HAZARDOUS WASTE HANDLING Pocket Guide

Addressing the information requirements of 29 CFR 1910.120

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Hey, how ya doin'?
Vinnie Vaducci here. Vinnie "Vavoom" Vaducci. That's the nickname they gave me when I got here. Not a bad nickname. You should hear what they call Elvis!

By now you've probably guessed that I "bought the farm," "punched out," "kicked the bucket," or my personal favorite, "took the dirt nap." You may be asking yourself, "Why would I want to read something penned by a dead guy?" Well, this is no ghost story. I'm talkin' serious business here. This is about health and safety - *your* health and safety. And it's written by a guy who's been there - me - Vinnie Vaducci. Where does the "Vavoom" part come in? Listen up, I'm gonna tell ya my

I. Review of the Law

The "Law" refers to the Occupational Safety and Health Administration (OSHA) *Hazardous Waste Operations and Emergency Response,* also known as *29 CFR Part 1910.120* or, more affectionately, as the *HAZWOPER* standard. First, let's back up a minute . . .

In the early 60's, there wasn't a lot of thought given to the environment and toxic wastes. Heck! (We can't use that other "H" word up here.) It wasn't until 1965, a couple of years after my dramatic departure, that an honest effort was made to control hazardous waste problems. This law, the *Solid Waste Disposal Act of 1965*, along with the *Resource Recovery Act of 1970*, represents the first real attempt to protect the environment from the improper disposal of hazardous wastes.

In 1976, the *Resource Conservation and Recovery Act (RCRA)* was passed. This law was the first comprehensive federal effort to regulate not only solid wastes, but hazardous wastes as well. *RCRA* regulates anyone engaged in the creation, transportation, treatment, and disposal of hazardous wastes. Unfortunately, by 1976, when *RCRA* was passed, there were already thousands of abandoned or uncontrolled waste dumps and sites.

Realizing the need to clean up these sites and the hazards created by accidental spills, the *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)* was passed in 1980. This law, better known as *Superfund*, further demonstrated the need to protect the safety and health of employees exposed to these hazards as they worked to clean up, treat, and dispose of wastes. This need was finally addressed in 1986 when the *Superfund Amendment and Reauthorization Act (SARA)* was passed. Section 126 of this law mandated that standards governing the safety and health of employees engaged in hazardous waste

II. Hazards Present at a Typical Site

Your ability to recognize safety and health hazards will go a long way toward reducing accidents at your worksite. If I knew then what I know now, I wouldn't have to be speakin' to ya from Cloud Nine, know what I mean?

Physical Hazards

Most injuries that occur at a hazardous waste site are physical, and not the result of inhaling some toxic chemical.

Whether you're on a hazardous waste site or responding to a spill off-site on the highway, you can find the following safety hazards: holes or ditches; poorly positioned objects such as drums or products that may fall; sharp objects such as nails, metal shavings, or even needles if medical waste is involved; slippery surfaces; irregular terrain; and steep inclines. In addition to risking bruises and broken bones from slipping or falling, you may increase your risk of chemical exposure by damaging your protective equipment.

You can help your employer guard against these physical hazards by paying close attention to your work environment. Make sure your work area is free from nails, metal shavings, and other objects that can cause punctures or lacerations. If you're involved in operating heavy equipment, make sure your movements (swinging a backhoe bucket or the boom on a drum picker) don't interfere with high tension wires, other equipment, or fellow workers. Take note of barricades and warning tape used to warn you of ditches, slippery surfaces, or danger of falling objects. As your work moves or changes, or you physically change your work environment, such as excavating a pit or stacking drums or products, be aware of how these changes affect your safety. Make your employer aware of these changes so amendments can be made to any specific

III. Sampling and Monitoring

Any employer or industrial hygienist will tell you the use of personal protective equipment is the least preferred method of protecting your health and safety. Get rid of the problem! Engineer it out! When that can't be done (at a hazardous waste site it usually can't), personal protective gear has to be worn.

Before you grab that respirator, I've got a question. How do you know what to wear? You gotta figure out what the stuff is before you can decide what level of personal protective equipment (PPE) to wear. To do that, you have to sample, collect, analyze, and measure for airborne contaminants.

Maybe you're thinking that hazard analysis will be performed by your employer and you won't need to get involved in this process. But wouldn't you like to know how those measuring gizmos work and what all that hygiene lingo (TLV, PEL, LD_{50}, etc.) means? I wish I'd had that info way back when. I could be kickin' back, havin' a cold one instead of listening to the king (no, not *The King* - I mean Elvis) constantly lament the lack of fast food joints around here.

