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Risk Communication and Community Right to Know: A Public Relations Obligation to Inform

Michael J. Palenchar

Risk communication and community right to know are increasingly important functions of public relations within communities that face a considerable amount of health, safety and environmental risk related to chemical manufacturing. Following Susan G. Hadden's (1989) claim that community right to know is not only a legal subject but a powerful approach to risk communication and by extension public relations, this research project analyzed, through an ethnographic case study of participant observations (n=193 days), interviews (n=27) and focus groups (n=15), how community residents perceive and construct their awareness and understanding of significant federally mandated and industry initiated community-right-to-know initiatives within risk communication. Findings include a general lack of awareness and understanding of community-right-to-know programs and risk management protocols, with differences among communities, cultures and genders, and the social justification of risks via narratives.

Introduction

Sense of risk invades homes, businesses and communities like never before, particularly for residents and employees who live near or work at potentially dangerous chemical manufacturing¹ facilities. Community-right-to-know provisions help increase the public's knowledge and access to information on chemicals at individual facilities and their uses and releases into the environment. Ideally, states and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. In the scope and purpose of community-right-to-know legislation, people are supposed to be alerted to the potentiality of a risk occurring that could affect their health or safety. Part of these risk characteristics, especially concerning chemical manufacturing, includes political and ecological destruction, human health impacts, poverty and corruption, and security arrangements and human rights abuses.

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¹ For simplicity reasons, chemical manufacturing refers to exploration, refining, production, storage and transportation of oil, natural gas, specialty chemicals and other energy sources.

Community residents who live near or work at potentially hazardous manufacturing facilities are justified in their concerns for their own and their families and friends health and safety, partly as the result of an inequality in risk distribution and the resulting environmental and aesthetic implications. According to Singer and Endreny (1987), these are among the numerous motivators people use when deciding whether a problem exists that affects them and deserves their attention, including the option of making personal responses or collaboratively seeking collective solutions by engaging in public policy struggles.

These motivators and social relations, among others, have been at the forefront of public discussions regarding risks and the development of the field of risk communication during the past three decades. To add to this discourse, the purpose of this paper is to analyze how community residents' risk perceptions of emergency response measures compare to those required by federal and industry community-right-to-know initiatives, and what are some key differences and/or similarities between different communities.

Risk Communication

Identifying or pointing to a specific date or event that launched risk communication is difficult as its movements grew organically out of a variety of perspectives and initiatives, including community-based activism, government regulations and industry initiated programs. Interest in risk communication was considered "quite recent" during the late 1980s (Krimsky & Plough, 1988). According to the National Research Council (NRC, 1989), the motivating sources and goals for this direction in risk communication was a requirement for or desire by government and industry officials to inform, to overcome opposition to decisions, to share decision-making power, and to develop effective alternatives to direct regulatory control. Overall, according to Krimsky and Golding (1992), the field of risk studies, including risk communication, developed from the practical needs of industrialized societies to regulate technology and to protect its citizens from natural and man-made, technological hazards.

Early on the U. S. Environmental Protection Agency (EPA) identified risk communication as a means to open, responsible, informed, reasonable, scientific and value-laden discussion of risks associated with personal health and safety practices involved in living and working in close proximity to harmful activities and toxic substances (NRC, 1989). This view of risk communication typically involves large organizations whose activities can pose a risk to members of a community. According to Palenchar (2005), "Risk communication provides the opportunity to understand and appreciate stakeholders' concerns related to risks generated by organizations, engage in dialogue to address differences and concerns, and carry out appropriate actions that can reduce perceived risks" (p. 752).

Disciplines do not agree and often assume substantially different interpretive approaches to risk. Althaus (2005) offered a comparative analysis of the fields' approaches to risk by starting with economic perspectives and models that distinguish risk from uncertainty in which risk is a structured application of knowledge to uncertainties. Althaus' research noted that among the social sciences, anthropology views risk as a cultural phenomenon, sociology a societal phenomenon, economics a decisional phenomenon related to a means of securing wealth or avoiding loss, law as a fault of conduct and a judicable phenomenon, psychology as a behavioral and cognitive phenomenon, linguistics as a concept, history as a story, arts as an emotional phenomenon, religion as an act of faith, and philosophy as a problematic phenomenon.

Risk communication is also grounded in various other academic and applied orientations. According to Renn (1992), this includes an actuarial approach utilizing statistical predictions, a toxicological and epidemiological approach, an engineering approach including probabilistic risk assessments, and cultural and social theories of risk. Summarizing these numerous views, Renn concluded that risk communication has evolved from at least three separate streams of thought to guide the way risks are calculated, evaluated and controlled: (1) scientific positivism, whereby data and methodologies of scientists dominate community efforts to ascertain the degree of risk and subsequent communications about the risk; (2) constructivism/ relativism, which assumes that everyone's opinions have equal value; and (3) dialogue, through collaborative decision-making, scientific opinion becomes integrated into policies which are vetted by key publics.

Leiss (1996), having written extensively on the history of modern risk communication, described three eras of the field beginning with a source-oriented approach and ending with the present approach of communication that is based on shared, social relations. Along those lines, one of the most prolific lines of risk communication research involved residents living near risk environments and the concern that they rely on invalid assumptions of risk. Fischhoff, Slovic, Lichtenstein, Read and Combs (1978; Covello, 1983; Slovic, 1987), among others, initiated "expressed preference" research that involved measuring a wider array of attitudes than benefits to ascertain tolerable risk levels. The researchers found laypeople's risk ratings, unlike those of experts, are not simply influenced by fatality estimates. Differences in judgments were affected by numerous qualitative factors such as familiarity, control, dread, acute, fatal and trust.

As such, there is no single psychology or sociology of risks. According to Brehmer (1987), "Each society highlights some risks and downplays others; and each society institutionalizes means for controlling some risks and not others . . . Risks are exaggerated or minimized according to the social, cultural, and moral acceptability of the underlying activities" (p. 28). Risks are not necessarily selected and perceived due to their scientific merit or personal benefit, but out of a combination of social and cultural factors, denotative and connotative reasons.

Hadden (1989) observed differences between previous and new versions of risk communication. Originally, experts tried to convince laymen of their risk assessments but it was "impeded by lay risk perception, difficulties in understanding probabilities, and the sheer technical difficulty of the subject matter" (p. 301). In contrast, the new approach is based on dialogue, social relations and participation. According to Otway (1992), "Risk communication requirements are a political response to popular demands.... The main product of risk communication is not information, but the quality of the social relationship it supports" (p. 227). Strategic risk communication highlights the importance of a dialogic, relationship-building approach to addressing the concerns and perceptions of community residents and employees, and one of the keys to success is supposed to be community-right-to-know initiatives.

