the wake of environmental right to know.

I first met Diane in the early 1990s, as part of a grassroots and union effort in the United States to commemorate the tenth anniversary of the Bhopal disaster. Already, she was a force to be dealt with and was an incredible resource for her community and an emerging toxics movement. She had forged links between labor and environmental groups and had cultivated contacts in government agencies like the Texas Water Commission. She recognized that Union Carbide's disaster in India was—despite company claims to the contrary—quite close to home. She saw how it all added up.

Disaster in Seadrift³⁰

On March 12, 1991, the Union Carbide plant in Seadrift, Texas, Diane's hometown, also blew up. A year before, the Texas Industry Chemical Council had designated the same plant as the safest in Texas. Just a few days before the disaster, Assistant Secretary of Labor Gerard Scannell announced

that Union Carbide's Seadrift plant had been approved for participation in the Occupational Safety and Health Administration's (OSHA's) STAR program, one of the agency's Voluntary Protection Programs for companies with exemplary safety and health programs.

Union Carbide's Seadrift disaster resulted from the explosion of an ethylene oxide production unit. The fireball could be seen ten miles away. John Resendez, a contract worker, was killed, and twenty-six others were injured.³

Chemical Week reported that there was a 92 percent satisfaction rate with emergency response by those living within two miles of the Union Carbide plant. Melonie Masih had a different story (see sidebar). So did Diane Wilson, who said:

People were listening to scanners and all you heard was pure chaos. They didn't know how to stop the fires. There were these big oxide tanks sitting close by. They were sitting there watching them expand; they didn't know what was in them. It was just, you know. Half the people supposed to be in the control room were down in Seadrift, having taken off on a tear . . . but according to the local media the explosion went so well they oughta have another one next year—just to show how great this county is at handling explosions. Yet, the workers who went in to handle it didn't even have protective gear on.

She later obtained internal OSHA documents stating that Union Carbide management had prevented government investigators from questioning workers without company lawyers present. Only one worker was willing to sign a statement.

OSHA proposed a fine of \$2,803,500 for 112 willful violations of health and safety regulations.³² Among the willful violations cited were 106 instances of fire and explosion hazards, three instances of inadequate fire water supply, and three instances of locked gates and blocked emergency exits. OSHA also revoked its approval of the Seadrift plant for participation in the STAR program and said that Union Carbide had a "significant" history of workers' safety violations.

Robert Kennedy, chief executive officer of Union Carbide, said that OSHA should not have "abandoned" the company as a STAR member just because of the accident.³³

Union Carbide eventually paid \$1.5 million to OSHA in fines and agreed to pay \$3.2 million to the widow and two children of Resendez.³⁴ Diane Wilson still had questions, so she made a citizen's request to meet with Union Carbide's Seadrift plant manager as provided for under the industry-wide Responsible Care program.

Environment and Development in the United States*A Grassroots Report for the United Nations Conference on Environment and Development***OUR NIGHTMARE**MELONIE MASIH, *Goliad, Texas*

Our nightmare began early on March 12, 1991. We were awoken from a very sound sleep by a tremendous explosion. The roof of our home appeared to lift several inches from the wall. Later, we would discover cracks in walls, broken windows, and pictures on the floor. The very earth underneath us shook with terrible vibrations. We thought we would be thrown from our very bed. It was shortly after 1:00 AM, but it appeared to be daylight due to the enormous fire resulting from the explosion. In our minds we felt certain an earthquake or the end of the world approached.

We immediately ran to our children ages 10 years and 12 years. Their safety being paramount in our concern. Our 12 year old suffers from a handicapping condition that results in grand mal seizures. Under stress her seizure activity increases.

My husband soon discovered Union Carbide once again was the culprit for disturbing our rest. We had ceased to count the episodes of lost sleep resulting from penetrating odors coming from Union Carbide.

We telephone the emergency number Union Carbide had provided for us at an earlier "near neighbor" meeting. This number had remained posted on our refrigerator for easy access. Following previous instructions given by Union Carbide we asked to speak to the emergency director on call. We were told, "he is busy." Next, we asked what had happened. We were informed, "lady, there has been an explosion." No joking, an idiot could have ascertained that bit of information! Before we could inquire as to what exploded the Union Carbide spokesperson hung up on us.

Then, we dialed the sheriff's department—no answer—dialed again—no answer. During this time we were trying our best to reassure and calm two very hysterical children. The children were literally shaking with fright and crying. It was months after the explosion before they would sleep alone or be free of nightmares. Even today loud noises upset them.

We could see this horrendous, murky cloud approaching our home. Our home was located half a mile from Union Carbide—Seadrift Plant property on the northeast corner of their property. The wind that early morning was from the south-southwest. We smelled a very suffocating, nauseous odor. It seemed to take our very breath away.

During the next few minutes a second and third explosion occurred. We had visions of being completely annihilated. Our decision was made we must evacuate. We telephoned our 80-year-old grandmother, who lived alone and closer to the plant, to inform her we were on our way to get her. Then, we telephoned our parents to let them know we were evacuating. Our daughter began to seizure. It took several minutes to place her in the car. All we could think of was we will be found dead when this nightmare finally ends.

