Maintaining fire detection systems

Maintaining and testing fire detection systems are very important. Dirt, dust, or foreign materials can build up inside the sensor elements of a detector, causing a reduced sensitivity that can limit the warning time given during a fire or result in unwanted alarms that can desensitize employees to the alarm. For the alarm to work as it should in the event of a fire, those assigned to ensure the alarm system will perform properly must:

- Operate and maintain the system in working condition, making sure it is always turned on, except during repairs or maintenance.
- Have fire detectors and fire detection systems tested and adjusted often to ensure they operate correctly and maintain reliability. Detectors found to be unreliable and/or with reduced sensitivity must be replaced or cleaned and recalibrated.
- Have a qualified person service, maintain, and test all fire detection systems, including cleaning and necessary sensitivity adjustments.
- Have fire detectors cleaned of dust, dirt, or other particulates at periodic intervals.

To maintain and test audible and visual fire alarms:

- Conduct visual checks to ensure alarm devices are not obstructed or installed in a manner that would prevent sound or light from reaching or entering the protected areas.
- Use only properly trained persons to service, maintain, and test alarms.
- Test the reliability and adequacy of non-supervised alarm systems every 2 months.
- Maintain or replace power supplies as often as necessary to ensure a fully operational condition. Provide a backup means of alarm when systems are out of service, such as employee runners or telephones.

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EMPLOYEE SAFETY NEWSLETTER

October 2021

Crystalline silica: Symptoms of silica dust-related disease in general industry

Crystalline silica is a common mineral found in materials such as stone, artificial stone, and sand. Employees can be exposed to respirable crystalline silica—which is made of very small particles typically at least 100 times smaller than ordinary sand found on beaches—during the use of industrial sand in manufacturing products such as:

- Pottery, china, and ceramics
- Bricks and artificial stone
- Glass and concrete
- Paint
- Plumbing fixtures
- Countertop manufacturing and finishing

Exposure also occurs in these operations:

- Foundry work
- Abrasive blasting operations
- Hydraulic fracturing

All these activities create the tiny dust particles (known as “respirable particles”) that can cause the lung disease silicosis, as well as other debilitating respiratory diseases such as lung cancer and chronic obstructive pulmonary disease (COPD).

Respiratory diseases caused by silica dust exposure

Silicosis is an irreversible, often disabling, and sometimes fatal fibrotic lung disease. Progression of silicosis can occur even if a person has been removed from further exposure. Diagnosis of silicosis requires a history of exposure to silica and radiologic findings characteristic of silica exposure. There are three types of silicosis: chronic, accelerated, and acute. Because accelerated and acute silicosis are much less common than chronic silicosis, we’ll describe chronic silicosis.

Chronic silicosis is the most common type of silicosis and usually occurs after at least 10 years of exposure to respirable crystalline silica. The symptoms of chronic silicosis are shortness of breath and cough, although employees may not notice any symptoms early in the disease. Other symptoms, such as fever, loss of appetite, and fatigue, may indicate other diseases associated with silica exposure, such as tuberculosis (TB) infection or lung cancer.

TB and other infections can result from silica exposure. Silica-exposed employees with latent TB are 3 to 30 times more likely to develop active pulmonary TB infection. Although silica exposure does not cause TB infection, individuals with latent TB infection are at an increased risk for activation of disease if they have higher levels of silica exposure, a greater profusion of radiographic abnormalities, or a diagnosis of silicosis. In addition, silica-exposed employees are at an increased risk for contracting nontuberculous mycobacterial infections.

Lung cancer. Although tobacco smoke is the greatest risk for lung cancer, exposure to substances such as silica increases the risk of developing this disease. Symptoms include coughing, especially if it’s persistent or intense; pain in the chest, shoulder, or back unrelated to pain from coughing; shortness of breath; and changes in the voice.

Renal and immune system. Silica exposure has been associated with several types of kidney disease, including those requiring dialysis. Silica exposure has also been associated with other autoimmune conditions, including progressive systemic sclerosis, systemic lupus erythematosus, and rheumatoid arthritis. Symptoms include frequent and recurrent pneumonia, sinus infections, meningitis or skin infections, inflammation and infection of internal organs, blood disorders, and painful or swollen joints.

First aid: Electrical shock

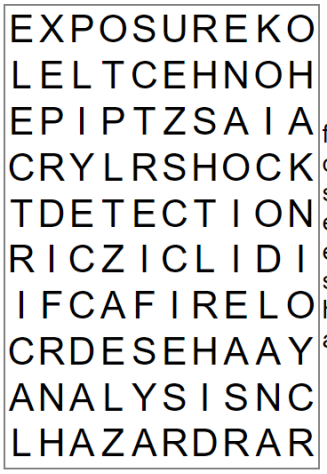
When someone at your workplace suffers an electrical shock, turn off the source of electricity, if possible. If you can't turn off the power, use a piece of wood, such as a broom handle, dry rope, or dry clothing, to separate the victim from the power source. Do not touch the injured person if he or she is still in contact with the electrical current, and do not move the injured person unless he or she is in immediate danger.

