

# HazSafety

## Training Advisor

VOLUME 13, NUMBER 8, AUGUST 2015

### It's not the heat...

This issue of *HazSafety* focuses on heat and other hot topics that employees will find helpful when working with hazardous substances, chemicals, materials, and waste. We'll cover these issues in a variety of articles, activities, and quizzes, as outlined below:



**How flammable?** ..... 2  
Discusses flammable liquids, approved flammable liquid containers, and proper workplace storage. **Audience:** Useful for any employees working with flammable liquids.



**Hot under the collar** ..... 3  
Highlights heat stress illnesses and the hazards faced by emergency responders and hazardous waste workers. **Audience:** Geared to employees who may have to use PPE when responding to chemical spills during summer heat.



**Keep your cool about your load** ..... 4  
Reviews hazardous materials shipments and the information that must be present in the shipping papers. **Audience:** Targeted toward all employees who package or receive hazardous materials, or who prepare shipping papers.



**Hazardous waste is a "hot" topic** ..... 5  
Explains the RCRA definition of solid waste, and defines both listed and characteristic waste. **Audience:** Valuable for employees whose work activities include working with or around any hazardous waste, or who must complete paperwork associated with waste.

**Quiz: Test your knowledge** ..... 6  
Allows readers to test their knowledge of HazCom, HAZWOPER, hazmat, and hazwaste issues covered in this newsletter.

**Learning activity: Heat stress** ..... 7

**Training notes** ..... 8  
These training notes help you incorporate company-specific information into your program.



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# How flammable?

When OSHA updated the Hazard Communication Standard, the Agency also adopted the Globally Harmonized System of the Classification and Labeling of Chemicals (GHS) definitions for flammable liquids.

A flammable liquid is any liquid having a flashpoint at or below 199.4 °F (93 °C). Flammable liquids are divided into four categories as follows:

- Category 1 liquids have flashpoints below 73.4 °F (23 °C) and a boiling point at or below 95 °F (35 °C).
- Category 2 liquids have flashpoints below 73.4 °F (23 °C) and a boiling point above 95 °F (35 °C).
- Category 3 liquids have flashpoints at or above 73.4 °F (23 °C) and at or below 140 °F (60 °C).
- Category 4 liquids having flashpoints above 140 °F (60 °C) and at or below 199.4 °F (93 °C).

## Design, Construction, and Capacity of Containers

Only approved containers and portable tanks may be used to store flammable liquids. Metal containers and portable tanks which are authorized by the De-



partment of Transportation (DOT) (49 CFR 178) are deemed acceptable when containing products authorized by the DOT (49 CFR 173).

Maximum allowable sizes of various types of containers and portable tanks are specified based on the class of flammable and combustible liquid they contain. In a Letter of Interpretation OSHA has stated that the use of DOT approved plastic fuel cans of five gallons capacity or less would be a de minimis violation.

## Design, Construction and Capacity of Storage Cabinets

Not more than 60 gallons of Category 1, 2, or 3 flammable liquids, nor more than 120 gallons of Category 4 flammable liquids may be stored in any given storage cabinet.

Cabinets shall be labeled in conspicuous lettering, “Flammable - Keep Fire Away.”

There may be no more than three flammable storage cabinets in any one “fire area” of the facility. A “fire area” is an area of a building separated from the remainder of the building by construction having a fire resistance of at least one hour and having all communicating openings properly protected by an assembly having a fire resistance rating of at least one hour.

Flammable or combustible liquids shall be stored in tanks or closed containers. The quantity of liquid that may be located outside of a storage cabinet in a building or in any one fire area of a building shall not exceed:

- 25 gallons of Category 1 flammable liquids in containers
- 120 gallons of Category 2, 3, or 4 flammable liquids in containers

# Hot under the collar

Heat stress may be one of the most common and potentially serious conditions for workers at hazardous waste sites and emergency response operations.

And while heat stress can be influenced by a number of factors such as the temperature, workload, and the individual health, wearing PPE can put a hazardous waste worker or an emergency responder at risk of developing heat stress.

