

**Building a Model
of Hospital WMD Preparedness upon
the Veterans Health Administration's
Extensive Expertise in Managing
Hazardous Materials and Wastes**

**Review of the Literature
And Initial Recommendations**

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**Education and Research
Emergency Management SHG**

Preface

The Emergency Management Strategic Healthcare Group (EMSHG), Education and Research section was assigned the task of developing a “pilot project” for preparing the VHA health care system for terrorist use of Weapons of Mass Destruction. The goal of the project was described as:

“...{To} explore how best to prepare, train and exercise our VA health care facilities to protect VA patients, staff and facilities from contamination in the event of a WMD {weapons of mass destruction} incident.”¹

The purpose of this paper is to summarize information gained through a search of regulations and literature concerning the decontamination of patients who arrive at a hospital for treatment. It encompasses contamination primarily from chemical agents, since they represent the greatest potential threat to staff, visitors and patients (as opposed to biological and radioactive agents (see Appendix A for rationale)). This discussion is limited to providing information only for patient decontamination, and not the multitude of other considerations a hospital must address in preparing for disasters and/or terrorism. The following is presented in an interrogatory fashion in order to identify and attempt to resolve some of the major issues.

¹ Memorandum, EMSHG Headquarters, November 22, 1999.

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Building a Model of Hospital WMD Preparedness upon the Veterans Health Administration's Extensive Expertise in Managing Hazardous Materials and Wastes

Introduction

This report is intended to introduce the reader to the subject of hazardous substances and the adjustments American society have made to control the risks associated with them. Its specific purpose is to provide information necessary to develop a practical yet effective capability within the Veterans Health Administration (VHA) to counter the potential threat of harm to staff, visitors and patients from contaminated persons presenting at a VHA health care facility. This discussion is not limited to only victims of terrorism, but applies to any situation and any spill of a contaminant harmful to human health and the environment.

A sentinel event occurred in 1985 in Bhopal, India, in which thousands were killed and injured as a result of the release of a toxic gas from a nearby industrial facility. Congress responded to the concerns from such a disaster occurring in the United States by enacting the Superfund Amendments and Reauthorization Act (SARA) of 1986, amending the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. The basic purpose of Title III of SARA, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA) was "to promote emergency planning to respond to chemical releases and to ensure that information regarding chemicals in the community is available to the public and to emergency response agencies. These are accomplished by:

- a. Establishing State Emergency Response Commissions (SERCs) and Local Emergency Planning Committees (LEPCs) with responsibility to develop emergency plans to be followed in the event of an emergency chemical release.
- b. Implementing a series of notification and reporting requirements to state and local emergency planning activities with respect to type and quantities of specific chemicals.
- c. Promoting the development of local response plans and procedures in the event of an emergency chemical release."²

Occupational Safety and Health Administration (OSHA) regulations for hazardous substances are found in 29 CFR Part 1910. Of specific interest to this discussion are Subparts H, I and Z:

² VA Directive 99-011

Subpart H – Hazardous Materials (1910.101-.126)

1910.120 - Hazardous Waste Operations and Emergency Response (HAZWOPER) and Appendices A-E.

Subpart I – Personal Protective Equipment (1910.132-.139 and App. B)

1910.132 – General Provisions

1910.133 – Eye and Face Protection

1910.134 – Respiratory Protection (and App. A-D)

1910.136 – Occupational Foot Protection

1910.138 – Hand Protection

Subpart Z – Toxic & Hazardous Substances (1910.1000-.1450 App B)

1910.1200 – Hazard Communication (and App. A-E)

1960.70 – Reporting to OSHA

1960, Part H

1910.1201 – Retention of DoT markings, placards and labels

1910.1020 – Access to employee exposure and medical records

In order to facilitate a basic understanding of how these laws and regulations come into play in the workplace and their relationship to each other, it is important to start with the policy that an employee has the right to a safe and healthful workplace.³ In workplaces that manufacture, use, store and/or dispose of hazardous substances⁴, the OSHA regulation 1910.1200, Hazard Communication, says that all employees must be informed about hazardous substances in the workplace and understand protective measures. Other OSHA regulations come into effect for employees who are exposed to hazardous substances. The Environmental Protection Agency (EPA) compels employers whose employees handle hazardous materials and wastes to follow certain guidelines set forth in the EPCRA, including engaging in planning for emergency spills or releases. Finally, OSHA regulation 1910.120 (HAZWOPER) establishes health and safety standards for those involved in responding to emergencies involving hazardous materials.

Thus, there are four key factors: an employees right to a safe and healthful workplace; an employers duty to inform employees about hazardous substances in the workplace; an employers responsibility to coordinate with community emergency planning groups; and, an employers duty to provide adequate protection for employees who may come in contact with hazardous materials. These will be explained in the following section.

³ See OSHA ___ and VA policy 7700.

⁴ Definition from OSHA,

1. Must VA comply with the Superfund Amendments and Reauthorization Act (SARA Title III)?

Yes. The Department of Veterans Affairs (VA) is required by the Environmental Protection Agency (EPA) to participate in an Emergency Planning and Community Right-to-Know Program (EPCRA).⁵

2. What are the responsibilities of VHA health care facilities?

It is the policy of the Veterans Health Administration (VHA) that “each facility shall establish and participate in an EPCRA in accordance with the guidelines of this Directive and consistent with all Federal, state and local regulations.

Health Care Facility Directors shall:

- a. Establish and participate in an effective EPCRA.
- b. Appoint an Emergency Response Coordinator (ERC) or other qualified individual to administer the facility EPCRA and serve as a point of contact with the LEPC. If necessary, the ERC shall represent the facility on the LEPC. The Emergency Medical Preparedness Area Manager can serve in this capacity, if available.
- c. Coordinate with the LEPC and other Federal, state and local agencies to include, as a minimum, the following:
 - 1). Participating in SARA Title III planning activities.
 - 2). Discussing with the LEPC the potential for spills or releases of chemicals on the Extremely Hazardous List and their Threshold Planning Quantities as published in the most recent Title 40 CFR Part 355, Appendices A and B, and:
 - 3). Reviewing proposed hazardous chemicals and quantities which would require additional reporting to LEPCs.
 - d. Reporting spills or releases of chemicals on the Extremely Hazardous List or other chemicals as required.
 - e. Provide upon request the nature and quantity of chemicals on the Extremely Hazardous List or other chemicals as may be required.
 - f. Review annually and updating facility inventories of hazardous chemicals and wastes.