Call 911 or your local emergency number if the source of electricity is a high-voltage wire or lightning. Don't get near high-voltage wires—stay at least 20 feet away—until the power is turned off. You should also call 911 or your local emergency number if the injured person experiences:

- Severe burns
- Confusion
- Difficulty breathing
- Heart rhythm problems, such as arrhythmias
- Cardiac arrest
- Muscle pain and contractions
- Seizures
- Loss of consciousness

After the power is turned off and the victim is no longer in contact with the electrical current, follow the company's procedure for first-aid treatment, as well as the company's policy for reporting injuries. You can assist the victim by taking the following actions while waiting for medical help:

- Begin cardiopulmonary resuscitation (CPR) if the person shows no signs of circulation, such as breathing, coughing, or movement.
- Try to prevent the injured person from becoming chilled.
- Cover any burned areas with a sterile gauze bandage or a clean cloth.



fire
detection
silica
exposure
electrical
shock
hazard
analysis

Job hazard analysis–Plan ahead: QUIZ

1. A job hazard analysis (JHA) focuses only on the task and the work environment. TRUE or FALSE.

2. After you identify uncontrolled hazards during a JHA, you can take steps to control them. TRUE or FALSE.

3. Which of the following is the least likely result after taking steps to control previously unidentified hazards?

A. Fewer worker injuries and illnesses

B. Safer, more effective work methods

C. Reduced workers' compensation costs

D. Decreased worker productivity

4. Which of the following should be the top option(s) as you apply controls to eliminate or reduce the hazards identified in the JHA?

A. Use personal protective equipment (PPE).

B. Eliminate the hazard entirely by removing it.

C. Substitute something less hazardous for the task.

D. Use administrative measures.

ANSWERS

1. **FALSE.** 2. **TRUE.** 3. **D.** 4. **B & C.**

Job hazard analysis–Plan ahead

A job hazard analysis (JHA) focuses on job tasks to identify and control hazards before the job starts. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to control them. This is likely to result in fewer worker injuries and illnesses; safer, more effective work methods; reduced workers' compensation costs; and increased worker productivity.

The JHA process

- Start by breaking the job down into steps. These don't have to be extremely detailed, but they should capture the basic steps.
- Next, identify the hazards of each task. Common hazards include chemical exposure, fire and explosion, electrical, falls, noise, caught between, struck against, and flying objects. Be sure to write down the potential consequences of the hazards, as well. This will help you identify especially dangerous tasks.
- Finally, apply controls to eliminate or reduce the hazards. Hazard controls should be applied in the following order, based on feasibility. Remember that the effectiveness of these controls goes down as you get lower on the list. If at all feasible, use the top options on the list:

1. Eliminate the hazard entirely by removing it, such as cleaning up an oil spill.
2. Substitute something less hazardous for the task. An example would be using a less flammable brake cleaner.
3. Engineer the hazard out, like installing guards on a machine.
4. Use administrative measures such as shift rotations on hot days.
5. Finally, use personal protective equipment (PPE) for any residual hazards.

Lead–Recognizing lead hazards in general industry: QUIZ

1. Lead is most often used in the construction industry. TRUE or FALSE.

2. Which of the following are common jobs that can expose you to lead?

A. Plumbing

B. Metal production

C. Radiator repair

D. All of the above

3. Which of the following symptoms are the result of short-term lead exposure?

A. Abdominal distress

B. Depression

C. Nausea

D. All of the above

4. Today, adults are primarily exposed to lead by getting lead compounds on the skin. TRUE or FALSE.

5. Which of the following is an example of an engineering control?

A. Isolating the exposure source and local exhaust ventilation

B. Limiting the amount of time spent performing tasks involving lead exposure

C. Good housekeeping practices to keep lead contamination off surfaces

D. Showering at the end of each shift to prevent lead contamination from escaping the work environment

Lead–Recognizing lead hazards in general industry

Lead is a heavy metal that is important for many types of business and industrial processes. Lead is most often used in the manufacturing sector, although worker exposure can also occur in other sectors, such as construction.

General industry workers may be exposed to lead from the production, use, maintenance, recycling, and disposal of lead materials and products. Common jobs that can expose you to lead include:

- Painting
- Radiator repair
- Battery manufacturing
- Metal production
- Metal scrap cutting and recycling
- Soldering
- Plumbing

Occupational lead exposure can occur from inhalation of airborne particles. Lead compounds can also get on the skin, contaminate clothing or food, and be ingested. Today, adults are primarily exposed to lead by breathing in lead-containing dust (i.e., from old lead-based paint) and fumes at work. Lead particles can travel through the lungs and into the bloodstream, where they can cause harm to many of the body's organ systems.

Lead is highly toxic and can cause damage to the brain, nervous system, blood, kidneys, and other organs. Lead poisoning can occur from short-term exposure to very high levels of lead. A person suffering from lead poisoning may experience symptoms such as:

- Abdominal distress
- Fatigue
- Headaches
- Irritability
- Loss of appetite
- Memory loss
- Pain or tingling in the hands and feet
- Weakness

Because many of these symptoms may be signs of other conditions, lead poisoning can easily be overlooked. If you are working with or around lead and experience these symptoms, report it to your supervisor right away.