The odor was horrible, terrible, suffocating and terrifying. Our children were begging and crying to put our two dogs in the car. There was no room. The dogs sensed danger; they tried repeatedly to get in the car. Finally, we pulled away from our home and pets not knowing if we would be alive at daybreak.

Our grandmother was waiting at her back door. We hurriedly placed her in the car and drove away quickly. She stated she had been up some time vomiting.

Once reaching the main highway there was tremendous traffic for such an early hour. All types of emergency vehicles were heading toward the Union Carbide Plant. There were numerous vehicles heading away from the plant. We later learned these were employees and neighbors seeking escape.

On the way to our small town of Port Lavaca located 11 miles east of the plant we stopped twice to question sheriff and police personnel. The stops proved futile. They had no information. In fact, they knew less than we did. One policeman even told us he would probably be dead by morning. They could not even tell us how far to go to be considered safe or what we had been exposed to.

During this time our daughter began to seize again. We had to administer her emergency medication. We decided to seek medical attention and drove to the hospital in Victoria some 30 miles away. We later received knowledge that the explosion had been felt some 85 miles away. While driving to Victoria, I experienced a strong metallic taste in my mouth and some difficulty in breathing.

Upon arriving, we learned that the hospital had received no information. In fact, hospital personnel thought that Saddam Hussein had launched a Scud missile. Soon after our arrival, word came over the radio that ethylene oxide was the chemical involved and that the hospital should expect numerous casualties.

Our children became weak and nauseous and had diarrhea. We gave them Coke to try to settle them. The physician who saw us said that all he could do was treat symptoms and advised us to see our family physician during office hours that day.

Just as we were beginning to recover somewhat from the nightmare, earlier statements and fear again began to enter our minds. A previous statement made at a "neighbor" meeting by the county judge, emergency management director, and Union Carbide plant manager said that in case of an emergency we would be notified within ninety seconds, but *no one ever came or called!* In addition was a statement by the emergency management director that he could be reached at anytime and anywhere, but he was the last official to report to the courthouse because he was unable to locate his pants! There were statements regarding safety, cancer concerns, fear of chemical plants, and their emission. Why had Union Carbide lied to us?

Today, as I sit here recounting this nightmare of events, we know the answers, answers we have had to learn the hard way. As I recall this information, my heart rate increases, tension develops, fear begins to consume me, and, yes, anger roars up, righteous anger that a company such as Union Carbide can be left to prey upon innocent people without fear of censure. The answers remain simple and point to one all-consuming fact: Union Carbide decided a long time ago that a dollar was more important than human life or planet Earth.

In conclusion, doctors tell us that it may be years before we learn the extent of damage to our bodies resulting from the nightmare of the explosion and our close proximity to the plant. To protect our family from further harm, we have been forced to sell our home, a five-generation farm, and relocate. Our resolve will continue to be to do everything in our power to protect this God-given home we call *Earth!*

On March 16, 1992, a group of eleven local and national environmental activists met at the Seadrift plant to attend the scheduled meeting. The Union Carbide spokesman said that he would not meet with them, saying that he would be prepared later in the week, which would have been after outside experts had left the area. The discussion held just outside the plant gates proceeded in revealing ways:

Fred Millar, Friends of the Earth: Is there a policy about not talking to people from outside the community?

Union Carbide spokesman: As I told Diane, we prefer to talk to local people, to keep it local.

Ramona Stevens, Louisiana Action Network: The main thing is that Diane has the ability to bring in technical people to go through the documents so that they can discuss them with your technical people.

Union Carbide spokesman: I'm local; Diane's local. We'll talk.

Millar: When you have the meeting with Diane, will you be bringing engineers and people like that?

Union Carbide spokesman: We'll bring the right people.

Millar: Experts?

Stevens: What about Diane's experts? It's not fair for ya'll to gang up on her. Ultimately, that's what you're doing.

Reverend Andy Smith, Director of Social and Ethical Responsibilities, American Baptist Churches, USA: This message is going to shareholders, that Carbide is not willing to allow people to come in that might know what the data you are giving them is, and be able to interpret it. This message is going to go out loud and clear to all the shareholders—that Carbide is not doing what it says it will do under Responsible Care.³⁵

Diane remained persistent and creative in her efforts to reduce risk in her community, adroitly working information resources, learning and revealing how information politics are entangled with environmental politics. Her successes were multiple and varied. Her own transmutation literally changed the order of things in Calhoun County, Texas, with ripple effects beyond.

From Politico to Author and Code Pink

In 2005, Diane Wilson published her first book, which chronicles her fight against chemical dumping in Calhoun County, in particular by

Formosa Plastics. The book is titled *An Unreasonable Woman: The True Story of Shrimpers, Politicos, Polluters, and the Fight for Seadrift, Texas* (see figure 5.2).