NOTE: VHA Directive 98-011, Management of Hazardous Chemicals, provides specific procedures for ensuring that hazardous chemicals are used, handled, stored and disposed of in a manner consistent with regulatory, statutory and accrediting requirements and accepted safe practices.”

⁵ VHA Directive 99-011: “When SARA Title III was passed in 1986, Federal agencies and activities were not required to comply. However, as a result of the Federal facilities Compliance Act of 1992 and Executive Order 12856 of 1993, all Federal agencies and facilities are required to comply with the provisions of SARA Title III, state and local environmental regulations, and actively participate in emergency planning activities.”

3. At an average VA Medical Center, how are these responsibilities organized?

Compliance with the requirements of the EPCRA involves two related programs:

The Hazard Communication Program ensures employees are informed and trained on the safe handling of hazardous chemicals in the workplace, including the proper storage, handling, labeling, spill, leak and disposal procedures. This includes a hazardous chemical inventory, material safety data sheets, labels and other forms of warning, training and communication with appropriate supervisors prior to the conduct of non-routine tasks that might expose employees to hazardous chemicals.

At some but not all VA Medical Centers, the Hazard Communication Program involves the Industrial Hygienist (often charged as the Hazard Communication Program coordinator); Service Chiefs in whose departments hazardous chemicals are used, stored or disposed of; Acquisition and Materiel Management (whose role includes ensuring incoming substances are labeled, and informing contractors at work within the facility about hazardous chemicals in the vicinity of that work), and Engineering, whose role includes obtaining contractor material safety data sheets and providing them to the Industrial Hygienist.⁶

The Hazardous Waste Management Program is also required by a variety of Federal, State and local agency laws and regulations and the JCAHO. Once generated, hazardous wastes must be labeled, handled, stored and disposed of in a manner consistent with their characteristics, which can be difficult to ascertain. A major goal of this program is the reduction and recycling of hazardous substances. The organization for this program mirrors that of the program for the Hazard Communication Standard.⁷

4. What training requirements exist for HAZCOM?

The Hazard Communication Standard (1910.1200) is a performance-based standard. This means that employers have the flexibility to adapt the rule to the needs of their workplace, rather than having to follow specific, rigid requirements. The HCS, at section (h), sets forth the elements that must be included in an employer's hazard communication training. According to the standard, employee training must consist of the following elements:

⁶ Richard L. Roudebush VA Medical Center, MCM 001S-13, Hazard Communication Program Policy.

⁷ Richard L. Roudebush VA Medical Center, MCM 001S-20, Hazardous Waste Management Program.

- Discussion on how to read and to interpret information on the Material Safety Data Sheets (MSDS) and on the container labels
- How employees can obtain and use the hazard information that is available and how the hazard communication program is implemented in their workplace.
- The hazards of the chemicals in the work area and the measures that the employees can take to protect themselves from the hazards.
- The specific procedures that the employer uses to provide protection such as engineering controls, work practices, and the use of personal protective equipment.
- Include the methods and observations that the workers can use to detect the presence a hazardous chemical to which they may be exposed.

5. Does OSHA review training materials or courses?

No. OSHA does not perform reviews of employer training materials to determine if their use will render the user in compliance with our standards. Further, OSHA does not approve nor does it endorse commercially available training programs.

It is up to the employer to decide whether any particular training program meets the intent of the Standard. As you can see, many of the areas that must be addressed in hazard communication training are workplace specific - for example, training on the specific chemical hazards at your workplace⁸

6. If an employee spills or releases hazardous chemicals, this is an emergency response as defined under OSHA 1910.120, or at what point does an “emergency” occur?

Incidental releases that can be safely handled by the workers who spilled the substance are not considered emergency responses and therefore are not covered under 1910.120. However, other training requirements, such as those found in the Hazard Communication Standard (1910.1200) would apply.⁹

An emergency response is defined as a “coordinated response effort by employees from outside the immediate release area or by outside responders (i.e., mutual-aid groups, fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance.”¹⁰

7. Does HAZWOPER apply to hospitals?

“After considerable review OSHA interprets the scope of 1910.120 {HAZWOPER} to cover hospitals in at least three scenarios: 1). When hospitals

⁸ OSHA Interpretive Letter, August 1, 1990.

⁹ OSHA Interpretative Letter, June 7, 1991.

¹⁰ OSHA Standard 1910.120(a)(2)(iv)(3).

have an internal release of a hazardous substance which requires an emergency response; 2). When hospitals respond as an integral unit in a community-wide emergency response to a release of hazardous substance; and, 3). If a hospital is a RCRA {Resource Conservation and Recovery Act)-permitted Treatment, Storage and Disposal Facility.”¹¹

The HAZWOPER standard does not define an emergency in terms of the quantity of the substance spilled. The term "emergency" is dependent upon several factors, including the hazards associated with the substance, the exposure level, the potential for danger and the ability to contain the substance. This analysis is the responsibility of employers since they are most familiar with the specific hazards of the substance as it is used in their work places and the potential for an emergency. The burden of proving that there is no potential for an emergency at a work site likewise properly belongs to the employer.¹²

8. *If a contaminated patient presents in the emergency department, is this an “emergency response?”*

Yes. OSHA does not require hospitals to receive accident victims, however, if the victim was part of an emergency involving hazardous substances and hospital personnel needed to decontaminate, OSHA regulations 29 CFR 1910.120 (HAZWOPER) would apply.¹³

9. *What are the specific JCAHO requirements?*

The organization designs (EC 1) and provides (EC 2) a safe, accessible, effective and efficient environment of care consistent with its mission, services and law and regulation. This includes the design of management plans for the control of hazardous materials and emergency preparedness (EC 1.5 and 1.6, respectively), as well as staff orientation and education on the environment of care and “possess the knowledge and skills to perform their responsibilities under the environment of care management plans” (EC 2.4 and 2.5, respectively). One specific standard relates to, “the {emergency preparedness management} plan identifies facilities for radioactive or chemical isolation and decontamination” (EC 1.6(I)).