Community Right to Know

One common element of legal instruments, regulatory mechanisms and epistemological approaches to risk management is communication based on community-right-to-know initiatives. As described by the EPA (1997), "Empowering the public with information helps assure [industry] compliance with existing laws and encourages companies to take additional measures to reduce industrial chemical releases" (p. 3). These laws and regulations, which were created by the U.S. Congress along with an array of city, county, state and federal governmental agencies as well as private industry and industry associations, are intended to minimize the likelihood and consequences of chemical and other manufacturing accidents. They are in part a response to a lack of oversight and a series of large chemical accidents in the United States and India during the 1980s (Belke, 2000). Part of the reason for the passage of these regulations was a U. S. federal government sponsored research project identifying more than 7,000 accidents of various kinds related to hazardous materials between 1980 and 1985 (Falkenberry, 1995).

Federal legislators created a cornerstone legislation based on community right to know entitled the Emergency Planning and Community-Right-to-Know Act of 1986 (EPCRA), section three of The Superfund Amendments and Reauthorization Act of 1986 (SARA Title III), which gives the EPA oversight of risk communication efforts. SARA and other federal policies require chemical companies to inform citizens regarding the kinds and quantities of chemicals that are manufactured, stored, transported and emitted in each community. SARA's underpinning assumption is that as companies report the toxicity about the materials they produce, transport and store people could become more informed of the level of risk in their neighborhood.

By 1986, 30 states or cities had some form of community-right-to-know requirements (Hearne, 1996), and every state presently has some community-right-to-know requirements, whether industry or government mandated. Within EPCRA's (1986) guidelines, the burden of informing the population belongs to organizations that work with, manufacture, refine or store hazardous materials, with a unique responsibility for the strategic communication of health, safety and environmental risks falling on the

shoulders of corporate communicators, particularly public relations practitioners, specializing in risk and environmental communication.

EPCRA is a document divided in two parts. The first regulates the emergency planning requirements for the states and the second “provides for public access to mandatory reports filed by industries concerning their chemical releases and general chemical inventories” (Falkenberry, 1995, p. 4). The regulation passed by the U.S. Congress in 1986 limited this right to know to a list of 400 extremely hazardous substances out of 60,000 chemicals in commercial use in the United States at the time (EPCRA, 1986). In this way, the right to know observed in the Environmental Impact Statement carries a duty to inform that falls only on risk-generating organizations with their obligation to provide complete, truthful and accurate reports to the local governments (EPCRA), but not on the government, which, according to Hadden (1989), should “ensure that the other parties can exercise their rights and fulfill their responsibilities... [by] designing and, if necessary, redesigning public policies” (p. 217).

EPCRA also allows citizens to enforce the law (Bass & MacLean, 1993; EPCRA, 1986). However, to be able to enforce the law, citizens need first to be able to access, understand and process the information into action (Bass & MacLean, 1993; O'Rourke & Macey, 2003; Shapiro, 2005). According to the agency's own regulations, the EPA has an affirmative responsibility to collect and disseminate information that furthers public health and environmental goals (Bass & MacLean, 1993). According to the EPA (1997), “Empowering the public with information helps assure [industry] compliance with existing laws and encourages companies to take additional measures to reduce industrial chemical releases” (p. 3).

According to Hadden (1989), the numbers of citizens who are able to use the law effectively can be increased with the use of communicative educational practices that translate technical information into useful and empowering knowledge to communities. Lewis (2005) argued that those practices are more than a legal requirement, but also a moral duty because access to quality information can effectively prevent disasters and help combat environmental discrimination. According to recent research (Jacobson, 2003; Johnson, 2005; Palenchar, Heath & Dunn, 2005), knowledge about the presence and risks of hazardous and toxic chemicals in nearby facilities can even help to diminish the risk of terrorist attacks.

Although the right to know as an approach to policymaking took an important transformational step with EPCRA, it has its roots in the first U. S. constitutional convention. James Wilson, arguably one of the most influential lawyers among the American Founding Fathers (National Archives, 2007), argued that the right to know should be used as a way for the public to have some control over their elected officials. Later on, the press argued for the public's right to know against censorship during World War II, but only in the mid 1980's did the right to know become an established federal law (Hadden, 1989).

Jacobson (2003) identified the Freedom of Information Act of 1966, an amendment to the Administrative Procedure Act signed by President Lyndon Baines Johnson, as the first statutory regulation that included the right to know principle. However, as Jacobson noted, the Freedom of Information Act “was not an environmental statute, but a broader effort” (p. 344) to establish a statutory right to access government information.

Hadden (1989) concluded that, although there are many approaches to the concept of right to know, they are not “entirely distinct, blurring into each other on the edges. Thus, a more appropriate image would be that of a continuum of rights to know, with the four points marking transitions” (p. 203). The four points, according to Hadden, are: basic right to know, right to know for risk reduction, participatory right to know (decision making), and right to know for changing the balance of power.

In this way, the literature in the field reaches a rare consensus about the importance of right to know. Researchers have found that access to quality of information is essential to empower communities to be able to discuss with corporations and governments in a balanced position of power (e.g., Branch & Bradbury, 2006; Bullard, 1994; Helfand & Peyton, 1999; Lewis, 2005; O'Rourke & Macey, 2003; Shapiro, 2005). Moreover, the quality of information has to meaningfully build the community's capacity to use it to improve participation in the decision-making process (e.g., Branch & Bradbury, 2006; Shapiro, 2005; Webler & Tuler, 2006).

Finally, once the access to meaningful information is provided, the ability of the community to process it and turn it into action is one of the most important factors in risk and pollution prevention and in the development of sound and equalitarian environmental regulation (e.g., O'Rourke & Macey, 2003; Shapiro, 2005). Two key community-right-to-know initiatives analyzed in this study are the EPA's SARA Title III, and specifically the formation of Local Emergency Planning Committees (LEPC), and the chemical industry's Responsible Care program.

SARA Title III and LEPC

SARA Title III requires the formation of LEPCs, which are designed to plan for manufacturing emergencies and to serve as monthly community forums where nearby residents, government officials, industry representatives, health and safety officials, and any other concerned individuals and organizations could request information and voice concerns. EPCRA and LEPCs have four major provisions: emergency planning (Section 301-303), emergency release notification (Section 304), hazardous chemical storage reporting requirements (Sections 311-312) and the Toxic Release Inventory (TRI; Section 313), which requires a publicly available, EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities.

The EPA (SARA, 1995) has argued that the TRI is one of the most successful environmental laws in the United States. Critics, however, have argued that the TRI is simply a pollution accounting system and makes no attempt other than through the power of information to control how pollution is managed or market incentives to minimize pollution (Hearne, 1996) and that it does not cover all toxic chemicals nor requires reporting from numerous significant sources of pollution releases (Environmental Defense Fund, 2003).