PPE adds weight and bulk making the body work harder, while the PPE itself reduces the body's normal mechanisms for cooling by trapping heat and sweat. Other factors can increase your chances of suffering from heat stress while wearing PPE.

## Acclimatization

Generally, workers who are acclimated to working in hot conditions can handle working in hot conditions better than those who have not been exposed to it. By gradually increasing workload and exposure times over several days, a worker's body can adapt.

## Age

Older individuals may be less effective in compensating for heat and work loads, although at moderate work and temperature loads, the responses to heat of younger and older workers are similar. Fitness level is a more important factor.

## Physical condition

The more physically fit a person is, the better that person will respond to



the strain of working in the heat, and the longer the person can work in the hot environment.

## Medications

The use of certain medication, over-the-counter medications, or the use of alcohol and social drugs may increase the risk of

heat injury or illness by reducing heat tolerance.

## Preventing heat illnesses

A heat illness prevention program should include:

- Providing workers with water, rest and shade;
- Gradually increasing workloads providing frequent breaks to allow workers to build a tolerance for working in the heat (**acclimatization**);
- Modifying work schedules as necessary;
- Planning for emergencies and training workers about the symptoms of heat-related illnesses and their prevention; and
- Monitoring workers for signs of illness.

Ensure that cool drinking water is available and easily accessible. (Note: Certain beverages, such as caffeine and alcohol can lead to dehydration.)

Encourage workers to drink a liter of water over one hour, which is about one cup every fifteen minutes.

Provide or ensure that fully shaded or air-conditioned areas are available for resting and cooling down.

# Keep cool about your load

Most hazardous material shipments that require shipping papers must also be accompanied by emergency response information.

At a minimum, the following information must be provided for each hazardous material in the shipment:

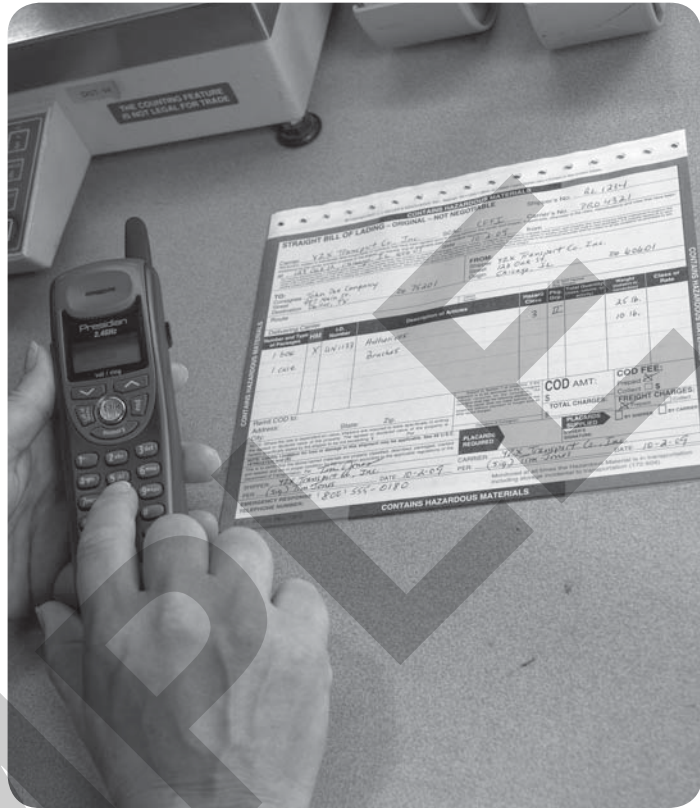
- Basic description and technical name of the hazardous material.
- Immediate hazards to health.
- Risks of fire or explosion.
- Immediate precautions to be taken in the event of an accident or incident.
- Immediate methods for handling fires.
- Initial methods for handling spills or leaks in the absence of fire.
- Preliminary first aid measures.

How this information is presented is at the discretion of the shipper. The main concern is that the information is complete, printed legibly, and in English.