One reviewer—M. L. Madison, writing for *Feminist Review*—says the book reads “like a fast-paced political novel, and you almost can’t believe it’s real. Particularly angering is the chapter about Diane’s discovering that the Environmental Protection Agency knows about Formosa’s illegal dumping, but won’t prosecute—despite the fact that many of the chemicals are carcinogenic.”³⁶ The same reviewer describes how

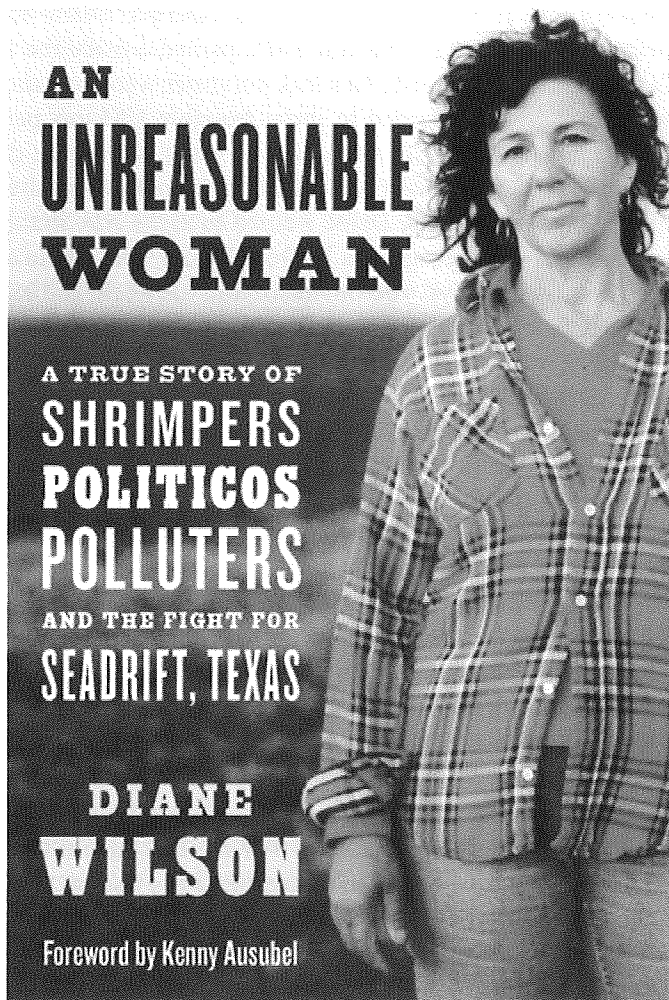
Wilson creates a memorable cast of characters that include friends, family, local politicians and environmental activists. Her writing is as captivating as the events that shaped the book: You can almost smell the waterfront, see the chemical clouds rising from the towers on the horizon, and hear the truck brakes squeal when one of the local fishermen is on the run from game wardens. You want to cheer her successes and cry for her defeats; her marriage is a casualty of her activism. . . . Despite all, Wilson absolutely *will not* give up. When she can’t get hearings, she takes her protests to the streets. When she can’t get legislators to return her calls, she befriends reporters. When her pro bono attorney tells her she should quit, she goes on a hunger strike. And she does all of this, amazingly, while being the primary caregiver of her five children.³⁷

Another reviewer—William Baue, writing for the Environmentally Responsible Mutual Funds website—describes how Diane’s unreasonableness is the book’s core subject:

Reasonable owners, managers, legislators, regulators, judges, and lawyers would hold corporations accountable for their toxic emissions. This book reveals that this is not always the case. Rather, it describes how a single woman must abandon reason to do “unreasonable” acts—hunger strikes and other more direct actions—to hold corporations and their supporters to account. Although it tells an all-too-true story, this book does not read like some non-fiction that bludgeons readers with data. Ms. Wilson focuses on truth over facts—though she does not spurn the latter, as evidenced by descriptions of stockpiling shrimp boxes full of documents acquired by Freedom of Information Act (FOIA) requests. In fact, it is the revelation of data that sets her activism in motion.³⁸

Memories of first reading about TRI data for Calhoun County are still sharp for Diane. “It said we were the number one county in the nation for toxic disposal—our county is real small, not known for anything at all, and it was mentioned in this article four times,” she explains. “That’s not the type of information you can sit on and say, ‘I didn’t see it’—I moved on it, and so that’s where all my work started, right there.”

Figure 5.2



Diane's movement took her in many directions. She founded Calhoun County Resource Watch and eventually won zero-discharge agreements from both Formosa Plastics and Alcoa. She also galvanized passage of zero-discharge resolutions by the Calhoun County Commissioners Court; by Seadrift's city council; and by the Oil, Chemical and Atomic Workers' Union. It took work: hunger strikes, protest speeches, an attempt to sink her shrimp boat on top of an illegal discharge outlet.

She visited Bhopal and became a critical voice in calls for legal accountability for Union Carbide's disaster there. As gas leak survivors

demonstrated in Delhi in July 2002, for example, Diane was on a hunger strike in the back of her pickup truck, parked outside the Dow (formerly Carbide) plant in Seadrift. Gas leak survivors were demanding that compensation already awarded to them (roughly US\$500 per survivor and US\$1,250 to the families of those who died) actually be distributed and that the plant site (which was leaching toxins into local drinking water supplies) be cleaned up. Diane wanted to make sure that their suffering and protests were recognized by Dow. By the time Diane ended her fast, after twenty-nine days, 700 others around the world had joined her, inter-linked through www.bhopal.net.

