Flammable and Combustible Liquids

Flammable and combustible liquids such as solvents, paint thinners are some of the most hazardous chemicals used on a regular basis. You are handling flammable and combustible liquids every time you fill your car’s gas tank, thin paint with turpentine, or start a barbecue with lighter fluid.

At work, flammable and combustible liquids are used as solvents, cleaners, fuels, processing aids, and raw materials - sometimes in large quantities. There are no training requirements in OSHA’s standard on flammable and combustible liquids, but you do need training on the hazards of these chemicals to meet the requirements of the hazard communication standard.

Using the MSDS to Determine Hazards

Flammable and combustible liquids evaporate to produce vapors that can fuel a fire. The risk depends on the physical properties of the liquid, such as its vapor density, vapor pressure, and flashpoint. Information on these physical properties is found on the chemical’s material safety data sheet (MSDS).

The value for vapor pressure indicates how much vapor builds up over the surface of the liquid as it evaporates. A liquid that evaporates quickly has a higher vapor pressure than a liquid that evaporates slowly. Flammable liquids that give off a lot of vapor quickly can ignite more easily than liquids that have lower vapor pressures. Of course, if the temperature increases, the rate of evaporation increases, too.

The value for flashpoint lets you know if a liquid is flammable or combustible. The flashpoint is the lowest temperature at which a liquid gives off enough vapor (in a test chamber) to form an ignitable mixture with air near the surface of the liquid. A flammable liquid has a flashpoint below 100° F; a combustible liquid has a flashpoint at or above 100° F. This means that flammable liquids will readily ignite at typical room temperatures, while combustible liquids need to be heated a little before they give off enough vapors to ignite.

Safe Handling and Use

It only makes sense that smoking, open flames, sparks, and other ignition sources are
Flammable vs. Combustible Liquids (continued from page 1)

Store chemicals properly. Not allowed where flammable and combustible liquids are in use. Another precaution is to only use hand tools (bung wrenches, screwdrivers, etc.) made of non-sparking alloys, and non-sparking power tools (pneumatic pumps, mixers, etc.) where hazardous flammable vapors may be present.

Take extra precautions when flammable and combustible liquids are transferred from one container to another. The molecules of these chemicals rub together to create static electricity as they are poured. The static builds up on the containers, and when the static discharges, the spark can ignite the flammable vapors. To keep the static from building up, the original container must be electrically grounded, and the receiving container must be electrically bonded to the original container. Wires and clips are used to ground and bond containers.

Liquids can be dispensed from drums by two methods: gravity flow for drums stored horizontally, and pump methods for drums stored vertically. For gravity flow, liquids are dispensed though self-closing valves. Self-closing valves help prevent spills because someone must actively hold the valve open while the liquid flows. Place a can under the valve to catch spills and leaks. The pump method is faster, has less risk for a spill, and empties the drum almost completely.

The pump method is one way of dispersing liquids.

Only take out as much of the liquid as you need for the job. Use the liquids in areas with adequate ventilation. Personal protective equipment (PPE) including eye and face protection, chemical-resistant aprons or protective clothing, gloves, and boots may be needed. Always put flammable and combustible liquids back into proper storage when you are finished with them. Never pour waste flammable and combustible liquids into a drain or sewer. Waste flammable and combustible liquids are hazardous, and they need to be collected and stored for proper disposal. Wet rags give off a lot of vapors, and they can easily start a fire. To prevent this, use specially designed waste cans to hold used rags.

Flammable and combustible liquids evaporate, their vapors can ignite and start fires. The vapors are often heavier than air, and they can build up and spread over a wide area. Smoking isn’t allowed where these liquids are used, but watch for other ignition sources too. Electric motors can spark, welding and cutting operations have open flames, and equipment can have hot surfaces.

Keeping containers closed when not in use keeps the liquids from evaporating and helps prevent spills.

Use only approved containers, such as safety cans, when the chemicals aren’t in their original containers. To lesson the chance for a spill, only take out what you need for the job. Make sure there is adequate ventilation in the area. Put the containers back into protected storage (a flammable liquid storage cabinet or a specially designed storage room) when you’re finished with them. Collect waste liquids for proper disposal - never pour them down a drain.

Safe Storage

Keep all containers closed when they’re not being used. Only certain types and sizes of containers can be used to store flammable and combustible liquids. Usually these are metal containers, however, some types of plastic containers have been approved. Safety cans have self-closing lids and flame arresters. OSHA sets limits on the amounts of flammable and combustible liquids that can be stored outside of protected areas. One type of protected storage is the flammable liquid storage cabinet.

Properly store flammable and combustible materials.

Another type of protected storage is the specially designed inside storage room. It meets OSHA’s specifications for ventilation, fire protection, wiring, capacity, and the arrangement of stored items. When a drum of flammable liquid is placed into storage, the bung cap should be replaced with a drum vent; this prevents pressure build-up if the drum is exposed to excessive heat.

You can work safely with flammable and combustible liquids by:

- Knowing where MSDSs are located in your area and how to read them;
- Follow chemical label instructions for safe use;
- Taking the necessary precautions when transferring flammable and combustible chemicals; and
- Wearing the appropriate PPE; and
- Storing chemicals in the correct location.

Dispose of used rags in the proper containers.

