Chemical Hygiene Plan

Department of Chemistry

Eastern Illinois University

Revised 2017

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I. INTRODUCTION

The purpose of this Chemical Hygiene Plan **(CHP)** is to define work practices and procedures to help ensure that laboratory workers and students in the Department of Chemistry at Eastern Illinois University are protected from hazards associated with working in a chemical laboratory. The Chemical Hygiene Plan is part of the University's compliance with the regulations promulgated by the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) entitled "Occupational Exposures to Hazardous Chemicals in Laboratories" (Code of Federal Regulations, 29 CFR 1910.1450).

II. RESPONSIBILITIES

A. University Responsibilities

Deans, Directors, and Heads of Academic and Administrative Units have the primary responsibility for the health and safety of their staff and students. Specifically, they should (1) collaborate with faculty and staff to develop an appropriate chemical hygiene plan for each relevant unit and (2) make and/or support budget requests for health, safety, and hazardous waste improvements.

B. Office for Environmental Health and Safety Department at EIU - Responsibilities

The Environmental Health and Safety (EHS) Department at Eastern Illinois University will oversee university safety and hazardous waste concerns. Specifically, this department will:

1. Appoint a Campus Chemical Hygiene Officer who will routinely review departmental/unit chemical hygiene plans and suggest modifications as needed.
2. Provide technical assistance to laboratory workers and supervisors regarding appropriate storage, handling, and disposal of hazardous chemicals.
3. Provide general laboratory training upon request.
4. Conduct exposure assessments and laboratory inspections upon request and on a routine basis.
5. Assist Health Services in medical consultation as needed.
6. Provide technical assistance concerning personal protective equipment and laboratory safety equipment.
7. Maintain a library of manufacturer's Material Safety Data Sheets and other laboratory and chemical safety literature.
8. Remain current on rules and regulations concerning chemicals used on campus.

C. Departmental Responsibilities

i. Chemistry Department Chair

The Chair of the Department of Chemistry at Eastern Illinois University will work with administrators, the Chemical Hygiene Officers of the University and the Department, laboratory supervisors, employees and students to help ensure safe working conditions and to seek ways to improve the chemical hygiene program. Also, in consultation with the Departmental Chemical Hygiene Officer, the Chair shall have the authority to suspend laboratory operations—in part, or in the whole—if deficiencies in laboratory procedures or equipment pose a significant threat to the safety of laboratory personnel, if well established environmental practices are not followed, or if procedures and rules

of conduct established in this CHP are violated on a recurring basis. A written report of the reasons for suspension will be made available to the relevant laboratory supervisor.

ii. Departmental Chemical Hygiene Officer

The departmental Chemical Hygiene Officer is an employee appointed by the chemistry department chair who is qualified, either by training or experience, to provide technical guidance in the development and implementation of the Chemical Hygiene Plan. The Chemical Hygiene Officer will perform the following tasks:

1. Make recommendations to the Chemistry Department Chair, that apply to the use of chemicals and help laboratory supervisors develop safe procedures.
2. Store records of chemical accidents and send to Risk Management.
3. Monitor the safety policies of the Chemistry Department for effectiveness.
4. Arrange for proper disposal of hazardous waste.
5. Be a member of the Departmental safety committee.
7. Maintain a library of SDS's for chemicals purchased by the department.
8. Ensure that up-to-date copies of the CHP are located in all research laboratories, the Chemical Department Stockroom, and the Chemistry Department Office.

iii. Department of Chemistry Safety Committee

The department will maintain a Safety Committee. The Safety Committee will conduct the following tasks:

1. Review the CHP annually and revise as needed.
2. Work with Department Chair and document that all research students receive training in chemical safety and hazardous waste disposal.
3. Conduct and/or arrange for annual laboratory inspections and provide feedback to the Department Chair and laboratory supervisors to assist them in proper chemical hygiene.

iv. Laboratory Supervisors

Laboratory supervisors are Departmental faculty members who supervise chemistry laboratory courses or who direct the research of students and/or associates involving chemicals. Laboratory supervisors will have the following responsibilities:

1. Provide continuing support to ensure that laboratory work is conducted within the guidelines as set forth in this CHP and according to generally

accepted principles of laboratory behavior as described in Prudent Practices in the Laboratory, Handling and Disposal of Chemicals, prepared by the Committee on Prudent Practices in the Laboratory: An Update Board on Chemical Sciences and Technology of the National Research Council, National Academy Press, 2011. A copy of this publication is available from the Department of Chemistry Stockroom.