10. *That statement does not require each facility to maintain its own facilities, it just requires that each facility identify a facility for isolation and decontamination, isn’t that correct?*

Yes, but the requirement that each healthcare facility maintain such facilities is required by SARA Title III (for the isolation and decontamination of employees from spills and releases occurring through the use of hazardous

¹¹ Hospitals and HAZWOPER, OSHA response to a letter from D. Bennett, 06-07-91.

¹² OSHA Interpretive Letter, October 21, 1992

¹³ OSHA, Interpretation

substances in the workplace). Further, hospitals are required to participate in the community-wide emergency response planning for hazardous materials by both JCAHO and SARA Title III.

11. Can the VHA health care facility just refuse a contaminated patient, especially if they are not eligible for care?

No, “the Consolidated Omnibus Budget Reconciliation Act (COBRA) mandates the delivery of medical services individuals seeking care in an emergency department. ... Every individual presenting to an emergency department must receive a medical screening examination. Choosing not to provide care to a contaminated individual, due to a lack of hazmat training, is a potential COBRA law violation. Transferring the potentially unstable (e.g., contaminated) patient without decontamination may be in direct violation of COBRA. In addition, the failure to treat may pose broader ethical questions.”¹⁴

It is also VA policy to provide humanitarian assistance, “which represent a true medical emergency, medical care will be rendered until such time that the patient’s condition is stable enough that he/she can either be transferred to another healthcare facility or sent home.”¹⁵

Since care cannot be refused, employees may be placed in harm’s way by the facility not preparing an adequate solution to this potential situation.

12. Can an employee who is not trained nor equipped to handle such a situation refuse to participate?

Yes, an employer could not force an employee to perform work in a situation such as this. The OSHA Hazard Communication Standard states that every worker has the right to a hazard-free work environment. VA Directive 7700 states it is VA policy to “maintain safe and healthful work environments for employees through the elimination of safety and health hazards and through the development of safe work practices {and} afford VA employees working at a non-VA facility protection equal to that required by the VA Occupational Safety and Health (OSH) program. This Directive “references safety and health standards, executive orders, VA directives and handbooks and the Code of Federal Regulations as the primary sources for government-wide guidelines.”

13. If the workers in this situation refused due to a lack of training and equipment, who would provide care to the victim(s)?

Staff should dial 9-1-1 and describe the situation to the dispatcher. Fire-rescue, hazardous materials and emergency medical service personnel would perform initial triage and gross decontaminate, provide supportive treatment and

¹⁴ Hazardous Materials: Disaster Medical Planning and Response, p. 333-334.

¹⁵ Richard L. Roudebush VA Medical Center, MCM Number 11-05.

transport the patient to an appropriate facility. Repercussions from such a scenario would include the need to temporarily close the area in order to decontaminate it, provide medical screening to those who came in close contact with the person(s) and carefully address inquiries from the media realizing that negative publicity and legal actions will probably ensue.

14. Does the existence of an “disaster” waive OSHA regulations?

No. The existence of a disaster does not exempt Federal agencies from all applicable OSHA standards. “In accordance with applicable OSHA and other agency regulations, all signatory agencies to the Federal Response Plan are responsible for protecting the safety and health of their personnel deployed to a disaster or disaster exercise.”¹⁶

15. Where should decontamination occur?

“The ideal situation is for decontamination to take place in the field and for this to be performed by specially trained HAZMAT teams. In this case, the subsequent pre-hospital and hospital care can be performed with little change in the usual routine and with minimal risk to health care providers. In situations where there are several hospitals in a given area, it is not financially feasible for all hospitals to have good decontamination facilities. One hospital should be chosen as the receiving facility. The choice of hospital should be based on the availability of decontamination facilities, intensive care facilities, training of ED personnel and staff trained in medical toxicology. Regardless of whether a hospital is a receiving facility or if it is in an area where there is a trained HAZMAT team, there will always be situations when contaminated patients present to the pre-hospital or hospital systems. Thus, all hospitals should have a plan and appropriate employee training for dealing with the contaminated patient.”¹⁷

14. What needs to be done to adequately prepare for this situation?

“HAZWOPER requires that workers who will be part of an emergency response unit be trained to perform their anticipated job duties without endangering themselves or others. To determine the level and type of training your workers need, you must consider the hazards in your community and what capabilities your personnel need to respond to those hazards. You should make your determination based on worst-case scenarios.

If your personnel are expected to provide limited decontamination services in order to attend to medical problems, they must be trained to the first responder operations level with emphasis on the use of PPE and decontamination

¹⁶ Federal Response Plan for Public Law 93-288, as amended, Occupational Safety and Health Annex, page SH-2.

¹⁷ Cox, RD, Hazmat.

procedures. {for an exception see inset, below}. This level of emergency response training is described in 29 CFR 1910.120(q)(6)(ii); additional guidance about the content of this training is available in HAZWOPER's Appendix E.

Although hospitals that may be involved in emergency response are required to designate emergency responders and train them accordingly, other hospital personnel that may have to enter the decontamination area may not have to be trained as emergency responders. There is an exception to paragraph (q) training requirements for "skilled support personnel." These employees are not required to have had emergency responder training, however, they must be given an initial briefing at the time of the incident, including instruction in the wearing of appropriate personal protective equipment, what chemical hazards are involved and what duties are to be performed. This category might include emergency room personnel as well as doctors and technicians."¹⁸

Hospitals may develop in-house training or they may send personnel to a standard first responder operations level course, then provide additional training in decontamination and PPE as needed. HAZWOPER requires the employer to certify that workers have the training and competencies listed in (q)(6)(ii). The standard also requires annual refresher training or demonstration of competency, as described in (q)(8).

