

# EMERGENCY PLANNING FOR HAZARDOUS CHEMICAL ACCIDENTS: ELEMENTS OF A LEGISLATIVE SOLUTION

## INTRODUCTION

A hazardous chemical leak from the Union Carbide chemical manufacturing plant in Bhopal, India killed thousands of people and injured over one hundred thousand others.<sup>1</sup> Although the scope of the Bhopal accident was unprecedented, other fixed-site facilities<sup>2</sup> in foreign countries and the United States have accidentally released<sup>3</sup> hazardous<sup>4</sup> chemicals into the air, injuring those living and working nearby.<sup>5</sup> In fact, between 1977 and 1979 almost 3,000 hazardous chemical incidents were reported to the Environmental Protection Agency (EPA). Of

1. On December 5, 1984 a cloud of poisonous methyl isocyanate gas leaked from the Union Carbide pesticide plant on the outskirts of Bhopal, India. The gas swept through an area inhabited by over 200,000 people. By the end of December, Indian hospital reports indicated that the death toll had topped 2,000. Other authoritative reports put the figure conservatively at 7,000, with peak estimates rising to 20,000. *Bhopal Update: India, U.S. Still Grapple with Effects*, CHEMICAL AND ENGINEERING NEWS, Jan. 21, 1985, at 41. Raj Kumar Bisarya, the mayor of Bhopal at the time of the disaster, said that many people who fled Bhopal and died at other places are not included in the 2,000 figure. He estimates that 3,000 people died. Wall St. J., April 1, 1984, at 1, col. 1. The Indian Cloth Merchants Association offered one figure of 10,000 deaths based on the number of shrouds it distributed for Hindu and Moslem services. *Bhopal Update: India, U.S. Still Grapple With Effects*, *supra*. Those who did not die immediately after the accident suffered various illnesses. Dr. H.A. Insof said that a considerable number of those exposed to the poison experienced wheezing, coughing, and vision problems. Dr. N.P. Misra, head of the Department of Medicine at Bhopal's Ghandi Medical College, believes that over time people will contact fibrosis — a scarring of the lung's terminal airways. He believes that this will cause premature respiratory failure and shorten lifespans. On the other hand, Dr. Insof believes that only a small number of people will develop respiratory failure. Wall St. J., *supra*. The long-term effects of a chemical accident are one of the most severe consequences associated with exposure to hazardous chemicals. See *infra* note 29.
2. A fixed-site chemical facility means a stationary structure where chemicals are located. Chemicals may be located at a fixed-site facility for many purposes, including manufacture, production, storage, or exporting. This note will focus on accidents at fixed-site chemical facilities only, and will not deal with accidental releases of hazardous chemicals which occur during their transportation. For further information concerning releases of hazardous chemicals in transportation accidents, see Hazardous Materials Transportation Act, 49 U.S.C. § 1801 (1982). Under the Act, the Department of Transportation is authorized to issue regulations for the safe transportation of hazardous chemicals and to provide for specific response procedures for transportation accidents. *Id.* § 1805. See also Matern, *Regulation of the Transportation of Hazardous Materials: A Critique and Proposal*, 5 HARV. ENVTL L. REV. 345 (1981); Strauss, *Transporting Hazardous Materials*, 88 CASE & COM., Nov.-Dec. 1983, at 24.
3. This note addresses sudden and unexpected releases of hazardous substances from chemical facilities into the environment, immediately threatening the health and safety of people nearby. Rapid, organized responses must follow these types of releases in order to avert human injuries and environmental damage. Although the slow, gradual release of hazardous chemicals into the environment can eventually cause serious human and environmental harm, that problem is already the focus of the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA), 42 U.S.C. § 9601 (1982), discussed *infra* notes 44-51 and accompanying text.
4. The kinds of chemicals considered "hazardous" differ from statute to statute. CERCLA, 42 U.S.C. 9601 (1982) refers to "hazardous" chemical definitions found in an assortment of statutes. See *infra* note 45. The Chemical Manufacturing Safety Act, discussed *infra*, defines "hazardous" chemicals by referring to lists of hazardous chemicals compiled by government and private sources. See *infra* note 90.
5. This note addresses those accidents which affect the population living outside the perimeter of chemical plants. The analysis does not address injuries occurring to those working at chemical facilities. For information about injuries to workers at chemical facilities, see Occupational Safety and Health Act, 29 U.S.C. § 651 (1982), *infra* note 71.

these incidents, 737 involved releases from fixed-site locations.<sup>6</sup>

The large number of deaths and injuries at Bhopal was partially due to the Union Carbide facility's inadequate emergency procedures for responding to a sudden accidental release of hazardous chemicals from the facility.<sup>7</sup> If a chemical release of equal dimension occurred at a fixed-site chemical facility in the United States, it is questionable whether present emergency response procedures would avoid a similar tragedy. The United States has no national plans detailing who would respond to this type of accident and how that response would be coordinated. Moreover, no federal agency has clear authority to require chemical facility operators to prepare plans defining the emergency procedures that they would follow in the event of a hazardous chemical release.<sup>8</sup>

Without national plans for responding to fixed-site hazardous chemical releases, confusion and disorganization reign among Federal and state authorities and plant operators. Such disarray results in slower responses to accidents, causes confusion and panic among those residing near a fixed-site facility, and could possibly cause unnecessary deaths or injuries.<sup>9</sup>

A statutory requirement for emergency response plans is not a novel concept: emergency response plans are required for hazardous chemical waste sites<sup>10</sup> and nuclear power reactors<sup>11</sup> in the United States. Yet despite the fact that fixed-site chemical facilities pose the same type of potential danger as chemical waste sites and nuclear power generators, no emergency response plans are required for fixed-site chemical facilities.<sup>12</sup>

This note reviews some accidents that have occurred at fixed-site chemical facilities, and how these accidents have affected those people living and working nearby. The note next describes the existing laws that require emergency response planning for chemical waste and nuclear generator accidents. It then explores the statutes which currently regulate hazardous chemicals, and proposes possible

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6. Between October 1977 and September 1978, 1224 hazardous materials incidents were reported to the EPA. Of these incidents, 126 occurred at storage facilities and 155 at manufacturing and industrial facilities. From October 1978 through September 1979, 1,596 hazardous materials incidents were reported to the EPA. Of these incidents, 169 occurred at storage facilities and 287 occurred at manufacturing and industrial facilities. U.S. ENVIRONMENTAL PROTECTION AGENCY, HAZARDOUS MATERIALS INCIDENTS REPORTED TO U.S. ENVIRONMENTAL PROTECTION AGENCY REGIONAL OFFICES FROM OCTOBER 1977 THROUGH SEPTEMBER 1979 (1980) [hereinafter cited as HAZARDOUS MATERIALS INCIDENTS].

7. Residents living near the Union Carbide chemical plant in Bhopal were not informed of any evacuation plans prior to the accident. Asinof, *After the Bhopal Tragedy*, ENVTL. ACTION, Jan.-Feb. 1985, at 11. Some Indians reported that they heard a siren during the release, but they did not know what it meant.

The fact that emergency planning for hazardous chemical releases can prevent deaths and injuries was demonstrated by one successful evacuation in 1982. An evacuation plan successfully saved hundreds of lives following a release of toxic gas from a Union Carbide plant in Taft, Louisiana. That release might have resulted in a disaster like Bhopal, except that well-trained evacuation teams were able to evacuate 17,000 people without injury. Hall, Recio, Cahan, and Miles, *A Backlash is Threatening Chemical Makers*, BUS. WEEK, Dec. 24, 1984, at 60.

8. See text accompanying notes 35-69 *infra*.

9. Despite the threat of hazardous chemical releases, many communities do not have written plans and procedures for these types of emergencies. Because so many different organizations respond at the scene of an accident, insufficient procedures and lack of chain of command have led to confusion and duplicated efforts. Dissemination of information is slow due to inadequate procedures, and in many cases emergency response groups have been unable to identify the chemical released, or even if they identify it, they are unaware of how to neutralize or combat it. See U.S. DEPT. OF HEALTH & HUMAN SERVICES, GUIDE TO DEVELOPING CONTINGENCY PLANS FOR HAZARDOUS CHEMICAL EMERGENCIES 5 (1981) [hereinafter cited as CONTINGENCY PLANS FOR HAZARDOUS CHEMICAL EMERGENCIES].

10. See *infra* notes 35-51 and accompanying text.

11. See *infra* notes 52-58 and accompanying text.

12. See *infra* notes 35-85 and accompanying text.

amendments to extend their application to accidental chemical releases at fixed-site facilities. Finally, the note examines a bill proposing emergency response procedures at fixed-site chemical facilities, and suggests amendments.

