"Safety Comes First"

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Environmental Health and Safety

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In this issue:

Influencing Indoor Air Quality

At work and at home, you can have a great influence on indoor air quality (IAQ). Daily activities such as using a microwave or a photocopier can generate odors and pollutants. By being aware of IAQ, you can help prevent issues and health problems. Here are some tips to follow for better indoor air:

Don't block air vents or grilles. Keep supply vents or return air grilles unblocked so you won't unbalance the heating, ventilation, and air conditioning (HVAC) system or affect the ventilation of a neighboring office. Notify your supervisor or building manager if your work space is too hot, too cold, stuffy, or drafty.

Clean up all water spills. Report any water leaks right away. Water creates a hospitable environment for the growth of microorganisms such as molds or fungi. Some of these microbes, if they become airborne, can cause health issues.

Dispose of waste. Dispose of garbage in appropriate containers that are emptied daily to prevent odors and biological contamination.

Store food properly. Unattended food or open food containers can attract pests. If not properly stored and refrigerated, some foods can spoil and generate unpleasant odors. Don't store perishable food at your desk. Refrigerators should be cleaned on a regular basis to prevent odors. Keep kitchens and dining areas clean.

You should always notify Customer Service and EHS immediately if you suspect an IAQ problem so that a timely solution can be reached.

Source: Safety.BLR

Hard Facts on Hard Hats

USE YOUR HEAD ON HARD HAT PROTECTION

Select a hat that protects against your job's hazards.

Safety helmets are rated by both Type and Class.

- **Type I** is designed to provide only top impact protection.
- **Type II** is designed to provide protection against both top and side impacts.
- **Class E** (formerly called Class B) stands for Electrical, and these helmets are tested to 20,000 Volts to reduce the danger of high voltage.
- **Class G** (formerly called Class A) stands for General and is tested only to 2,200 Volts, so these helmets offer only minimal electrical protection.
- **Class C** stands for Conductive, and this class is not intended to provide protection from electrical conductors.

"Inspect (hard hat) for damage before and after each use."

Care for your hard hat so it can take care of you:

- Inspect for damage or wear before and after each use
- Adjust the headband so the hat doesn't touch your head
- Don't throw, bang, or scrape the hat
- Remove and wash the sweatband periodically
- Clean the hat occasionally. Dip it in hot soapy water, then scrub, rinse, and dry
- Store in a safe place away from heat and sun

Replace:

- Any hat that took a heavy blow even if it doesn't look damaged
- A hat with a cracked, broken, or punctured shell
- A headband that's stretched or worn

If you have any questions concerning hard hat protection, call or email Construction and Facilities Safety Manager Brandon Kirk at 216.368.3120/bxk230@case.edu.

Source: Safety.BLR

Dangers of Carbon Monoxide

What do you know about CO?

Carbon monoxide (CO) is an odorless, colorless, and poisonous gas. Exposure can be fatal. CO is a common, hazardous substance. It's produced when organic fuels are burned in an area with a limited supply of oxygen. The most common occurrence is incomplete burning in an airtight building.

During the winter season, you must be extra cautious of CO dangers that may be present as you heat your home or office. CO is produced by the incomplete burning of any material that contains carbon, including gasoline, oil, propane, natural gas, coal, and wood. CO is produced in workplaces and homes during the operation of equipment such as furnaces, space heaters, water heaters, gas clothes dryers, gas ranges, fireplaces, and all motor vehicles, including forklift trucks.

What are the signs of CO poisoning?

Be alert for CO poisoning symptoms—and act quickly! Symptoms may resemble those of the flu, such as dizziness and vertigo, nausea, flushed face, headache, weakness, irritability, sleepiness, confusion, and chest pains for people who have heart conditions. In the event you or someone else is exposed to CO, get to fresh air immediately! Seek immediate medical attention if you think you have inhaled CO.

Do's and don'ts to remember

DO keep all fuel-burning equipment and appliances maintained and operating properly. Be sure your furnaces have routine servicing.

DO vent all fuel-burning equipment and appliances outside. Inspect vents to be sure they're not blocked. Check that exhaust fans blow out and away from air intake vents so they don't bring combustion products back into the building. Be especially careful in energy-efficient buildings, which may have minimal ventilation.