Most of the research related to the effectiveness of the risk communication and community-right-to-know initiatives of SARA Title III have focused on the creation of the LEPCs, their effectiveness at disseminating risk information, and the perspectives of the LEPC representatives. Conn, Owens and Rich (1990) identified that LEPCs are capable of sharing technical communication with community residents, but they lacked sophistication in community dialogue and involvement of residents in the planning and research process; in general failing to stimulate community dialogue. They cited the problems of promoting their existence, poor location of outreach offices, and the lack of assistance to the community in deciphering complicated manufacturing information.

Responsible Care

The Responsible Care program, developed by The American Chemistry Council (formerly the Chemical Manufacturing Association), is an industry initiative that functions to meet the requirements of SARA Title III. Responsible Care works to achieve improvements in environmental, health and safety performance, as well as developing industry risk communication tools related to community emergency response preparation. According to the American Chemistry Council (2003), the guiding principles of Responsible Care include: (1) to operate facilities and develop processes and products in a manner that protects health, safety and environment; (2) to lead in the development of responsible laws, regulations and standards; (3) to work with customers, carriers, suppliers, distributors and contractors to foster the safe use, transport and disposal of chemicals; and (4) to seek and incorporate public input regarding our products and operations. The Responsible Care program established industry standards in six different areas: community awareness and emergency response, process safety, distribution, pollution prevention, employee health and safety, and product stewardship.

Part of the Responsible Care program includes the formation of community advisory committees or panels (CAC/P) that serve as a forum for public dialogue related to manufacturing concerns and risks. CAC/Ps are comprised of individuals, with membership drawn from a cross section of the community, who provide a link between the public and various organizations that operate in the region by providing counsel and recommendations on matters of public policy. According to the American Chemistry Council (2004), CAC/Ps provide a level of accountability by opening up decision-making and policy formation processes to concerned citizens, while providing resources for citizens to participate in the public policy process.

The effectiveness and value of CAC/Ps have been questioned. *Chemical Week's* former Gulf Coast Editor Gregory Morris argued that the CAC/Ps are not dialogic forums but rather vehicles to provide information asymmetrically: “These panels are not two-way streets” (Hunter, 1992, p. 5). Heath, Bradshaw and Lee (2002) found a lack of awareness of their existence and low use while at the same time more than two-thirds of the residents surveyed approved of their intended functions.

A recent addition to Responsible Care is the 2002 Responsible Care Security Code, developed in response to 9/11, and the focus of which is to safeguard against potential terrorist attacks, expand industry relationships with law enforcement, and provide a model for chemical site protection. The Security Code uses a risk-based approach to identify, assess and address vulnerabilities, prevent or mitigate incidents, enhance training and response capabilities, and maintain and improve relationships with key stakeholders. Some specific examples include companies using tools to analyze the security of products sales, distribution, and cyber security, and maintaining open and effective lines of communication including steps such as sharing effective security practices with others throughout industry and communities and maintaining interaction with law enforcement officials.

Developed from a literature review regarding risk communication, public relations and community right to know, the following research questions were posited:

RQ1: How do community residents' risk perceptions of emergency response measures compare to those required by federal and industry community-right-to-know initiatives, specifically SARA Title III and Responsible Care?

RQ2: What are some key differences and/or similarities between the two communities regarding residents' risk perceptions and their role in community-right-to-know initiatives?

Methodology

The Houston Ship Channel links Galveston Bay and the Gulf of Mexico with more than 100 major industrial facilities. This area of the country has the largest concentration of petrochemical plants in the United States (Marland, 2004), and ranked among the dirtiest/worst 10 percent of all counties in the United States in terms of air releases and in terms of an average individual's added cancer risk from hazardous air pollutants (Environmental Defense Fund, 2006).

Two distinct classifications (high and low profile) of risk communities have been identified and used in prior, peer-review published research in relationship to risk communication, risk perceptions and emergency preparation efforts (e.g., Heath & Abel, 1996; Heath & Palenchar, 2000; Palenchar & Heath, 2002) that address the designated profiles of this research project. This study examined one higher profile

community (Deer Park, Texas) and one lower profile community (Galena Park, Texas) from the Houston Ship Channel region. These community classifications or “profiles” are based on the amount and duration of their emergency preparation, industry risk communication efforts, proximity/size/type of industrial community, apparent community interest level in plant operations, community outreach status, effectiveness of the Local Emergency Planning Committees (LEPC), and the economic or social importance of industry to the community.

Data Collection and Analysis

Deer Park has more than 28,000 residents, and as part of the Deer Park outreach area has more than 100 EPA-regulated facilities and 29 major manufacturing, storage and transportation facilities. Females make up 50.3 percent of the total population, the median age of a resident is 34.7 years, the median household income is \$61,334 and 24.1 percent of employed residents 16 years and older work in the manufacturing industries. The racial composition of the community is 80.8 percent White, 15.2 percent Hispanic or Latino and 1.3 percent Black or African-American (U.S. Census Bureau, 2000).

Galena Park has more than 10,000 residents and as part of the North Channel outreach area there are 44 EPA-regulated facilities and 14 major manufacturing, storage and transportation facilities. Females make up 50.2 percent of the total population, the median age of a resident is 28 years, the median household income is \$31,660, and 19.2 percent of employed residents 16 years and older work in the manufacturing industries. The racial composition of the community is 69.3 percent Hispanic or Latino, 22.2 percent White and 7.6 percent Black or African-American (U.S. Census Bureau, 2000).

Data collection and analysis were conducted with residents who live in either city’s manufacturing facilities geographic corridors Zone 0 through Zone 3, representing residential neighborhoods that lie in the industrial zone to roughly one mile away. These near neighbor geographic zones are identified by city emergency management departments, in coordination with industry and trade associations, and city and state emergency response teams.

The author, with an openly acknowledged research purpose, immersed himself in the lives of near neighbor community residents via participant observation, ethnographic interviews (n=27) and focus groups (n=15), which took place over the course of 193 days; living in the high-profile community for 92 days, with 63 days spent observing and participating, and living in the lower-profile community for 101 days, with 71 days spent observing and participating.

Typical means of observing and participating in the daily life of the communities included: listening to or directly joining residents at community bakeries, coffee shops, lunch stands and restaurants; attending formal community special events such as

holiday celebrations and barbecue fundraisers; attending informal community events such as neighborhood picnics and residents “squatting” on their porches together; attending school functions such as sporting events and neighborhood beautification projects; teas or meals in private homes; meetings with civic, government and business leaders; attending church events; browsing and shopping in local stores and other service providers; and running common errands such as going to the post office.