### ACCIDENTAL CHEMICAL RELEASES AT FIXED-SITE FACILITIES

Although the Bhopal accident was the most severe chemical accident in history, other large scale chemical accidents have occurred. For example, in 1976 dioxin<sup>13</sup> escaped from the Icmesa chemical plant in Meda, Italy and drifted over the town of Seveso.<sup>14</sup> Following the release, authorities evacuated 738 residents.<sup>15</sup> Many townspeople reported chemical poisoning, and thousands of domestic animals died.<sup>16</sup> Three years after the accident, the number of Seveso women who developed breast cancer was double the Italian national average.<sup>17</sup> The number of babies born with deformities jumped from 3 in 1975 to 53 in 1978.<sup>18</sup> Since the longterm effects of exposure to hazardous chemicals often do not appear until years later, the full consequences of exposure to the dioxin will remain unknown for some time.<sup>19</sup>

In the United States, the EPA reported that 737 hazardous chemicals incidents occurred between 1977 and 1979.<sup>20</sup> The types of chemical releases and their affects vary. For example, a fire at a chemical storage plant in California sent hazardous chemicals into the air, injuring nearby residents.<sup>21</sup> A leak of 500 tons of anhydrous ammonia from a Minnesota storage terminal blinded, choked, and burned at least 30 people.<sup>22</sup> In October 1984 a cloud of noxious pesticide fumes leaked from a pesticide plant in New Jersey and spread over a 20 mile area of New Jersey and Staten Island. Many people became ill, and more than 100 were treated at hospitals.<sup>23</sup> In 1982, a toxic gas release from a Union Carbide plant in Louisiana might have caused a Bhopal-type accident, but rescue teams evacuated

13. Dioxin is the common name for the highly toxic substance tetrachlorodibenzodioxine, or TCDD.

14. Revzin, *Chemical Cloud Still Casts Long Cloud Over Seveso, Italy*, Wall St. J., July 10, 1979, at 1, col. 4. LAGADEC, MAJOR TECHNOLOGICAL RISK: AN ASSESSMENT OF INDUSTRIAL DISASTERS 35-37 (1982). Authorities attribute the release of the gas to a safety disk which loosened, allowing the gas to escape from the plant and enter the air. *Id.* at 49.

15. LAGADEC, *supra* note 14, at 51; *Fears Still Cloud Italy's Toxic Town*, NEWSWEEK, May 10, 1982, at 14.

16. *Id.*

17. LAGADEC, *supra* note 15, at 14.

18. *Id.* The number of injuries reported after the accident differs in reports released by an official government publication, citizen investigation committees, and news accounts. For example, a people's committee reported 293 malformations from 1976 through 1978, while the government reported only 95 malformations during the same period. LAGADEC *supra* note 14, at 71-73.

19. Two additional examples of accidents in foreign countries include a release of 18 tons of ammonia that escaped from a chemical plant in Putschfroom, South Africa on July 13, 1973. The accident left 18 people dead. On October 12, 1978, one hundred kilograms of acrolein were released into the atmosphere at Pierre Benite (Lyons), France. Several thousand people experienced discomfort; 12 were admitted to the hospital for observation. LAGADEC, *supra* note 14, at 181.

20. HAZARDOUS MATERIALS INCIDENTS, *supra* note 6.

21. On July 20, 1981, 18,000 drums of paints, solvents, and pesticides (at least 25 hazardous materials) exploded in a fire in Santa Fe Springs, California. Residents near the facility reported skin and eye irritation. *Oversight of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980: Hearings before the Subcomm. on Commerce, Transportation and Tourism of the House Comm. on Energy and Commerce*, 97th Cong., 1st Sess. 2277 (1981).

22. Davies, *A Call for National Disaster Guidelines*, N.Y. Times, Dec. 9, 1984, at 3, col. 1.

23. The fumes were a byproduct of the pesticide malathion. Among those injured were 29 seamen aboard a passing freighter, 11 others aboard a tanker, and about 15 men working on nearby docks. Police on Staten Island and in Woodbridge, Perth, Amboy, South Amboy, Linden, Edison, Sayreville, and Old Bridge in New Jersey were deluged with calls from people complaining of burning eyes and skin, and sickening odors. *McFadden, Scores are Felled by Cloud of Fumes*, N.Y. Times, Oct. 7, 1984, at 1, col. 1.

17,000 people before serious injuries resulted.<sup>24</sup>

One state's statistics vividly illustrate the frequency and severity of hazardous chemical accidents. Illinois, which ranks fifth among states in annual chemical production, recorded approximately 4,000 hazardous chemical emergencies between 1978 and 1982.<sup>25</sup> These emergencies involved 165 different chemicals, killed 39 people, injured 823 others, and required the evacuation of 18,649.<sup>26</sup>

Public concern raised by publication of such hazardous chemical accidents is intensified by reports stating that environmental factors, which include chemicals, may cause eighty to ninety percent of all cancer,<sup>27</sup> while cancer accounts for approximately twenty percent of all deaths in the United States.<sup>28</sup> As well as causing longterm adverse health effects, hazardous chemicals may cause immediate visible injuries such as burns.<sup>29</sup>

24. A fire and explosion took place on December 11, 1982 at a tank farm at Union Carbide's Taft, Louisiana plant. Efficient evacuation plans prevented the accident from injuring nearby residents. Hall, Recio, Cahan, and Miles, *supra* note 7.

Other hazardous chemical releases from fixed-site facilities have occurred in the United States. For example, ninety tons of chlorine escaped from a tank in Baton Rouge, Louisiana on December 10, 1976. The escape caused the evacuation of 10,000 people the Mississippi River was blocked for a length of over 36 miles. LAGADEC, *supra* note 14, at 180. Another accident happened in Blair, Nebraska where ammonia escaped from a 32,000 ton ammonia tank for 2 1/2 hours on November 16, 1970. The leak eventually released 140-160 tons of ammonia. The cloud claimed no victims, perhaps because the accident occurred in a rural area. *Id.* at 181.

Dupont was recently fined \$5,000 for a gas leak which occurred at its Niagara plant on October 30, 1982. The gas travelled several seconds through the air then descended on a field where Niagara University and Siena College were playing a football game. The gas made many of the players and spectators ill. Hospitals in Niagara Falls treated 76 people. N.Y. Times, Nov. 14, 1982, at 62, col. 3. About 30 gallons of methyl isocyanate accidentally spilled on November 15, 1984. The spill caused eye irritation to nine students and one teacher at an elementary school. Wall St. J., Dec. 7, 1984, at 2, col. 3.

25. *Toxicity Testing of Chemicals: Hearing before the Subcomm. on Toxic Substances and Environmental Oversight, Senate Comm. on Environment and Public Works*, 98th Cong., 2d Sess. 66, 81 (1984) (statement of Roger A. Kanerva, Manager of Environmental Programs, Illinois Environmental Protection Agency.).

26. *Id.* at 66.

27. See COUNCIL ON ENVIRONMENTAL QUALITY, TENTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY: ENVIRONMENTAL QUALITY 1979 (1979). "Environmental factors" refers to all factors that are not genetic and not related to the body's natural aging process. They include smoking, diet, occupation, radiation, pollution, viruses, and stress. *Id.* at 189. The report states that the number of deaths from cancer continue to rise at the rate of 0.5% annually, with the number of new cases of cancer rising at 1.6% per year. *Id.* at 188.

28. COUNCIL ON ENVIRONMENTAL QUALITY, FOURTEENTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY: ENVIRONMENTAL QUALITY 1983, at 10 (1983) [hereinafter cited as ENVIRONMENTAL QUALITY 1983]. The report further explains that even though human exposure to hazardous pollutants may cause other health effects, public attention is being focused more on potential carcinogens. *Id.*

29. Hazardous chemicals affect human health in different ways. The hazardous effects of chemicals depend on a number of contingencies, including the type of chemical involved, its form, flammability, quantity, concentration, and reaction under certain climatic conditions. LACK, ENVIRONMENTAL PROTECTION: STANDARDS, COMPLIANCE, AND COSTS 227 (1984).

Some substances, such as benzene and asbestos, can cause cancer, yet appear innocuous at the time of exposure, and give little or no warning of their presence. The onset of the disease may not occur until decades after the exposure. Adverse effects of other chemicals, such as chlorofluorocarbons, may occur after a complex series of processes in the environment which take decades to become fully evident. For cancer and other kinds of delayed health or environmental effects, the connections between the effect, the substance, its manufacturers, and the situation in which the exposure occurred may be difficult or impossible to establish.

