“Communicating Under Section 112(r) of the Clean Air Act Amendments”

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Patrick McNulty, Leon Schaller and Karen Chinander

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Patrick J. McNulty, Leon C. Schaller, and Karen K. Chinander

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Regulations under Section 112(r) of the 1990 Clean Air Act Amendments require fixed facilities having threshold quantities of materials on the U.S. Environmental Protection Agency’s list of regulated substances to disclose to the general public the expected offsite consequences of worst-case accidental chemical releases. This paper describes the communication practices of small firms in Delaware and New Jersey and the practical problems these facilities might encounter complying with the proposed rule. The paper reports an interesting difference between the comprehension voiced by small firms required to report worst-case release information and the public’s apparent lack of interest in such information. Unlike the difficulty expected by small firms in calculating and communicating worst-case chemical release information, this paper includes some observations on the ability of large chemical firms to comply with the proposed requirements.

KEY WORDS: Clean Air Act; risk communications; worst-case chemical release; community participation.

1. INTRODUCTION

Regulations under the 1990 Clean Air Act Amendments (CAA) include requirements for preventing accidental chemical releases. Section 112(r) of the CAAA, the Accidental Release Provisions, requires the U.S. Environmental Protection Agency (EPA) to develop and implement regulations to prevent accidental releases to the air of regulated substances and to minimize the consequences of releases that do occur. To comply with this directive, the EPA has proposed regulations(1,2) that require any facility, public or private, having threshold quantities of materials on the EPA’s list of regulated substances(3) to have in place the structural elements of a sound process safety program, and to practice, document, and communicate the elements of their program. The proposed rule, and the final rule(4) requires registered facilities to calculate and to make available worst-case accidental chemical release information.

The provision to report worst-case information to the public is worrisome to some in the regulated community due, in part, to certain characteristics of the rule. The regulation prescribes the steps a facility must take to identify hazards, design and maintain a safe facility, and minimize the consequences of accidental releases which do occur. The rule does not set a level of risk that a facility must achieve after it takes the required compliance steps, the level of risk a community must accept, nor limit the consequences the community might suffer from a worst-case chemical release. Also, the rule does not require specific actions from a community in its response plan. These are issues that local communities and local officials must decide and are discussed in detail by Rosenthal et al.(5)
This paper reports the results of an investigation into the awareness of small firms to the proposed rule, specifically difficulties they might encounter coping with its communications requirements. No systematic examination of this topic has been reported previously. Because the EPA has estimated that many of the 66,000 facilities covered by the proposed regulations are small firms, we focused on firms with less than 100 employees. To understand the challenge faced by these facilities, we surveyed small firms in Delaware and New Jersey to discover firm’s communication practices with the community that relate to accidental chemical releases. These states are of interest in this investigation because certain provisions of the state regulations in Delaware and New Jersey are similar to portions of the EPA’s proposed rule. In essence, their experiences provided a natural laboratory for examining the likely effects of the types of requirements the EPA was considering for national implementation. Furthermore, visits to firms in Delaware and New Jersey in this investigation complemented another survey we conducted to investigate the management of chemical safety process regulations in small firms.

The objective of the present investigation, however, was aimed only at determining the ability of small firms to calculate and communicate the consequences of a worst-case accidental chemical release. It was not to examine the relationship of the small firm with its State Emergency Response Commission (SERC), the Local Emergency Planning Committee (LEPC), or the relationship of the firm with the community. Nor was the objective intended to evaluate the effect that outreach community communications programs have on risk reduction. For the ultimate effectiveness of a communication program, however, these issues are recognized as important.

2. REGULATORY BACKGROUND

Increasingly, in the United States, a public put at risk has demanded to know the risks being imposed upon it. The requirement to communicate the potential worst-case release of a chemical is consistent with this sentiment and has been prompted by recent industrial experience. The 1974 explosion in Flixborough, England, the 1976 release of dioxin in Seveso, Italy, and the 1984 release of methylisocyanate in Bhopal, India, are examples that illustrate what can go wrong in chemical process safety. The incident at Bhopal raised special public concern in the United States because of the large number of people outside a fixed facility that were injured and killed. The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act (SARA), was a direct result of the incident at Bhopal. Although SARA Title III did not regulate accident prevention directly, it provided the framework for improved emergency response planning efforts. This act began the process for determining community risks posed by chemical releases and for evaluating the community’s ability to cope with such risks.

