



**Sept/Oct  
2017**

*In this issue:*

*"Safety Comes First"*

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### *Too Tired at Work?*

According to a survey of 2,000 working adults, 43 percent of U.S. workers believe they are too tired to function safely at work. The findings were revealed in the National Safety Council (NSC) Report, *Fatigue in the Workplace: Causes and Consequences of Employee Fatigue*. The study found that 97 percent of workers have at least one risk factor for fatigue, such as working at night or in the early morning, working long shifts without regular breaks, working more than 50 hours each week, and having long commutes.

Workplace fatigue can be caused by a variety of factors, such as work schedules, environmental conditions, and job demands. The report points to three levels of fatigue: decreased cognitive performance, microsleeps or nodding off, and increased risk for workplace injuries.

What are some ways that you can help yourself stay awake and safely function at work?

- Take steps to get more and better sleep. Set a sleep schedule for yourself, and stick to it.
- Adjust your eating habits to include a healthy, balanced diet. Avoid eating anything close to bedtime.
- Exercise and stretch regularly. Try going for walks with other coworkers on breaks.
- Increase interaction with friends and family.

Develop strategies for staying alert at work, such as stretching at your desk, drinking caffeine beverages moderately, or listening to music.

Source: Safety.BLR

## *Using Electrical Protective Equipment*



*“Every device must be completely free of any physical defects or damage...”*

### ***Protect yourself from electrocution and other related injuries***

In the workplace, electrical shocks, burns, electrocutions, and other injuries happen because of unsafe electrical equipment or installation. Many of these incidents can be prevented by using insulation and other electrical protective devices.

#### **What are electrical protective devices?**

Electrical protective devices protect you from electrical shocks and potential electrocution. These devices include insulating blankets, matting, covers, line hoses, gloves, and sleeves made of rubber and other insulators. Some personal protective equipment can be worn by you while others directly cover or coat the live electrical parts.

#### **What’s an insulator?**

Insulators are composed of rubber, glass, or plastic and are used to coat metals and other conductors and help confine the flow of electrical current along wires or through equipment. Insulation on conductors is usually color-coded. Insulated grounding conductors typically are either solid green or green with yellow stripes. Insulation cover-ing grounded conductors is generally white or gray. Ungrounded conductors, or “hot wires,” often are black or red, although they may be any color other than green, white, or gray.

#### **What markings are there?**

All electrically protective blankets, matting, covers, line hoses, gloves, and sleeves are clearly marked with the electrical class and type of equipment to help you determine the maximum use voltage that the devices can safely withstand. Safety markings on gloves are always on the cuff, and they include the manufacturer’s identification and the size.

All electrical protective devices must be tested, and the date of the test is marked directly on the device, and logs are often kept with the dates. See your supervisor for the logs if the test date isn’t legible on the device.

#### **When should you inspect equipment?**

Inspect electrical protective devices before each day’s use and after any incident that damaged or could have damaged the electrical equipment. Every device must be completely free of any physical defects or damage that could interfere with its insulating properties. Report any equipment defects or damage that you find to your supervisor so it can be tested. Any device that fails tests or inspections must be immediately removed from service.

*Source: Safety.BLR*

## *Labeling and Transfer of Chemicals*

### **Permanent Container Labels**

Employers must ensure that **NO** worker uses, stores, or allows any other person to use or store any hazardous substance in a laboratory if the container (including bags, barrels, bottles, boxes, cans, cylinders, drums and reaction vessels) does not meet the following labeling requirements in OSHA's Hazard Communication Standard [29 CFR 1910.1200(f)(1)]:

1. The identity of the chemical and appropriate hazard warnings must be shown on the label.
2. The hazard warning must provide users with an immediate understanding of the primary health and/or physical hazard(s) of the hazardous chemical through the use of words, pictures, symbols, or any combination of these elements.
3. The name and address of the manufacturer, importer or other responsible party must be included on the label.
4. The hazard label message must be legible, permanently displayed and written in English.

### **Portable (Secondary) Container Labels**

Often, laboratory operations require transferring chemicals from the original labeled container into a secondary container (e.g., beaker, flask, or bottle). Portable containers must comply with the labeling requirements listed above if any of the following events occur:

1. The material is not used within the work shift of the individual who makes the transfer.
2. The worker who made the transfer leaves the work area.
3. The container is moved to another work area and is no longer in the possession of the worker who filled the container.

Labels on portable containers are not required if the worker who made the transfer uses all of the contents during the work shift.