GUSMAN, VON MOLTKE, IRWIN, AND WHITEHEAD, PUBLIC POLICY FOR CHEMICALS: NATIONAL & INTERNATIONAL ISSUES 2 (1980) (citing WORLD HEALTH ORGANIZATION, INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC), CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS, IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS 12 (1979) and NATIONAL ACADEMY OF SCIENCES, PROTECTION AGAINST DEPLETION OF STRATOSPHERIC OZONE BY CHLOROFUOROCARBONS 1-7 (1979)). Exposure to certain chemicals can cause carcinogens (cancer), mutagenesis (transmittable

Approximately 60,000 different chemicals are sold in the United States and new ones are being invented at an increasing rate.<sup>30</sup> Several common products such as pesticides, fertilizer, and nylon are composed of hazardous chemicals.<sup>31</sup> As a result, the American public perceives the carcinogenic potential of hazardous chemical pollutants as a major health concern.<sup>32</sup>

A large-scale chemical accident at a fixed-site facility would release hazardous chemicals into the environment, exposing those nearby to the chemicals. Many hazardous chemical facilities are located in the most heavily populated states<sup>33</sup> and near cities and towns.<sup>34</sup> Thus the possibility of a hazardous chemical release near a populated area is high, increasing potential harm. The serious and harmful effects of hazardous chemical releases, increasing numbers of hazardous chemicals in the marketplace, and placement of chemical facilities in populous areas mandate a reasoned and coherent plan for minimizing the dangers of chemical accidents.

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genetic damage) and teratogenesis (birth defects). COUNCIL ON ENVIRONMENTAL QUALITY, TOXIC SUBSTANCES IV (1971), reprinted in House Comm. on Interstate and Foreign Commerce, 94th Cong., 2d Sess., Legislative History of the Toxic Substances Control Act 755, 759 (Comm. Print 1976).

In contemplating the long-term consequences of chemical accidents, one author notes that exposure to certain chemicals can cause consequences not measurable until a number of years, such as mental retardation, cardiac problems, damage to a fetus, and other affects which appear in future generations. LAGADEC, *supra* note 14, at 222. Toxic pollutants pose a new and more complicated challenge, if only because their health effects are uncertain. According to the Council on Environmental Quality "[t]he chronic long-term effects of exposure to small amounts of toxic chemicals is a major health concern, yet long-term effects are very hard to measure." ENVIRONMENTAL QUALITY 1983, *supra* note 28, at 8-9.

30. ENVIRONMENTAL QUALITY 1983, *supra* note 28, at 8. These chemicals are being developed in response to the demands of new and growing industries, such as those that produce photovoltaic cells, microchips, and pesticides. Even though all of these chemicals do not pose threats to health, controlling those chemicals that are toxic in even small quantities may be more difficult than controlling traditional pollutants which were generated in much larger quantities. *Id.*

31. J. BELFIGLIO, T. LIPPE, & S. FRANKLIN, HAZARDOUS WASTE DISPOSAL SITES 9 (1981).

32. ENVIRONMENTAL QUALITY 1983, *supra* note 28, at 10. In the early 1970's the pollutants considered most threatening to environmental quality and human health were those that tended to be emitted in large quantities by individual sources and that affected large numbers of people over broad areas of the country. However, in the 1980's pollutants emitted in much smaller quantities, and affecting relatively fewer people, are causing more concern because of their potentially toxic effects. *Id.* at 8.

Some representatives of the chemical industry think that the potential dangers of hazardous chemicals are exaggerated. One official believes that government miscommunication and media distortion contribute to public misperception of the chemical industry. See statement of James N. Sites, Vice President of Communications, Chemical Manufacturer's Association, delivered before the Chemical Communications Association. 47 VIT. SPEECHES DAY 151-54, Dec. 15, 1980.

33. A two year EPA study of hazardous chemical releases revealed a correlation between reported chemical releases and the distribution of population and industrial capacity of various states. The 10 most chemically hazardous states during that period were (in order of most hazardous to least hazardous): California, New Jersey, Pennsylvania, Texas, Ohio, Connecticut, New York, Tennessee, Illinois and Michigan. The 10 least hazardous states were (ranked from least hazardous to more hazardous): South Dakota, New Hampshire, Delaware, Idaho, Montana, Nevada, North Dakota, Utah, Kansas and Maine. ZEIGLER, JOHNSON, AND BRUNN, TECHNOLOGICAL HAZARDS 62-3 (1983) (citing HAZARDOUS MATERIALS INCIDENTS, *supra* note 6).

34. Some common sources of hazardous chemicals, (and the types of chemicals found there) are sewage disposal plants (chlorine), nursery and farm supply distributors (pesticides), commercial pest control companies (acrylamitrite, benzene, carbon tetrachloride, hydrogen cyanide), warehouses (many chemicals), and manufacturing and processing plants (many chemicals). CONTINGENCY PLANS FOR HAZARDOUS CHEMICAL EMERGENCIES, *supra* note 9, at 18.

## EMERGENCY RESPONSE PLANNING FOR ACCIDENTS AT HAZARDOUS WASTE AND NUCLEAR REACTOR FACILITIES

### Statutes and Regulations

No Federal law specifically outlines emergency response procedures for accidental releases of hazardous chemicals from fixed-site chemical facilities. However, several statutes and regulations specify emergency response procedures for other similar types of accidents. Specifically, emergency response laws govern operators of hazardous waste and nuclear reactor facilities. These laws demonstrate that Congress has already recognized the importance of requiring emergency response planning for releases of hazardous substances.

The Resource Conservation and Recovery Act (RCRA)<sup>35</sup> regulates the handling of hazardous wastes, from their collection until their final disposal.<sup>36</sup> Under RCRA, Congress requires the EPA to formulate performance standards to protect human health and the environment during the treatment, storage and disposal of hazardous wastes.<sup>37</sup> Congress also requires the EPA to develop contingency plans to minimize damage in case of a hazardous chemical release during the treatment, storage, or disposal of any hazardous waste.<sup>38</sup>

Accordingly, the EPA has enacted a series of regulations which detail the degree of emergency preparedness required of those handling chemical wastes. For example, companies handling chemical waste must train their personnel to respond to emergencies.<sup>39</sup> They must provide specific fire equipment and communication devices at the site where hazardous wastes are being handled,<sup>40</sup> and must develop emergency plans for responding to an accident.<sup>41</sup> In preparing their emergency response plans, they must make prior arrangements with state and local authorities to coordinate emergency response procedures in the event of an accident.<sup>42</sup> Operators of hazardous waste facilities must also appoint an emergency response coordinator to coordinate all emergency response procedures.<sup>43</sup>

Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund")<sup>44</sup> to initiate the cleanup of hazardous<sup>45</sup> waste sites and to combat releases of hazardous chemicals into the

35. Resource Conservation and Recovery Act, 42 U.S.C. § 6901 (1982) [hereinafter cited as RCRA].

36. One stated purpose of the Act is to regulate "the treatment, storage, transportation, and disposal of hazardous wastes which have adverse effects on health and the environment." *Id.* § 6902(4). The Administrator of the EPA must promulgate regulations applicable to owners and operators of facilities for the treatment, storage or disposal of hazardous wastes. Such standards include "contingency plans for effective action to minimize unanticipated damage from any treatment, storage, or disposal of any such hazardous waste." *Id.* § 6924.

37. 42 U.S.C. § 6924 (1982).

38. *Id.* § 6924(5).

39. 40 C.F.R. § 264.16 (1984). Facility personnel must complete a program that teaches them how to respond to fires and explosions, shutdown facility operations, and replace facility emergency equipment. *Id.*

40. 40 C.F.R. § 264.32 (1984).

41. 40 C.F.R. § 264.51(a) (1984). This plan must describe arrangements agreed to by local police, fire, hospital, and state and local emergency response personnel to coordinate their emergency services. The plan must also list the names and phone numbers of emergency response personnel, and list all emergency equipment at the facility. *Id.* § 264.52.

42. 40 C.F.R. § 264.37 (1984).

43. 40 C.F.R. § 264.55 (1984). "At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordination of all emergency response measures." *Id.*

44. Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 (1982) [hereinafter cited as CERCLA].

45. 42 U.S.C. § 9601(14) (1982), defines "hazardous substances" as "such elements, compounds, mixtures,

environment.<sup>46</sup> CERCLA also mandates emergency response procedures. Under CERCLA, Government agencies have primary responsibility for rapidly responding to hazardous substance releases that will threaten health or the environment.<sup>47</sup>

Unlike RCRA, CERCLA does not authorize the EPA to prepare specific emergency guidelines for companies to follow in case of an emergency release of a hazardous chemical. Instead, CERCLA only requires companies to notify the appropriate government agency of a hazardous release.<sup>48</sup> The regulations enacted pursuant to CERCLA omit any reference to company's responsibilities in preparing emergency response plans.<sup>49</sup> The regulations simply "encourage the participation and sharing of technology by industry and other experts"<sup>50</sup> and encourage groups and individuals to voluntarily participate in response operations.<sup>51</sup>

In response to Congress' charge, the Nuclear Regulatory Commission (NRC)<sup>52</sup> has developed elaborate emergency response guidelines for rapid and

solutions and substances which, when released into the environment may present substantial danger to the public health or welfare or the environment." *Id.* § 9602.

