



*"Safety Comes First"*

# Case Western Reserve University Environmental Health and Safety

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## *The Chemical Hygiene Plan*

Nonproduction laboratories—or labs where workers are routinely exposed to small quantities of hazardous chemicals but that do not produce commercial quantities of materials—are subject to the OSHA “Laboratory Standard.” According to OSHA, over 500,000 workers are employed in these labs, which include research and development labs that may or may not be used to support manufacturing. Generally, quality control labs are not covered by the standard.

For these labs, the employer is required to have a Chemical Hygiene Plan (CHP). This is a written policy describing standard operating procedures and responsibilities to protect lab personnel from health hazards. A chemical hygiene officer is designated by the employer to implement the CHP.

If you work with hazardous substances in a nonproduction lab, you should review your employer’s CHP that is specific to your workplace and the chemicals you will encounter. The following important information will be in the CHP:

- Permissible exposure limits (PELs) for regulated substances or the recommended exposure limits for any hazardous chemicals for which there is no OSHA standard.
- The signs and symptoms associated with exposure to hazardous chemicals in use.
- The location and availability of reference materials (including safety data sheets) describing the hazards, safe handling, storage, and disposal of hazardous chemicals.

In addition, workers should be trained on how to protect themselves against hazards from exposure to hazardous chemicals, including the personal protective equipment that should be used and emergency procedures.

Source: Safety.BLR

## Radiation Therapy Basics-Part 3



*“...radiation therapy can slightly raise the risk of getting another cancer.”*

### Who gives radiation therapy treatments?

During your radiation therapy, a team of highly trained medical professionals will care for you. Your team may include these people:

- **Radiation oncologist:** This doctor is specially trained to treat cancer with radiation. This person oversees your radiation treatment plan.
- **Radiation physicist:** This is the person who makes sure the radiation equipment is working as it should and that it gives you the exact dose prescribed by your radiation oncologist.
- **Dosimetrist:** This person is supervised by the radiation physicist and helps the radiation oncologist plan the treatment.
- **Radiation therapist or radiation therapy technologist:** This person operates the radiation equipment and positions you for each treatment.
- **Radiation therapy nurse:** This nurse has special training in cancer treatment and can give you information about radiation treatment and managing side effects.

You may also need the services of a dietitian, physical therapist, medical or clinical social worker, dentist or dental oncologist, or other health care providers.

### Does radiation therapy cause cancer?

It has long been known that radiation therapy can slightly raise the risk of getting another cancer. It's one of the possible side effects of treatment that doctors have to think about when they weigh the benefits and risks of each treatment. For the most part, the risk of a second cancer from these treatments is small and is outweighed by the benefit of treating the cancer, but the risk is not zero. This is one of the many reasons each case is different and each person must be part of deciding which kind of treatment is right for them.

If your cancer care team recommends radiation treatment, it's because they believe that the benefits you'll get from it will outweigh the possible side effects. Still, this is your decision to make. Knowing as much as you can about the possible benefits and risks can help you be sure that radiation therapy is best for you.

### Does radiation therapy affect pregnancy or fertility?

**Women:** It's important not to become pregnant while getting radiation – it can harm the growing baby. If there's a chance you might become pregnant, be sure to talk to your doctor about birth control options. If you are or might be pregnant, let your doctor know right away.

**Men:** Not much is known about radiation's effect on the children conceived by men while getting radiation therapy. Because of this, doctors often advise men to not get a woman pregnant during and for some weeks after treatment. Talk to your doctor to find out more about this.

## *Radiation Therapy Basics-Part 3, cont.*

(Continued from page 2)

### **Questions to ask about radiation therapy**

Before treatment, you'll be asked to sign a consent form saying that your doctor has explained how radiation therapy may help, the possible risks, the type of radiation to be used, and your other treatment options. Before signing the consent form, be sure that you have had a chance to get all your questions answered. Here are some of the things you may want to ask about:

- What's the purpose of radiation treatment for my type of cancer? To destroy or shrink the tumor? To prevent or stop cancer spread? To lower the chance the cancer may come back?
- If radiation is to be done after surgery, what are the chances it will kill any cancer cells left behind? Could radiation be used instead of surgery?
- What's the chance that the cancer will spread or come back if I do – or don't – get radiation therapy?
- What type of radiation therapy will I get?
- Are there other treatment options?
- What can I do to be ready for treatment?
- Can I eat before treatment or do I need to avoid certain foods before getting treatment?
- What will radiation treatment be like? How often is it given? How long will it take?
- How will the radiation affect the area near the cancer?
- How will I feel while I'm getting treatment? Will I be able to work? Go to school? Take care of my family?
- What side effects am I likely to have, when will they start, and how long will they last?
- Will any of these side effects affect how I do things, such as eat or drink, exercise, work, etc.?
- Will treatment and/or side effects change how I look?
- What long-term side effects might I have?
- Will I be at higher risk for any other health problems in the future?