When a secondary container is used for longer than one shift or

*(Continued on page 8)*



*"The hazard label message must be legible, permanently displayed and written in English."*

## *Salmonella Typhimurium Linked to Laboratory Exposure*

**CDC**

*Advice to Students & Employees in Microbiology Laboratories*

### **What can I do to help keep myself safe in a microbiology laboratory?**

- Know that bacteria used in microbiology laboratories can make you or others who live in your household sick, especially young children, even if they have never visited the laboratory.
  - If you work in a microbiology laboratory, you could bring bacteria home through contaminated lab coats, pens, notebooks, personal electronic devices, and other items that you use in the laboratory.
  - Do not take personal items like car keys, purses, or cell phones into the laboratory. These items may get contaminated.
  - To limit contamination, do not take laboratory supplies outside of the laboratory area.
- Do not eat, drink, smoke, apply makeup, or touch your contact lenses in a microbiology laboratory.
- Do not touch your face, eyes, or mouth in a microbiology laboratory.
- Wear a lab coat or other protective garment over personal clothing when working in a laboratory.
- Wash hands often while working in a microbiology laboratory and immediately before leaving it. Follow proper handwashing practices.
- If you work with *Salmonella* bacteria in a laboratory, know that these bacteria can make you sick.
  - Look for [signs & symptoms](#) of *Salmonella* infection, such as diarrhea, fever, and abdominal cramps.
  - Contact your healthcare provider if you or a family member has any of these symptoms.

*“Follow proper hand-washing practices.”*



## *Salmonella Typhimurium – Laboratory Exposure, cont*

(Continued from page 4)

### **Advice to Faculty Involved with Laboratories that Handle Infectious Agents**

- Either nonpathogenic or attenuated bacterial strains should be used when possible, especially in teaching laboratories. This practice will help reduce the risk of students and their family members becoming ill.
  - The laboratory should perform a thorough cleaning and decontamination of any potentially contaminated surfaces after students or employees work with pathogenic microorganisms.
- People working with infectious agents, including *Salmonella* bacteria, must be informed of any potential hazards and should be trained and proficient in the biosafety practices and techniques required for safe handling of these agents.
  - All students and employees using the laboratory should be trained in biosafety practices before working in the laboratory.
  - Students and staff should wear gloves when working with infectious agents.
  - Do not allow lab coats to be removed from the laboratory, except to be cleaned by the institution.
  - Ensure that handwashing sinks have soap and paper towels. Require students and employees to wash their hands before leaving the laboratory.
- Do not allow food, drinks, or personal items like car keys, and personal electronic items to be consumed or used in the laboratory.
  - Provide students with dedicated writing utensils, paper, and other supplies for laboratory use only. These items should not be allowed to leave the laboratory.
- Advise everyone working in the laboratory to watch for symptoms of *Salmonella* infection, such as diarrhea, fever, and abdominal cramps, and to call their healthcare provider if they or a family member have any of these symptoms.

Source: CDC

***“Do not  
allow  
food,  
drinks, or  
personal  
items...in  
the labora-  
tory.”***

**CDC**



## Uses of Radiation-Part One



*“...diagnostic x-rays or radiation therapy have been administered to about 7 out of every 10 Americans.”*

Although scientists have only known about radiation since the 1890s, they have developed a wide variety of uses for this natural force. Today, to benefit humankind, radiation is used in medicine, academics, and industry, as well as for generating electricity. In addition, radiation has useful applications in such areas as agriculture, archaeology (carbon dating), space exploration, law enforcement, geology (including mining), and many others. The next few issues will cover various uses for radiation including:

- Medical Uses
- Academic and Scientific Applications
- Industrial Uses
- Nuclear Power Plants

### Part One-Medical Uses

Hospitals, doctors, and dentists use a variety of nuclear materials and procedures to diagnose, monitor, and treat a wide assortment of metabolic processes and medical conditions in humans. In fact, diagnostic x-rays or radiation therapy have been administered to about 7 out of every 10 Americans. As a result, medical procedures using radiation have saved thousands of lives through the detection and treatment of conditions ranging from hyperthyroidism to bone cancer.

The most common of these medical procedures involve the use of [x-rays](#) — a type of radiation that can pass through our skin. When x-rayed, our bones and other structures cast shadows because they are denser than our skin, and those shadows can be detected on photographic film. The effect is similar to placing a pencil behind a piece of paper and holding the pencil and paper in front of a light. The shadow of the pencil is revealed because most light has enough energy to pass through the paper, but the denser pencil stops all the light. The difference is that x-rays are invisible, so we need photographic film to "see" them for us. This allows doctors and dentists to spot broken bones and dental problems.