DO maintain vehicles properly. Inspect them for exhaust and pipe leaks and body rot, which could allow CO into the vehicle.

DO install detectors to alert you to dangerous CO levels, since CO can't be seen or smelled.

DON'T forget to change the batteries in your CO detectors regularly.

DON'T let vehicles run in an enclosed area. Accidental deaths result every winter from simply warming cars in closed garages.

Remember! Be aware of CO sources where you live and work. CO is impossible to see, but its sources can be identified and repaired or modified to keep you, your coworkers, and your family safe from deadly CO hazards.

Source: Safety.BLR

OSHA®

"Seek immediate medical attention if you think you have inhaled CO."

LAMP: CDC's Lead and Multi-Element Proficiency Program

CDC

"LAMP is a voluntary program that focuses on assuring the quality of multi-element analyses in whole blood."

The Centers for Disease Control and Prevention (CDC) has been involved in preventing human exposure to lead and lead poisoning for a number of years. Over time, as an understanding of the adverse health effects of lead poisoning has grown, public health officials have recognized the need for accurate and precise blood lead measurements.

CDC began the Blood-Lead Laboratory Reference System (BLLRS) in 1990 to help laboratories ensure consistent, high-quality blood-lead measurements. Because of the success of the program, CDC expanded BLLRS in 2006 to include more elements and gave it a new name: the Lead and Multi-Element Proficiency Program, or LAMP.

LAMP is a voluntary program that focuses on assuring the quality of multi-element analyses in whole blood. At least 100 laboratories, including 30 international labs, participate in LAMP. Each quarter, these laboratories are required to analyze a set of blood samples provided by CDC and return the analyses results to CDC. CDC provides detailed reports to participating laboratories about how well they performed these analyses. LAMP results are not used for accreditation or certification; however, the program does improve the precision and accuracy of blood lead, cadmium, and mercury measurements. In the future, other inorganic toxicants, such as arsenic, selenium, and uranium, will be added to the program.

Program Details

Four times a year, CDC sends participating laboratories bovine (cow) blood samples containing known values of environmental contaminants. Laboratories use their routine analytical procedures and run the samples in duplicate on two days or two different runs and then report the results to CDC. Labs are also asked to report the limit of detection for their analytical method. Besides quality-control materials, CDC provides each laboratory with analytical guidelines, technical training, and consultation to ensure that its measurements of blood lead, cadmium, and mercury levels are both accurate and precise. CDC sends each laboratory a report of its results, and the laboratories will use the reports to

- Verify calibrations.
- Troubleshoot analytical problems.

(Continued on page 5)

LAMP: CDC's Lead and Multi-Element Proficiency Program, cont

(Continued from page 4)

- Set up quality-assurance or quality-control programs.
- Compare various laboratory methods.
- Conduct research and development.

CDC calculates Z-scores, which enable a laboratory to compare its results with those of other laboratories. Data are provided for all participating laboratories but laboratories are not identified by name in the report to maintain confidentiality. The samples that CDC prepares for the laboratories are prepared using Inductively Coupled Plasma–Mass Spectrometry (ICP-MS).

How to Enroll

1. Go to http://www.cdc.gov/labstandards/lamp_enrollment.html and complete the application form.
2. E-mail the completed form to LAMP@cdc.gov or fax it to (770) 488-4097. A confirmation e-mail will be sent within 72 hours.
3. Enrollment occurs immediately upon receiptof your form and your laboratory will receive a set of samples each February, May, August, and November.

For more information, contact

Centers for Disease Control and Prevention (CDC)
Lead and Multi-Element Proficiency
4770 Buford Highway N.E., Mailstop F-18
Atlanta, GA 30341-3724 USA
Fax number: (770) 488-4097
E-mail address: LAMP@cdc.gov

Source: CDC

"CDC calculates Z-scores, which enable a laboratory to compare its results with those of other laboratories."

Uses Of Radiation-Part Two

Industrial Uses

We could talk all day about the many and varied uses of radiation in industry and not complete the list, but a few examples illustrate the point. In irradiation, for instance, foods, medical equipment, and other substances are exposed to certain types of radiation (such as x-rays) to kill germs without harming the substance that is being disinfected — and without making it radioactive. When treated in this manner, foods take much longer to spoil, and medical equipment (such as bandages, hypodermic syringes, and surgical instruments) are sterilized without being exposed to toxic chemicals or extreme heat. As a result, where we now use chlorine — a chemical that is toxic and difficult-to-handle — we may someday use radiation to disinfect our drinking water and kill the germs in our sewage. In fact, ultraviolet light (a form of radiation) is already used to disinfect drinking water in some homes.