Fasting was not her only strategy. On a steaming day in late August 2002, Diane passed through the entrance gates of Dow's Seadrift plant with chains and a banner under her shirt. Combining skills from shrimping and from years of creative public protest, she climbed a seventy-foot-tall tower, a part of the ethylene oxide production process that had led to disaster in Seadrift more than a decade earlier. Once at the top, she chained herself in and unfurled her banner. The message was simple: "Dow—Responsible for Bhopal." Responsibility for disaster, Diane insisted, was heritable. Dow bought Union Carbide, so Dow now owns Union Carbide's liabilities as well as its assets. Diane was finally pulled down from the tower by a gang of men on a cherry picker and was charged with trespassing. For this act, she served five months in the Victoria County Jail.

Diane was also a founding member of Code Pink and helped organize their many protests against U.S. war in Iraq. An initiative at the Westin Oaks Hotel in Houston in December 2005 was particularly revealing. Code Pink had organized a peaceful protest outside a fund-raising event for Republican Congressman Tom DeLay. By donating \$50, Diane was able to join the fund-raiser itself. When Vice President and former Halliburton CEO Dick Cheney took the stage, Diane opened up her black velvet wrap to reveal a banner that read "Corporate Greed Kills—From Bhopal to Bagdad." After being called a bitch and a whore by fellow guests, she was dragged out by police.

Diane's vitality has come from her capacity to make connections between highly technical information, everyday risk, and realpolitik; across the sea and the chemical plants, Seadrift and Bhopal; and across seemingly separate issues such as occupational safety and natural resource management, environmental politics, and the politics of and for war. Right-to-know legislation helped build this capacity. Not in full, of course; clearly,

Diane is an extraordinary person, but the transmutational effects of law deserve note nonetheless.

Conclusion

Law can, of course, directly shape the behavior of people and organizations, reducing risk and injury. The less linear ways law works are also significant.

The argument that law works in wayward ways is certainly not new to cultural and social studies of law. There remains, however, a general need within political and legal arenas to enhance recognition of cultural shifts as drivers and indexes of change. Changes in what is considered robust knowledge, changes in what is considered tractable or actionable, changes in how "fairness" is explicated—all cultural changes—are themselves important outcomes of law. These transmutations—changes in the form or character of things—often escape attention when behavior and performance are at the center of concern. Energy changes into matter and matter into energy through transmutation. Lead turns to gold through transmutation. Biological species differentiate and become distinct through transmutation. Thinking in terms of transmutation thus points to a way that law works beyond its direct effects. Indirect, nonlinear effects are particularly important in evaluating legally mandated disclosure in the environmental arena and in considering ways to reduce vulnerabilities to disaster.

Many commentators emphasize that "empowering the community" and "meeting the needs of ordinary citizens" are key aspects of right-to-know initiatives.³⁹ How, though, should community needs and empowerment be conceived? What is it that enables communities to protect themselves from risk and injury? What is constitutive of vulnerability, and—by contrast—resilience?⁴⁰

Mike Davis, Charles Perrow, and many others highlight the material conditions productive of disaster.⁴¹ Others highlight social and political conditions that both produce and are capable of deflecting disaster.⁴² Amartya K. Sen's thesis about the ways information flow deflects famine is well known, calling attention to the ways the operation of a free press and other democratic institutions decrease the likelihood that available food supplies will be hoarded or diverted for profit.⁴³ Anthropologist Wadley L. Reed has shown how lateral social connections—supporting information flow, among other things—reduce vulnerabilities to disaster.⁴⁴

The significance not only of having information, but also of being able to critically read and strategically deploy it, has also been considered.⁴⁵ Right-to-know initiatives produce these connections and critical practices, even when information is incomplete or faulty.

Indeed, a critical skill in the context of disaster is being able to make effective use of whatever resources—including information resources—are available. Right-to-know initiatives have cultivated this skill. It is this dimension of right-to-know initiatives—the way they cultivate critical information practices and social connections—that is missed in many evaluations of their efficacy, yet here are partial answers to questions about how disaster can be offset.

Disaster—whether creeping or catastrophic—forces and requires change. Initiatives aimed at disaster mitigation and preparedness thus need to be evaluated for the way they produce, or undermine, practices and infrastructure that enhance preparedness for change. Law, as one of many points of entry, should thus attend to the transmutations it permits.

In this way of accounting for things, reducing potentially injurious emissions—that is, changes in firm behavior—would continue to be a key index of the success of right-to-know initiatives. Additional indexes would also be necessary: indexes of evolving ways information available through right-to-know initiatives is triangulated, visualized, and deployed; indexes of the social connections enabled and forged as a result of right-to-know initiatives; indexes of conceptual developments that could make it easier to “recognize” environmental problems and disaster more generally. Recognition, as Elizabeth Povinelli has argued, is profoundly cultural, depending on very specific conceptual, discursive, and technological infrastructures.⁴⁶ Right-to-know initiatives have greatly expanded recognition of this order.

Most critical are the connections—both social and conceptual—that information enables. Because of the sheer volume of (environmental) risk information now available and continual innovation of ways to visualize it and connect it to other information, “working knowledge” can emerge, even when findings are not conclusive in a conventional sense. Working knowledge is not comprehensive, nor without error. It has what one of my informants called “requisite precision.” Indeed, working knowledge is knowledge that works even when there are known information gaps and less than total confidence in information sources. Working knowledge depends on interpretation and judgment. It permits recognition of the complexity and ever-evolving nature of problems, while also helping people

set priorities and mobilize change. Working knowledge works, even when the problems at hand are as complex as most environmental problems. Uncertainty no longer licenses inaction.