The Act further defines "hazardous substances" by referring to the definition of that phrase in other statutes. For example, CERCLA refers to the Federal Water Pollution Control Act, 33 U.S.C. § 1251 (1982), which defines hazardous substances to include "elements and compounds, when discharged in any quantity into or upon the navigable waters of the United States . . . present an imminent and substantial danger to the public health or welfare . . . ." *Id.* § 1321(b)(2)(A).

CERCLA also refers to the Solid Waste Disposal Act, 42 U.S.C. § 6901 (1982), which states that: the term 'hazardous waste' means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may—

(A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of or, otherwise managed.

*Id.* § 6903(5).

The CERCLA definition of hazardous substances also includes those substances mentioned in the Federal Water Pollution Control Act, 33 U.S.C. § 1251 (1982). That section states that toxic pollutants include those pollutants listed in Table 1 of the Committee Print Numbered 95-30 of the House Committee of Public Works and Transportation. The Administrator of the EPA may periodically revise this list. Before the Administrator can include a pollutant on the list, or before he can remove the pollutant from the list, he must take into account the toxicity of the pollutant, its persistence, and its degradability, among other things. *Id.* § 1317.

Additionally, CERCLA refers to the Clean Air Act, 42 U.S.C. § 7401 (1982), definition of hazardous pollutants. The Clean Air Act defines a hazardous pollutant as "an air pollutant to which no ambient air quality standard is applicable and which in the judgment of the Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness." *Id.* § 7412.

CERCLA further defines hazardous substances as those imminently hazardous chemical substances or mixtures which the Administrator of the EPA has acted to control pursuant to the Toxic Substances Control Act, 15 U.S.C. § 2601 (1982). That section reads:

[t]he term 'imminently hazardous chemical substance or mixture' means a chemical substance or mixture which presents an imminent and unreasonable risk of serious or wide-spread injury to health or the environment. Such a risk to health or the environment shall be considered imminent if it is shown that the manufacture, processing, distribution in commerce, use, or disposal of the chemical substance or mixture, or that any combination of such activities, is likely to result in such injury to health or the environment before [regulations are enacted to] protect against such risk.

*Id.* § 2606(f).

46. See *infra* notes 81-83 and accompanying text.

47. Both the National Response Team and the Federal Emergency Management Agency are involved in response operations. See *infra* notes 59-69 and accompanying text.

48. 42 U.S.C. § 9603(a) (1982). Once an operator of a facility has notice of a spill, he must notify the National Response Center. The National Response Center is a central station, operated by the Coast Guard, for receiving reports of hazardous substance releases. See also footnotes 59-65 and accompanying text.

49. In fact, the regulations enacted pursuant to CERCLA focus on the Government's response efforts following a discharge of a hazardous substance. 40 C.F.R. § 300.3(b) (1984).

50. 40 C.F.R. § 300.61(c)(5) (1984).

51. 40 C.F.R. § 300.25(a) (1984).

52. Nuclear Regulatory Commission, 42 U.S.C. § 5841 (1982) [hereinafter cited as NRC].

effective responses to nuclear reactor accidents.<sup>53</sup> Before a reactor can start up, its operator must prepare emergency response plans for the generator and give the NRC the emergency response plans of state and local governments.<sup>54</sup> These plans must include specific items of information, such as the names of those plant employees who will take charge in an emergency,<sup>55</sup> and the state and local authorities who will be responsible for off-site evacuations.<sup>56</sup> Furthermore, reactor operators are required to inform those living near the nuclear reactor of basic emergency planning information,<sup>57</sup> and to conduct regular emergency practice drills.<sup>58</sup>

### Emergency Response Authorities

Two national authorities are currently responsible for responding to hazardous waste and nuclear accidents, but have no clear authority over hazardous chemical releases from fixed-site facilities. The National Response Team responds to releases of hazardous chemical wastes, while the Federal Emergency Management Agency (FEMA) responds to releases of radiation.

The National Response Team,<sup>59</sup> under the direction of the EPA,<sup>60</sup> is the primary coordinator of the national government response to releases of hazardous substances and contaminants into the environment.<sup>61</sup> Comprised of representatives from a variety of Government agencies,<sup>62</sup> the Team devises plans for dealing with releases and threatened releases of hazardous wastes.<sup>63</sup> It receives assistance in this task from the National Response Center, a central reporting center for releases of hazardous chemicals.<sup>64</sup> Once the National Response Center receives notice of a release, it reports the release to the EPA or directly to the National

53. Congress has granted the NRC licensing and regulatory functions for nuclear reactors. 42 U.S.C. § 5842 (1982). Under the NRC's guidance an Office of State Programs has been established to respond to emergencies. 10 C.F.R. § 1.47 (1984). The Division of Operating Reactors administers safety programs. 10 C.F.R. § 1.61(d) (1984).

54. 10 C.F.R. § 50.33(g) (1984). Applications for operating licenses for nuclear power reactors must show radiological emergency response plans of state and local governments. Operators must submit the plans of those governmental entities that are within the radiation exposure pathway, referred to as the Emergency Planning Zone. *Id.* See also 10 C.F.R. § 50.43(a)(10) (1984) and 10 C.F.R. § 50.47(a)1, 50 App.E, 70.22(a)(8) (1984).

55. 10 C.F.R. § 50, App.EIV 2(a),(c), 3,4,5 (1984).

56. 10 C.F.R. § 50, App.EIV 6,7,8 (1984).

57. 10 C.F.R. § 50, App.EIV (D)(2) (1984).

58. 10 C.F.R. § 50, App.EIV (F)(1) (1984).

59. The National Response Team is a part of the National Contingency Plan. The National Contingency Plan is a detailed federal response program, originally established under the Clean Water Act to provide a response program for oil and hazardous substance discharges in the water. Clean Water Act, 33 U.S.C. § 1321(c)(2) (1982). Under CERCLA, Congress called for expansion of the National Contingency Plan to make it cover releases of hazardous substances, pollutants, and contaminants on land and in the air. 42 U.S.C. § 9605 (1982). The National Contingency Plan addresses the responsibilities and coordination of the response procedures for various federal agencies following a spill or release of a hazardous substance into the environment. 40 C.F.R. §§ 300.1-300.81 (1984). The particular means of responding to hazardous substance releases are more specifically addressed in 40 C.F.R. §§ 300.61 - 300.71 (1984).

60. Of all the Federal agencies participating in the National Response Team, the President vested the EPA with primary authority over responses to releases of hazardous substances on land. Exec. Order No. 11,735, 38 Fed. Reg. 21,243 (1973).

61. Exec. Order No. 12286, 46 Fed. Reg. 9901 (1981).

62. Members of the National Response Team include representatives from the Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, FEMA, Department of Health and Human Services, Department of Interior, Department of Justice, Department of Labor, Department of State, Department of Transportation, and EPA. 40 C.F.R. § 300.32 (1984).

63. 40 C.F.R. § 300.32 (1984).

64. 42 U.S.C. § 9603(a) (1982). "Any person in charge of a . . . facility shall, as soon as he has knowledge of any release of a hazardous substance . . . immediately notify the National Response Center established under the Clean Water Act of such release." *Id.* See also 40 C.F.R. § 300.36(c) (1984).



Response Team.<sup>65</sup> The EPA and the National Response Team then coordinate their emergency response to the release.

FEMA<sup>66</sup> coordinates the national emergency management program for responding to large-scale disasters, such as nuclear accidents.<sup>67</sup> FEMA also provides guidance and technical and financial assistance to state and local governments to assist them in developing their capability for responding to natural and man-made disasters.<sup>68</sup> Currently, FEMA responds to emergencies involving hazardous chemicals only as one of the member agencies of the National Response Team.<sup>69</sup>

Although these statutes, regulations and organizations respond to hazardous waste and nuclear reactor problems, they are not designed for solving chemical release accidents. A look at existing legislation dealing with hazardous substances will highlight legislation that could potentially be amended to respond to hazardous chemical accidents at fixed-site facilities.

### EXISTING HAZARDOUS CHEMICAL LAWS

Congress has enacted a variety of Federal statutes to regulate releases of hazardous chemicals into the environment. A review of these statutes demonstrates that Congress has failed to include plans for emergency responses to releases of hazardous chemicals from fixed-site facilities. If Congress should decide that emergency response procedures already in effect for hazardous wastes and nuclear energy should also apply to fixed-site chemical facilities, it could accomplish this goal by amending statutes already dealing with hazardous chemical releases. Then, the emergency response provisions under these Acts would also apply to fixed-site facilities.