A hospital that expects its employees to handle emergencies involving hazardous substances also needs to prepare a written emergency response plan. Employees and affiliated personnel expected to be involved in an emergency response including physicians, nurses, maintenance workers, and other ancillary staff should be (1) familiar with how the hospital intends to respond to hazardous substance incidents, (2) trained in the appropriate use of PPE, and (3) required to participate in scheduled drills.

OSHA Publication 3152, Hospitals and Community Emergency Response - What You Need to Know (1997), is an excellent reference on this topic. It discusses the range of emergency response planning and training a hospital needs to undertake, depending on its role in community emergency response."¹⁹

15. JCAHO mandates the hospital be part of the community-wide planning effort, what support is available from the community?

"Under SARA Title III, communities must prepare an emergency response plan. It is mandated by the statute that the local hospital participate in the planning process."²⁰

¹⁸ OSHA Interpretive Letter, June 7, 1991.

¹⁹ OSHA Interpretive Letter, March 10, 1999.

²⁰ OSHA Interpretive Letter, June 7, 1991.

Hospitals are responsible for providing training and equipment to their own employees. For this reason, hospitals that may receive victims contaminated with hazardous substances should coordinate with the Local Emergency Planning Committee (LEPC) or the State Emergency Response Commission (SERC). The LEPC or SERC is responsible for planning for emergencies and providing funds to community emergency responders to “improve emergency planning, preparedness, mitigation, response and recovery capabilities.”²¹

16. If medical personnel will only be performing medical care (while others perform decontamination duties), do they need to be trained in accordance with 1910.120?

Instruction for emergency medical personnel in topics under 29 CFR 1910.120(q)(6)(ii) that are not directly relevant to emergency medical care is not necessary, although employees must be trained to perform the duties and functions expected of them. This is considered a de minimis violation, which is reserved for employers who are not technically in compliance with a regulation but who provide a safe and healthful working environment for their employees.”²²

17. What are the levels of training for emergency responders?

Level 1: First Responder Awareness:

This is the person who witnesses or discovers the release of hazardous material and notifies the proper authorities. Training includes recognition and identification of hazardous materials, notification procedures, and employee’s role in the emergency release plan. Sufficient training or proven experience in specific competencies.

Level 2: First Responder Operations:

Persons who respond to release of hazardous substances without trying to stop the release. Requires Level 1 competency and 8 hours of additional training in basic hazard and risk assessment, personal protective equipment (PPE) selection, containment and control procedures, decontamination and the emergency release plan (ERP).

Level 3: Hazardous Materials Technician:

This level responds aggressively to stop a release. It requires 24 hours of Level 2 training and competencies in detailed risk assessment, toxicology, PPE selection, advanced control, containment and decontamination

²¹ Hospital Preparedness for Receiving Contaminated Victims, OSHA response to a letter from C.O. Toole, 10-21-92.

²² OSHA Interpretive Letter, October 27, 1992.

procedures, air-monitoring equipment and the incident command system (ICS).

Level 4: Hazardous Materials Specialist:

The specialist has advanced knowledge of hazardous materials and responds with and provides support to hazardous materials technicians. It requires 24 hours of Level 3 training and proven competencies, along with advanced instruction, on all specific hazardous material topics.

Level 5: On-Site Incident Commander:

This individual assumes control of the incident. Level 5 requires 24 hours of training equivalent to Level 2 with competencies in the ICS and ERP, hazard and risk assessment and decontamination procedures.²³

18. What are the continuing education requirements?

“All emergency response personnel covered by paragraph (q) must receive refresher training, at least annually, to ensure that their skills and competencies do not deteriorate and are not forgotten. Training that expands the knowledge of emergency responders upward along the continuum is acceptable to meet the annual refresher training requirements for the year during which the training was received.”²⁴

19. If hospitals will have to comply with the HAZWOPER standard, must an incident commander be on site at all times (for hospitals, 24 hours a day, 7 days a week) or on call?

“Hospitals may come under OSHA's HAZWOPER standard (or EPA's equivalent standard, 40 CFR 311, if it is a public hospital), depending upon the level of activity they have chosen to undertake during in-house emergencies. If the hospital has decided that a hospital staff member will be the incident commander during an emergency, this person must meet the training requirements found in 29 CFR 1910.120(q)(6) and be able to implement the procedures for handling an emergency response as outlined in 29 CFR 1910.120(q)(3).

The senior official responding to the emergency can be designated as the individual in charge of the Incident Command System. As is explained in the standard's "note to (q)(3)(i)," this can change as more senior officers arrive on the scene. Therefore, you would not be required to have an incident commander on site at all times, but a designated person must be on call 24 hours a day. The

²³ OSHA 29 CFR 1910.120(q)

²⁴ Hazardous Waste Operations and Emergency Response: A Closeup Look at Training, Seymour.

emergency response plan must identify the most senior official who will be in charge until the designated incident commander arrives; this person must be properly trained for the function to be performed. “²⁵

20. Who certifies the competency of employees, the employer or OSHA?

OSHA does not certify individuals, it is the employer who must show by documentation or certification that an employee's work experience and/or training meets the requirements of 1910.120. There must be a written document which clearly identifies the employee, the person certifying the employee, and the training and/or past experience which meets the requirements. One possibility would be to include this information in the employee's personnel file. The preferred method is to include this information on a separate certificate for each employee.”²⁶

21. How is the correct level of Personal Protective Equipment (PPE) selected?

From an assessment of likely hazards, assuming the worst-case scenario. 29 CFR 1910.132 states:

“(d)(1) The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

(d)(1)(i) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

(d)(1)(ii) Communicate selection decisions to each affected employee;
and,

(d)(1)(iii) Select PPE that properly fits each affected employee. Note: Non-mandatory Appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.