The production and sustainability of working knowledge depend on rights and access to information. They also depend on cultural transmutations that grant legitimacy to modes of thinking often censored in legalistic and technocratic arenas. Thinking comparatively rather than conclusively, with the goal of setting priorities rather than resolving all differences of perspective, for example, begins to make sense. Entanglement between social, technological, ecological, economic, and other kinds of systems begins to seem obvious, and people become adept at recognizing many pressure points where systems are subject to change. People—like Diane Wilson—who index and further propel such transmutations begin to seem eminently reasonable because the process and character of reason itself has shifted.⁴⁷ The transmutations of law can thus be quite significant indeed.

The implications for disaster preparedness and response are clear and are not particularly complex. People need risk information of many kinds, and they need it in advance of catastrophe. Concerns that people will misinterpret information are not unfounded, but they should not dominate decision making about information availability. People are interpreting creatures, and this needs to be cultivated by law, leveraged rather than suppressed. And practice does make more robust, if not perfect. It is through exposure to information that people develop the critical sensibilities that are needed for right-to-know initiatives to work.

Right-to-know legislation thus anticipates transmutation of its subjects (both human and informational) rather than assumes readiness in advance. It does not directly provide answers or solutions, but builds the infrastructure—technical, social, and cultural—that supports recognition of and response to risk, in routine as well as in catastrophic times. Risk and disaster are thus mitigated through the production of actors, like Diane Wilson, who have the capacity to reason beyond what convention denotes as reasonable and beyond what information itself reveals. It is transmutation rather than transparency in itself that is critical.

NOTES

1. My research on these issues began in 1989, when I went to Bhopal for ethnographic fieldwork. I have followed the Bhopal case and figures like Diane Wilson since then, trying to understand the cultural, social, and political-economic dynamics that shape efforts to reduce environmental health risks. I am currently working on a book that examines how the development of information culture and technology since the late 1980s has shaped knowledge and governance of the environment.

2. Diane Wilson, *An Unreasonable Woman: A True Story of Shrimpers, Politicos, Polluters and the Fight for Seadrift Texas* (White River Junction, VT: Chelsea Green Publishing, 2005), 37.

3. The TRI is a database of information about legal releases of approximately 650 chemicals by industry in particular sectors, now including manufacturing, metal and coal mining, and electric utilities. The list of substances subject to reporting has expanded over time (from about 300 at the outset), although there have also been controversial "delistings." The EPA provides electronic public access to the information in the TRI, allowing it to be downloaded and configured by organizations like OMB (Office of Management and Budget) Watch, which maintains RTKNET.org, and Environmental Defense, which launched the now-famous scorecard.org website in 1998. Scorecard links TRI information to health information to enhance users' understanding of risk, risk distributions, and opportunities for risk reduction.

4. Economists Tom Tietenberg and David Wheeler explain that "disclosure strategies form the basis of what some have called the third wave in pollution control policy—after legal regulation [emissions standards], and market-based instruments [tradable permits, emissions charges]." Tietenberg and Wheeler argue that first-phase approaches were excessively costly or incapable of achieving stipulated goals, especially in developing countries, where legal and regulatory institutions are weak. Market-based approaches are said to have done better, but even in industrial countries have not been able to handle the sheer number of substances to be controlled. To counter these problems, Tietenberg and Wheeler explain that third-phase pollution control policy "involves investment in the provision of information as a vehicle for making the community an active participant in the regulatory process. . . . The timing seems to emanate from a perceived need for more regulatory tools in the regulatory community, from a demand for environmental information from communities and markets and from falling costs of information collection, aggregation and dissemination." Tom Tietenberg and David Wheeler, "Empowering the Community: Information Strategies for Pollution Control," paper read at Frontiers of Environmental Economics Conference, Airlie House, VA, October 23–25, 1998, 1.

5. In late 2006, despite enormous opposition, the EPA weakened reporting requirements for the TRI. Previously, facilities had to provide detailed information about listed chemical releases of more than 500 pounds. The rule change allows facilities to resort to a short, much less detailed form (Form A) for releases of most TRI chemicals of up to 5,000 pounds, as long as 2,000 pounds or less are directly released to the environment. Twelve states have sued the EPA, arguing that the changes are a violation of the Emergency Planning and Community Right-to-Know Act because the EPA neither justified the changes nor even had the authority to make them. OMB Watch is a leading organization tracking this controversy and others related to environmental right to know. See <http://www.ombwatch.org/article/archive/97>.

6. Many people and organizations have insisted that Wilson is indeed special, even if "nobody particular." Wilson has won a number of awards, including the National Fisherman Magazine Award, Mother Jones's Hell Raiser of the Month Award, Louis Gibbs's

Environmental Lifetime Award, Louisiana Environmental Action's Environmental Award, the Jennifer Altman Award, and the Bioneers Award. Graphic artist Molly Bang has told and illustrated Wilson's story for young people in the book *Nobody Particular: One Woman's Fight to Save the Bays* (New York: Henry Holt, 2000).