Federal laws regulate hazardous chemicals in three ways. Statutes control the production of hazardous chemicals,<sup>70</sup> promote occupational safety measures for

65. The National Response Center relays notice of releases to an On-Scene Coordinator, either the EPA or its designee. 40 C.F.R. § 300.36(a) (1984). The On-Scene Coordinator is a Federal official predesignated by the EPA to coordinate and direct the Federal response to begin cleaning up hazardous substances. 40 *Id.* § 300.6 (1984) (definition of On-Scene Coordinator). The On-Scene Coordinator then advises the spiller that he is responsible for clean up. If the spiller does not begin clean up, then the EPA hires contractors and brings in Federal people and equipment to do the job. 42 U.S.C. § 9604(a) (1982); 40 C.F.R. §§ 300.61-68 (1984).

66. The Federal Emergency Management Agency (FEMA) was established by Exec. Order No. 12127, 43 Fed. Reg. 41943 (1979).

67. FEDERAL EMERGENCY MANAGEMENT AGENCY ANNUAL REPORT 1983, A REPORT TO THE PRESIDENT ON EMERGENCY MANAGEMENT IN THE UNITED STATES 1 (1983) [hereinafter cited as FEMA ANNUAL REPORT 1983]. FEMA responds to other types of large-scale accidents, such as hurricanes and earthquakes. *Id.*

68. *Id.* at 2.

69. The President has granted limited authority to the Federal Emergency Management Agency to find permanent relocation for residents, businesses, and community facilities following a disaster, or to temporarily evacuate individuals following a hazardous chemical release. The President has delegated certain other functions to the Administrator of the EPA, and to other government agencies. Exec. Order No. 12316, (as amended by Exec. Order No. 12418), 46 Fed. Reg. 42,237 (1981). Once the EPA or On-Scene Coordinator receive notification from the National Response Center of a hazardous release, they must immediately notify FEMA of potential major disaster situations that may require evacuation, temporary housing, or permanent relocation. 40 C.F.R. § 300.32(b)(6) (1984).

70. Toxic Substances Control Act, 15 U.S.C. § 2601 (1982). The Act requires the assessment of a chemical's potential hazards before permitting its manufacture for commercial use. If the Administrator of the EPA finds a reasonable basis to conclude that the manufacture, processing, distribution, use or disposal of a chemical substance or mixture presents an unreasonable risk of injury to health or the environment, the Administrator may regulate the chemical in such a way as to protect against such risks. *Id.* § 2605(a). Furthermore, the Administrator can require testing of those chemicals or chemical mixtures which may present an unreasonable risk of injury to health or the environment. Testing can also be required if the chemical will be produced in substantial quantities and will enter or reasonably can be anticipated to enter the environment in substantial quantities, or if the chemical is prob-

those who work with hazardous chemicals,<sup>71</sup> and set ambient emission standards for hazardous chemicals and effluent controls to achieve those standards.<sup>72</sup> Despite this seemingly complete statutory scheme, Congress has enacted hazardous chemical regulation in a piecemeal fashion.<sup>73</sup> Although various laws regulate different types of hazardous chemical releases, no legislation regulates accidental releases of hazardous chemicals from fixed-site facilities.

The Clean Air Act charges the EPA to "protect and enhance the quality of the Nation's air resources . . . ."<sup>74</sup> In addition, section 112 of the Act regulates "hazardous pollutants" and provides the EPA with the primary authority to control air pollutants that "may reasonably be anticipated to result in an increase in mortality."<sup>75</sup> Although the Act authorizes the EPA to monitor and regulate hazardous emissions from chemical plants, it does not specifically authorize the EPA to develop its own emergency response plans for sudden accidental releases of hazardous chemicals from fixed-site facilities, or to compel companies to prepare emergency response plans for these types of accidents.

Since the Clean Air Act currently regulates hazardous emissions, it could be amended to include the types of sudden emissions that occur when hazardous

duced in substantial quantities, and there is or may be significant or substantial human exposure to it. *Id.* §§ 2603 (a)(1)(A),(B).

71. Occupational Safety and Health Act, 29 U.S.C. § 651 (1982). The Act deals with the safety of workers in chemical plants. The Secretary of Labor must set standards that most adequately assure, to the extent feasible, that no employee will suffer material impairment of health or of functional capacity if exposed to a toxic or harmful chemical, even if the employee is regularly exposed to it. *Id.* § 655 (b)(5).

72. Numerous laws govern the emissions of hazardous substances into the environment. The Federal Water Pollution Control Act, 33 U.S.C. § 1251 (1982), regulates the emission of pollutants into the water by requiring the application of the best practicable control technology currently available, as defined by the Administrator of the EPA. *Id.* § 1311. Furthermore, the Act calls for application of the "best available technology" economically achievable which will result in reasonable progress towards eliminating the discharge of all toxic pollutants, if the Administrator of the EPA concludes that such elimination is technologically and economically achievable. *Id.* § 1311(b)(2)(A).

The Safe Drinking Water Act, 42 U.S.C. § 300(f) (1982), seeks to prevent health threatening contaminants from entering drinking water. The Administrator of the EPA may act to protect the public health from contaminants entering the public water system which may present an imminent and substantial endangerment to public health. *Id.* § 300(i).

The Hazardous Materials Transportation Act, 49 U.S.C. § 1801 (1982), authorizes the Department of Transportation to issue regulations for the safe transportation of hazardous chemicals and to provide for specific response procedures in case of an accident. *Id.* § 1805.

See also, Resource Conservation and Recovery Act, 42 U.S.C. § 6901 (1982), *supra* notes 35-43; Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 (1982), *supra* note 44-51; Clean Air Act, 42 U.S.C. § 7401 (1982), *infra* notes 74-76.

73. Environmental Emergency Response Act: Report of the Committee on Environment and Public Works, S. REP. NO. 848, 96th Cong., 2d Sess. 8-9 (1980). Congress did not enact current environmental legislation prospectively, but retrospectively, to remedy problems after they arose. For example, the Committee on Environment and Public Works began studying possible legislation that would regulate hazardous waste dumps in 1978. The Senate adopted S. 2900 in 1978 to deal with the problem. The House passed its own hazardous waste site bill, but the House and Senate did not resolve their differences over the two bills before the end of the 95th Congress. By the end of 1978, the incidents at Love Canal more clearly demonstrated the national problem posed by hazardous waste dumps, prompting the House and Senate to finally compromise on the CERCLA legislation. The Committee also listed other incidents, besides the Love Canal incident, which convinced it to enact legislation covering the clean up of hazardous waste dumps. *Id.* at 3-8. See also statement of Sen. Alan K. Simpson (R-Wyo.) (lamenting that the environment legislation of the 1970's failed to provide the kind and degree of environmental quality and safety to public health as was intended and that legislation was adopted "measure by measure, piece by piece.") *Id.* at 118.
74. Clean Air Act, 42 U.S.C. § 7401 (1982). The Act proposes to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and productive capacity of its population." *Id.* § 7401(b)(1).
75. *Id.* § 7412(a)(1). To date, the EPA has listed seven substances as hazardous air pollutants under section 112: asbestos, benzene, beryllium, inorganic arsenic, mercury, radionuclides, and vinyl chloride. ENVIRONMENTAL QUALITY 1983, *supra* note 28, at 35. EPA is in the process of evaluating health and exposure data for 37 other hazardous pollutants. *Id.* at 38.

substances are accidentally released from a fixed-site facility. The Act prohibits the construction or modification of a facility which will emit a hazardous air pollutant, unless such an emission does not violate hazardous pollutant standards.<sup>76</sup> This section of the Act could be amended to prohibit the construction or continued operation of a fixed-site chemical facility unless the operator prepared detailed emergency response plans.

The Resource Conservation and Recovery Act (RCRA) provides guidelines for the safe handling of hazardous wastes.<sup>77</sup> Under RCRA, those who handle hazardous wastes must prepare emergency response plans in case the waste is accidentally spilled or released.<sup>78</sup> Since RCRA is intended only to regulate emergencies involving hazardous wastes, it does not regulate emergency responses to chemical releases before the chemical has been converted into a waste byproduct. Thus, the manufacture, production, storage, and use of hazardous chemicals do not fall within the purview of the Act.

Congress could amend RCRA to cover the handling of hazardous chemicals before their conversion into waste. By doing this, operators of fixed-site hazardous chemical facilities would come under RCRA, which would make them responsible for preparing the same types of emergency response plans already prepared by operators of hazardous waste facilities.