### **Will I be radioactive during or after external radiation treatment?**

External radiation therapy affects cells in your body only for a moment. Because there's no radiation source in your body, you are not radioactive at any time during or after treatment.

*“External radiation therapy affects cells in your body only for a moment.”*



## Electrical Safety: Avoiding Arc Flashes



*“...Many of the burn incidents were the result of human error...”*

Have you ever seen a quick spark when working with electrical equipment? Or how about an arc flash—a larger spark that bridges a gap, that lasts longer? An arc flash occurs when electricity travels through the air from one conducting surface to another or to ground. This type of electrical discharge has a high current density and is very dangerous.

Each year, over 2,000 people are burned from arc flash incidents. Many of the burn incidents were the result of human error—not faulty equipment or poorly engineered electrical installations. Here we discuss some practices to create an electrically safe work condition.

An arc flash can occur when circuit breakers and disconnects are opened and closed, when exposed electrical equipment is touched with a tool, or when equipment fails. The most effective way to prevent an arc flash is to de-energize or disconnect and lock out the power source before starting any maintenance or repair work.

### *Worker responsibilities*

An *unqualified person* is an employee who works around exposed, energized electrical equipment but does not have any specialized knowledge or training in the construction or operation of the equipment. Such a worker never works directly on or close to the live equipment or parts. If you are in this category of worker, you should still know how to remain safe around the equipment in your work area.

If you are a *qualified person*, you need to know and follow these procedures to create an electrically safe work condition:

1. Determine all the possible sources of energy supply to the equipment.
2. After shutting off or isolating the load current, open the disconnecting device(s) for each energy source.

## *Electrical Safety: Avoiding Arc Flashes, Cont.*

(Continued from page 4)

3. Verify all elements of the disconnecting device are open or that circuit breakers are in the fully disconnected position.
4. Apply lockout/tagout devices according to established procedures.
5. Test the voltage using only testing equipment that is in perfect working condition and that is rated for the equipment being tested.
6. Apply appropriate grounding devices as necessary in case stored electrical energy exists.

It is important to *NEVER* take a shortcut—if you don't shut off the power and lock out the power source, this could lead to an arc flash that can cause you great bodily harm in just a few milliseconds.

### *The importance of PPE*

Even when these procedures aren't followed, and an arc flash does happen, you can avoid injury by wearing appropriate personal protective equipment (PPE). You should do the following:

- Wear all arc-rated PPE, such as nonconductive head protection, safety glasses, and arc-rated face shield.
- Never wear synthetic materials made of nylon, acetate, or rayon as outer clothing—they will burn or melt when exposed to an arc flash.
- Don't wear metal objects on clothing—no metal buttons and zippers.
- Make sure your protective clothing is rated flame-resistant.

*“It is  
Important  
to NEVER  
take a  
shortcut...”*





## Avoiding ticks



Ticks are arachnids, usually 3–5 millimeters (mm) long and can transmit diseases that result in a range of mild symptoms to severe infections requiring hospitalization. Each year, there are about 30,000 reported cases of Lyme disease, one painful disease transmitted through tick bites.

*“You can be exposed to ticks year-round if you spend time near grassy areas or woods where they live.”*

You can be exposed to ticks year-round if you spend time near grassy areas or woods where they live. Ticks are most active during warmer months, so this summer, follow these guidelines from the Centers for Disease Control and Prevention (CDC) to keep yourself safe:

- Treat clothing with permethrin (it will remain protective even after several washes) and use insect repellent containing DEET, picaridin, IR3535, Oil of Lemon Eucalyptus (OLE), para-menthane-diol (PMD), or 2-undecanone.
- After potential exposure, get in the routine of thoroughly examining your clothing and body for ticks (especially hiding places like hair, around the ears, and under the arms). Taking a shower within 2 hours of coming indoors may remove unattached ticks.
- If you find a tick attached to your skin, act quickly. Use fine-tipped tweezers to grab hold of the tick as close to the skin as possible (this helps to remove the entire tick). Pull upward with a steady motion (do not twist because the tick may break). Once it is removed, clean the bitten area thoroughly with soap and water.
- Early detection is important—if you develop a distinctive rash or fever, or experience stiffness or joint pain, you should get checked out by your healthcare provider. Symptoms may appear within days after the bite or may take months to appear.

For more information on preventing tick bites and what to do if you are exposed, check out the CDC’s resource center.