## Emergency response information

The most common methods for presenting the required emergency response information include:

- Listing it directly on the shipping papers.
- Keeping a copy of the Emergency Response Guidebook with the shipping papers.
- Keeping a copy of the appropriate guide pages from the Emergency Response Guidebook with the shipping papers. The material's basic descrip-



tion (and technical name(s), if any) must be included.

- Keeping a copy of the material's Safety Data Sheet with the shipping papers if it contains all of the required emergency response information. The material's basic description (and technical name(s), if any) must be included.

## Emergency response phone number

The shipping papers must include an emergency response telephone number that can be called for more information in the event of an emergency. It must be the number of:

- The person offering the material for transportation, or
- Any agency or organization (such as CHEMTREC®) that is capable of, and accepts responsibility for, providing detailed information about the hazardous material.

# Hazardous waste is a “hot” topic

Under the EPA’s Resource Conservation and Recovery Act (RCRA), the term “solid waste” means any waste, whether it is a solid, semisolid, or liquid. EPA developed a set of regulations to assist in determining whether a material is a waste.

## Hazardous waste

A waste may be considered hazardous if it:

- Has certain “characteristics” or
- Is “listed” on a specific list of wastes EPA has determined are hazardous because they pose substantial present or potential hazards to human health or the environment.

By “listing” a waste, the EPA describes a specific type of waste that is considered dangerous enough to warrant regulation. Hazardous waste listings describe wastes from various industrial processes, wastes from specific sectors of industry, or wastes in the form of specific chemical formulations.

When defining hazardous waste characteristics, EPA asks the question, “What properties or qualities can a waste have which cause that waste to be dangerous?”

## Characteristic Hazardous Wastes

A RCRA characteristic hazardous waste is a solid waste that exhibits at least one of four characteristics:

- **Ignitability** – Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F).

Examples include waste oils and used solvents.

- **Corrosivity** – Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) and/or are capable of corroding metal containers, such as storage tanks, drums, and barrels. Battery acid is an example.
- **Reactivity** – Reactive wastes are unstable under “normal” conditions. They can cause explosions, undergo violent reactions, generate toxic fumes, gases, or vapors or explosive mixtures when heated, compressed, or mixed with water. Examples include lithium-sulfur batteries and explosives.
- **Toxicity** – Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute ground water. Toxicity is defined through a laboratory procedure called the Toxicity Characteristic Leaching Procedure (TCLP). The TCLP helps identify wastes likely to leach concentrations of contaminants that may be harmful to human health or the environment.



# Test your knowledge

The following quiz is designed to test your knowledge of heat-related issues as they apply to HazCom, HAZWOPER, hazmat, and hazwaste. The questions are based on material presented in this newsletter. Circle the correct answer.

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**HAZCOM**

1. A Category 2 flammable liquid is one which has a flashpoint below 73.4 °F and a boiling point above:
  - A. 140 °F
  - B. 95 °F
  - C. 122.7 °F
  - D. 199 °F
2. You can store 120 gallons of Category 3 flammable liquids in a single flammable storage cabinet.  
True  False

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**HAZWOPER**

3. Wearing PPE can put a hazardous waste worker or an emergency responder at risk of developing heat stress.  
True  False
4. A heat illness prevention program should include:
  - A. Providing water, rest, and shade.
  - B. Allowing workers to build a tolerance for working in the heat.
  - C. Monitoring workers for signs of illness.
  - D. All of the above.

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**HAZMAT**

5. Information for each hazardous material in the shipment must include:
  - A. The OSHA identification number.
  - B. A basic description and technical name of the material.
  - C. The EPA hazard class.
  - D. All of the above.
6. The shipping papers must include an emergency response telephone number.  
True  False

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**HAZWASTE**

7. Under RCRA, the term “solid waste” does not refer to liquid or semisolid wastes.  
True  False
8. Which of the following is a characteristic of hazardous waste, according to RCRA?
  - A. Carcinogenicity
  - B. Instability
  - C. Corrosivity
  - D. Mutagenicity

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Heat Stress

When the body is unable to cool itself through perspiration, serious heat illnesses can occur. The most extreme heat-induced illnesses are heat exhaustion and heat stroke. If not treated, heat-related illnesses can lead to mental confusion, seizures, or even death.