Similarly, radiation is used to help remove toxic pollutants, such as exhaust gases from coal-fired power stations and industry. For example, electron beam radiation can remove dangerous sulphur dioxides and nitrogen oxides from our environment. Closer to home, many of the fabrics used to make our clothing have been irradiated (treated with radiation) before being exposed to a soil-releasing or wrinkle-resistant chemical. This treatment makes the chemicals bind to the fabric, to keep our clothing fresh and wrinkle-free all day, yet our clothing does not become radioactive. Similarly, nonstick cookware is treated with gamma rays to keep food from sticking to the metal surface.

The agricultural industry makes use of radiation to improve food production and packaging. Plant seeds, for example, have been exposed to radiation to bring about new and better types of plants. Besides making plants stronger, radiation can be used to control insect populations, thereby decreasing the use of dangerous pesticides. Radioactive material is also used in gauges that measure the thickness of eggshells to screen out thin, breakable eggs before they are packaged in egg cartons. In addition, many of our foods are packaged in polyethylene shrink-wrap that has been irradiated so that it can be heated above its usual melting point and wrapped around the foods to provide an airtight protective covering.

All around us, we see reflective signs that have been treated with radioactive tritium and phosphorescent paint. Ionizing smoke detectors, using a tiny bit of americium-241, keep watch while we sleep. Gauges containing radioisotopes measure the amount of air whipped into our ice cream, while others prevent spillover as our soda bottles are carefully filled at the factory.

Engineers also use gauges containing radioactive substances to measure the thickness of paper products, fluid levels in oil and chemical tanks, and the moisture and density of soils and material at construction sites. They also use an x-ray process, called radiography, to find otherwise imperceptible defects in metallic castings and welds. Radiography is also used to check the flow of oil in sealed engines and the rate and way that various materials wear out. Well-logging devices use a radioactive source and detection equipment to identify and record formations deep within a bore hole (or well) for oil, gas, mineral, groundwater, or geological exploration. Radioactive materials also power our dreams of outer space, as they fuel our spacecraft and supply electricity to satellites that are sent on missions to the outermost regions of our solar system.

Nuclear Power Plants

Electricity produced by nuclear fission — splitting the atom — is one of the greatest uses

(Continued on page 7)

"...electron beam radiation can remove dangerous sulphur dioxides and nitrogen oxides from our environment."

Uses Of Radiation-Part Two, cont

(Continued from page 6)

of radiation. As our country becomes a nation of electricity users, we need a reliable, abundant, clean, and affordable source of electricity. We depend on it to give us light, to help us groom and feed ourselves, to keep our homes and businesses running, and to power the many machines we use. As a result, we use about one-third of our energy resources to produce electricity.

Electricity can be produced in many ways — using generators powered by the sun, wind, water, coal, oil, gas, or nuclear fission. In America, nuclear power plants are the second largest source of electricity (after coal-fired plants) — producing approximately 21 percent of our Nation's electricity.

The purpose of a nuclear power plant is to boil water to produce steam to power a generator *to produce electricity*. While nuclear power plants have many similarities to other types of plants that generate electricity, there are some significant differences. With the exception of solar, wind, and hydroelectric plants, power plants (including those that use nuclear fission) boil water to produce steam that spins the propeller-like blades of a turbine that turns the shaft of a generator. Inside the generator, coils of wire and magnetic fields interact to create electricity. In these plants, the energy needed to boil water into steam is produced either by burning coal, oil, or gas (fossil fuels) in a furnace, or by splitting atoms of uranium in a nuclear power plant. Nothing is burned or exploded in a nuclear power plant. Rather, the uranium fuel generates heat through a process called fission.