(d)(2) The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

²⁵ OSHA Interpretive Letter, October 21, 1992.

²⁶ OSHA Interpretive Letter, December 2, 1991

(e) Defective and damaged equipment. Defective or damaged personal protective equipment shall not be used. ..1910.132(f).”²⁷

22. Who is required to pay for PPE, the employer or employee?

“OSHA policy requires employers to provide and to pay for personal protective equipment (PPE) which is required for a worker to do his or her job safely to comply with OSHA standards.”²⁸

“The personal protective equipment standards at 29 CFR 1910.132 through .138 establish the employer's obligation to provide personal protective equipment to employees.”

“Protective equipment, including personal protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices and protective shields and barriers, shall be provided, used and maintained in a sanitary and reliable condition wherever it is necessary by reasons of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.” (29 CFR 1910.132(a))

In order to accommodate work situations in which it is customary, as an exception, for workers in a particular trade to provide their own PPE, the standard acknowledges that employees may provide their own equipment, but does not specify that practice as the norm; instead, the standard underscores the employer's obligation to assure that such equipment is adequate and that it is properly maintained.

The "worker-provided" clause on the PPE standard (1910.132(b)), now also codified for the construction industry at 1926.95(b), has raised questions as to when employers are required to pay for PPE. This memorandum is intended to clarify the situation.

OSHA has interpreted its general PPE standard, as well as specific standards, to require employers to provide and to pay for personal protective equipment required by the company for the worker to do his or her job safely and in compliance with OSHA standards. Where equipment is very personal in nature and is usable by workers off the job, the matter of payment may be left to labor-management negotiations.”²⁹

²⁷ 29 CFR 1910.132.

²⁸ OSHA Interpretive Letter, December 9, 1996.

²⁹ OSHA Policy Memorandum, 1994.

23. Are there particular training requirements for those who wear PPE?

Yes, OSHA Standard 29 CFR 1910.132(f) states:

“(f)(1) The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

(f)(1)(i) When PPE is necessary;

(f)(1)(ii) What PPE is necessary;

(f)(1)(iii) How to properly don, doff, adjust, and wear PPE;

(f)(1)(iv) The limitations of the PPE; and,

(f)(1)(v) The proper care, maintenance, useful life and disposal of the PPE.

(f)(2) Each affected employee shall demonstrate an understanding of the training specified in paragraph (f)(1) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(f)(3) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (f)(2) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(f)(3)(i) Changes in the workplace render previous training obsolete; or
..1910.132(f)(3)(ii)

(f)(3)(ii) Changes in the types of PPE to be used render previous training obsolete; or

(f)(3)(iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(f)(4) The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

(g) Paragraphs (d) and (f) of this section apply only to 1910.133, 1910.135, 1910.136, and 1910.138. Paragraphs (d) and (f) of this section do not apply to 1910.134 and 1910.137.”³⁰

24. Do all designated emergency response personnel involved in a decontamination operation at a hospital require medical surveillance?

“No. Subparagraph (q)(9) requires that "members of an organized and designated HAZMAT team and hazardous materials specialists shall receive a baseline physical examination and be provided with medical surveillance as required in paragraph (f) of this section." Additionally, any emergency response employees who exhibit signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident must be provided with medical consultation.”³¹

25. How does SARA Title III apply to preparedness for Weapons of Mass Destruction (WMD)?

WMD is defined as “any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination or impact of: (A) toxic or poisonous chemicals or their precursors; (B) a disease organism, or; (C) radiation or radioactivity.”³²

Even though the provisions of SARA Title III were not originally designed for the intentional use of nuclear, chemical, biological and explosive/incendiary agents by terrorists, the structure established by the law and regulations created the hazard communication, emergency planning and response system used to manage incidents involving hazardous materials.

Within health care facilities, the foundation upon which a capability to decontaminate patients can be built is the Hazard Communication and Hazardous Waste Management Program(s).

But, as a recent Institute of Medicine report (see Appendix A) so clearly describes, hospital preparedness for persons contaminated with chemical and biological agents as a result of terrorism requires more research and development. Many gaps exist ~ from the ability to recognize and/or detect agents; what level of personal protective equipment (PPE) is adequate; and how much decontamination is sufficient, etc.

³⁰ 29 CFR 1910.132

³¹ OSHA Interpretive Letter, August 5, 1993.

³² Nunn-Lugar-Domenici Act, as referenced by the First Annual Report to the President and Congress by the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction (Draft), 12/15/99.

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Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response

Excerpted from the Executive Summary

The Institute of Medicine, in collaboration with the Committee on Life Sciences was asked by the Department of Health and Human Services, Office of Emergency Preparedness to:

- Collect and assess existing research, development and technology information on detecting potential chemical and biological agents and protecting and treating both the targets of attack and the health care providers, and
- Provide specific recommendations for priority research and development

The report included eight recommendations, six of which are particularly relevant to this discussion. They include:

- Pre-Incident Communication and Intelligence
- Personal Protective Equipment
- Detection and Measurement of Chemical and Biological Agents
- Mass Casualty Decontamination and Triage Procedures
- Prevention, Assessment and Treatment of Psychological Effects
- Computer-related Tools for Training and Operations

Pre-Incident Communication and Intelligence

The response of even the most well prepared medical facilities will be markedly improved by advance notice by the law enforcement community. The latter understandably fear compromising ongoing investigations, but may not fully appreciate the substantial impact even very general information about possible incidents can have in facilitating a rapid and effective response by the medical community. Receipt of information concerning a mass casualty event need not involve more than a few key individuals who can review the organization's seldom used planned begin to think about treatment options and where and how to obtain needed antidotes and drugs, make hospital beds available on short notice, and ensure adequate staffing levels.

