Process Safety Management

The Process Safety Management (PSM) standard targets highly hazardous chemicals that have the potential to cause catastrophic incidents.

To minimize the hazards, the PSM standard requires employers to use hazard analyses, operating procedures, employee training, safety reviews, management of change procedures, incident investigations, etc.

Employees play a key role in implementing all of the PSM standard’s requirements; and employers should nurture the necessary expertise, experience, judgment, and initiative within their workforce.

However, as workers become familiar with a process over time, they can become complacent and miss minor changes or deficiencies that could contribute to a disaster.

Periodic training keeps workers attentive to PSM-related responsibilities.

Main Goal of PSM

The PSM standard was established to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. To do this, processes must be monitored to ensure that they are operating within safe limits. The standard includes a list of highly hazardous chemicals that are covered by the standard, and processes that use flammable liquids or gases that are not on the list can also be covered under some circumstances.

Process Hazard Analysis

The chemicals used in a process each present safety and health hazards that need to be identified and evaluated. When combinations of chemicals are used, their interactions can create new hazards that must be addressed.

Once all of the hazards have been identified, the appropriate precautions...
that need to be taken to prevent overexposures or releases can be determined.

Engineering controls, such as exhaust ventilation, containment, or pressure relief valves, can be designed and implemented. Work practice controls, such as safe storage and handling procedures, can be outlined.

Communication and training play a big part in getting the process to run safely. Everyone needs to be aware of all of the hazards and control measures.

Safe Operating Limits
Operating procedures detail the steps to follow to make sure that all of the control measures are in place. The operating procedures should outline the safe operating limits of the process. Some of the operating limits could include: voltage and amperage limits of the equipment, pressure limitations, temperature ranges, mass or volume limits, corrosive properties of the chemicals in the process and their effects on the equipment, or any critical time constraints involved in the proper functioning of the process. Employees should also be aware of the need to obtain the proper permit before doing any welding or other hot work on or near process equipment.

Emergency Procedures
When a process experiences a failure, proper emergency response is crucial to protecting lives. Operators must be prepared to follow the proper emergency shut-down procedures.

Everyone must know how to report an emergency. Report any incident that could have resulted in a catastrophic release of chemical. Every incident must be investigated to make sure steps are taken to keep the process safe. The incident investigation report will be reviewed with the workers who were affected by the incident.

Elements of the PSM Standard
There are many detailed provisions in the PSM standard. Some of them are complicated and need to be addressed by engineers, but all employees should be aware of them. Employee participation is an important part of the PSM standard.

Processes that involve the use of highly hazardous chemicals can be run safely, and each of the elements of the standard works to control the risks. The individual elements of the PSM standard include:
- Employee participation;
- Process safety information;
- Process hazard analysis;
- Operating procedures;
- Employee training;
- Contractors;
- Pre-startup safety review;
- Mechanical integrity of equipment;
- Hot work permits;
- Management of change;
- Incident investigations;
- Emergency planning and response;
- Compliance audits; and
- Trade secrets and documentation.

During operation, process equipment is regularly inspected and tested. Proper repairs are made in a timely manner. When changes are made to a process, each aspect of the change is considered and steps are taken to ensure the process stays safe. A pre-start safety review is done before a modified process goes live.

Working with Contractors
It’s not unusual for contractors to come in to work on process equipment. The employer evaluates their safety records before they start work. The employer also instructs the contractor on the fire, explosion, or toxic release hazards that are related to the contractor’s work and describes the emergency action plan. Contract employees must have training on the hazards and safe practices.
Safety Focus: Holiday Safety

Traditions, entertaining, and decorating are all part of the holiday season. Give the gift of health and safety to yourself and others by following these tips:

1. **Wash your hands often.** Keeping hands clean is one of the most important steps you can take to avoid getting sick and spreading germs to others. Wash your hands with soap and warm water for at least 20 seconds.

2. **Stay warm.** Cold temperatures can cause serious health problems, especially in infants and older adults. Stay dry, and dress warmly in several layers of loose-fitting, tightly woven clothing.

3. **Manage stress.** The holidays don’t need to take a toll on your health and pocketbook. Keep a check on overcommitment and overspending. Balance work, home, and play. Get support from family and friends. Keep a relaxed and positive outlook. Make sure to get the proper amount of sleep.