Congress enacted CERCLA to provide a response program for releases of hazardous chemicals from chemical dumps into the environment.<sup>79</sup> Under CERCLA, whenever any hazardous substance is released into the environment or there is a substantial threat of a release, the EPA is authorized to take any measure needed to protect the public health or environment.<sup>80</sup> Although CERCLA plainly states that it applies to all releases of hazardous substances, a reading of the statute's legislative history,<sup>81</sup> court interpretations of it,<sup>82</sup> and the regulations promulgated under it,<sup>83</sup> show that the major thrust of the Act applies only to releases of hazardous chemicals from chemical waste sites.

Congress could amend CERCLA to embrace releases of hazardous chemicals from fixed-site facilities. "Release" is already defined broadly under CERCLA,<sup>84</sup>

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76. 42 U.S.C. § 7412(c)(1)(A) (1982). "No person may construct any new source or modify an existing source which, in the Administrator's judgment, will emit an air pollutant to which such [hazardous emissions] standard applies unless the Administrator finds that such source if properly operated will not cause emissions in violation of such standard." *Id.*

77. See *supra* notes 35-43.

78. 40 C.F.R. § 343 (1984).

79. See *supra* notes 44-47.

80. When there is a threat of a release of a hazardous substance, and the release of the substance may present an imminent and substantial danger to the public health or the environment, the EPA is authorized to act. 42 U.S.C. § 9604(a) (1982). The Act actually grants this authority to the President, but he has delegated his authority to the Administrator of the EPA. The EPA need not take any action if it believes that the owner or operator of the facility from which the release emanates will act. 42 U.S.C. § 9604 (1982).

81. CONGRESSIONAL RESEARCH SERVICE, A LEGISLATIVE HISTORY OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 at 1 (1983). See also Note, *The Right to Contribution for Response Costs Under CERCLA*, NOTRE DAME L. REV. 345, 347-51 (1985).

82. In *City of Philadelphia v. Stepan Chem. Co.*, 544 F. Supp. 1135 (E.D. Pa. 1982), the district court examined CERCLA and found that:

[CERCLA] is designed to achieve one key objective—to facilitate the prompt clean up of hazardous dumpsites by providing a means of financing both governmental and private response and by placing the ultimate financial burden upon those responsible for the danger.

*Id.* at 1142-43.

83. 40 C.F.R. § 300.3 (1984).

84. 42 U.S.C. § 9601(22) (1982). In this section "release" is defined as "any spilling, discharging, injecting, escaping, leaking, dumping or disposing into the environment . . .", but excludes releases affecting people solely in the workplace, exhaust emissions, and releases of nuclear material. *Id.*

so the term could easily be expanded to include sudden accidental releases at fixed-site facilities. Another reason that, CERCLA is ideally suited to an amendment dealing with sudden emergency chemical releases is that the National Response Team and FEMA have already prepared an emergency response plan under it for responding to hazardous waste releases. The National Response Team and FEMA could expand this plan to include responses to hazardous chemical releases from fixed-site facilities.<sup>85</sup>

### PROPOSED LEGISLATION TO REQUIRE EMERGENCY RESPONSE PLANNING FOR HAZARDOUS CHEMICAL RELEASES AT FIXED-SITE FACILITIES

Even though the idea of amending existing hazardous chemical legislation to apply to fixed-site chemical facilities has some merits, enacting new legislation specifically tailored to the problems posed by fixed-site facilities is a better idea. A law expressly drafted for fixed-site facilities could adapt the best features from other hazardous substance legislation and apply them to develop emergency response operations for fixed-site facilities, as the following sections will show.

#### Chemical Manufacturing Safety Act

Following the Bhopal accident public interest in emergency response procedures at fixed-site chemical facilities rose sharply.<sup>86</sup> In February 1985 a group of congressmen from the House of Representatives introduced the Chemical Manufacturing Safety Act (CMSA)<sup>87</sup> to fill the legislative vacuum in the area of emergency response planning for accidents at fixed-site chemical facilities. CMSA attempts to mitigate the consequences of a hazardous chemical release at a fixed-site facility by requiring the EPA and facility operators to prepare emergency response plans to prepare for and respond to hazardous chemical releases at fixed-site facilities.<sup>88</sup>

Under CMSA all major manufacturers<sup>89</sup> of hazardous substances covered

85. See *supra* notes 59-69.

86. After the Bhopal accident, Warren M. Anderson, Chairman of Union Carbide, told William J. Storck, Business Editor of Chemical and Engineering News, about the changes in safety practices that he foresaw for the chemical industry. Anderson stated that:

If you had tried six months ago to get a bunch of different people involved in evacuation plans around a chemical plant, you might have been hard pressed to get everybody's attention. You must get doctors, hospitals, TV stations, radio stations, police, state troopers, the governor's office. Now you can get their attention. . . . I think that, given the help of the Chemical Manufacturers' Association, and of the local communities, who have a much heightened interest in this kind of thing, we're going to be better off.

CHEM. & ENGINEER. NEWS, Jan. 21, 1985, at 9, 14.

Following the Bhopal accident, a flurry of activity on capitol hill culminated in the sponsorship of two bills designed to prevent a similar accident in the United States. Rep. Robert E. Wise (D-W.Va.), introduced H.R. 1660 to amend the Solid Waste Disposal Act and the Toxic Substances Control Act to prevent releases of toxic and hazardous substances. H.R. 1660, 99th Cong., 1st Sess., 131 CONG. REC. H1377 (daily ed. March 21, 1985). In addition, a group of Congressmen introduced the Chemical Manufacturing Safety Act, *infra*.

87. H.R. 965, 99th Cong., 1st Sess., 131 CONG. REC. H327 (daily ed. Feb. 6, 1985). The bill was sponsored by Representatives Florio, Waxman, Molinari, Edgar, Eckart, Markey, Sikorski, Swift, Downey, Dwyer, Moody, Wolpe, Guarini, Bonior, Fazio, Torricelli, Levine, Rodino, Miller, Lundine and Vento. It was then referred to the Committee on Energy & Commerce. *Id.*

88. *Id.* §§ 211-213. The bill contains three major provisions. One section deals with emergency response planning. Another section centers on the community's "right-to-know" about hazardous substances located at facilities nearby. The third provision would grant a federal right to sue for the victims of chemical accidents. H.R. 965, *supra* note 86, §§ 221-225.

89. A major manufacturer is one who manufactures, distributes, uses, or imports a covered hazardous substance which, if released into the environment in significant quantities, would be reasonably likely to create an imminent and substantial endangerment to health or the environment. *Id.* § 213(a)(2).

under the Act<sup>90</sup> must establish emergency evacuation and response plans for their facilities.<sup>91</sup> These plans must explain how facility personnel will notify the public in the event of an accident,<sup>92</sup> establish emergency traffic routes,<sup>93</sup> and provide adequate medical care.<sup>94</sup> The plans must also specify which state, local and company officials would be contacted in an emergency,<sup>95</sup> and other detailed measures that would be taken to mitigate risks to human health and the environment caused by an accidental chemical release.<sup>96</sup>

Each state must have local emergency response committees comprised of police, fire and health officials, hospital personnel, and community and industry representatives.<sup>97</sup> These committees would review all emergency plans and modify or consolidate them as appropriate.<sup>98</sup>

Under CMSA the EPA must promulgate a uniform method for labelling pipes, storage tanks, and containers holding hazardous substances.<sup>99</sup> These labels would alert firefighters, police and other response authorities to the location of hazardous substances and instruct them how to respond to a release of a particular chemical.<sup>100</sup>

CMSA also establishes a community "right-to-know" program.<sup>101</sup> This program requires all hazardous<sup>102</sup> chemical manufacturers, users, distributors, and

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This definition of hazardous substance is similar to the one given by the Department of Health and Human Services in 1981. The Department defined hazardous materials as "generally, substances in a quantity and form, which if released, can be harmful to life, property or the environment." CONTINGENCY PLANS FOR HAZARDOUS CHEMICAL EMERGENCIES, *supra* note 9, at 2. See also the definitions of "hazardous" substances in present environmental legislation, *supra* note 45.

90. Covered hazardous substances include hazardous or toxic chemicals which have been listed by the government and private sources. Government sources include the National Toxicology Program of the United States Public Health Service, the Occupational Safety and Health Administration, and the Carcinogen Assessment Group of the Environmental Protection Agency, pesticides which have been classified for restricted use under the Federal Insecticide, Fungicide, and Rodenticide Act, and substances defined as "hazardous" under CERCLA. Private sources of listed substances include the American Conference of Government Industrial Hygienists, the National Institute for Occupational Safety and Health, the National Fire Protection Association, the International Agency for Research On Cancer and the National Cancer Institute. *Id.* § 231. The Administrator of the EPA has the authority to list certain other substances as hazardous substances. *Id.* § 231(b). The Administrator of the Agency of Toxic Substances and Disease Registry must compile a digest of all covered hazardous substances and update the digest annually. *Id.* § 231(c).