Nuclear power plants are fueled by uranium, which emits radioactive substances. Most of these substances are trapped in uranium fuel pellets or in sealed metal fuel rods. However, small amounts of these radioactive substances (mostly gases) become mixed with the water that is used to cool the reactor. Other impurities in the water are also made radioactive as they pass through the reactor. The water that passes through a reactor is processed and filtered to remove these radioactive impurities before being returned to the environment. Nonetheless, minute quantities of radioactive gases and liquids are ultimately released to the environment under controlled and monitored conditions.

The U.S. Nuclear Regulatory Commission (NRC) has established limits for the release of radioactivity from nuclear power plants. Although the effects of very low levels of radiation are difficult to detect, the NRC's limits are based on the assumption that the public's exposure to man-made sources of radiation should be only a small fraction of the exposure that people receive from natural background sources.

Experience has shown that, during normal operations, nuclear power plants typically release only a small fraction of the radiation allowed by the NRC's established limits. In fact, **a person who spends a full year at the boundary of a nuclear power plant site would receive an additional radiation exposure of less than 1 percent of the radiation that everyone receives from natural background sources**. This additional exposure, totaling about 1 millirem (a unit used in measuring radiation absorption and its effects), has not been shown to cause any harm to human beings.

"...uranium fuel generates heat through a process called fission.."

How And When To Use Fire Extinguishers

Fight or flight?

In the event of a fire, pull the fire alarm to notify others in the building of the emergency. Only trained employees should extinguish fires. If you are not trained in portable extinguisher use, you should evacuate. If you are trained, carefully consider whether to fight the fire or take flight and evacuate. Small fires can often be put out quickly, but you should not take on larger fires yourself.

How do you use the extinguisher?

If you can safely extinguish the fire, you must:

- Position yourself between the fire and your escape route.
- Get the fire extinguisher.
- Back away from an extinguished fire in case it flames up again.
- Evacuate immediately if the extinguisher is empty and the fire is not out.
- Evacuate immediately if the fire becomes bigger.

Remember the acronym PASS:

P*ull* the pin that unlocks the operating handle.
A*im* the extinguisher low at the base of the fire.
S*queeze* the lever on the extinguisher to discharge the agent.
S*weep* the nozzle or hose from side to side, and continue to sweep the extinguisher back and forth at the base of the flames until the fire is out or the extinguisher is empty.

Which extinguisher should you use?

There are five basic classifications of fires and extinguishers.

Class A fires involve ordinary combustible materials, such as cloth, wood, paper, rubber, and many plastics, and these require a water extinguisher labeled A.

Class B fires involve flammable liquids, such as gasoline, alcohol, oil-based paints, and lacquers. These require an extinguisher labeled B. **Note:** Do not attempt to extinguish a fire involving flammable gas unless you're sure the source of gas can be shut off.

Class C fires involve energized electrical equipment and require an extinguisher labeled C.

Class D fires involve combustible metals, such as magnesium, titanium, and sodium. These fires require a special extinguisher labeled D.

Class K fires involve vegetable oils, animal oils, or fats in and around cooking appliances, and these require an extinguisher labeled K.

Multipurpose extinguishers with an ABC label are suitable for use with fires involving ordinary combustibles, flammable liquids, and energized electrical equipment.

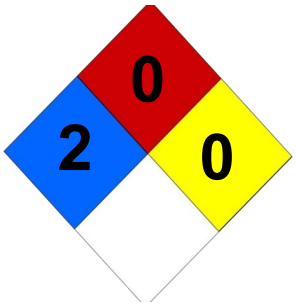
If you have any questions concerning fire extinguishes, or fire safety in general, call or email Fire Safety Specialist Justin Fry at 216.368.0021/jxf416 @case.edu.

Source: Safety.BLR

"Only trained employees should extinguish fires."

Chemical spotlight: Chloroform

Chloroform is a colorless liquid with a pleasant, nonirritating odor and a slightly sweet taste.



In the past, chloroform was used as an inhaled anesthetic. Today, chloroform is no longer used for this purpose. It is used instead to make other chemicals. It can be formed in small amounts when chlorine is added to water. Chloroform dissolves easily in water, and some of it may break down to other chemicals. The chemical lasts for a long time in groundwater and evaporates easily into the air.

Breathing air, eating food, or drinking water containing high levels of chloroform for long periods of time may damage your liver and kidneys. In addition, large amounts of chloroform can cause sores when it touches your skin.