Recommendation: *There needs to be a system in every State and major metropolitan area to ensure that medical facilities, including the State epidemiology office, receive information on actual, suspected and potential terrorist activity.*

Specific R&D needs:

- *A formal communications network between the intelligence community and the medical community.*
- *A national mechanism for the distribution of clinical data to the intelligence and medical communities after an actual event or exercise.*

Personal Protective Equipment

Personal Protective Equipment (PPE) refers to clothing and respiratory apparatus designed to shield an individual from chemical, biological or physical hazards. The “universal precautions” (gloves, gown, mask, goggles, etc.) employed by medical personnel to prevent infections will generally provide protection from the biologic agents under discussion, but it is difficult to say with confidence which, if any, civilian workers have suitable chemical PPE because the testing and certification demanded by the Occupational Safety and Health Administration (OSHA) has not, until very recently, involved military nerve agents or vesicants, and military PPE that has been tested for protection against those agents generally does not have the testing and certification that would allow it use by civilian workers. Hospitals receive not only field-decontaminated patients but also “walk-ins” who may have bypassed field decontamination. Despite Joint Commission on Accreditation of Healthcare Organizations (JCAHO) standards calling for hospitals to have hazardous materials (hazmat) plans and conduct hazmat training, two recent reviews have suggested that most hospitals in the United States are ill-prepared to treat chemically contaminated patients.

Recommendation: *The committee endorses continued testing of civilian commercial products for suitability in incidents involving chemical warfare agents, but research is still needed addressing the bulk weight and heat-stress imposed by current protective suits; developing a powered air respirator with greatly increased protection, and in providing detailed guidance for hospitals on dermal and respiratory protection.*

Specific R&D needs:

- *Increased protection factors for respirators.*
- *Protective suits with less bulk, less weight and less heat-stress.*
- *Evaluation of the impact of occupational regulations governing use of personal protective equipment.*
- *Uniform testing standards for protective suits for use in chemical agents incidents.*
- *Guidelines for the selection and use of personal protective equipment in hospitals.*
- *Alternatives to respirators for expedient use by the general public.*

Detection and Measurement of Chemical and Biological Agents

Hazardous materials or “hazmat” teams are routinely equipped with a variety of chemical detectors and monitoring kits, primarily employing chemical-specific tests indicating only the presence or absence of a suspected chemical or class of chemical. The most common detectors test for pesticides, chlorine, and cyanide, but not specifically for phosgene, vesicants or nerve agents. Although chemical tests, detectors and monitors used by the military are commercially available for civilian use, they have not been acquired by civilian organizations in appreciable numbers.

Laboratory assays indicating exposure to cyanide and anticholinesterase compounds such as nerve agents are known and available at many hospitals, but there is no current test for mustard agents or other vesicants. However, for all of these agents except mustard, individuals receiving potentially lethal doses usually develop signs and symptoms within a matter of minutes after exposure. Therefore, initial diagnosis and treatment are likely to be based on observations of signs and symptoms by the paramedic or other health care professionals on the scene.

Real-time detection and measurement of biologic agents in the environment is more daunting, even for the military because of the number of agents to be distinguished, the complex nature of the agents themselves, the myriad of similar microorganisms that are always present in the environment, and the impracticality of providing real-time, continuous monitoring at even a fraction of the sites of potential concern. Few, if any, civilian organizations currently have, or can easily obtain even a rudimentary capability in this area.

Some serological, immunological, and nucleic acid assays are available for identifying all of the biologic agents being considered in this report, and many hospitals and commercial laboratories have the necessary equipment and expertise to perform these and similar assays. However, these diseases are extremely rare in the United States and for that reason, these laboratories do not perform these assays regularly. It therefore seems unlikely that many labs will be immediately prepared to conduct the specific analytical test needed to confirm the presence of the agent, even when the attending physician is astute enough to ask for the appropriate test.

Recommendation: *The civilian medical community must find ways to adapt the many new and emerging detection capabilities to the spectrum of chemical and biological warfare agents. Public safety and rescue personnel, emergency medical personnel and medical laboratories all need faster, simpler, cheaper, more accurate instrumentation for detecting and identifying a wide spectrum of toxic substances, including but not limited to military agents, in both the environment and in clinical samples from patients. The committee therefore recommends adopting military products in the short run and supporting basic*

research necessary to adapt civilian commercial products whenever possible in the long run.

Specific R&D needs:

- *Evaluation of current hazmat and EMS chemical detection equipment for ability to detect military warfare agents.*
- *Miniaturized and less expensive chromatography/mass spectrometry technology for monitoring the environment within fixed medical facilities and patient transport vehicles.*
- *Standard Operating Procedures for communicating chemical detection information from first responders to hazmat teams, EMS teams and hospitals.*
- *Simple, rapid and inexpensive methods of determining exposure to chemical agents from clinical samples.*
- *Faster, cheaper, and easier patient diagnostics that include rare potential bioterrorism agents.*
- *Inexpensive or multipurpose biodetectors for environmental testing and monitoring.*
- *Basic research on pathogenesis and microbial metabolism.*
- *Scenario-specific testing of assay and detector performance.*

Mass Casualty Decontamination and Triage Procedures

The removal of solid or liquid chemical agents from exposed individuals is the first step in preventing severe injury or death. Civilian Hazmat teams generally have basic decontamination plans in place, although proficiency may vary widely. Very few teams are staffed, equipped or trained for mass decontamination. Hospitals need to be prepared to decontaminate patients, despite plans that call for field decontamination of all patients before transport to hospitals. However, few hospitals have formal decontamination facilities, even fewer have dedicated outdoor facilities or an easy way of expanding their decontamination operations in an event involving mass casualties.