7. See, for example, W. Neil Adger, "Vulnerability," *Global Environmental Change* 16 (2006): 268–81; Carl Folk, "Resilience: The Emergence of a Perspective for Social-Ecological Analyses," *Global Environmental Change* 16 (2006): 253–67; and Gilberto Galloping, "Linkages between Vulnerability, Resilience and Adaptive Capacity," *Global Environmental Change* 16 (2006): 293–303. See also the glossary of disaster risk reduction terms posted by the U.N. International Strategy for Disaster Reduction project: <http://www.unisdr.org/eng/library/lib-terminology-eng.htm>.

8. Michele Murphy aptly describes how information gaps can be understood as part of "regimes of imperceptibility." My argument is that bits of information can draw people into these regimes, as into a funhouse. They see the distortions of mirrors, bump into walls, and try to navigate unstable ground—learning how such regimes are configured, sliding out of them a bit more in the know. See Michael Murphy, "Uncertain Exposures and the Privilege of Imperception: Activist Scientists and Race at the U.S. Environmental Protection Agency," in *Landscapes of Exposure: Knowledge and Illness in Modern Environments*, ed. Gregg Mitman, Michelle Murphy, and Christopher Sellers, special issue of *OSIRIS* 19 (2004): 266–82.

9. The incremental learning process I describe here is not unlike the process of learning to do feminist semiotics as taught by figures like Teresa de Lauretis, emphasizing the need to understand what systems say as well as what they do not and cannot say. Understanding the gender effects of a social system, de Lauretis argues, demands "a movement back and forth between the representation of gender (in its male-centered frame of reference) and what that representation leaves out or, more pointedly, makes unrepresentable." The analyst must find or invent a way to move "between the (represented) discursive space of the positions made available by hegemonic discourses and the space-off, the elsewhere, of those discourses: those other spaces both discursive and social that exist, since feminist practices have (re) constructed them, in the margins (or 'between the lines,' or 'against the grain') of hegemonic discourses and the interstices of institutions, in counterpractices, and in new forms of community." Teresa de Lauretis, introduction to her *Technologies of Gender: Essays on Theory, Film and Fiction* (Bloomington: Indiana University Press, 1987), 1–30, quotations on 26.

10. My argument is not that environmental regulation should be limited to information disclosure, depending on "voluntary compliance." Old-fashioned "command-and-control" regulation remains critical and can be justified with increasing precision because of continuing developments in environmental health science. Consider, for example, advances in understanding the health effects of fine particulates and subsequent justification for tightening air quality standards. For details on 2007 revisions to the National Ambient Air Quality Standards, see <http://www.epa.gov/oar/particlepollution/naaqsrev2006.html>.

11. The background provided here and in the following section is drawn from my essay "From Bhopal to the Informing of Environmental Health: Risk Communication in Historical Perspective" in *Landscapes of Exposure: Knowledge and Illness in Modern Environments*, ed. Gregg Mitman, Michelle Murphy, and Christopher Sellers, special issue of *OSIRIS* 19 (2004): 283–96.

12. http://en.wikipedia.org/wiki/Information_society.

13. See, for example, Peter Ducker, *The Age of Discontinuity* (London: Heinemann, 1969); Daniel Bell, *The Coming of Post-Industrial Society* (New York: Basic Books, 1976); Jean-François Leotard, *The Postmodern Condition* (Manchester, UK: Manchester Univer-

sity Press, 1984); and Manuel Castells, *The Rise of the Network Society*, vol. 1, *The Information Age: Economy, Society and Culture* (Malden, MA: Blackwell, 1996).

14. Kevin Kelly, "New Rules for the New Economy," *Wired*, September 1997, 4, http://www.wired.com/wired/archive/5.09/newrules.html?pg=4&topic=&topic_set=.

15. Wil Lepkowski, "The Restructuring of Union Carbide," in *Learning from Disaster: Risk Management after Bhopal*, ed. Sheila S. Jasanoff (Philadelphia: University of Pennsylvania Press, 1994).

16. Janice Long and David Hanson, "Bhopal Triggers Massive Response from Congress, the Administration," *Chemical and Engineering News* (February 11, 1985), 59.

17. *Ibid.*, 53.

18. Wil Lepkowski, "Bhopal Disaster Spotlights Chemical Hazard Issues," *Chemical and Engineering News*, December 24, 1984, 20.

19. Long and Hanson, "Bhopal Triggers Massive Response," 56.

20. Through passage, in 1976, of the U.S. Resource Conservation and Recovery Act (RCRA), in particular. This legislation required "cradle-to-grave" tracking of hazardous wastes and controls on hazardous waste facilities. The RCRA was amended in 1984, partly in response to the problems at Love Canal, which gained media attention in 1978.

21. The right to know is also part of the development of rights discourse since World War II to encompass human and civil rights as well as patients' rights, animal rights, and the right to a clean environment (Carl Wellman, *The Proliferation of Rights: Moral Progress or Empty Rhetoric?* (Boulder, CO: Westview, 1998).

22. John Young, "Using Computers for the Environment," in *State of the World 1994*, ed. Lester Brown (New York: W. W. Norton, 1994).