X-rays and other forms of radiation also have a variety of therapeutic uses. When used in this way, they are most often intended to kill cancerous tissue, reduce the size of a tumor, or reduce pain. For example, radioactive iodine (specifically iodine-131) is frequently used to treat thyroid cancer, a disease that strikes about 11,000 Americans every year.

X-ray machines have also been connected to computers in machines called computerized axial tomography (CAT) or computed tomography (CT) scanners. These instruments provide doctors with color images that show the shapes and details of internal organs. This helps physicians locate and identify tumors, size anomalies, or other physiological or functional organ problems.

In addition, hospitals and radiology centers perform approximately 10 million nuclear

*(Continued on page 7)*

## *Uses of Radiation-Part One, cont*

(Continued from page 6)

medicine procedures in the United States each year. In such procedures, doctors administer slightly radioactive substances to patients, which are attracted to certain internal organs such as the pancreas, kidney, thyroid, liver, or brain, to diagnose clinical conditions.

### **Academic and Scientific Applications**

Universities, colleges, high schools, and other academic and scientific institutions use nuclear materials in course work, laboratory demonstrations, experimental research, and a variety of health physics applications. For example, just as doctors can label substances inside people's bodies, scientists can label substances that pass through plants, animals, or our world. This allows researchers to study such things as the paths that different types of air and water pollution take through the environment. Similarly, radiation has helped us learn more about the types of soil that different plants need to grow, the sizes of newly discovered oil fields, and the tracks of ocean currents. In addition, researchers use low-energy radioactive sources in gas chromatography to identify the components of petroleum products, smog and cigarette smoke, and even complex proteins and enzymes used in medical research.

Archaeologists also use radioactive substances to determine the ages of fossils and other objects through a process called carbon dating. For example, in the upper levels of our atmosphere, cosmic rays strike nitrogen atoms and form a naturally radioactive isotope called carbon-14. Carbon is found in all living things, and a small percentage of this is carbon-14. When a plant or animal dies, it no longer takes in new carbon and the carbon-14 that it accumulated throughout its life begins the process of radioactive decay. As a result, after a few years, an old object has a lower percent of radioactivity than a newer object. By measuring this difference, archaeologists are able to determine the object's approximate age.

Part Two will be covered in the next issue and will include industrial uses of radiation and nuclear power plants.

Source: USNRC

***"Do not  
allow  
food,  
drinks, or  
personal  
items...in  
the labora-  
tory."***



## Labeling and Transfer of Chemicals, cont.



*“...the new label must contain the same information as the original.”*

does not meet the requirements outlined in the Permanent Container Labels section, mentioned earlier, a label must be applied to the secondary container. This label must contain two key pieces of information: the identity of the hazardous chemical (s) in the container (e.g., full chemical name(s)) and the hazards present. There are many ways to communicate this hazard information. Employers should select a system that will work for each location.

### Replacement Container Label

The existing label on a container entering the workplace from a supplier must not be removed, altered or defaced. If a chemical container's original label must be replaced, the new label must contain the same information as the original. Only use labels, ink and markings that are not soluble in the liquid content of the





## Chemical Spotlight: Cyanide

Cyanide is a potentially deadly chemical that is usually found joined with other chemicals to form compounds. Simple cyanide compounds include hydrogen cyanide, sodium cyanide, and potassium cyanide. Cyanide is used in electroplating, metallurgy, organic chemicals production, photographic developing, manufacture of plastics, fumigation of ships, and some mining processes.

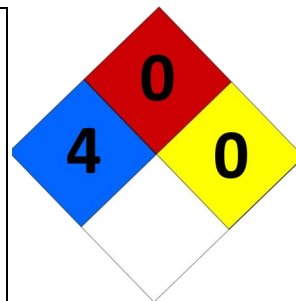
Cyanide enters air, water, and soil from both natural processes and industrial activities. In air, cyanide is mainly found as gaseous hydrogen cyanide. In water, cyanide will form hydrogen cyanide and evaporate. Cyanide has been found in at least 471 of the 1,662 [National Priorities List](#) sites.

Exposure to high levels of cyanide for a short time damages the brain and heart and can even cause coma and death. Workers who inhaled low levels of hydrogen cyanide over a period of years had breathing difficulties, chest pain, vomiting, blood changes, headaches, and enlargement of the thyroid gland.

If cyanide is spilled:

- Evacuate everyone, and control the entrance to the area.
- Cover the chemical with a noncombustible material, and shovel it into a dry container for disposal.
- Flush the spill area with hypochlorite solution. Do not use water!
- Ventilate the spill or leak area after the cleanup is complete.
- Cyanide may need to be contained and disposed of as a hazardous waste.
- Contact your state environmental department or EPA regional office for questions about proper disposal.