Safety Focus: Use Snow Throwers Safely

If you live in a cold climate, you probably have the honor of clearing snow from sidewalks and driveways. Using a snow thrower is certainly easier on the back, but this equipment can cause serious injuries and deaths. It is important to follow all of the manufacturer’s instructions when using a snow thrower. This is especially important if you have teens at home who are learning to use the equipment. Employees who are under 16 years of age have to get out the shovel to get rid of all that snow. By law, they are not allowed to use motorized snow removal equipment like snow blowers on the job.

Recognize the hazards

The U.S. Consumer Product Safety Commission (CPSC) reports that, in a recent year, there were approximately 590 finger amputations involving snow throwers. The agency estimates that each year on average there are more than 5,000 hospital emergency room-related injuries associated with snow throwers. Injuries most frequently occurred when people, thinking that the augers had stopped rotating, put their hands into the machine’s auger/collector or discharge chute in an attempt to clear snow or debris. Other injuries have been caused by defective parts that have failed while the equipment was in use. CPSC has also received reports of fatalities from becoming caught in the machine or from carbon monoxide poisoning after running the engine in an enclosed area.

Use with caution

CPSC offers the following safety tips for using snow throwers:

- Stop the engine and use a long stick to unclog wet snow and debris from the machine. Never use your hands to unclog a snow thrower!
- Always keep hands and feet away from all moving parts.
- Never leave the machine running in an enclosed area.

- Don’t leave the machine unattended if the engine is operating; shut down the engine if you leave the machine for any length of time.
- Add fuel to the tank outdoors before starting the machine; don’t add gasoline to a running or hot engine. Always store gasoline out of the house and away from ignition sources.
- If you have an electric-powered snow thrower, be aware of where the power cord is at all times. Inspect the snow thrower each time you use it; always refer to the owner’s manual for instructions on care and maintenance.

Dos and Don’ts

- Always allow unit and engine to adjust to outdoor temperatures before clearing snow.
- Do not operate unless proper guards, plates or other protective devices are in place and working properly.
- Never operate a snow blower without good visibility.
- Always be aware of traffic and pedestrians when operating along streets, curbs, or sidewalks. Never discharge through person.
- Always be sure of your footing, especially when operating in reverse or leaving the operator's position. Walk, never run, during operation.
- Avoid uneven and rough terrain. Be extra cautious while operating near drop-offs, ditches, or embankments. Units can suddenly turn over if a wheel is over the edge of a cliff or ditch.
- Use extreme caution on gravel surfaces. Adjust runners so a scraper blade does not contact gravel.
- Avoid starting or stopping on a slope. If you must operate on a slope, keep all movement on slopes slow and gradual.
- Slow down and turn corners slowly.
- Always look down and behind before and while backing.
- Disengage attachment drive when traveling from one work area to another.
- Do not leave a running unit unattended. Always shut off engine and remove the key before leaving a unit.
- Do not overload the machine capacity by attempting to clear snow at too fast a rate.
- Run the unit a few minutes after clearing snow to prevent freeze-up.
- Stay alert for any unexpected hazard.
The mission of Putnam City Schools is to prepare our students to be responsible citizens and lifelong learners. It’s a mission in which we are succeeding. For 17 consecutive years, Putnam City Schools has been selected as one of the top school systems in the nation as a recipient of the SchoolMatch "What Parents Want Award." SchoolMatch maintains information on every public school system in the country to help employees transferred by their companies find schools that match the needs of their children. Criteria used in selecting winners of the "What Parents Want Award" include curriculum, academic test scores, recognition for excellence, library/media services, class size and above average expenditures on pupil instruction.

Thanks to all of you who do your part to make our schools strong and successful!

Goodbye Pyramid, Hello Plate

With a new year here, many of us will be putting eating better on our list of resolutions. What does eating better look like? For years, Americans’ guide to a balanced diet was the food pyramid from the US Department of Agriculture (USDA).

Items that Americans should have the most of (including carbohydrates, fruits, and vegetables) could be found at the bottom of the pyramid, while fats, oils, and sweets were located at the top, indicating that they should be used sparingly.

However, the food pyramid is no more. A new MyPlate” model replaces the food pyramid and aims to simplify nutrition. It encourages people to fill half of their plates with fruits and vegetables, another quarter with grains, and another quarter with protein. Finally, a blue circle next to the plate represents dairy.

Because consumers have different calorific and nutrient needs, this new model suggests proportions of food rather than a specific number of servings from each food group. Americans are used to large portion sizes. Portions sold in stores and restaurants can be anywhere from two to eight times the recommended serving size? Many Americans have no idea what a standard serving size looks like, but with one in three Americans qualifying as obese, an understanding of what a regular food portion should look like is vital.

The USDA sets standards for healthy serving sizes, many of which can be visualized by comparing a portion of food to a familiar object. Here are some serving size examples:

- ½ cup pasta – the size of a tennis ball
- 3 ounces of lean meat, poultry, or fish – the size of a deck of cards
- 1½ ounces of cheese – the size of three dice
- A medium potato – the size of a computer mouse
- 1 cup of vegetables – the size of a baseball
- 1 tablespoon of butter – the size of a poker chip
- 2 inch square brownie – the size of a pack of dental floss

Aside from revising the way we look at the makeup of our diets, the USDA wants Americans to take another look at portion control and empty calories, advising people to enjoy food, but eat less, avoid oversized portions, and drink water instead of sugary drinks.

Americans who attempt to visit www.mypyramid.gov will now be redirected to www.choosemyplate.gov. Plans for the new nutritional site include interactive tools to help people manage their weight and track exercise.

Check out our website!  www.putnamcityschools.org


Portions © 2011 Putnam City Schools