## Chemical Spotlight: Hydrochloric Acid

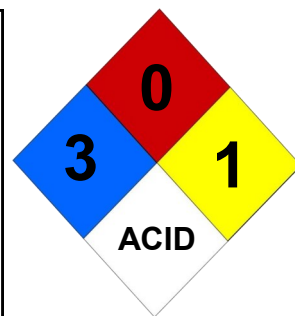
Hydrochloric acid is a clear, colorless to light yellow liquid with a strong, pungent odor. Hydrochloric acid is a strong acid with a pH of 0.01 but can be diluted for different uses. A dilute solution is actually present in the human stomach that helps to break down food in digestion. Higher concentration solutions are used in many industrial applications including removing rust from iron or steel, in the production of other chemicals and foams, and in food manufacturing.

You should only work with hydrochloric acid in well-ventilated areas and should always wear appropriate personal protective equipment (PPE). Emergency eye wash stations and safety showers should be located in close proximity to your workstation. Exposure to hydrochloric acid can cause severe skin burns and damage to the eyes. Inhalation of vapors may cause irritation to the nose and upper respiratory tract, coughing, and shortness of breath; these symptoms may appear immediately or be delayed.

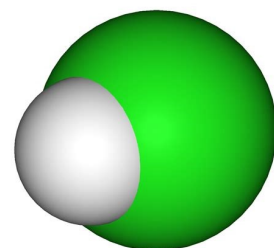
Hydrochloric acid is corrosive and should only be stored in compatible containers constructed of corrosion-resistant material such as polyvinyl chloride (PVC). If hydrochloric acid is exposed to metals and water, flammable hydrogen gas can be generated and if it is mixed with oxidizing chemicals, dangerous chlorine gas is formed.

It may be required to contain and dispose of hydrochloric acid as a hazardous waste. Contact your state environmental department or EPA regional office to inquire about proper disposal.

*Source: Safety.BLR*



*“Exposure to hydrochloric acid can cause severe skin burns and damage to the eyes.”*

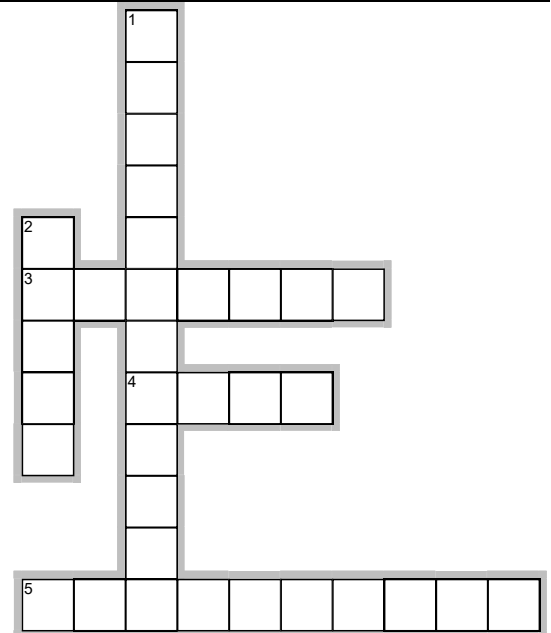


# Fun Page

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## Across

3. Apply \_\_\_\_\_/tagout devices according to established procedures.
4. Each year, there are about 30,000 reported cases of \_\_\_\_\_ disease transmitted by ticks.
5. A radiation \_\_\_\_\_ is a doctor that is specially trained to treat cancer with radiation.



EclipseCrossword.com

## Down

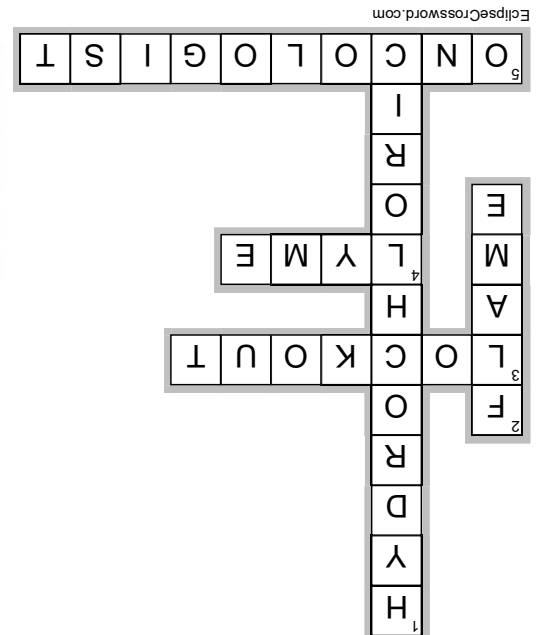
1. Polyvinyl chloride (PVC) is an approved container for storing \_\_\_\_\_ acid.
2. Part of electrical safety includes wearing protective clothing that is rated \_\_\_\_\_-resistant.

## Funny Corner



“Look, Bill—for the last time, I don’t need the rubber gloves.”

## Puzzle Answers



EclipseCrossword.com



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### *Safety Quotes*

*Know  
safety,  
no  
injury.  
No  
safety,  
know  
injury.*

*~Author  
Unknown*

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