2. Stress to laboratory workers the importance of conducting research and laboratory work in a safe and prudent manner.
3. Ensure that laboratory workers receive safety training pertaining to the lab and their laboratory work.
4. Provide, and enforce the use of, protective apparel and personal protection equipment required for each laboratory procedure.
5. Ensure that facilities and training are adequate before ordering any materials.
6. Enforce the Departmental policy regarding solitary work as described in the standard operating procedures.
7. Conduct weekly chemical hygiene and housekeeping inspections.
8. Ensure disposal of hazardous waste as specified in this CHP.
9. Follow the procedures in this CHP Appendix G) for lab checkout upon retirement or other abandonment of the research laboratory
10. Report laboratory injuries, accidents, major spills/leaks or any fire to the Chemical Hygiene Officer within 24 hours of occurrence using the Incident Report Form in Appendix H.

v. Laboratory Workers

Laboratory workers are individuals who work with chemicals in the Department of Chemistry including students, teaching assistants, research assistants, and post-doctoral associates. Laboratory workers are required to:

1. Plan and conduct each operation in accordance with the Departmental CHP.
2. Develop good personal chemical hygiene habits.
3. Report to their supervisor any situations that are inconsistent with the CHP or generally accepted safe practices.
4. Dispose of hazardous waste in accordance with the CHP.
5. Use personal protective equipment where appropriate.

III. Standard Operating Procedures

A. Introduction

The Department of Chemistry recognizes that this CHP is an ongoing effort to improve safety and chemical hygiene within the department. It will be improved and updated as new procedures and information become available.

The following SOP's are intended to provide guidance as to how to safely work with and dispose of chemicals. Please consult additional sources for further safety information.

B. General Safety Notes

1. Permission from the laboratory supervisor is required for after hours work.
2. Unattended operations and/or short term absences from the laboratory which might cause a problem require the approval of the laboratory supervisor. Provisions must be made for secondary containment of chemicals in the event of spillage or container breakage and condenser hoses must be sufficiently secure. A note must be left identifying the experimenter and back-up personnel.
3. Careful planning should precede all laboratory operations. A written procedure should be in place, reviewed and understood prior to starting any experiment.
4. Be prepared for accidents. Know specific actions to be taken in case of an accidental release of a hazardous substance. Know the location of safety equipment and the nearest fire alarm and telephone. Know the location of relevant telephone numbers to call and whom to notify in the event of an emergency.
5. Perform only the assigned experiments. Unauthorized experiments are strictly forbidden.
6. A serious working atmosphere needs to be maintained. Absolutely **NO** horseplay, fooling around or practical jokes will be allowed.
7. No eating, drinking, smoking, gum chewing, applying cosmetics, and taking medications is permitted in any laboratory, or Stockrooms, PSB 3409, 3419, or 4148. No laboratory chemicals, glassware or apparatus should be used in the refrigerator or in the microwave in PSB 3180. No chemical demonstrations should be performed in PSB 3180.
8. Consult your lab supervisor if you are unsure of the hazards or proper use of any reagent or piece of equipment.

9. Maintenance of a safe and clean work area (personal housekeeping) is the responsibility of each lab worker and lab supervisor.
10. Preceding all outreach demonstrations, a description of the chemistry demonstration, and accompanying MSDS (or links) must be sent to the facility. Facility Profile and Demonstration Acknowledgement forms must be returned to the Chemistry Department before the scheduled visit.

C. Personal Protective Equipment

1. Chemical splash goggles should be worn in teaching and research laboratories at all times by instructors, students, and visitors. Research and stockroom workers should wear goggles when carrying out operations in which there is any danger of splashing from corrosive or toxic chemicals. Special goggles must be worn in the Laser Lab (room 3421) when lasers are operating.

2. Face shields or safety shields should be used in laboratory operations which have the potential to result in fires or explosions or which utilize pressurized or high vacuum operations. Prior authorization of the laboratory supervisor is required. Check the safety equipment (fire extinguishers, shields, safety showers, etc...) prior to such operations.

3. Protective gloves may be needed for some procedures. The type of glove selected should protect against the chemical that you are using, or against heat, cold, and sharp objects. Consult the laboratory supervisor and Appendix A.

4. Long hair should be tied back to keep it away from flames and chemicals and moving mechanical parts.

5. Clothing must cover the body from the shoulders to the knees (no bare midriffs). The flammability of the fabric should be considered. Hanging items (jewelry, hoodie strings, scarves, etc.) and loose or baggy clothing must be secured or removed. Earbuds or earphones are not allowed in laboratories or stockrooms.

6. Sturdy shoes covering the entire foot should be worn. Sandals, Crocs, ballet shoes, mules, or any type of shoe that does not cover the entire foot are forbidden.

7. The use of lab coats is optional.

D. Chemical Safety

i. Let knowledge, caution and common sense add up to chemical safety.

1. Assume any unfamiliar chemical is hazardous. Review SDS for reagents used.

2. Consider a mixture to be at least as hazardous as its most hazardous component.

3. Do not use unlabeled chemicals.

4. Never combine substances unless you understand the chemistry that likely will occur, including heat evolution and gas production, and have prepared for the consequences. Students should never combine substances unless they have been explicitly instructed to do so.