The creation of data-texts was an ongoing part of the participant-as-observant research protocols, building data utilizing the constant comparative coding method (Glaser, Barney & Strauss, 1967). Scratch and head notes, extensive field notes, journals and documents were utilized. Prescribing to research protocols advocated by Emerson, Fretz and Shaw (1995), at first communication and observations were recorded as jottings, noting initial impressions, then focusing on key events and incidents and acknowledging personal reactions to these events. Research protocol included extensive fieldnotes, developed sketches of social scenes, identified recurring incidents and narratives, noted local expressions, explored residents’ distinctions and accounts and detailed dialogue among those present, creating an accumulated written record of observations and experiences.

The researcher also conducted 27 interviews and 15 focus groups. Purposeful snowball-sampling techniques with a combination of low and high moderator involvement called the “funnel” approach (Morgan, 1997) and audiotape transcript acquisition were utilized by developing sources from within the community. Interviews and focus groups participants were distributed to represent a cross-section of residents, with distinctions being made for ethnicity (African-American, Hispanic and White), age (more than 18 years old) and gender (males and females). Interviews included 14 females and 13 males, while focus groups consisted of four all-female groups, two all-male groups, and nine combined-gender groups. Ethnicity distribution was approximated to 2000 census data, and none of the participants worked directly for the chemical industry.

Transcriber training was conducted during a pre-test of the research protocols in an effort to examine the guidelines and syntax used prior to data collection. An assessment of issues such as reflexivity, deliberate or accidental data alterations, the quality of transcribers, and the trustworthiness of the transcription was conducted based on a review of selected transcripts in the context of an explicit acknowledgement of the interpretive nature of the transcription process (Emerson et al., 1995).

Overall, the development of four levels of data analysis along with triangulation, member checks and leaving the field at an appropriate time provided a standard measure of certainty to the data and analysis: comprehending the data collected while keeping the literature at bay; synthesizing and merging the stories and experiences to describe a typical, composite pattern of communication and behavior; a level of theoretic activity; and recontextualizing the data. The analysis, results and discussion

section includes citations within the data text arranged in the following order: city (DP = Deer Park; GP = Galena Park) – type of data set (OP = observation-participation field notes; PI = personal interview; FG = focus group) – catalogued number of data set – page number on transcript or field notes. For example, DP-FG-2-7 cites that the narrative comes from the second focus group conducted with residents in Deer Park, page seven of the transcript.

Results and Discussion

This analysis focused on community residents' risk perceptions of emergency response preparation protocols as required by SARA Title III and the Responsible Care program. Taking this into consideration, the following research question is raised:

RQ1: How do community residents' risk perceptions of emergency response measures compare to those required by federal and industry community-right-to-know initiatives, specifically SARA Title III and Responsible Care?

Overall, four unique areas related to emergency response preparation are discussed, including: LEPC, Alert Systems, TRI, and the Responsible Care Security Code.

Deer Park Community

LEPC. Established in 1986, Deer Park's LEPC has well attended monthly meetings and maintains an annual budget of approximately \$100,000. Deer Park's LEPC emergency response protocols, in conjunction with associated police and fire departments, utilize a vast array of emergency management protocols to alert community residents of industrial accidents at the chemical manufacturing plants. Within the industry, Deer Park's community risk communication efforts set the standard in the country. For example, Deer Park's LEPC campaign won the 2003 Chemical Education Foundation 2nd place national award for LEPC achievements.

Even though a recent survey identified that 58 percent of Deer Park residents were aware of the LEPC in their community (Palenchar & Heath, 2002), most residents lacked a detailed awareness of the role of their LEPC. Few residents were able to describe the basic functions or when and where the community meetings took place. Typical of residents' level of awareness was this description. "I know what an LEPC is... but I can't remember what they actually do... I know it's something about helping keep us safe, they let us know what to do if a plant explodes" (DP-PI-6-7).

Some residents were aware of the LEPC due to recent emergency training in the community. The Deer Park LEPC annually conducts emergency response training, with simulated situations that involve the police and fire departments, city offices, and local

health care service providers. One such training was conducted during the course of this research project, and jolted quite a few residents' memories of the training and LEPC (DP-PI-12-8):

They [LEPC] train for explosions and so forth all the time, and the industry does too, you can see them every once in a while, with students laying out on the grass pretending to be hurt by an explosion, they [LEPC] are the ones responsible for those simulations.

To a lesser extent, a few residents were aware that the LEPC is responsible for monitoring the hazardous chemical storage reporting requirements. Though storage units are rarely talked about in the community, but quite a few residents perceived the LEPC as one of the groups monitoring what is held in the large storage tanks just across the highway from the city. "The LEPC puts their name right on some of the storage tanks for everyone to see. I just assumed that's their stamp of approval" (DP-PI-5-5). However, the LEPC logo on storage tanks is not a seal of approval but rather a means to increase awareness of the LEPC.

Residents perceived the LEPC as a positive information source in the community via the numerous risk communication materials they produce and distribute on a regular basis. The most recognized and positively perceived communication tools are Wally, an annual household hazardous materials collection day, school book covers and grocery bags with emergency shelter-in-place information, cable television notices, and an annual calendar distributed to residents and businesses with shelter in place and other risk management information (DP-FG-3-6):

Researcher: Where have you seen SIP information?

Resident A: Wally (laughter). And the calendars...

Resident B: Those are great. I grab a bunch of those every year for my kids.

Resident A: And my kids really like the poster contest.

Resident C: I used to get it in my cable bill, but I think they stopped doing that.

Resident D: They have them on the computers down at the library.

For some residents the LEPC is an example of why Deer Park is a great community, with a caring industry and city government, that provides a wide variety of services, including those in emergency response preparation and management (DP-FG-4-7/8):

Resident A: I think we all know what the LEPC is, right? (VERBAL/NON-VERBAL AGREEMENT BY MANY). They work hard to let us know what's going on in the community, but people just don't attend the meetings, everyone's too busy.

Resident B: I don't go to the meetings but I see the announcements in the paper. I always wondered what exactly they did in those meetings. My neighbor goes, but I think she just likes to attend things.

Resident C: I don't think you really need to go to the LEPC unless you have a problem, they are always asking people to call if they need any information, but I hear the sirens, they operate those, right? I know what to do.

Resident A: That's the great thing about living here; we have all kinds of great services here.

Overall, these findings suggest that the LEPC is increasingly being associated with the information people receive about emergency response practices, but at the same time lacks the details that might be required for appropriate behavioral choices related to risk decisions.