23. The literature on the TRI and environmental right to know is now fairly expansive. See, for example, James Hamilton, *Regulation through Revelation: The Origin, Politics and Impacts of the Toxic Release Inventory Program* (Cambridge: Cambridge University Press, 2005); Peter H. Sand, "The Right to Know: Environmental Information Disclosure by Government and Industry," in *Proceedings of the 2002 Berlin Conference on the Human Dimensions of Global Environmental Change: Knowledge for the Sustainability Transition. The Challenge for Social Science*, ed. Frank Biermann, Sabine Campe, and Klaus Jacob (Amsterdam, Berlin, Potsdam, and Oldenburg: Global Governance Project, 2004), 292-301; Anne Platt McGinn, "From Rio to Johannesburg: Reducing the Use of Toxic Chemicals Advances Health and Sustainable Development," *World Summit Policy Briefs* (WorldWatch Institute: June 25, 2002, e-mailed edition), 3; S. Dasgupta, B. Laplante, and N. Mamingi, "Pollution and Capital Markets in Developing Countries," *Journal of Environmental Economics and Management* 44 (2001): 310-35; Elisa Morgera, "An Update on the Aarhus Convention and its Continued Global Relevance," *Review of European Community & International Environmental Law* 14, no. 2 (2005): 138-47; J. C. Terry and B. Yandle, "EPA's Toxic Release Inventory: Stimulus and Response," *Managerial and Decision Economics*, no. 6 (1997): 433-43; Shameek Konar and Mark Cohen, "Information as Regulation: The Effect of Community Right to Know Laws on Toxic Emissions," *Journal of Environmental Economics and Management* 32 (1997): 109-24; Don Sherman Grant II, "Allowing Citizen Participation in Environmental Regulation: An Empirical Analysis of the Effects of Right-to-Sue and Right-to-Know on Industry's Toxic Emissions," *Social Science Quarterly* 78, no. 4 (1997): 859-73; S. Afsah, B. Laplante, and D. Wheeler, "Controlling Industrial Pollution: A New Paradigm," Working Paper no. 1672 (Washington, DC: World Bank, Policy Research Department, May 1996); Sidney M. Wolf, "Fear and Loathing about the Public Right to Know: The Surprising Success of Emergency Planning and Community Right-to-Know Act," *Journal of Land Use and Environmental Law* 11, no. 2 (Spring 1996): 217-325; Susan L. Santos, Vincent T. Covello, and David B. McCallum, "Industry Response to Sara Title III: Pollution Prevention, Risk Reduction and

Risk Communication," *Risk Analysis* 16, no. 1 (1996): 57-66; Susan Hadden, "Citizen Participation in Environmental Policy Making," in *Learning from Disaster: Risk Management after Bhopal*, ed. Sheila Jasanoff (Philadelphia: University of Pennsylvania Press, 1994).

24. Gerald V. Poje and Daniel M. Horowitz, *Phantom Reductions: Tracking Toxic Trends* (Washington, DC: National Wildlife Federation, 1990).

25. E. Petkova with P. Veit, "Environmental Accountability." For current information about PRTRs in different regions, see http://www.prtr.net/prtr/index_e.cfm.

26. McGinn, "From Rio to Johannesburg," 3.

27. For more on concern that exposure to risk information will provoke hysteria, see my "From Bhopal to the Informing of Environmental Health."

28. Wilson, *An Unreasonable Woman*, 47.

29. *Ibid.*, 58.

30. This section is excerpted from my book *Advocacy after Bhopal: Environmentalism, Disaster, New Global Orders* (Chicago: University of Chicago Press, 2001).

31. The explosion and fire at Seadrift was caused by overpressurization of an ethylene oxide production unit. When the oxide unit column blew, a large piece of shrapnel hit the pipe rack and ruptured lines containing methane and other products.

32. The figure here for the proposed fine was drawn from George Draffen, *Research Compendium on the Union Carbide Corporation* (Seattle: Institute on Trade Policy for Communities Concerned about Corporations, 1994), 254. Louis Ember reports that OSHA announced proposed penalties against Union Carbide of \$2,817,500 (Ember, "Responsible Care: Chemical Makers Still Counting On It to Improve Image," *Chemical and Engineering News*, May 29, 1995, 10-18). OSHA levied these fines under its egregious policy, which allows \$25,000 for each violation. In 1986, Union Carbide was the first facility cited by OSHA under its egregious policy, for violations at their facility in Institute, West Virginia (the "sister plant" of the Bhopal plant because of its similar design).

33. Gregg LaBar, "Citizen Carbide?" *Occupational Hazards*, November 1991, 33-37. OSHA again awarded the Seadrift plant "star" status in its Voluntary Protection Program in 2007. OSHA's announcement of the award describes the Seadrift facility as having "706 employees who operate the plant's 14 production units. An additional 646 contractor employees are on site performing maintenance, capital projects, and guard and janitorial services. The chemical plant produces more than 40 products for use in everyday household, business and consumer products, such as plastic for wire and cable applications, automotive parts, toys, diapers, roofing materials, antifreeze, and health and beauty products." Electronic version of press release, http://www.osha.gov/pls/owadisp.show_document?p_table=NEWS_RELEASES&p_id=14276.

34. Draffen, *Research Compendium on the Union Carbide Corporation*, 254.

35. Exchange filmed by Chris Bedford for *Out of Control: The Story of Corporate Recklessness in the Petrochemical Industry* (Boulder, CO: Oil, Chemical and Atomic Workers Union, 1992).