Recommendation: *Research and development in decontamination and triage should concentrate on operations research to identify methods and procedures for triage and rapid, effective and inexpensive decontamination of large groups of people, equipment and environments.*

Specific R&D needs:

- *The physical layout, equipment and supply requirements for performing mass decon for ambulatory and non-ambulatory patients of all ages and health in the field and in the hospital.*
- *A standardized patient assessment and triage process for evaluating contaminated patients of all ages.*

- *Optimal solution for performing patient decon, including decon of mucous membranes and open wounds.*
- *The benefit vs. the risk of removing patient clothing.*
- *Effectiveness of removing agents from clothing by a showering process.*
- *Showering time necessary to remove chemical agents.*
- *Whether high pressure/low volume or low pressure/high volume spray is more appropriate for optimal cleaning of contaminated areas.*
- *The best methodology to employ in determining if a patient is “clean,” and*
- *The psychological impact of undergoing decontamination on all age groups.*

Prevention, Assessment and Treatment of Psychological Effects

Risks to victims and rescue and health care workers in such incidents include not only physical injury, but also psychological trauma. Research on post traumatic stress disorder (PTSD) has expanded far beyond studies of Vietnam veterans in the last 20 years, and including a few studies of large-scale industrial accidents, among them, chemical spills. The latter studies have most often been epidemiological in nature, focusing on sequelae rather than treatment methods and efficacy. A technique intended to prevent PTSD, Critical Incident Stress Debriefing (CISD) has gained wide acceptance among field emergency workers, and it can be expected that local police, fire and emergency medical units will be familiar with the process and the plans to use it. Scientific evidence of its efficacy, however, is equivocal.

At the federal level, the National Disaster Medical System includes special Disaster Medical Assistance Teams specializing in mental health, and the Federal Emergency Management Agency funds the Crisis Counseling Assistance and Training Program. Few practitioners have experience with chemical and biological disasters, however, and fewer still are knowledgeable about chemical and biological warfare agents.

Recommendation: *Educational materials on chemical and biological agents are badly needed by both the general public and mental health professionals.*

Specific R&D needs:

- *Identify resource material on chemical and biological agents and enlist the help of mental health professional societies in developing a training program for mental health professionals.*
- *Psychological screening methods for differentiating adjustment reactions after chem/bio attacks from more serious psychological illness.*
- *Evaluation of techniques for preventing or ameliorating adverse psychological effects in emergency workers, victims and near-victims.*
- *Agent-specific information on risk assessment, threat perception by individuals and groups, and on risk communication by public officials.*

Computer-Related Tools for Training and Operations

This section of the report identifies relevant computer-related tools and pertinent health effects information that could be used by medical and other first responders to train regularly or use operationally to enhance and sustain capabilities for identifying or managing chemical or biological terrorist incidents. These tools will also decrease the need for participation in large exercises that can be disruptive, logistically complicated, expensive, and sometimes unproductive.

Recommendation: *The committee recommends support for computer software R&D in three areas: event reconstruction from medical data; dispersion prediction and hazard assessment, and decontamination and reoccupation decisions.*

Specific R&D needs:

- *Computer software for rapid reporting of unusual medical symptomatology to public health authorities and linking that data to both toxicological information and models of agent dispersion.*
- *Examination and field testing of current, and proposed atmospheric dispersion models to determine which would be the most suitable for the emergency management community.*
- *Models of other possible vectors of dispersion (e.g., water, food and transportation).*
- *Customizable simulation software to provide interactive training to personnel involved in management of chemical and biological terrorism incidents.*
- *Information on the chemical, physical and toxicological properties of the chemical and biological agents, in order to improve modeling of their environmental transport and fate and to better support recommendations on decontamination and reoccupation decisions.*³³

³³ Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response, Institute of Medicine, national Research Council,

Appendix B

29 CFR 1910.120, HAZWOPER

Training Curriculum Guidelines (App. E)

C. Emergency response training.

Federal OSHA standards in 29 CFR 1910.120(q) are directed toward private sector emergency responders. Therefore, the guidelines provided in this portion of the appendix are directed toward that employee population. However, they also impact indirectly through State OSHA or USEPA regulations some public sector emergency responders. Therefore, the guidelines provided in this portion of the appendix may be applied to both employee populations.

States with OSHA state plans must cover their employees with regulations at least as effective as the Federal OSHA standards. Public employees in states without approved state OSHA programs covering hazardous waste operations and emergency response are covered by the U.S. EPA under 40 CFR 311, a regulation virtually identical to Sec. 1910.120.

Since this is a non-mandatory appendix and therefore not an enforceable standard, OSHA recommends that those employers, employees or volunteers in public sector emergency response organizations outside Federal OSHA jurisdiction consider the following criteria in developing their own training programs. A unified approach to training at the community level between emergency response organizations covered by Federal OSHA and those not covered directly by Federal OSHA can help ensure an effective community response to the release or potential release of hazardous substances in the community.

a. General considerations.

Emergency response organizations are required to consider the topics listed in Sec. 1910.120(q)(6). Emergency response organizations may use some or all of the following topics to supplement those mandatory topics when developing their response training programs. Many of the topics would require an interaction between the response provider and the individuals responsible for the site where the response would be expected.

(1) Hazard recognition, including:

(A) Nature of hazardous substances present,

(B) Practical applications of hazard recognition, including presentations on biology, chemistry, and physics.

- (2) Principles of toxicology, biological monitoring, and risk assessment.
- (3) Safe work practices and general site safety.
- (4) Engineering controls and hazardous waste operations.
- (5) Site safety plans and standard operating procedures.
- (6) Decontamination procedures and practices.
- (7) Emergency procedures, first aid, and self-rescue.
- (8) Safe use of field equipment.
- (9) Storage, handling, use and transportation of hazardous substances.
- (10) Use, care, and limitations of personal protective equipment.
- (11) Safe sampling techniques.
- (12) Rights and responsibilities of employees under OSHA and other related laws concerning right-to-know, safety and health, compensations and liability.
- (13) Medical monitoring requirements.
- (14) Community relations.

b. Suggested criteria for specific courses.

- (1) First responder awareness level.
 - (A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).
 - (B) Hands-on experience with the U.S. Department of Transportation's Emergency Response Guidebook (ERG) and familiarization with OSHA standard 29 CFR 1910.1201.
 - (C) Review of the principles and practices for analyzing an incident to determine both the hazardous substances present and the basic hazard and response information for each hazardous substance present.
 - (D) Review of procedures for implementing actions consistent with the local emergency response plan, the organization's standard operating procedures, and

the current edition of DOT's ERG including emergency notification procedures and follow-up communications.

