



"Safety Comes First"

Case Western Reserve Environmental Health and Safety

Service Building, 1st Floor

Phone: (216) 368-2906/2907

FAX: (216) 368-2236

Website: case.edu/ehs

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Be Smart, Be Safe

When a student works in a laboratory there is an expectation that the laboratory will be as free of hazards as possible. In many cases nobody else in the world has done what is about to be attempted. The unknown is what research is all about. As you work in a laboratory, you are responsible to pay attention to what you are doing and to work safely. If you see something that is not quite right you need to stop and rethink what you are doing. While it may be tempting to keep that candy bar in your desk drawer, bring that cup of coffee into the laboratory, or work until you can't keep your eyes open, you are only increasing the chances that you will make a mistake and cause yourself injury. Be good to yourself and don't take unnecessary chances.

A good method to find hazards in a procedure is to perform a dry run. If you are going to do a complex procedure or a procedure that has never been done before, running through the procedure without the hazardous element can go a long way to both identifying the hazards and possibly saving a lot of time later if a problem is found during the dry run. The time taken to plan what you will do might be the difference between successfully finishing your research and an injury.

Please know that the EHS office is here to help you in any way possible to do your work as safely as possible. We have many excellent safety experts on staff that are more than willing to meet with you one on one. Our mission is your health. Take advantage of our services.

It is my sincere hope that your work here at CWRU will be rewarding. Be Smart. Be Safe.

*Marc Rubin,
Director, EHS*

Chemical Waste Disposal

“Hazardous waste must be disposed of in compliance with current laws.”

Laboratories make and use chemicals on a daily basis. All chemicals that are regulated by OSHA as a hazardous material and/or defined by the EPA or RCRA as a "Hazardous Waste", must be disposed of in compliance with current laws. To properly dispose of these chemicals, contact Environmental Health and Safety at 216-368-2907.

Fill out the Hazardous Waste Tags and Unwanted Chemical Disposal Form (Pink Sheet). They are available from the EHS office. The “Unwanted Chemicals” form (Figure 1) must contain the following:

1. Page number
2. Laboratory contact
3. Primary investigator
4. Location (ex. WRB 3401) and location code
5. Department
6. Account number
7. Phone
8. Date
9. Bottle Number
10. List of ingredients in each bottle
11. Amount of each ingredient in each bottle (L or Kg)
12. Signature

Send the Form to EHS, which will then have the waste picked up. See Example in Figure 1.

Bottles need to be labeled as soon as a chemical waste is put in the bottle. Labeling must be legible, durable and in English. Deface or remove original bottle labeling before placing your label, and make sure bottle is clean or contains the same material as the generated waste. Use the key words, “HAZARDOUS WASTE”, and include chemical ingredients with amounts. DO NOT use shorthand, chemical nomenclature, abbreviations or acronyms. Write the chemical name. Commercial product trade names may be used, but must be accompanied with an MSDS. ALL Hazardous Waste containers must be capped when not in use, even during accumulation period.



Chemical Waste Disposal, Cont.

(Continued from page 2)

Department of Occupational & Environmental Safety
DISPOSAL LISTING FOR HAZARDOUS WASTE AND UNWANTED CHEMICALS

PI # _____ Year _____ Pick Up # _____
 ID # _____
 Is this a move/termination? Yes * No *

PAGE 1 of 1

Contact Ann Tracks Primary Investigator Dr. No Location Room LC _____
 Department Safety Account Number OPR123456 Phone 368-0000 Date Today

List the volume or mass (L or Kg) of each component in each container. EX: A container with 10% formaldehyde in water should be documented as .010L of formaldehyde and .090L of water on the waste form. See back for complete instructions or call D.O.E.S. at 368-2907.