Emergency Response Alert Systems

The City of Deer Park, along with the LEPC and industry, uses a variety of community emergency response alert systems in the case of a toxic leak or accident at the plant. These systems include a local emergency radio station, which is a computerized calling system that automatically dials community residents phone numbers that are listed in the local city directory and provides information about the chemical manufacturing incident; First Alert, which is an emergency notification system located in the school administration building, as well as all schools and public buildings, delivering emergency messages; the CAER Line, which is a telephone number that residents can call to find continuous information about an emergency incident; and the community and plant siren system, which covers the entire city of Deer Park with PA announcements regarding emergency situations.

Without prompting, local residents did not share stories of the benefits or problems with emergency warning systems. However, in other prompted discussions, residents perceived these emergency alerts systems as one of the benefits of living in Deer Park. "I know for a fact that other cities don't have as good a systems as we have" while another resident suggested that they provide "a sense of comfort at night" (DP-FG-6-11). Most of the residents immediately knew when the siren system was testing (first Thursday of the month, 6 p.m.) and pretty much ignore it. One resident explained how she almost does not even hear the testing siren, but when it's another time of the day she really notices it, acknowledging, however, that she does not understand all the different sirens (DP-OP-41-1).

Toxic Release Inventory

One of SARA Title III's major four provisions is the establishment of the toxic chemical release inventory (Section 313), which is a publicly available EPA database

that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities.

However, in all the community discussions, interviews and focus groups, awareness or even a limited knowledge of the TRI was very infrequent. No resident brought up the TRI database in the course of normal conversations, though a few residents were familiar with TRI. The residents that were aware of TRI, however, were not alerted to its presence from materials distributed either by the industry, LEPC or city, but rather was accessed on a Web site in the course of conducting research about the community or writing a paper for college or work. One resident described about how he went to the EPA Web site and found this great site, full of information “about how terrible the air in Houston and Deer Park is” (DP-OP-52-3). Another resident mentioned that she was writing a paper for a course in the local community college, and she had to find out information about the environmental effects of the chemical industry. Her professor informed her of the Web site, and she was “just absolutely shocked” about the air and water quality in “my town” (DP-OP-52-6).

Responsible Care Security Code

A recent addition to Responsible Care is the Responsible Care Security Code, developed in response to 9-11, which focus is to safeguard against potential terrorist attacks, expand industry relationships with law enforcement, provide a model for chemical site protection, and provide information to the community regarding security efforts that do not jeopardize plant security.

Throughout all the community discussions, interviews and focus groups, awareness or even a limited knowledge of the industry’s security code was very infrequent. No resident brought up the Responsible Care Security Code or any aspect of its provisions in the course of normal conversations, though a few residents were familiar with general security measures at the plants.

Deer Park residents did not share a high level of concern regarding terrorist threats. Residents are aware that their community is considered a high-priority target because of the nature and toxicity of the materials produced at the plants in the community. As one resident commented echoing others sentiments: “I know that they [terrorist] would like to blow up this whole damn area, but if I know one thing, these plants are prepared” (DP-FG-3-7). He continued that if there is one thing the plants can do is stop people from getting on the property at the plants. He asked if I ever tried to sneak in a plant. “They would stop you before you jumped the fence” (DP-FG-3-7). Another resident reinforced that sentiment, but with a different perspective (DP-FG-3-8):

I think it would be very difficult, and I mean very difficult, for them [terrorists] to blow up a plant. The plants might not spend the money on

keeping the odor out of the air and other health stuff as much as they should, but you can bet they will spend every last dime to keep the plants secure – they have to or they wouldn't survive.

Galena Park LEPC

The Galena Park LEPC was established in the late 1980s in a joint effort between industry and the City of Galena Park as part of the requirements of community-right-to-know initiatives. The Galena Park LEPC meets once every other month, maintains an annual budget of approximately \$30,000, and does not utilize regularly a public relations agency for the development, implementation and research of their communication efforts. It is not as active as many of their counterparts along the Houston Ship Channel and public participation is limited. There are no baseline figures available to discern the extent to which community residents are aware of the LEPC. Residents typically were not aware of the Galena Park LEPC, their purpose, when and where they met, who comprised the members of the committee, or their role in the community. Typical of this kind of lack of awareness were responses such as “I have never heard of them before” and “You got me, who are they?” (GP-FG-2-7).

The few residents who have heard of the LEPC typically did not have high regard for the committee. “They don't do nothing, they talk a lot, but when you get down to it, all they care about is if the chemical companies are happy, the tax base” (GP-PI-10-8). This perspective towards the LEPC was common among all ethnic groups in Galena Park, but especially so for the Hispanic community. “The LEPC is like all the other groups in town, if you are important they will listen to you, you know, but they are not going to listen to me, it does not really matter” (GP-PI-4-13).

Emergency Response Alert Systems

Emergency notification systems and protocols are essentially the same in Galena Park as Deer Park, adding a new siren system that covers the entire community within the past few years. However, there appears to be a limited amount of risk communication efforts to alert residents of the system. Messages in the newspaper and the actual sirens themselves were the only two ways mentioned in which residents knew about these systems. Most just knew it from living in the neighborhood, and gathering details about the system from friends, family and neighbors when they moved into Galena Park. One male resident recalled hearing the practice siren for the first time (GP-OP-24-5):

I was like, oh my God, what is happening, what do I need to do? I knew it could be dangerous living near the plants, but the rent is cheap and I didn't think nothing of it. I'm running around all crazy to only find out that it's a test of the system, they do it every month, now I'm used to it. Now I tell my new neighbors what it all means.

He admitted, after some discussion, that he probably should not be the one to tell new neighbors what the sirens mean or how the system works. “All I know is that if there is an emergency, I’ll call my neighbor and get the hell out of town” (GP-OP-24-5).

Even the expansion of the siren system to include all of Galena Park has upset some residents. One African-American resident strongly asserted her position on the expansion of the sirens that the older siren systems were supposed to cover her neighborhood, where she has lived for almost 40 years. But according to her, it failed to go off several times, and she had to hear about it [explosion, leak] from her friends through phone calls. Now, according to her, the expansion is just covering the new neighborhoods to the north, the neighborhoods that do not need them because they are farther away from the plants, while her neighborhood continues to be ignored. “They take advantage of us because we don’t complain much over here” (GP-PI-6-5).

Overall, several residents summed up their perspectives on the siren systems. “It would be good if you could understand it. Nobody can understand it, so people go ‘whatever’ and go about their business,” while her friend added “that I can’t ever recall hearing [the siren], being inside my house” (GP-FG-5-21/22).

Toxic Release Inventory

Not one person brought up or discussed TRI. When some residents found out about the database from participating in the study, there were mixed comments. Several residents exclaimed that it was a great idea, that they should put that type of information out there – why haven’t they heard? As the informal discussion continued, one woman wondered if she would be able to use such information. She explained that they don’t have a computer or access to the Internet, though her children do at school. She expressed a sense of relief that at least her kids could access that kind of information (GP-PI-12-21).