Trade secret protection is given for a chemical's name or identity, but not for the hazard and other information required to be disclosed. Trade secret protection is also withheld in cases of an emergency or where the chemical is a known carcinogen. *Id.* § 203.

91. This plan is designed to minimize the injury to human health and the environment which could result from any hazardous substance emergency. *Id.*
92. The Act requires a specific emergency notification plan so that members of the public are immediately warned of an emergency and given instructions on how to respond to it. This plan should include a warning system (including an alarm system) which is activated by a monitoring system for the monitoring of gases or other emissions of hazardous substances. The emergency notification plan must also include a program for educating the public concerning the plans which have been made to respond to any emergency. *Id.* § 211(a)(2)(D).
93. In particular, the emergency evacuation plan must include routes to be followed and traffic plans to be altered, as well as an evaluation of whether adequate transportation exists to accomplish such evacuation. *Id.* § 211(a)(2)(c).
94. *Id.* § 211(a)(2)(E).
95. *Id.* § 211(a)(2)(A)(i),(ii).
96. *Id.* § 211(a)(2)(B).
97. *Id.* § 211(b)(2). If the governor does not appoint committees within 24 months after enactment of this section, the Administrator of the EPA will be treated as the emergency response committee, until the governor makes the necessary appointments. *Id.*
98. *Id.* § 211(b)(3).
99. *Id.* § 212.
100. *Id.*
101. *Id.* § 201.
102. Covered hazardous substances are defined *supra* note 89.

importers subject to the Act <sup>103</sup> to fully inform communities near their facilities of the risks posed by the chemicals they handle. Those subject to the Act must publish a fact sheet explaining to the public the physical symptoms of exposure to the hazardous chemicals at the facility and the emergency procedures to follow in case chemicals are accidentally released from it.<sup>104</sup>

### Suggested Amendments To CMSA

In its current form CMSA sets forth a basic structure for emergency response planning for sudden accidental releases of hazardous chemicals from fixed-site facilities. Even though it represents a step in the right direction, the Act requires several amendments. Congress should amend CMSA to:

1. *Cover storers of hazardous chemicals.*
2. *Designate FEMA as the chief government response authority for hazardous chemical releases.*
3. *Encourage FEMA to coordinate its response efforts with CHEMTREC.*
4. *Require companies to use the most advanced and technologically feasible emergency equipment.*
5. *Oblige companies to report potential releases of hazardous chemicals.*

First, CMSA should cover storage facilities. It presently requires emergency response planning by all major manufacturers, users, distributors, and transporters of hazardous substances, but it fails to mention storers of hazardous chemicals. Large quantities of hazardous substances are housed in storage facilities, and their release from storage could injure people nearby.<sup>105</sup> Therefore, CMSA should also require operators of hazardous chemical storage facilities to prepare the same emergency response plans that manufacturers, distributors, users and importers of hazardous chemicals must prepare.

Second, CMSA requires states to form local emergency response committees to oversee emergency planning and to coordinate emergency responses.<sup>106</sup> Although some government body must oversee and coordinate emergency response planning for fixed-site chemical facilities, this new emergency response network would duplicate functions that FEMA and the National Response Team could serve. These authorities already respond to emergency releases of other hazardous substances and they could easily adapt their operations to respond to hazardous chemical releases from fixed-site facilities.<sup>107</sup>

CMSA should provide that FEMA coordinate emergency response planning. FEMA is eminently qualified to coordinate chemical emergency response pro-

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103. A covered manufacturer, distributor, user, or importer is one who either employs more than 10 employees or manufactures, distributes, uses or imports more than 1,000 kilograms of any covered hazardous substance in any calendar month. *Id.* § 202(a)(1),(2).

Those not covered under the bill include domestic workers or casual laborers employed at a place of residence, research laboratories and hospitals, and consumers. *Id.* § 202(b)(1),(2),(3).

104. *Id.* § 201(a). The fact sheet must disclose the physical properties of the chemical, its health hazards, the areas possibly exposed to an accidental release of the chemical, the physical symptoms of such exposure, appropriate emergency procedures to follow in case of an accident, and the phone number of the company's emergency response personnel. The general public must have access to the fact sheet. It must be filed at the facility of the covered manufacturer, distributor, user or importer and at local police, fire, or health departments. The fact sheet must also be supplied to any physicians and emergency medical personnel who request it to diagnose or treat any individual who has been exposed to the substance listed on it. The public must receive notification through local newspapers that the fact sheet is available for review both at local police, fire and health department offices and at the facility where the chemicals are located. *Id.* § 201(d).

105. See, e.g., the Santa Fe, California accident *supra* note 21.

106. H.R. 965, *supra* note 87, at § 211(b).

107. See *supra* notes 59-69 and accompanying text.

grams.<sup>108</sup> It is already experienced in responding to emergencies and is equipped to integrate national,<sup>109</sup> state,<sup>110</sup> local and company<sup>111</sup> emergency response procedures.<sup>112</sup> FEMA presently trains state and local response teams to handle a variety of emergencies, and it could expand this training to include specialized training for responding to chemical emergencies.<sup>113</sup>

There are many other advantages to having FEMA coordinate emergency planning. Large scale accidents may extend beyond state or local boundaries and may require greater resources and efforts than are available on a state or local level.<sup>114</sup> Designating FEMA to oversee and coordinate state and local efforts would provide a centralized location for the collection of information about the types of chemicals at facilities,<sup>115</sup> their possible effects on communities in the path of a potential chemical release,<sup>116</sup> and evacuation plans.<sup>117</sup> Following a response

108. *Role of Information Technology in Emergency Management: Hearings before the Subcomm. on Investigations and Oversight of the House Comm. on Science and Technology*, 98th Cong., 1st Sess. 42-43 (1983) [hereinafter cited as *Role of Information Technology in Emergency Management*].

109. FEMA could integrate its emergency response planning with the National Response Team, *supra* notes 59-65 and accompanying text.

110. For an explanation of one state's emergency response programs see FEDERAL EMERGENCY MANAGEMENT AGENCY, *EMERGENCY MANAGEMENT* 22 (1980).

111. Many companies have already initiated their own emergency response programs. Wall St. J., Dec. 7, 1984, at 2, col. 3. Companies should be encouraged to devise their own emergency response plans for two reasons. First, companies would have the opportunity to initiate action themselves, without too much government interference. Companies are more familiar with their own plants, and possible facility weaknesses and how to rectify them. Second, allowing companies to devise their own emergency response programs would lead to the formation of more site-specific plans, rather than generic plans covering all chemical plants. Since the types and quantities of chemicals that companies handle are different, as are the structures of facilities, their location vis-a-vis populated areas, the geographical terrain surrounding facility, and the types of emergency response plans already prepared, emergency response plans should be site-specific, rather than generic.

112. *Role of Information Technology in Emergency Management*, *supra* note 108, at 31-87. For a detailed discussion of FEMA's emergency management efforts and plans for future improvements, see FEDERAL EMERGENCY MANAGEMENT AGENCY, *FIRST ANNUAL SYMPOSIUM OF NATIONAL EMERGENCY COORDINATORS AND CENTER MANAGERS* 1983 (1984).

113. *Role of Information Technology in Emergency Management*, *supra* note 108, at 34. As presently organized, FEMA does not actively recruit state and local officials but waits for them to approach it. *Id.*

For smaller scale accidents, FEMA's involvement may not be necessary. After receiving proper training, local response teams could respond to chemical emergencies without FEMA's assistance. *Id.*

114. For example, one national resource which FEMA operates is the Emergency Broadcast System. FEMA uses this service to warn residents via television and radio about an emergency. FEMA could use this system to warn residents near a chemical facility of a chemical release. *FEMA ANNUAL REPORT* 1983, *supra* note 67, at 5.

115. Response authorities must consider the effects of a hazardous chemical in determining the response necessary to mitigate injuries and protect the environment. They must compile a detailed catalogue of the possible effects of the hazardous chemicals at particular facilities. Such a record would provide immediate information to medical personnel arriving at the scene of an accident. In keeping a record of the hazardous chemicals at a site and their potentially harmful effects, authorities must not only scrutinize the chemicals in their original form, but must also consider their possible products formed following an accident and during the process of their dispensation into the atmosphere. *LACK, supra* note 29, at 114.

To estimate population exposure to a pollutant, it is essential to have information on production, use, and disposal of the chemical, as well as its physical and chemical properties and behavior in the environment. SAXENA & FISHER, *HAZARD ASSESSMENT OF CHEMICALS: CURRENT DEVELOPMENTS* 383 (1981). To determine general population exposure to the pollutant, the sources of the exposure must be identified and a measurement must be made of the amount of pollutant released. The sizes of the populations located in the vicinities of the release site, especially down wind, must be estimated from available census data. The dispersion pattern must then be estimated using a simulation model and a conclusion then drawn as to the number of people likely to suffer exposure to the pollutant. *Id.* at 338-41.