BOTTLE#	DESCRIPTION (Chemical component in each container)	QUANTITY (L or Kg)	OFFICE USE ONLY
1	formaldehyde (EXAMPLE)	.010 L	
1	water	.090 L	
2	Water	.100 L	
2	Hydrochloric Acid	.900 L	
3	Sodium Chloride	1.0 Kg	

I certify the above information to be true and correct
Ann Tracks
 Signature Required

Picked up by: _____
 Date: _____

----- OFFICE USE ONLY -----
 STAGING AREA: Millis Science Center—OHD 000812330 / DOA 990—OHD 987033669
 Wolstein—OHR 000120147 / The Greenhouse—OHR 000112482 / Cedar—OHD 004174660

**“DO NOT
 use
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Figure 1. Chemical waste form.

HAZARDOUS WASTE

PI: Dr. No LOCATION: Room
 CONTACT: Ann Tracks BOTTLE# 2
 ACCOUNT# OPR123456 PHONE # 368-0000
 OFFICE USE ONLY
 SEQUENCE# _____ P/U DATE: _____

CONSTITUENTS:	QUANTITY	DATE:
Water	0.10L	Today
Hydrochloric Acid	0.90L	Today

Waste Tags (Figure 2) must contain the following:

1. Primary investigator
2. Location (ex. WRB 3401)
3. Laboratory contact
4. Bottle number (correlates to Hazardous Waste Form)
5. Account number
6. Phone
7. List of ingredients bottle
8. Amount of each ingredient (L or Kg)

Figure 2. Properly labeled waste tag (correlates to Hazardous Waste Form.)

(Continued on page 7)

Liquid Nitrogen Safety

“Liquid nitrogen expands on vaporization at the rate of 1 liter of liquid nitrogen to 682 liters of nitrogen gas...”

Properties: Liquid nitrogen is a colorless, odorless, tasteless, non-flammable and non-toxic liquid. As it boils, it generates gaseous nitrogen which people cannot detect; it is also an asphyxiate, as it cannot support life.

Hazards: Liquid nitrogen is extremely cold: -32°F or -196 °C or below at atmospheric pressure. Exposure to these temperatures can cause severe frost bite/burn. Its large evaporative expansion ratio make it an explosion and asphyxiation hazard. Liquid nitrogen expands on vaporization at the rate of 1 liter of liquid nitrogen to 682 liters of nitrogen gas and may cause an explosion if storage container is sealed and the pressure relief valve is malfunctioning, or it can easily displace oxygen in the room and cause suffocation without warning. The boiling point of liquid nitrogen is higher than that of liquid oxygen so it can condense oxygen from the atmosphere. An oxygen rich atmosphere can also result from evaporation of liquid oxygen. An oxygen rich atmosphere increases the risk of fire or explosion. The possibility of severe frost bite represents a much more serious danger and is therefore of greater concern. This does not mean that the others are of lesser concern, but it does mean that one has to be extremely careful when handling liquid nitrogen.

Safety Precautions: Treat liquid nitrogen or any object cooled with liquid nitrogen with caution. Be careful to not allow liquid nitrogen to be trapped in clothing near skin. Wear personal protective equipment such as gloves (loose fitting insulating or leather gloves) when touching any object cooled by liquid nitrogen, safety glasses and a face shield when transferring liquid nitrogen. Chemical splash goggles must be worn at all times when handling, transporting or working with liquid nitrogen. Only approved containers should be used for liquid nitrogen. Never dip a hollow tube into liquid nitrogen; it may spurt liquid. Use liquid nitrogen in a well-ventilated room, and never dispose of liquid nitrogen by pouring it on the floor or down the drain. It could displace enough oxygen to cause suffocation without any warning.



Hepatitis C

Hepatitis C is defined by OSHA as a bloodborne pathogen, and is a contagious liver disease that results from infection with the Hepatitis C virus. When first infected, a person can develop an “acute” infection, which can range in severity from a very mild illness with few or no symptoms to a serious condition requiring hospitalization.