Several other residents, mainly Hispanic, expressed reservations about the information on the system. One resident challenged the notion of such a database. “I can’t believe they have that” (GP-PI-2-8). After walking over to a nearby bakery for a phone connection to tap into the Internet, she was surprised to look at the TRI data on a lap top. After acknowledging that such information was available, he immediately questioned the authenticity of the information. “I don’t trust them [EPA], don’t even know who they are” (GP-PI-2-9).

Responsible Care Security Code

Similar to awareness and perceptions of the TRI, residents have not heard of this code. No one who participated in the research project recalled any aspect of this code nor had even heard of it. Residents instinctively knew that the plants have beefed up security. However, that is not necessarily appreciated by many of the residents. “They’re not doing nothing about that [health],” (GP-PI-4-7) one resident argued. Ever

since 9/11, he continued, the plants have spent all their money that was going to pollution controls and long-term health concerns to plant security. “They put up new fences and cameras all over the place; I don’t even like to walk around there” (GP-PI-4-19). His brother joined in the discussion. “We needed that; Houston is at the heart of a possible terrorist attack... I feel better with the extra security... what pisses me off is that they were able to get all that done ASAP, but when you ask them to do something for the city, they are always ‘looking into to it’ and nothing gets done” (GP-PI-4-19).

Similarities and Differences Between the Two Communities

While the general guidelines of community-right-to-know initiatives are consistent there are clear differences in how they are executed by industry and government agencies, perceived by community residents, and acted upon by community residents in times of minor to major crises. Acknowledging these differences, the following research question was posed:

RQ2: What are some key differences and/or similarities between the two communities regarding residents’ risk perceptions and their role in community-right-to-know initiatives?

Though there are numerous similarities and differences between the two communities’ residents in this matter, this discussion will center on increased sense of risk in both communities, differing levels of support of the chemical industry and the social justification of risk.

Increased Sense of Risk

Within the past few years some risk communication researchers (e.g., Palenchar, Heath & Dunn, 2005) have been arguing that the previous risk communication models that utilized sense of risk as a dependent variable – one that should be reduced with communication campaigns – may not in fact be the ideal or actual way this process variable is working in communities.

From an examination of residents’ discussions and narratives regarding their sense of risk, it appears that the more aware they are of emergency response measures that are meant to protect residents the more knowledgeable residents are about harms related to potential risks; both possibly playing a curvilinear role in actually increasing residents’ sense of risk. “The more information we get, now that we get some of that stuff, though not all of it by any means, but now that I know what to do, I’ve actually become more aware of what’s going on” (GP-OP-37-3). Another resident added that every time they shelter in place, her sense of risk increases but in a good way (DP-OP-39-2):

We have sheltered in place twice since I have been here, but I rather be alerted and told what to do, but it's kinda funny but until I went through one I never really thought about all this, but now that I do, I feel more prepared but at the same time I feel more vulnerable... maybe ignorance is bliss, who knows.

One resident shared her feelings about seeing Wally Wise (a mascot created by the Deer Park LEPC to educate children about sheltering in place during emergencies) at local community events such as a recent store opening (DP-OP-29-4):

I know I shouldn't feel this way, but I can't help it, you know when I see Wally, you know that city turtle they use to teach the kids about the environment, it reminds me of what has happened at some of the plants [explosions, leaks] here in town lately... he [Wally Wise] makes me a little nervous but makes me a little comfortable too, knowing that they are teaching the kids, and I guess me, what to do.

Other residents echoed this sentiment, talking about how cute Wally Wise is, what a great educational tool for the children, but at the same time it reminds them of the dangers associated with living in a manufacturing town.

These narratives run against a traditional risk communication principle which argues that more emergency response information provided community residents – in a sense helping to build trust and provide a positive sense of control – should lead to a decreased sense of risk. Though possibly counterintuitive, industry and other organizations responsible for risk management should view this increase in sense of risk as a positive sign that residents are becoming more aware of the potential dangers, are becoming more aware of the appropriate behaviors should an emergency occur, and in general might becoming more vigilant community neighbors. Risk management and communication experts should strive for an aware and vigilant public. By making the information available, even in formats unsuited to making rational risk choices, it still addresses key concerns regarding the imposition of and discontent regarding chemical manufacturing health and safety measures.

Support/Opposition – Separated by a Ship Channel

Throughout the analysis of community risk perceptions in Galena Park and Deer Park, Texas, a variety of differences are apparent (but not all part of this research paper). These differences range from the level of knowledge among residents (much higher in Deer Park though residents in both communities fail to demonstrate any sophisticated knowledge of either the manufacturing process or products being produced); sense of control and trust (differentiated by ethnicity and community); and awareness, knowledge, and behavioral intentions related to risk communication protocols that residents should follow during an emergency (again, in general much

higher level of awareness, knowledge, and anticipated correct behaviors by Deer Park residents).

However, all these variables and more are related to the most common dependent variable studied in risk communication: support/opposition. Previous risk communication research (e.g., Heath & Palenchar, 2000, Palenchar & Heath, 2002) has demonstrated a positive relationship between emergency information knowledge and industry support. In fact, risk communication studies have frequently been criticized for using communication campaigns to increase support under the disguise of health and safety educational efforts. The difference between the two cities studied is striking in regard to residents' support and/or opposition of the industry.

Near neighbor community residents' support of industry is much higher in Deer Park than it is in Galena Park. Two statements by a resident from each community are typical of the differences exemplified in residents' narratives of living in each community. For one Galena Park Hispanic male resident, the industry is in some sense the devil in disguise (GP-OP-37-5):

I don't like them, trust them, I don't want my children to have anything to do with them. I know, I know, they give us good jobs and schools, whatever you see around here is probably because of them but it comes at a cost, whatever that cost is I'll probably find out one day but it ain't good my friend.

This type of comment is consistent with earlier findings that Galena Park residents are less trusting of industry, less trusting of the industry in general and management in particular, and less aware and knowledgeable of emergency risk procedures.

For one Deer Park female resident, the industry is more like that bothersome friend who bothers you a little bit but in general is a nice guy (DP-OP-49-2):

Ha, you say some people here don't support our plants, well tell them they should just leave... My family, my friends, everyone at church and that I work with supports the industry, everybody, it's who this town is for heaven's sake... You take the bad with the good and the good with the bad, just like my husband, but I support him no matter what.

This type of comment is consistent with earlier findings that Deer Park residents are more trusting of industry and management, and more knowledgeable of emergency risk procedures. This study supports this notion while acknowledging the convoluted nature of this phenomenon. While the increased use of strategic risk communication has some impact on industry support, numerous other variables also play a role in affecting residents' attitudes toward industry.