(E) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(F) Awareness and knowledge of the competencies for the First Responder at the Awareness Level covered in the National Fire Protection Association's Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(2) First responder operations level.

(A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).

(B) Hands-on experience with the U.S. Department of Transportation's Emergency Response Guidebook (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.

(C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, the likely behavior of the hazardous substance and its container, the types of hazardous substance transportation containers and vehicles, the types and selection of the appropriate defensive strategy for containing the release.

(D) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including extended emergency notification procedures and follow-up communications.

(E) Review of the principles and practice for proper selection and use of personal protective equipment.

(F) Review of the principles and practice of personnel and equipment decontamination.

(G) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(H) Awareness and knowledge of the competencies for the First Responder at the Operations Level covered in the National Fire Protection Association's

Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(3) Hazardous materials technician.

(A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).

(B) Hands-on experience with written and electronic information relative to response decision making including but not limited to the U.S. Department of Transportation's Emergency Response Guidebook (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.

(C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, the likely behavior of the hazardous substance and its container, the types of hazardous substance transportation containers and vehicles involved in the release, the appropriate strategy for approaching release sites and containing the release.

(D) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including extended emergency notification procedures and follow-up communications.

(E) Review of the principles and practice for proper selection and use of personal protective equipment.

(F) Review of the principles and practices of establishing exposure zones, proper decontamination and medical surveillance stations and procedures.

(G) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(H) Awareness and knowledge of the competencies for the Hazardous Materials Technician covered in the National Fire Protection Association's Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(4) Hazardous materials specialist.

(A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).

(B) Hands-on experience with retrieval and use of written and electronic information relative to response decision making including but not limited to the U.S. Department of Transportation's Emergency Response Guidebook (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.

(C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, and the likely behavior of the hazardous substance and its container, vessel, or vehicle.

(D) Review of the principles and practices for identification of the types of hazardous substance transportation containers, vessels and vehicles involved in the release; selecting and using the various types of equipment available for plugging or patching transportation containers, vessels or vehicles; organizing and directing the use of multiple teams of hazardous material technicians and selecting the appropriate strategy for approaching release sites and containing or stopping the release.

(E) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, including knowledge of the available public and private response resources, establishment of an incident command post, direction of hazardous material technician teams, and extended emergency notification procedures and follow-up communications.

(F) Review of the principles and practice for proper selection and use of personal protective equipment.

(G) Review of the principles and practices of establishing exposure zones and proper decontamination, monitoring and medical surveillance stations and procedures.

(H) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(I) Awareness and knowledge of the competencies for the Off-site Specialist Employee covered in the National Fire Protection Association's Standard No. 472, Professional Competence of Responders to Hazardous Materials Incidents.

(5) Incident commander.

The incident commander is the individual who, at any one time, is responsible for and in control of the response effort. This individual is the person responsible for the direction and coordination of the response effort. An incident commander's position should be occupied by the most senior, appropriately trained individual present at the response site. Yet, as necessary and appropriate by the level of response provided, the position may be occupied by many individuals during a particular response as the need for greater authority, responsibility, or training increases. It is possible for the first responder at the awareness level to assume the duties of incident commander until a more senior and appropriately trained individual arrives at the response site.

Therefore, any emergency responder expected to perform as an incident commander should be trained to fulfill the obligations of the position at the level of response they will be providing including the following:

(A) Ability to analyze a hazardous substance incident to determine the magnitude of the response problem.

(B) Ability to plan and implement an appropriate response plan within the capabilities of available personnel and equipment.

(C) Ability to implement a response to favorably change the outcome of the incident in a manner consistent with the local emergency response plan and the organization's standard operating procedures.

(D) Ability to evaluate the progress of the emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.

(E) Ability to adjust the response plan to the conditions of the response and to notify higher levels of response when required by the changes to the response plan.

[54 FR 9317, Mar. 6, 1989, as amended at 55 FR 14073, Apr. 13, 1990; 56 FR 15832, Apr. 18, 1991; 59 FR 43268, Aug. 22, 1994; 61 FR 9227, March 7, 1996]

Appendix C

29 CFR 1910.132, Personal Protective Equipment

General Requirements (Training)

(f) Training.

(f)(1) The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

(f)(1)(i) When PPE is necessary;

(f)(1)(ii) What PPE is necessary;

(f)(1)(iii) How to properly don, doff, adjust, and wear PPE;

(f)(1)(iv) The limitations of the PPE; and,

(f)(1)(v) The proper care, maintenance, useful life and disposal of the PPE.

(f)(2) Each affected employee shall demonstrate an understanding of the training specified in paragraph (f)(1) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(f)(3) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (f)(2) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(f)(3)(i) Changes in the workplace render previous training obsolete; or

..1910.132(f)(3)(ii)

(f)(3)(ii) Changes in the types of PPE to be used render previous training obsolete; or

(f)(3)(iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(f)(4) The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the

name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

(g) Paragraphs (d) and (f) of this section apply only to 1910.133, 1910.135, 1910.136, and 1910.138. Paragraphs (d) and (f) of this section do not apply to 1910.134 and 1910.137.

[39 FR 23502, June 27, 1974, as amended at 59 FR 16334, April 6, 1994; 59 FR 33910, July 1, 1994; 59 FR 34580, July 6, 1994]

Appendix D

29 CFR 1910.1200, Hazard Communication Standard

Requirements of Training Programs

..1910.1200(h)

(h) "Employee information and training."

(h)(1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

(h)(2) "Information." Employees shall be informed of:

(h)(2)(i) The requirements of this section;

(h)(2)(ii) Any operations in their work area where hazardous chemicals are present; and,

(h)(2)(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(h)(3) "Training." Employee training shall include at least:

(h)(3)(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(h)(3)(ii) The physical and health hazards of the chemicals in the work area;

(h)(3)(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(h)(3)(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety

data sheet, and how employees can obtain and use the appropriate hazard information.