The process of determining community risk was continued in 1990 when Congress amended the Clean Air Act. For example, Section 304 directed the Secretary of Labor, in coordination with the Administrator of the Environmental Protection Agency, to promulgate a chemical process safety standard to prevent the accidental release of chemicals that could pose a threat to employees. Additionally, it required OSHA to publish a list of extremely hazardous chemicals. On February 24, 1992, OSHA promulgated a standard for chemical process safety management intended to protect workers from chemical accidents in facilities using highly toxic, reactive, flammable, or explosive substances.

Likewise, the requirement of Section 112(r) of CAAA particularly relevant to this investigation pertains to the creation of a Risk Management Plan (RMP). The RMP must be derived from the facility’s internal risk management program and is to be made available to government agencies and the general public. The RMP must contain a 5-year history of releases, calculations of a most probable release, and calculations for a worst-case release. The release information must contain an estimate of the community consequences of such releases. An excellent overview of these laws is provided in the report to Congress in Section 112(r) prepared by the EPA’s Chemical Emergency Preparedness and Prevention Office.

In addition to the Federal government, four states—California, New Jersey, Delaware, and Nevada—have developed regulations that require operational risk management programs. Like OSHA’s Process Safety Standard, State laws in Delaware and New Jersey require facilities handling hazardous materials to use a performance-oriented approach and to have management controls in place for ensuring that appropriate accident prevention measures are taken. The regulations in Delaware, the Extremely Hazardous Substances Risk Management Act (EHSRMA), and New Jersey, the Toxic Catastrophe Prevention Act (TCPA), are discussed in detail by Schaller et al.

Delaware’s regulation is similar to the EPA’s proposed rule in that it requires worst-case chemical release
information to be communicated to the State officials in Delaware’s Department of Natural Resources and Environmental Control (DNREC). Under Delaware law, the worst-case scenario is calculated somewhat differently from that proposed by the EPA but the differences are not great. Both the law in Delaware and the EPA’s proposed rule make information of worst-case release available to the public in a passive way. New Jersey’s law does not require worst-case calculation nor communication with the community. It does require an annual report to the Department of Environmental Protection ensuring compliance with the risk-reducing aspects of the regulation.

3. METHODOLOGY—SMALL FIRMS

3.1. Selection Process

To understand how small firms currently communicate with the communities around their facilities and how they propose to communicate when the EPA’s proposed regulation becomes effective, we investigated a limited number of private firms in Delaware and New Jersey. We did not include municipally-owned facilities, such as water-treatment facilities that use chlorine, although such facilities are covered in the EPA’s proposed rule and are also covered by State regulations. Companies were selected from lists of all firms registered under the respective State regulations. Firms meeting the study criteria, i.e., commercial firms with fewer than 100 employees, were identified with the assistance of the state regulatory agencies. Candidates for interview were selected randomly within broad geographic clusters. A total of approximately 30 companies were identified, 22 were contacted, and ten agreed to be interviewed. This number of firms was consistent with the terms of our Cooperative Agreement with the EPA. (13)

Included in the study were two propane distributors, two cold storage warehouses using ammonia refrigerant, three chemical processors, one chemical repackager, one chemical distributor, and one energy plant using ammonia to reduce nitrogen oxide emissions. These firms are described in Tables I and II. While the selection process contained opportunities for bias, such as a priori willingness to be interviewed and the absence of firms which failed to register as required by the regulation, the nature and distribution of interview responses suggests these did not compromise the study. Of greater concern is the small number of firms interviewed, which require that the data gathered be viewed as anecdotal.

3.2. Survey Procedure

To learn how facilities currently communicate with the communities around their plants, and how they propose to communicate when the proposed EPA rule becomes effective, we asked a series of questions in a set of one-on-one interviews with ten small chemical firms, five in Delaware and five in New Jersey.