4. **Handle and prepare food safely.** As you prepare holiday meals, and any meals, keep yourself and your family safe from food-related illness. Wash hands and surfaces often. Avoid cross-contamination by keeping raw meat, poultry, seafood, and eggs (including their juices) away from ready-to-eat foods and eating surfaces. Cook foods to the proper temperature. Refrigerate promptly. Do not leave perishable foods out for more than two hours.

5. **Travel safely.** Whether you’re traveling across town or around the world, help ensure your trip is safe. Don’t drink and drive, and don’t let someone else drink and drive. Wear a seatbelt every time you drive or ride in a motor vehicle.

6. **Stay active.** Be active for at least 2½ hours a week. Help kids and teens be active for at least 1 hour a day.

**Selecting a Tree for the Holidays**

Christmas trees account for hundreds of fires annually. Typically, shorts in electrical lights or open flames from candles, lighters, or matches start tree fires. If you put up a natural tree, be sure to select a fresh one. Needles should be green and hard to pull back from the branches, and the needles should not break if the tree has been freshly cut. The trunk should be sticky to the touch. Old trees can be identified by bouncing the tree trunk on the ground. If many needles fall off, the tree has been cut too long and, has probably dried out.

Keep the tree watered. Dry and neglected trees can be a fire hazard. Do not place your tree close to a heat source, including a fireplace or heat vent. The heat will dry out the tree, causing it to be more easily ignited by heat, flames, or sparks. Do not put your live tree up too early or leave it up for longer than two weeks.

Dispose of your tree properly. Take it to a recycling center or have it hauled away by a community pick-up service.

**Holiday Lights and Decorations**

Inspect holiday lights each year for frayed wires, bare spots, gaps in the insulation, broken or cracked sockets, and excessive kinking or wear before putting them up. Use only lighting approved by a testing laboratory. Do not link more than three light strands, unless the directions indicate it is safe.

Connect strings of lights to an extension cord before plugging the cord into the outlet. Make sure to periodically check the wires – they should not be warm to the touch. Do not leave holiday lights on while you are gone.

Consider switching to LED lights to save energy and money. In addition, LED lights are much cooler than incandescent bulbs, reducing the risk of fires.

**Fires**

Never leave a burning candle unattended or place lit candles on a tree. Consider using battery-operated flameless candles, which can look and smell real.

If you do light candles, make sure they are in stable holders and place them where they cannot be easily knocked down. Keep candles at least 12 inches from anything that can burn. Avoid using candles in bedrooms and sleeping areas.

Wrapping paper should not be burned in the fireplace. This could result in a very large fire, giving off dangerous sparks and embers that may result in a chimney fire.
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Beat the Holiday Blues

The holidays are supposed to be a wonderful time of year, but the same traditions that make it special can also lead to tension and depression. While some stressful situations may be out of your control, it’s important to manage what you can. To minimize the negative feelings that can accompany the season:

- **Plan carefully.** If you expect a family get-together to be stressful, think about how you’ll cope with the situation. Perhaps seeing certain people in small doses, or taking a walk to get some fresh air during the event, will help make the situation manageable.

- **Be realistic.** Expecting perfection guarantees disappointment, notes Dr. Colleen Carney, associate professor of psychology at Ryerson University in Toronto and the director of its Sleep and Depression Lab. Less can be more; adjust your expectations to relieve yourself of some tasks and reduce pressure.

- **Sort things out.** When trying to decide what traditions or events to weed out and what to keep, think back to years past and remember what made you smile. “Prioritize the types of moments associated with feelings of joy, contentment, or happiness,” Carney said. Minimize or eliminate activities that made you feel anxious, guilty, ashamed, sad, or angry.

- **Entertain within limits.** A vision of a perfectly set table in an impeccably decorated room is an idyllic illusion. “One tip for entertaining is that the hosts should enjoy themselves,” Carney said. “Do you typically enjoy yourself while entertaining? If the answer is largely no, you should scale back your plans, or perhaps refrain from entertaining and instead accept an invitation to someone else’s gathering instead.”

- **Stick to your meal schedule.** Eat a balanced diet and enjoy a few fruits and vegetables before a party to avoid overdoing the sweets and snacks that may contribute to depression and holiday weight gain.

- **Try to maintain your regular sleep routine.** Lack of sleep can be a mood killer, says Carney, so cut down on your to-do list to make rest a priority.

- **Make time for yourself.** Exercise to release feel-good endorphins. Take a walk, listen to music, or go the gym. Staying active helps you to take care of yourself.