Social Justification of Risk

One of the most interesting features of risk perceptions in this study is the notion that residents in both communities are constructing narratives to justify their risk perceptions and behaviors. The risk communication literature is filled with decision-making principles and models that help explain how people view risk and make choices about which risks are tolerable or bearable in balance with other choices and options. Very little research within the risk communication field has looked at how these residents' justify their choices through language and specifically narratives.

Consistently throughout this study, residents in both communities have spent a large part of their conversational time sharing stories as if trying to justify with a variety of reasons why they have chosen to live and work in either city – in a sense why they have chosen to remain a resident who lives in a town dominated by chemical manufacturing facilities. And uniquely enough, this social justification was not differentiated by city, gender, ethnicity, or even age.

For example, two young women (probably early 20s) talked about why they stayed in Deer Park and started families here. One woman, who moved away for a couple of years after high school but has since returned, talked about all the benefits of living in Deer Park. “I just had to come back, it’s a great town, you wouldn’t know it unless you grew up here... I tried living in Houston but it wasn’t me, you know, if you stay a while you’ll see why, it’s hard to explain” (DP-FG-1-8). But her story and reasons for returning, like many other residents’ interviewed, were delivered in a persuasive manner, at times defensive of their city or at least their reasons why they have chosen to remain there.

Consistently, whether from personal interviews, focus groups or observation-participation, residents in both communities, even after bad-mouthing the town or the industry or government officials, came back with a justification for staying. Whether the reasons are economic (jobs), community (good schools, safe neighborhoods), social (good friends, good neighbors), religious (close to their church), pragmatic (benefits of small towns) or righteous (bravado risk bearer), residents consistently ended their stories with these justifications.

One Galena Park resident justified her reasons for living in town, even after listing a variety of problems including the corrupt nature of the local government (GP-OP-49-3):

I know it sounds silly – we must sound bad, after spilling our guts out [about all the problems in this town] with you . . . especially after my cop hassling me story... but this is my town, it’s a great town for the right reasons, just stick around a little longer and you will understand.

A few residents over the course of the study became somewhat annoyed that they could not effectively explain their reasons for living in either Deer Park or Galena Park (DP-OP-41-4):

It's frustrating; you all come here everyone once in a while and ask questions. But what you don't understand is we are no different than any other place... except maybe better... all you see are all the plants and smell and traffic, what I see is my home... you just can't appreciate it until – unless you live here.

This resident's statement provided a unique summary perspective. His social justification of bearing risk by living in his home community may be no different than other residents in other communities justifying why they chose the town they live in to call home. However, for residents who live in communities dominated by the increased risk due to living near major manufacturing facilities, how they construct their justifications for risk can aid in developing more sophisticated and strategic risk communication tools.

Part of this social justification by residents may stem from efforts to construct a positive identity for them. Thompson (1996) suggested, "As traditions lose their hold in many spheres of social life, individuals are obliged to increasingly fall back on their own resources to construct a coherent identity for themselves" (p. 90). Earlier identified narratives demonstrated a lack of trust for traditional institutions in these communities, such as trust and sense of control by industry, government agencies, and non-government agencies so individuals are forced to form their own positive sense – justification – for living and working in the communities. "In the absence of clear guidelines from government and science about risk in society today, it is left to the individual to change his or her lifestyle to match their perceptions of the risks involved" (Jones, 2002, p. 51).

Conclusion

Strategic and ethical risk communication requires that community dialogue be a part of formulating emergency response plans prior to being implemented. This dialogue works with and appreciates community residents need to be informed of the plans and to know of the warning systems that will notify them in the event of an emergency, such as the release of a hazardous chemical from a manufacturing facility. These types of legislation and regulations are in support of conflict environmental sociology literature (Schnaiberg & Gould, 1994), which contends that pollution and security is a result of differences of power between industry and community residents (and other classes). In relation to community-right-to-know legislation, asymmetrical information flows among classes are part of the reason for pollution and other health and safety issues. Schnaiberg and Gould argued that compromise may not be the most effective means of resolution because compromise typically favors those organizations with higher power resources. Others (e.g., Grant, 1997) have argued that

regardless of power structure, community-right-to-know provisions legitimate citizens' demands and provide opportunities to mobilize resources.

Community-right-to-know initiatives must be part of holistic risk communication efforts encompassing all stakeholders and stakeholders to the level that adequate information is shared to lead to effective policy and behavioral decisions associated with living in communities dominated by manufacturing risks, and increased research into policies that address this asymmetry are warranted and should help to reduce industrial pollution and health and safety risks. Additional research from a variety of ontological and epistemological perspectives can help provide a clearer picture of the role of community right to know in risk communication and public relations.

Beyond the legal requirement, public relations practitioners and scholars have a community and global responsibility to communicate for social impact. Part of that challenge for risk communicators in particular is the use of community right to know in environmental law and its application to risk communication, and the obligation of the field to ensure practitioners and community risk bearers are aware of the legal and regulatory responsibilities of community right to know provisions and carry out the fundamental philosophy of community right to know: a free, open, accurate information flow among all stakeholders for better decision making.

References

- Althaus, C. E. (2005). A disciplinary perspective on the epistemological status of risk. *Risk Analysis*, 25(3), 567-588.
- American Chemistry Council. (2003). *Security code: Responsible Care practitioners' site*. Retrieved April 22, 2003, from <http://www.americanchemistry.com/rc.nsf/unid/lgrs5jrmfe?opendocument>
- American Chemistry Council. (2004). *ACC media kit on security*. Retrieved January 29, 2004, from <http://www.americanchemistry.com>
- Bass, G. D., & MacLean, A. (1993). Enhancing the public's right-to-know about environmental issues. *Villanova Environmental Law Journal*, 4, 287-310.
- Belke, J. C. (2000). *Chemical accident risks in U.S. industry – A preliminary analysis of accident risk data from U.S. hazardous chemical facilities*. Washington, D.C.: U. S. Environmental Protection Agency.
- Branch, K. K., & Bradbury, J. A. (2006). Comparison of DOE and Army advisory boards: Application of a conceptual framework for evaluating public participation in environmental risk decision making. *The Policy Studies Journal*, 34(4), 723-753.
- Brehmer, B. (1987). The psychology of risk. In W. T. Singleton & J. Hovden (Eds.), *Risk and decisions* (pp. 25-39). New York: Wiley.
- Bullard, R. D. (2004). *Environmental justice in the 21st century*. Retrieved October, 12, 2007 from http://www.ejrc.cau.edu/ejin_the21stcentury.htm
- Conn, W. D., Owens, W. L., & Rich, R. C. (1990). *Communicating with the public about hazardous materials: An examination of local practice*. (EPA Report No. 230-04-90-077). Blackburg, VA: University Center for Environmental & Hazardous Materials Studies.
- Covello, V. T. (1983). The perception of technological risks: A literature review. *Technological Forecasting and Social Change*, 23(4), 285-297.
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (1995). *Writing ethnographic fieldnotes*. University of Chicago Press.
- Environmental Defense Fund. (2003). *Scorecard*. Retrieved March, 26, 2003, from http://www.scorecard.org/community/index.tcl?zip_code=77547
- Environmental Defense Fund. (2006). *Scorecard*. Retrieved February 10, 2006, from http://www.scorecard.org/community/index.tcl?zip_code=77006&set_community_zipcode_cookie_p=t&x=43&y=13

Environmental Protection Agency. (1997). *U.S. national profile on the management of chemicals: Executive summary*. Retrieved March 29, 2006, from http://www.epa.gov/oppfead1/cb/csb_page

EPCRA. (1986). 42 U.S.C. 11001 et seq.