Acute Hepatitis C is a short-term illness that occurs within the first 6 months after someone is exposed to the Hepatitis C virus. For reasons that are not known, 15%–25% of people “clear” the virus without treatment. Approximately 75%–85% of people who become infected with the Hepatitis C virus develop “chronic,” or lifelong, infection.

Chronic Hepatitis C is a long-term illness that occurs when the Hepatitis C virus remains in a person’s body. Over time, it can lead to serious liver problems, including liver damage, cirrhosis, liver failure, or liver cancer.

Hepatitis C is usually spread when blood from a person infected with the Hepatitis C virus enters the body of someone who is not infected. Today, most people become infected with Hepatitis C by sharing needles or other equipment to inject drugs. Although uncommon, outbreaks of Hepatitis C have occurred from blood contamination in medical settings. An estimated 3.2 million people in the United States have chronic Hepatitis C. Most are unaware of their infection. Each year, about 17,000 Americans become infected with Hepatitis C. Chronic Hepatitis C is a serious disease that can result in long-term health problems, including liver damage, liver failure, and liver cancer. Approximately 12,000 people die every year from Hepatitis C-related liver disease.

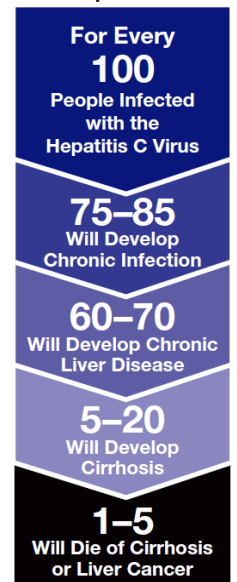
Many people with Hepatitis C do not have symptoms and do not know they are infected. Even though a person has no symptoms, the virus can still be detected in the blood. If symptoms occur with acute infection, they can appear any time from 2 weeks to 6 months after exposure. Symptoms of chronic Hepatitis C can take up to 30 years to develop. Damage to the liver can silently occur during this time. When symptoms do appear, they often are a sign of advanced liver disease. Symptoms for both acute and chronic Hepatitis C can include fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark

(Continued on page 6)



“Many people with Hepatitis C do not know they are infected.”

Progression of Hepatitis C



Liquid Nitrogen Safety, Cont.

Hepatitis C, Cont.



“The research community should familiarize themselves with these basic safety precautions for the safe use of liquid nitrogen.”

(Continued from page 4)

Frost bite: For exposure to liquid nitrogen, restore tissue to normal body temperature by using warm water. Remove or loosen up clothing that may constrict blood circulation to the frostbitten area.

Suffocation: If a person became dizzy or lost consciousness while working with liquid nitrogen, move him/her to a well-ventilated area immediately. Keep him/her warm and at rest. Following the first aid, seek *immediate medical attention* at the University Hospitals Emergency Room, or at the University Health Services, 216.368.4539. The research community should familiarize themselves with these basic safety precautions for the safe use of liquid nitrogen.

For more information, consult with your PI, supervisor, or EHS.

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urine, grey-colored stools, joint pain, and jaundice.

Doctors can diagnose Hepatitis C using specific blood tests that are not part of blood work typically done during regular physical exams. Typically, a person first gets a screening test that looks for “antibodies” to the Hepatitis C virus, which remain in the bloodstream, even if the person clears the virus. If the screening test is positive, different blood tests are needed to determine whether the infection has been cleared or has become a chronic infection.

Testing for Hepatitis C is recommended for certain groups, including people who:

- Currently inject drugs
- Injected drugs in the past, even if it was just once or occurred many years ago
- Have HIV infection
- Have abnormal liver tests or liver disease
- Received donated blood or organs before 1992
- Have been exposed to blood on the job through a needlestick or injury with a sharp object
- Are on hemodialysis

For more information visit
www.cdc.gov/hepatitis

....Waste, Cont.