36. Book review, *Feminist Review* (February 2007), http://feministreview.blogspot.com/2007_02_01_archive.html).

37. *Ibid.*

38. William Baue, "Book Review: An Unreasonable Woman: The True Story of Shrimpers, Politicos, Polluters, and the Fight for Seadrift Texas," Environmentally Responsible Mutual Funds website (September 27, 2005), <http://www.socialfunds.com/news/article.cgi/1816.html>.

39. See, for example, Archon Fung, Mary Graham, and David Weil's new book *Full Disclosure: The Perils and Promise of Transparency* (New York: Cambridge University Press, 2007). Promotional text for the book reads as follows:

Which SUV's are most likely to rollover? What cities have the unhealthiest drinking water? Which factories are the most dangerous polluters? What cereals are the most nutritious? In recent decades, governments have sought to provide answers to such critical questions through public disclosure to force manufacturers, water authorities, and others to improve their products and practices. Corporate financial disclosure, nutritional labels and school report cards are examples of such targeted transparency policies. At best, they create a light-handed approach to governance that improves markets, enriches public discourse and empowers citizens. But such policies are frequently ineffective or counterproductive. Based on an analysis of eighteen U.S. and international policies, Full Discourse shows that information is often incomplete, incomprehensive, or irrelevant to consumers, investors, workers and community residents. To be successful, transparency policies must be accurate, keep ahead of disclosers' efforts to find loopholes, and, above all, focus on the needs of ordinary citizens.

40. Increasingly (particularly in the emerging community of researchers and practitioners focused on human adaptation to climate change), "vulnerability" is the term used to describe what puts particular social groups at risk, increasingly the likelihood of the incidence of disaster and decreasing the capacity to respond to and survive disaster. "Resilience" is the opposing term and is created by social, cultural, political, economic, and technical infrastructures that reduce the risk of disaster and enable people to deal relative effectively with crisis events. How these concepts are worked out will dramatically shape policy and life chances in coming years.

41. Mike Davis, for example, describes how

the extreme events that shape the Southern California environment tend to be organized in surprising and powerfully coupled causal chains. Drought, for example, dries fuel for wildfires which, in turn, remove ground cover and make soils impermeable to rain. This increases the risk of flooding in areas where earthquakes may have already exposed new surfaces to erosion and increased steam power by raising land elevation. In such conditions, storms are more likely to produce sheet flooding, land slides, and debris flows that result in dramatic erosion and landform change. Vast volumes of sediment rapidly realign river channels, and before the advent of twentieth-century flood control engineering, even switched river courses between alternate deltas. Sedimentation can also create sandbars that temporarily cut off tidal flows to coastal marshes—initiating a 50–75 year-long cycle of ecological readjustment. . . . This is not random disorder, but a hugely complicated system of feedback loops that channels powerful pulses of climatic or tectonic energy (disasters) into environmental work. The Southern California landscape epitomizes the concept of nonlinearity where small changes in driving variables or inputs—magnified by feedback—can produce disproportionate, or even discontinuous, outcomes.

Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York: Vintage Books, 1998), 18–19. See also Charles Perrow's very influential *Normal Accidents: Living with High Risk Technologies*, 2d ed. (1984; repr., Princeton, NJ: Princeton University Press, 1999), and his more recent *The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters* (Princeton: Princeton University Press, 2007).

42. See Charles Briggs with Clara Mantini-Briggs, *Stories in the Time of Cholera: Racial Profiling during a Medical Nightmare* (Berkeley: University of California Press, 2003); and Paul Farmer, *Pathologies of Power: Health, Human Rights, and the New War on the Poor* (Berkeley: University of California Press, 2003).

43. Amartya K. Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Clarendon Press, 1981).

44. Wadley L. Reed, "Coping with Crisis—Smoke, Drought, Flood and Currency: Iban Households in West Kalimantan, Indonesia," *Culture and Agriculture* 24 (March 2002): 26–33.

45. Fortun, "From Bhopal to the Informing of Environmental Health"; Fortun, *Advocacy after Bhopal*.

46. Elizabeth Povinelli, *The Cunning of Recognition: Indigenous Alterities and the Making of Australian Multiculturalism* (Durham, NC: Duke University Press, 2002); Elizabeth Povinelli, "Radical Worlds: The Anthropology of Incommensurability and Inconceivability," *Annual Review of Anthropology* 30 (2001): 319-34.

47. There is now a wealth of scholarship that critically assesses conventional, "Enlightenment" constructs of reason, the best noting how alternatives are both coded by and must be worked out within governing norms and discourses. Jacques Derrida, for example, explains that "since the revolution against reason, from the moment it is articulated, can operate only *within* reason, it always has the limited scope of what is called, precisely in the language of a department of *internal* affairs, a disturbance." Jacques Derrida, *Writing and Difference*, trans. A. Bass (Chicago: University of Chicago Press, 1978), 36. Diane Wilson, in my reading, is a compelling example of this type of disturbance. For overtly feminist critiques of conventional constructs of reason (and objectivity), see Donna Haraway, "Situated Knowledge: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (Fall 1988): 575-99; Evelyn Fox Keller, "Dynamic Objectivity: Love, Power and Knowledge," in *Reflections on Gender and Science* (New Haven, CT: Yale University Press, 1985), 115-26; and Gayatri Spivak's essays in *In Other Worlds: Essays in Cultural Politics* (New York: Methuen, 1987).