116. Any emergency response system must consider information concerning the general physical layout of the plant site and its surrounding geographical features. This includes the physical location of the plant, and all routes leading to and from it. Additional geographic information includes the location of mountains, water and human population. *LACK, supra* note 29, at 227. For a chemical spill, the path of a release could be calculated on a computer, programming into it the terrain around the

effort at a chemical accident, information concerning the effort could be stored at a central location for future reference. Thus, successes of one response team in Arizona might be repeated again in Illinois, and the failures of a response effort in Washington could be avoided in Texas.

Third, CMSA should encourage FEMA to coordinate its emergency response planning with the privately funded chemical emergency response organization, CHEMTREC. Established by the Chemical Manufacturer's Association, the Department of Transportation has already recognized CHEMTREC as a useful emergency service for responding to hazardous chemical transportation accidents.<sup>118</sup> CHEMTREC currently notifies the National Response Center about hazardous chemical accidents,<sup>119</sup> provides information to response personnel at the scene of a chemical accident,<sup>120</sup> and occasionally lends on-site assistance in the event of a serious transportation accident.<sup>121</sup> Additionally, CHEMTREC provides limited training services for industry and community personnel who must respond to chemical emergencies.<sup>122</sup> CHEMTREC could adopt all of these existing response resources to make them encompass accidents at fixed-site facilities.

Fourth, CMSA should require companies to maintain advanced and technologically feasible emergency equipment. CMSA already requires individual companies handling hazardous chemicals to provide their own emergency plans for

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chemical site and wind speed. *Role of Information Technology in Emergency Management*, *supra* note 108, at 72.

After programming this information into a computer, and adding such particular information as the amount of chemical released and wind speed, personnel could determine the potential severity of an accident, the populated areas to evacuate, the response authorities needed to carry out an effective evacuation plan, the vehicles of transportation, the routes of transportation, the location of temporary shelters, and the medical personnel available to provide treatment to the injured. Having programmed the essential geographical and population data into its computer, response personnel could also simulate a chemical accident and run a test to determine who would feel its effects and how authorities would respond. In explaining the process of developing a simulation model for chemical accidents, one author states that to define the exposure profile for a particular air pollutant, monitoring is generally undertaken to generate data to feed into an air quality simulation model whose product is a geographic profile of pollutant concentrations. In addition to measuring the levels of the pollutant at series of locations within the region of interest, data should also be taken on wind velocity and direction, temperature, atmospheric pressure, degree of isolation, humidity and degree of precipitation. SAXENA & FISHER, *supra* note 115, at 338.

117. In a chemical emergency, response managers need to know where the people are, the location of natural features that help or hinder response, the transportation available to remove people and to bring emergency services in, the environmental pathways that will spread the accident's impacts to other areas, and the location of jurisdictional boundaries. Data to answer these questions is scattered throughout various agencies, but a central post is needed to gather and sort it out. *Role of Information Technology in Emergency Management*, *supra* note 108, at 40. (statement of Dr. Jerome E. Dobson, Oak Ridge National Observatory).

FEMA is capable of constructing a model of an evacuation which would tell how many people need to be removed from a certain area and where human and transportation resources would come from. This would integrate the responsibilities of police, fire and other response groups to make sure that they are not relying on the same people, equipment, routes, etc. *Role of Information Technology in Emergency Management*, *supra* note 108, at 42-43 (Statement of Robert F. Littlejohn, Deputy Director, Office of Civil Preparedness, New York.)

118. DEPARTMENT OF TRANSPORTATION, STATEMENT OF FORMAL RECOGNITION AND ATTENDANT UNDERSTANDINGS (1981) (available at offices of the *Journal of Legislation*).
119. CHEMTREC INFORMATION BULLETIN 4 (1984) (available at the offices of the *Journal of Legislation*).
120. *Id.* at 8. Chemical companies can telephone CHEMTREC's toll-free number in the event of a spill, leak, fire, exposure or accident involving their products. Emergency calls are answered by a communicator who can retrieve information from a computer file of 45,000 chemicals to provide information about the chemical involved. *Id.*
121. *Id.* at 10-11. Since CHEMTREC's beginning in September, 1971 until March 1985, it received 56,910 transportation emergency calls and 7,873 non-transportation calls. CHEMTREC RED PHONE INBOUND CALLS SHEET (1985) (available at the offices of the *Journal of Legislation*).
122. CHEMTREC INFORMATION BULLETIN 15 (1984) (available at the offices of the *Journal of Legislation*). CHEMTREC sponsors workshops for chemical company emergency response personnel. *Id.*



responding to accidents.<sup>123</sup> Companies could be required to incorporate state of the art technology in executing these plans. Other environmental legislation restricting hazardous substance emissions demands use of the most technologically feasible equipment available.<sup>124</sup> If Congress required operators of fixed-site chemical facilities to do the same then those operators would remain abreast of technological advances and install emergency planning devices such as advanced computer<sup>125</sup> and alarm systems.<sup>126</sup>

Fifth, CMSA should require companies to report potential chemical accidents.<sup>127</sup> In the event of an impending chemical release, company personnel should be allowed some time to handle the situation themselves. At the same time, however, response personnel at the facility should alert FEMA and apprise it of the potential release.<sup>128</sup> FEMA could then proceed with preliminary response measures and remain abreast of an emergency situation as it developed. Thus, if a hazardous chemical was suddenly released from a facility, response authorities would already be poised to respond quickly to the accident.

### CONCLUSION

The prevalence of chemical accidents near populated areas has increased the risk that people will experience exposure to hazardous chemicals. To alleviate the consequences of hazardous chemical accidents when they happen, operators of hazardous chemical facilities should be required to draft and implement emergency response plans before an accident. Additionally, the government must organize its emergency-response teams to prepare for hazardous chemical accidents at fixed-site facilities. Congress requires this type of emergency response planning for hazardous waste and nuclear generator facilities, and should require similar plans for hazardous chemical facilities.

Congress can require emergency response planning for chemical accidents at fixed-site facilities in two ways. It can either amend existing hazardous chemical

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123. H.R. 965, *supra* note 87, at § 211(a).

124. Federal Water Pollution Control Act, 33 U.S.C. § 1311 (1982); Clean Air Act, 42 U.S.C. § 7401 (1982).

125. The Diamond-Shamrock company in Texas is installing a computer that will analyze wind speed and direction, and the source and rate of any chlorine leak. It depicts the chemical plume advancing over a map on a video monitor. The computer produces a list of emergency telephone numbers at local plants, businesses and public agencies in the projected plume path, and predicts the concentration of chlorine passing through various locations. Burrough, *U.S. Cities and Towns Ponder the Potential for Chemical Calamity*, Wall St. J., Dec. 14, 1984, p. 1, col. 6.

126. In cases of explosions and other sudden releases of hazardous chemicals, time is an important factor. Advanced alarm systems must alert both the public and response authorities about an emergency.

In 1979 Dow Chemical Company in Plaquemine, Louisiana began installing black speaker boxes in 120 homes near its chlorine plant. A loud buzzer and recorded message could warn residents of danger and instruct them on evacuation plans. *Id.*

A warning device that would notify facility personnel about a chemical release should also be required. A similar spill warning device for spills of hazardous chemicals into streams and rivers has already been developed for the EPA. Since spills of hazardous materials into the water can happen without the knowledge of the spiller, the system was designed to detect those types of spills. ENVIRONMENTAL PROTECTION AGENCY, HAZARDOUS SPILLS WARNING SYSTEM (1981).

127. Regulations enacted pursuant to RCRC require emergency coordinators at hazardous waste facilities to activate internal alarm systems and notify State or local response agencies in the event of an *imminent* or actual emergency situation. 40 C.F.R. § 264.56 (1984).

128. Company personnel would most often know about a potential chemical release before response authorities, who are not present at a facility. Having notified response teams of the potential release, company response officials could decide to evacuate nearby residents or coordinate such an evacuation with government response authorities. Simply because response authorities decide not to take any action, this should not preclude company officials from acting alone. Furthermore, all private and public groups involved in response efforts, either before or after a chemical release, should be encouraged to coordinate their efforts.

legislation to make it apply to fixed-site facilities, or it can enact CMSA. Congress' better alternative is to enact CMSA with certain amendments. It would then create a law that provides tailored emergency response plans for fixed-site chemical facilities. Yet, however Congress may choose to respond to this problem, it must act soon before the number of hazardous chemical accidents increases along with the toll of injuries from those accidents.

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