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Attach the Waste Tags to the properly labeled waste containers. Commercial chemicals with proprietary ingredients may be entered as the product trade name, as long as there is an attached MSDS (Figure 3). As always, when in doubt, call the EHS office.



Figure 3. Properly labeled waste tag for commercial product.

What Should We Know About Radon?

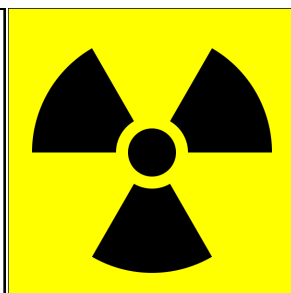
Radon (Rn) is an odorless, tasteless and invisible gas. It is a decay product of uranium, thorium and radium in rocks and soil.

Radon can enter homes through cracks in floors, walls or foundations. Also it can be released from building materials or from water obtained from wells that contain radon. Basement and first floors typically have the highest radon levels because of their closeness to the ground.

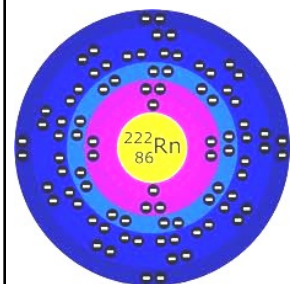
The US Environmental protection agency (EPA) recommends taking action to reduce radon in homes with a radon level of 4 picocuries per liter of air.

According to 2006 statistic data from Ohio Department of Health and USEPA, approximately 30.5 % of schools in Ohio may have at least on room that exceeds of the USEPA action level compared to a nationwide average of 19.3%. Also, Cuyahoga County's (vicinity of Cleveland) average radon level is about 2.7pCi/L.

For some official guidance on correcting your home's radon problem, check out the EPA's Consumer's Guide to Radon Reduction. You can also call the Radon Fix-it Line operated by the Consumer Federation of America (CFA) at 1-800-644-6999. They provide guidance and encouragement to consumers with elevated radon levels and will try to answer some of your most pressing questions. The Fix-it Line is only answered between noon and 8pm EST, Monday through Friday.



“Cuyahoga County's (vicinity of Cleveland) average radon level is about 2.7pCi/L.”



EHS STAFF

Victoria COOK (vcook), Health Physics Specialist II

Gwendolyn COX-JOHNSON (gwendolyn.cox-johnson), Department Assistant II

Jim DAHLE (james.dahle), Fire & Life Safety Specialist I

Bill DEPETRO (william.depetro), Safety Services Specialist II

Anna DUBNISHEVA (anna.dubnisheva), Safety Services Specialist II

Charles GREATHOUSE (charles.greathouse), Analyst Programmer II

Kumudu KULASEKERE (kumudu), Health Physics Specialist I

Robert LATSCH (robert.latsch), Safety Services Specialist II

Jason MAY (jason.may), Chemical Safety Department Assistant I

Shirley MELE (shirley.mele), Office Manager; Ergonomics/Respirator Program

Tom MERK (tom.merk), Assistant Director of Safety Services, ABSO

Yelena NEYMAN (yelena.neyman), Health Physics Specialist II

Joe NIKSTENAS (joenick), Operations Manager Specialist II, RRPT

Marc RUBIN (marc.rubin), Director of Safety Services, BSO, CSO, Select Agents ARO

Zach SCHWEIKART (zachary.schweikart), Industrial Hygiene Specialist II

Dr. Mary Ellen SCOTT (maryellen.scott), Safety Services Specialist II

Dr. W. David SEDWICK (w.sedwick), Director of Radiation Safety, Professor and RSO

Felice THORNTON-PORTER (felice.porter), Assistant Director of Radiation Safety, ARSO

Please remember, all back issues of the EHS Newsletter can be found online at case.edu/ehs. Simply click on the "Newsletter" link in the left-hand column!

Environmental Health and Safety

Case Western Reserve University

(216) 368-2906/2907 FAX: (216) 368-2236