Source: Safety.BLR



*“Cyanide has been found in at least 471 of the 1,662 [National Priorities List](#) sites.”*



# Fun Page

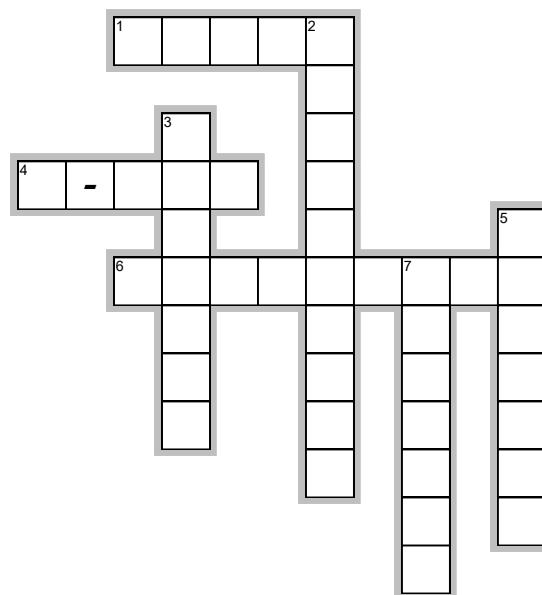
# F U N P A G E

## Across

1. Safety Specialist featured in this issue.
4. A type of radiation that can pass through our skin and produce an image.
6. All students and employees working with Salmonella laboratory should be trained in \_\_\_\_\_ practices before working in the laboratory.

## Down

2. \_\_\_\_\_ are composed of rubber, glass, or plastic and are used to help confine the flow of electrical current along wires or through equipment.
3. The three levels of \_\_\_\_\_ include decreased cognitive performance, microsleeps or nodding off, and increased risk for workplace injuries.
5. This issue's "Chemical Spotlight" focused on the chemical \_\_\_\_\_.
7. The hazard label message must be legible, permanently displayed and written in \_\_\_\_\_.



EclipseCrossword.com

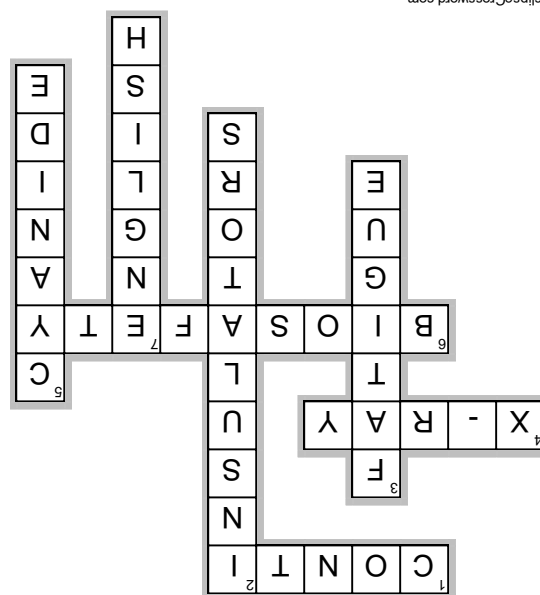
## Funny Corner



"Ooooooh... I was wondering why  
a water bucket was labeled  
'hazardous chemical'..."

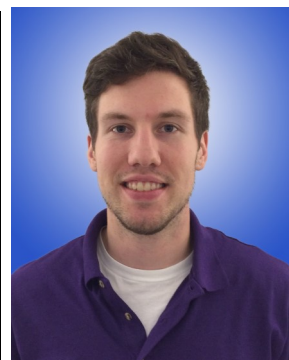
## Puzzle Answers

EclipseCrossword.com



## *Environmental Health and Safety Staff*

**Derek CONTI** (djc182), Safety Services Specialist I  
**Victoria COOK** (vmr6), Health Physics Specialist II  
**Gwendolyn COX-JOHNSON** (gxc13), Department Assistant II  
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**Brad FYE** (jxf308), Asbestos and Lead Specialist I  
**Charles GREATHOUSE** (cxg118), Business Analyst II  
**Brandon KIRK** (bxk230), Manager of Plant and Construction Safety  
**Kumudu KULASEKERE** (kck40), Health Physics Specialist II  
**Robert LATSCH** (rnl2), Safety Services Specialist II  
**Becca MANNING** (rdm124), Safety Services Specialist I  
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### *Meet Derek Conti*

*Safety Specialist I  
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*Contact Derek  
with your  
questions  
regarding  
Respiratory  
Protection.*

All back issues of the EHS Newsletter can be found online at  
[case.edu/ehs](http://case.edu/ehs). Click on the "Newsletter" link at the bottom of each page.

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