- Does the firm know about the proposed EPA rule under the CAAA?
- Does the firm understand how to calculate various release scenarios, including worst case accidental release?
- Does the firm presently communicate release information to local officials?
- Does the firm presently communicate release information to the public?
- How does the firm plan to meet the release requirements of the proposed rule?

3.3. Survey Results

Survey results are summarized in Tables I and II. Because Delaware regulations require calculation and communication of worst-case release information, firms in Delaware were more conversant with calculating worst-case release information and communicating it to State officials than firms in New Jersey. However, all the firms we visited in Delaware indicated that they had received help either from State officials or from trade associations in calculating worst-case information. All admitted that without such help, the task would have been much more difficult and time consuming. None of the firms in New Jersey were familiar with what was involved in calculating and reporting worst-case release information.

In Delaware (Table I), only one of the firms visited was aware of the EPA’s proposed rule. That firm, which was part of a Community Awareness and Emergency Response (CAER®) group, did not know the details of the EPA’s proposed rule but had a vague idea that worst-case reporting was required. In the absence of information about the requirements of the proposed rule, none of the firms had plans for preparing a Risk Management Plan (RMP) including the calculation and communication of worst-case release information. Most firms used the opportunity of the interview to convey the difficulties inherent in complying with environmental regulations.

One firm in Delaware, a cold storage warehouse using anhydrous ammonia, had an active communication
program with neighbors. That program was the result of state regulations which mandated communications when homes were in the vulnerability zone of a calculated worst-case release. The other firms in Delaware expressed concern for the provision in the EPA’s proposed rule which would make worst-case information available to the general public. One firm, a heating oil and propane distributor, expressed the opinion that residential neighbors near his site would put him out of business were they given worst-case information (Table I).

In has been a requirement for the past 7 years in Delaware that all firms, both large and small, calculate and communicate worst-case release information to State officials in DNREC. These officers make information available to the LEPCs for emergency planning or to the public upon request. Despite anxiety expressed by small firms about providing information to the public under the proposed EPA rule, there was no evidence from the firms we interviewed in Delaware, or from subsequent conversation with State officials, that worst-case accidental release information provided to DNREC had ever been requested by the public.

In New Jersey (Table II), we found little evidence for community outreach communication programs except where the firm was part of a larger industrial complex or where prior releases had prompted adverse community reaction. In no case did a firm calculate or discuss worst-case accidental chemical release information with the community.

4. LARGE FIRM COMMUNICATION PRACTICES

During the time we were investigating small firms in Delaware and New Jersey, we became aware of the
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Table II. New Jersey Firms

<table>
<thead>
<tr>
<th>Business</th>
<th>Community/location</th>
<th>Compliance assistance</th>
<th>Communications program</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small family-owned business engaged in packaging various grades of a regulated material.</td>
<td>Located in a mixed commercial and residential neighborhood. Homes within 50 feet of facility.</td>
<td>Originally made aware of regulation by out-of-state supplier. Tried to comply without success. Engaged consultant to achieve compliance. Changed grade to not be regulated by TCPA.</td>
<td>No communications program. Did not share RMP with LEPCC or community before leaving coverage of the regulation.</td>
<td>Believes communication of worst-case release would arouse neighbors.</td>
</tr>
<tr>
<td>Independently owned co-generation facility that uses a regulated material to reduce nitrogen oxides in exhaust gases.</td>
<td>Located in an industrial park supporting heavy industry.</td>
<td>Engaged a consultant to ensure compliance. Consultant provided RMP and all documentation. Little direct management involvement in the process. Compliance inspections have been uneven.</td>
<td>Communications with the community have been limited to contacts with the local industrial community and meetings with politicians. Parent company has sponsored talks with civic groups and schools to promote business.</td>
<td>Concern was not expressed for reporting worst case. Concern was expressed for the short time allowed to phase in regulatory changes, the immediate reporting of releases, and possible increases in fees.</td>
</tr>
<tr>
<td>Manufacturer of chemical and pharmaceutical products. Recently discontinued operation.</td>
<td>Located in a light industrial park. Residential and commercial neighborhoods nearby.</td>
<td>Management demonstrated a high degree of technical competence and regulatory awareness but did receive some help from a trade association—SOCMA.</td>
<td>Management has played a key role developing emergency response plans and a community relations program.</td>
<td>Management does not believe the public can respond rationally to a worst-case scenario.</td>
</tr>
<tr>
<td>Privately-held chemical processor preparing and packaging a regulated material.</td>
<td>Located in a mixed residential and light industrial area.</td>
<td>After a fine and citation outside consultants were engaged to bring the firm into compliance and develop a RMP.</td>
<td>No communication with the community.</td>
<td>Management had no thoughts about communicating worst-case scenarios.</td>
</tr>
<tr>
<td>Distributor of two chemicals covered by TCPA.</td>
<td>Mixed industrial residential neighborhood.</td>
<td>Discovered business was covered by regulation through trade literature. Determined that customers could use different grades not covered by regulations.</td>
<td>No communications with industrial or residential neighbors. Worst case never addressed.</td>
<td>Management feels regulations are a burden. Three of 33 employees spend full time ensuring compliance. No thoughts about worst case.</td>
</tr>
</tbody>
</table>