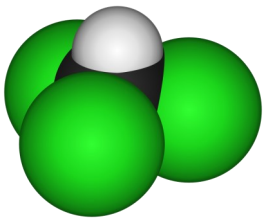
Chloroform reacts with chemically active metals, aluminum, strong bases, and oxidizing agents to cause fire and explosions.

If chloroform is spilled:

- Evacuate everyone, and control the entrance to the area
- Ventilate the area of the spill or leak to disperse the gas
- Eliminate all ignition sources
- Absorb liquids in vermiculite, dry sand, earth, or a similar material, and place in sealed containers for disposal
- Do not wash this chemical into the sewer.

Source: Safety.BLR

"In the past, chloroform was used as an inhaled anesthetic."



Fun Page

FUN PAGE

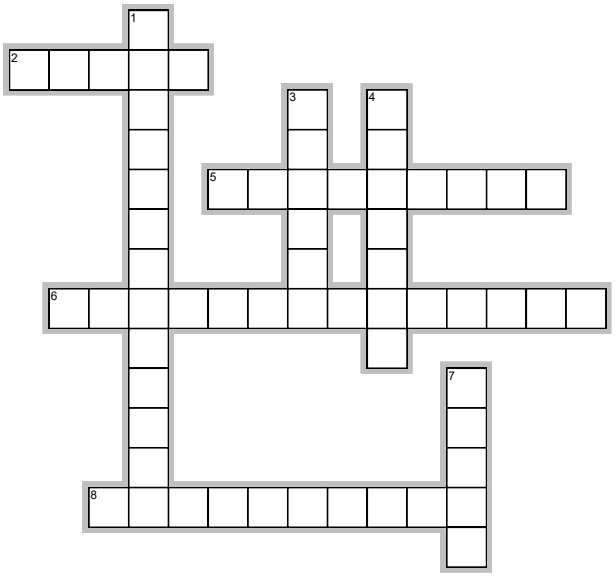
Across

2. The second "S" in the acronym "PASS" stands for _____.

5. The purpose of a nuclear power plant is to boil water to produce steam to power a _____ to produce electricity.

6. Water creates a hospitable environment for the growth of _____ such as molds or fungi.

8. In the past, chloroform was used as an inhaled _____.



EclipseCrossword.com

Down

1. LAMP results are not used for accreditation or _____.

3. During the _____ season, you must be extra cautious of CO dangers that may be present as you heat your home or office.

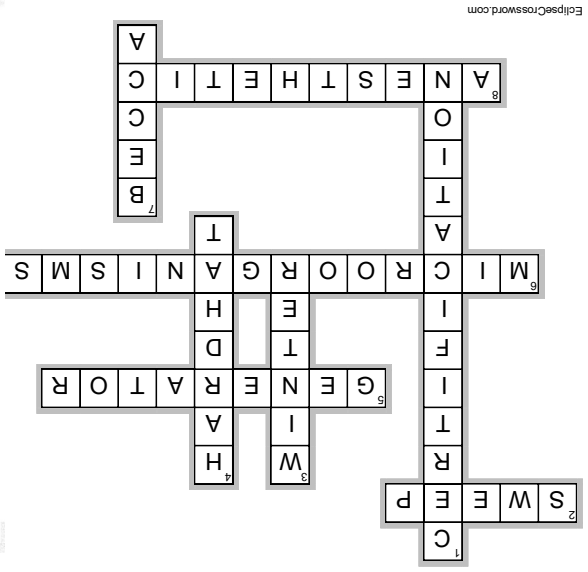
4. Inspect your _____ for damage or wear before and after each use.

7. FIRST name of Safety Specialist featured in this issue.

Funny Corner

"You're sure I can't interest you in a fire extinguisher, Mrs. O'Leary?"

Puzzle Answers



EclipseCrossword.com

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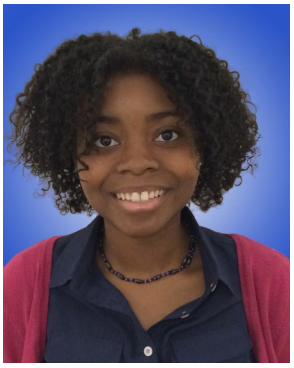

Meet Becca Manning

Safety Specialist I
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Contact Becca with your ergonomic concerns.

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