## It happened like this

It was a hot and dry morning when Pete woke up for his first day of work in construction. Being new on the job, Pete wanted to make sure he was prepared. Based on the weather forecast, he knew that it was going to reach 105°F by mid-afternoon. So he wore light-weight clothing, a bandana, and sunglasses with UV-protection. Pete also brought a six-pack of caffeinated beverages in a cooler along just in case he needed a little extra energy.

At the worksite, the foreman told Pete where to go to find drinking water and where to take breaks from the heat, the location of drinking water, and how important it was to rest and drink plenty of water throughout the day. Pete was teamed up with Randy, a construction worker for 12 years. However, Randy had to get the roof finished that day and did not feel like he had time to train someone new.

Randy and Pete worked together and focused on finishing the roof. They did not have time for breaks in the morning. By lunch time, Pete was feeling weak, he had a headache, and his stomach hurt. Pete hoped that having a couple of sodas and a sandwich would help. Later that afternoon, Pete started making really odd statements. His skin was red and hot, he was not sweating, and he looked dazed.

“Pete, are you okay?” Randy asked him.

“What? Yeah, let’s ... yeah, fine, just a little dizzy” Pete said.

“You don’t look so good. Why don’t we take a break and get some water?” Randy asked. Randy was worried that Pete might be getting ill.



“Water? ... I’m gonna ... over here put this ... just second here, hold on.” Pete said.

It was a short time later that Pete stumbled and collapsed when he was going to the break area. Randy went over and could not get a response from him, so he immediately called for help.

## Let’s talk about this, okay?

What are the issues?

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What did Pete do right?

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What did the foreman do right?

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What did Randy do wrong?

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What did Pete do wrong?

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What did the foreman do wrong?

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# Training notes

The information in this newsletter addresses many issues your employees need to know about the various issues contained herein. Consider including company-specific information in your training.

Ideas for covering company-specific information in your training for this topic include:



- Using an SDS and a labeled container, explain how the trainees can identify a flammable liquid using both. Take a tour of the facility and note areas where flammable liquids are used.
- Review your heat illness program with the employees, and review those jobs most likely to see cases of heat illness. Explain how to identify the early signs of heat illness in others.
- Show shipping papers used for materials at your facility. Discuss the emergency response information used for the chemicals your facility handles.
- Tour the facility's waste storage area, and note the types of wastes stored there. Explain the different properties of the wastes.

## Answer key: (from page 7)

### What are the issues?

Excessive heat.  
Employee training.  
Job deadline.  
Violation of company safety policies.  
Heat stroke.

### What did Pete do right?

Watched weather forecast.  
Wore light-weight clothing.  
Wore a bandana.  
Wore sunglasses with UV-protection.

### What did the foreman do right?

Stressed the importance of rest and water breaks.  
Paired Pete up with experienced construction worker.

### What did Randy do wrong?

Didn't drink water or take breaks.  
Didn't insist that Pete stop work and rest in a cool place.  
Didn't notice the symptoms of heat stroke.  
Didn't let someone know sooner that Pete was in trouble.

### What did Pete do wrong?

Didn't take intermittent rest breaks  
Didn't drink small quantities of water frequently.  
Didn't report symptoms to supervisor.  
Consumed caffeinated beverages.

### What did the foreman do wrong?

Didn't properly train Pete on heat stress  
Didn't gradually expose Pete to work in the heat.  
Didn't check on the two workers.  
Didn't control exposure to heat stress and, in fact, allowed Randy and Pete to perform heavy work in extremely hot temperatures.

## Answer key: Test your knowledge (from page 6)

Use the following answer key to see how well your employees understood the material in this newsletter. Or, if you prefer, you can allow employees to check their own answers by copying the key and providing it to them with the newsletter.

(1) B (2) F (3) T (4) D (5) B (6) T (7) F (8) C

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