exercise in worst-case communication practice ongoing in the Kanawha Valley of West Virginia. The Kanawha Valley Hazard Assessment Group Project, sponsored by the Kanawha/Putnam Local Emergency Committee, included eight large chemical firms. These firms with plants located in five different communities along the Kanawha Valley modeled 72 different release scenarios involving 20 different chemicals. The firms and the chemicals they modeled are given in Table III. During the public meetings in Charleston, WV, on June 3-4, 1994, and in subsequent follow-up conversations with participating companies, we were able to establish that large chemical companies, in contrast to the small companies we visited in Delaware and New Jersey, have the resources and talents to meet the proposed EPA requirements to calculate and communicate worst-case release information. Knowles(2) has reported on the work required to calculate and communicate worst-case information in the Kanawha Valley and efforts that the regulated facilities made to involve all stakeholders in that communication process.

We also became aware of the East Harris County Manufacturers Association’s initiative in Texas to communicate worst-case release information. This initiative, currently ongoing in seven communities along the Houston Ship Channel where 600,000 people live, is a much larger exercise than the one in the Kanawha Valley and involves over 80 manufacturing facilities. The area along the Houston Ship Channel is more diverse in population and industrial activity than the Kanawha Valley because it has 50% of the petroleum refining and 30% of the chemical manufacturing in the United States. This initiative involves mostly large chemical companies, including many firms that did not participate in the Kanawha Valley exercise, but also includes many small companies. Coe, who is involved in the East Harris County Manufacturers Association, has reported on similar initiatives in other parts of the country.(3) These in-
Table III. Companies in the Kanawha Valley Hazard Assessment Group

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Chemical 1</th>
<th>Chemical 2</th>
<th>Chemical 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCO Chemical Company</td>
<td>Institute</td>
<td>Propylene oxide</td>
<td>Acrylonitrile</td>
<td>Vinyl chloride</td>
</tr>
<tr>
<td></td>
<td>South Charleston Technical Center</td>
<td>Propylene oxide</td>
<td>Methylen chloride</td>
<td></td>
</tr>
<tr>
<td>DuPont Company</td>
<td>Belle Nitro</td>
<td>Ammonia</td>
<td>n-Butyl isocyanate</td>
<td>Dimethylamine</td>
</tr>
<tr>
<td>FMC Corporation</td>
<td>Institute</td>
<td>Methylene chloride</td>
<td>Phosphorus trichloride</td>
<td>Phosphorus oxychloride</td>
</tr>
<tr>
<td>Monsanto Company</td>
<td>Nitro Spring Hill</td>
<td>Chlorine</td>
<td>Ammonia</td>
<td>Hydrogen sulfide</td>
</tr>
<tr>
<td>OxyChem Corporation</td>
<td>Belle Nitro</td>
<td>Chlorine</td>
<td>Methyl chloride</td>
<td>Hydrogen chloride</td>
</tr>
<tr>
<td>Olin Corporation</td>
<td>South Charleston Technical Center</td>
<td>Chlorine</td>
<td>Chlorine</td>
<td>Ammonia</td>
</tr>
<tr>
<td>Rhone-Poulenc Ag. Company</td>
<td>Institute</td>
<td>Methyl isocyanate</td>
<td>Chlorine</td>
<td>Phosgene</td>
</tr>
<tr>
<td>Union Carbide Corporation</td>
<td>South Charleston</td>
<td>Butadiene</td>
<td>Ethylene oxide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical Center</td>
<td>Musconeutamine</td>
<td>Sulfur trioxide</td>
<td></td>
</tr>
</tbody>
</table>