Long-term exposure to lead can cause additional symptoms, such as depression, difficulty focusing, forgetfulness, and nausea. Prolonged exposure to lead can also put you at risk for high blood pressure, heart disease, kidney disease, and reduced fertility. Chronic exposures that result in high blood lead levels (BLLs) can cause impaired mental function, lower reaction times, and attention deficit. Very high BLLs can cause more serious symptoms and acute effects such as convulsions, coma, and death. Chronic conditions, such as anemia, may also develop from a very high BLL.

When it isn't feasible to eliminate or substitute a hazard such as lead, a workplace may implement a combination of engineering controls, administrative controls, and personal protective equipment (PPE) to control employee exposures.

Engineering controls for preventing lead exposure include isolating the exposure source and local exhaust ventilation. Administrative or work practice controls include limiting the amount of time spent performing tasks involving lead exposure, good housekeeping practices to keep lead contamination off surfaces, and showering at the end of each shift to prevent lead contamination from escaping the work environment. When these controls are insufficient, PPE must be worn. PPE used for controlling lead hazards includes respirators, safety goggles, hazmat suits, and other protective clothing.

Lead–Recognizing lead hazards in general industry: ANSWERS

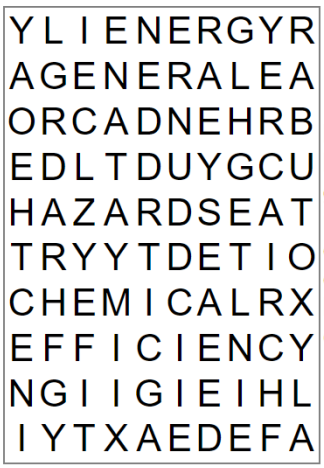
1. **FALSE.** Lead is most often used in the manufacturing sector.

2. **D. All of the above.** Plumbing, metal production, and radiator repair are all common jobs that can expose you to lead.

3. **A. Abdominal distress.** Abdominal distress is one of the symptoms that result from short-term lead exposure.

4. **FALSE.** Adults are primarily exposed to lead by breathing in lead-containing dust (i.e., from old lead-based paint) and fumes at work.

5. **A. Isolating the exposure source and local exhaust ventilation.** An example of an engineering control is isolating the exposure source and local exhaust ventilation.



lead
hazards
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energy
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butoxyl
chemical

Energy Efficiency Day

Energy Efficiency Day is celebrated annually on the first Wednesday of October (this year's observation will be October 6, 2021) and is a joint effort of energy-efficiency advocacy groups around the United States. Since the inaugural Energy Efficiency Day in 2016, this annual awareness event has been supported by hundreds of organizations, companies, and government agencies. The goal of Energy Efficiency Day is to share tips, tools, and stories that promote the multiple benefits of energy efficiency, including meeting energy needs, cutting consumer bills, and reducing pollution.

Here are some ways you can reduce energy waste:

- **Use LED light bulbs.** They last at least 25 times longer and consume up to 90% less electricity than incandescent bulbs.
- **Seal window leaks.** Heating and cooling account for almost half of a home's energy consumption. All the small leaks can be equivalent to leaving open a 3-foot-by-3-foot window.
- **Maintain your heating, ventilation, and air conditioning (HVAC) system.** Make sure to clean or change your furnace filters regularly.
- **Look for the ENERGY STAR® label.** ENERGY STAR-labeled windows can cut heating costs by as much as 30% compared with single-pane windows.
- **Turn the electronics off.** Turn off unnecessary/idle lights, appliances, and electronics.
- **Clean your clothing efficiently.** A washing machine spends 90% of its energy to heat water. Consider using cold water and air-drying your clothes instead.
- **Clean your dishes efficiently.** Avoid the "rinse hold" cycle on your dishwasher and skip heated drying. Open the door at the end of the washing cycle to let them air-dry instead.

Chemical spotlight: Butoxyl

Butoxyl is a clear, colorless liquid with a slight, irritating odor. It is used as a solvent in the paint and lacquer industry.

Butoxyl may form explosive peroxides with prolonged storage or contact with air or light or when stored above room temperature. It is not compatible with oxidizing agents, strong acids, aluminum, lead, and chromium trioxide. Store Butoxyl in tightly closed containers in a cool, well-ventilated area away from heat or flame. Avoid all sources of ignition where Butoxyl is used, handled, or stored.

If Butoxyl is spilled or leaked, avoid breathing vapors, mist, or gas, and ensure adequate ventilation. Remove all sources of ignition and evacuate personnel to safe areas. Use personal protective equipment (PPE), including goggles or safety glasses, gloves, flame-retardant protective clothing, and respiratory protection.

Prevent further leakage or spillage if safe to do so, and do not let the product enter drains, sewers, underground or confined spaces, groundwater, or waterways or discharge into the environment. Contain the spillage, and absorb it with fly ash, cement powder, or commercial sorbents. Then place the spillage in a sealed container. It may be necessary to contain and dispose of Butoxyl as a hazardous waste. Contact the federal and local Environmental Protection Agency for specific recommendations.