Falkenberry, E. M. (1995). The Emergency Planning and Community Right-to-Know Act: A tool for toxic release reduction in the 90's. *Buffalo Environmental Law Journal*, 3(1), 1-36.

Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S., & Combs, B. (1978). How safe is safe enough? A psychometric study of attitudes toward technological risks and benefits. *Policy Sciences*, 9(3), 127-152.

Glaser, J., Barney, G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago: Aldine.

Grant, D. S., II. (1997). Allowing citizen participation in environmental regulation: An empirical analysis of the effects of right-to-sue and right-to-know provisions on industry's toxic emissions. *Social Science Quarterly*, 78(4), 859-873.

Hadden, S. (1989). Institutional barriers to risk communication. *Risk Analysis*, 9(3), 301-308.

Hearne, S. A. (1996). Tracking toxics: Chemical use and the public's "right-to-know." *Environment*, 38(6), 1-11.

Heath, R. L., & Abel, D. D. (1996). Proactive response to citizen risk concerns: Increasing citizen's knowledge of emergency response practices. *Journal of Public Relations Research*, 8(3), 151-171.

Heath, R. L., Bradshaw, J., & Lee, J. (2002). Community relationship building: Local leadership in the risk communication infrastructure. *Journal of Public Relations Research*, 14(4), 317-353.

Heath, R. L., & Palenchar, M. J. (2000). Community relations and risk communication: A longitudinal study of the impact of emergency response messages. *Journal of Public Relations Research*, 12(2), 131-162.

Helfand, G. E., & Peyton, L. J. (1999). A conceptual model for environmental justice. *Social Science Quarterly*, 80(1), 68-83.

Hunter, D. (1992, December 9). Viewpoint. *Chemical Week*, p. 5.

- Jacobson, J. D. (2003). Safeguarding national security through public release of environmental information: moving the debate to the next level. *Environmental Law*, 9, 327-397.
- Johnson, S. M. (2005). Terrorism, security, and environmental protection. *William & Mary Environmental Law & Policy Review*, 29(1), 107-158.
- Jones, R. (2002). Challenges to the notion of publics in public relations: Implications of the risk society for the discipline. *Public Relations Review*, 28(1), 49-62.
- Krimsky, S., & Golding, D. (1992). Preface. In S. Krimsky & D. Golding (Eds.), *Social theories of risk* (pp. xiii – xvii). Westport, CT: Praeger.
- Krimsky, S., & Plough, A. (1988). *Environmental hazards: Communicating risks as a social process*. Dover, MA: Auburn House.
- Leiss, W. (1996). Three phases in the evolution of risk communication practice. *Annals of the American Academy of Political and Social Science*, 545, 85-94.
- Lewis, B. C. (2005). What you don't know can hurt you: The importance of information in the battle against environmental class and racial discrimination. *William & Mary Environmental Law & Policy Review*, 29(2), 267-326.
- Marland, R. (2004, Feb. 22). Houston industry varied: Energy sector still tops. *Houston Chronicle*, p. 9 (Perspectives).
- Morgan, D. L. (1997). *Focus group as qualitative research*. Newbury Park, CA: Sage.
- National Archives. (2007). *Charters of freedom: A new world is at hand*. Retrieved November 1, 2007, from http://www.archives.gov/national-archives-experience/charters/constitution_founding_fathers_pennsylvania.html
- National Research Council. (1989). *Improving risk communication*. Washington, DC: National Academy Press.
- O'Rourke, D., & Macey, G. P. (2003). Community environmental policing: Assessing new strategies of public participation in environmental regulation. *Journal of Policy Analysis and Management*, 22(3), 383-414.
- Otway, H. (1992). Public wisdom, expert fallibility: Toward a contextual theory of risk. In S. Krimsky & D. Golding (Eds.), *Social theories of risk* (pp. 215-228). Westport, CT: Praeger.
- Palenchar, M. J. (2005). Risk communication. In R. L. Heath (Ed.), *Encyclopedia of public relations* (pp. 752-755). Thousand Oaks, CA: Sage.

- Palenchar, M. J., & Heath, R. L. (2002). Another part of the risk communication model: Analysis of communication processes and message content. *Journal of Public Relations Research*, 14(2), 127-158.
- Palenchar, M. J., Heath, R. L., & Dunn, E. (2005). Terrorism and industrial chemical production: A new era of risk communication. *Communication Research Reports*, 22(1), 59-67.
- Renn, O. (1992). Concepts of risk: A classification. In S. Krimsky & D. Golding (Eds.), *Social theories of risk* (pp. 53-82). Westport, CT: Praeger.
- SARA: Superfund Amendments and Reauthorization Act of 1986 (1995), U.S. Code, vol. 42, sec. 9601, et seq.
- Schnaiberg, A., & Gould, K. A. (1994). *Environment and society*. New York: St. Martin's Press.
- Shapiro, M. D. (2005). Equity and information: Information regulation, environmental justice, and risks from toxic chemicals. *Journal of Policy Analysis and Management*, 24(2), 373-398.
- Singer, E., & Endreny, P. (1987). Reporting hazards: Their benefits and costs. *Journal of Communication*, 37(3), 10-25.
- Slovic, P. (1987). Perception of risk. *Science*, 230, 280-285.
- Thompson, J. B. (1996). Tradition and self in a mediated world. In P. Heelas, S. Lash & P. Morris (Eds.), *Detraditionalization: Critical reflections on authority and identity* (pp. 78-103). Blackwell: Oxford.
- U.S. Census Bureau (2000). *Census 2000*. [Accessed Wed Mar 26 12:04:16 US/Central 2003].
- Webler, T., & Tuler, S. (2006). Four perspectives on public participation process in environmental assessment and decision making: Combined results from 10 case studies. *The Policy Studies Journal*, 34(4), 699-722.