include: Texas City, Texas; St John the Baptist Parish, Louisiana; Nashua, New Hampshire; Indianapolis, Indiana; Philadelphia, Pennsylvania; Brazoria, Texas; Calhoun/Victoria, Texas; and the Golden Triangle, Texas.

5. DISCUSSION AND IMPLICATIONS

The data collected in this study suggests that small firms which are isolated and operating independently will have difficulty meeting the communication requirements of worst-case chemical release reporting. The expertise necessary to develop, package, and deliver the message does not exist, and, for many small firms, the cost of contracting this expertise would be regarded as an excessive and unwarranted expense. Furthermore, there is little appreciation of any benefits which might accrue from such communication and there is apprehension regarding community reaction to awareness of the potential risk posed by the facility. For small firms to develop an effective outreach communications effort, they will need outside help. Help in determining worst-case release information could come from trade associations, raw material suppliers, State officials, consultants, and industry consortia. Help in dealing with community reaction to the consequences of a worst-case release, however, is less obvious.

Firms that participated in the Kanawha Valley Hazard Assessment Group Project demonstrated very convincingly their ability to model and communicate various release scenarios and to work with all stakeholders in the community to develop an appropriate emergency response plan in the community. Presumably, companies participating in the East Harris County Manufacturers Association Project will demonstrate the same ability.

The concern for adverse public reaction to reports of worst-case chemical release appears to be more acute in small firms than in large ones. Because large firms frequently operate community outreach programs that put them in contact with neighborhoods around their fixed facilities, they feel they know their communities. These outreach programs provide an opportunity for the firm and the community to get to know each other and to develop a relationship of trust. Consequently, large firms feel more comfortable with the communities around their plants than do small firms. On the other hand, small firms are not without contact in the community. Many small firms, such as propane dealers, have customers in the community, hire local people, and frequently have their principals live in the community. Consequently, the pessimism of small firms is not easily understood. What is surprising in this study is that small firms in Delaware are as apprehensive about the EPA's proposed rule as firms in New Jersey even though firms in Delaware have been reporting worst-case release information to state officials for several years without the public showing any interest. There appears to be a disconnect between the fears of facility managers concerning the public's interest in and ability to understand worst-case information, and the public interest in acquiring such information. The lack of public interest in worst-case release reporting that we discovered in Delaware is similar to the findings reported by Santos et al. concerning the lack of public interest in reporting under SARA Title III. In the case of accidental releases, we suspect the public has latent interest in such information but that such interest is not manifested until after a release has occurred. However, we did not investigate
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this nor do we have data to support such assumptions. From our interviews, it was apparent that facility managers were much more comfortable with regulatoryofficials than the general public.

Large firms have demonstrated in the Kanawha Valley, and are demonstrating currently in other locations, that they have the human and technical resources to calculate worst-case releases, that they can effectively communicate results to the public, and that they can work with stakeholders in the community to lower community risk and optimize emergency response plans. Large firms also have given an indication in certain locations, such as East Harris County, Texas, that they intend to proceed with the determination and communication of worst-case release information independent of the development of regulations under the proposed rule. The decision to proceed seems to be made by local management with corporate support. We were unable to determine any corporate policy that required plant locations to anticipate the rule. The places where local management makes such decisions appear to be locations of heavy industrial activity or where past incidents have adversely affected relationships between the industry and the community. Calculation and communication of worst-case scenarios appears to provide an opportunity for firms to improve the social franchise under which they operate by offering a reason for engaging the community in the development of mutually-beneficial programs. Of all the stakeholders affected by the proposed rule, the large chemical firms probably are best positioned to comply.

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REFERENCES