The two types of measuring or analysis that occur on-site are sampling and monitoring.

Sampling

Sampling is used to collect a specific volume or amount (by time or weight) of hazardous contaminants. This collection process could include one or more of the following:

Bag or Grab Sample - A simple method by which an air sample of the desired area is collected in a "bag" or "inert membrane" through either a hand or battery operated pump. The captured sample is then taken to a laboratory off-site or a portable lab trailer on-site where it is analyzed.

IV. Personal Protective Equipment

If you've been paying attention, and I'm sure you have, you already know that the proper selection of personal protective equipment (PPE) cannot be made without first identifying and measuring quantifying) the hazards that are present.

It's hard to fully appreciate the value of the PPE ensemble without understanding how these hazardous substances can wind up inside of you. Let's take a look at each primary route of entry and see what we can do to prevent them.

Contact/Absorption

Do you know what the body's largest organ is? (Now be nice!) It's the skin! No kiddin'! The skin is an organ and it's about 3,000 square inches on an average person. Your skin is not only the largest organ, it's also the most exposed, usually receiving the most contact with hazardous materials.

Some hazardous materials only damage the skin's surface. Others permeate the skin. I bet you'll be surprised to learn that contact hazards are responsible for more health-related occupational injuries than all other routes of exposure. These injuries can range from simple contact dermatitis to blindness caused by eye contact with hazardous materials.

Absorption or permeation of the skin. Results in the hazard entering directly into the body. Cuts and scrapes can permit direct entry into the body. Sometimes skin absorption can be more dangerous than ingestion because some contaminants that are ingested can reach the liver, where they can be de-toxified, but contaminants absorbed through the skin go directly into the bloodstream.

V. Signs and Symptoms of Overexposure

The following[1] is a list of some of the signs and symptoms a person overexposed to hazardous materials may experience.

Abdominal cramps. Painful stomach area spasms
Alopecia. Loss of hair; baldness
Amenorrhea. Stoppage of menstruation
Amnesia. Loss of memory
Analgesia. Loss of sensitivity to pain
Anesthesia. Loss of feeling
Angina pectoris. Chest pain
Anorexia. Loss of appetite
Anosmia. Loss of sense of smell
Anoxia. Lack of O_2 from inspired air
Anuria. Lack of urination
Anxiety. Troubled feeling
Apathy. Lack of emotion
Aphasia. Inability to talk coherently
Apnea. Breathing temporarily stopped
Areflexia. Loss of reflexes
Argyria. Blue-colored tissue from silver
Arrhythmia. Irregular heartbeat
Arthralgia. Joint pain
Asbestosis. Lung disease from inhaling asbestos
Asphyxia. Suffocation
Aspiration hazard. Drawing material into lungs
Asthenia. Loss of strength or energy
Asthma. Difficulty breathing
Ataxia. A loss of muscular coordination
Athetosis. Slow writhing movement of fingers
Atrophy. Reduction in size, or function of body
Blackened teeth. Darkening of tooth surface
Blindness. Inability to see
Blurred vision. Not in focus
Bradycardia. Slow heart beat

VI. Glossary

Abandoned Site. An inactive hazardous waste disposal or storage facility which cannot be easily traced to a specific owner, or a location where illegal dumping has taken place.

Absorption. Hazardous waste physical treatment method which involves adding materials to the waste to decrease its fluid content; suitable absorbents include soil and fly ash.

Activated Carbon. A highly absorbent form of carbon, used to remove odors and toxic substances from gaseous emissions or liquid effluents.

Acutely Hazardous Waste. A waste that is considered a substantial hazard whether improperly managed or not. EPA includes waste shown to be fatal to humans in low doses, waste shown in mammalian studies to have specific toxicities, and explosives.

Adsorption. Process by which ions in one phase tend to condense and concentrate on the surface of another phase. A hazardous waste physical treatment process where substances in waste streams adhere to and become attached to adsorbents such as activated carbon.

Aerobic. Having oxygen (O_2) as part of the environment; growing only in the presence of oxygen, such as aerobic organisms; occurring only in the presence of oxygen, such as aerobic decomposition.

Anaerobic. Life or processes that occur in the absence of molecular oxygen; growing in the absence of molecular oxygen, such as anaerobic bacteria; occurring in the absence of molecular oxygen, such as anaerobic decomposition.

Aquifer. Geological formation, group of formations, or part of a ground formation, usually gravel or porous, which is capable of yielding water to wells or springs.

Bioaccumulation. The process that occurs