5. Follow all chemical safety instructions and procedures to the letter.

ii. Chemical exposure can be minimized by careful use of chemicals and good housekeeping.

1. Promptly clean up and properly dispose of small chemical spills, including water spills.

2. Clean up your work area prior to leaving the laboratory.

3. Wash hands, face, and arms thoroughly if contaminated and always wash before leaving the laboratory.

4. Always wash before eating, drinking, smoking, visiting the rest room, or applying make-up after working in the laboratory.

5. Depending on the chemicals used, a shower after working may be recommended.

iii. All chemical use should be preceded by a knowledge of the potential hazards of the chemical. Treat all chemicals with respect. Know the hazards before you handle the material.

1. Check your lab write-up for special hazards.

2. Read the chemical labels very carefully to assure that you have the correct chemical. Read labels three times: when you pick it up; just before you use it; and after you are finished. Match name, formula and concentration on the label to lab directions.

3. Read the container labels and Safety Data Sheets. They will tell you: 1) any hazardous ingredients; 2) physical and chemical characteristics; 3) health hazards; 4) precautionary measures; 5) proper storage and handling procedures; 6) how to handle leak and spill cleanup and proper disposal; 7) first-aid procedures.

4. Beware of poisons.

a. Never taste a chemical.

b. Check odors (only if instructed to do so) by gently wafting some of the vapor towards your nose with your hand over the open container top. Never sniff a bottle directly.

c. Pipetting by mouth is forbidden.

d. Laboratory fume hoods should be used for all operations that have the potential to release fumes, gases, or volatile solvent vapors in excess of recommended exposure levels.

5. Work with corrosive agents such as acids and bases should be conducted with particular care to avoid skin and eye contact. If you spill acid or base on yourself, rinse the affected area with lots of water. If the outside of a reagent bottle is contaminated, handle with gloves and rinse the bottle before using the reagent.

6. Report broken mercury thermometers and spills to the Chemistry Stockroom, who will then contact Work Control. The EIU Hazmat team cleans up mercury spills. Isolate the area and call EIU Work Control after hours (581-3416).

7. Always add acid to water.

8. Remember that organic compounds, especially solvents, often are very flammable. Verify that no flammable vapors are present before lighting a Bunsen burner.

9. If any chemical is splashed or spilled on your skin or body, immediately wash off the chemical and rinse for15 minutes. Remove contaminated clothing immediately. Notify your lab supervisor.

10. Use of low temperature operations require special procedures. Such operations require the prior approval of your lab supervisor.

11. Compressed gases should be used as described in this CHP in section G.

iv. Chemicals should be stored and dispensed properly.

1. Flammable liquids should be dispensed in containers complying with NFPA (National Fire Protection Association) and OSHA (U.S. Occupational Safety and Health Administration) codes, and storage should be in special cabinets also complying with NFPA and OSHA codes.

2. The shelf-life of some chemicals is prolonged by storage at a low temperature. The refrigerators and freezers used for chemical storage must be clearly marked as either **explosion-resistant** or **explosion-proof**. Absolutely **NO** storage of food is permitted in chemical refrigerators, freezers, or coolers.

3. Ideally, hoods should not be used for chemical storage; bottles sitting in a hood interfere with the proper air flow. However, if chemicals are stored in a hood it should be used for storage only; no experiments should be conducted in hoods containing stored chemicals.

4. Never return unused reagents to the reagent bottle. Be careful to take only what you need. Do not contaminate reagents by exchanging caps or stoppers or by laying stoppers on the desk top. Dispose of excess reagent as directed by the laboratory supervisor and this CHP.

5. In general, do not insert pipets or medicine droppers into the reagent bottle. Where possible transfer a small amount into a beaker and dispense from there.

6. Keep only the necessary chemicals in the lab. All others should be returned to the Chemistry Department Stockroom.

7. Report any deterioration of a chemical, broken containers or broken caps to the laboratory supervisor.

8. All chemicals should be stoppered or capped at all times when not in immediate use. This includes hazardous waste.

9. Hazardous chemicals stored in breakable containers should be provided with secondary containment. Keep the funnel lid closed on organic waste containers.

10. Do not store chemicals near heat, in sunlight, or near other substances with which they might react.

11. Store chemicals and equipment away from the countertop edge.

12. Store dangerous items like biohazards, radioactives, carcinogens, poisons, water reactive chemicals, etc..., in special cabinets designed for their safe storage. Warning labels must be on such chemicals and cabinets.

13. Do not place reagents directly on the balance pan. A weighing container must be used.

14. It is the responsibility of both the laboratory supervisor and the lab worker to properly label any chemical taken from its original container. This label should include: 1) the chemical name 2) the date; and 3) hazard information including the NFPA coding. Reaction intermediates and products of uncertain or undetermined structure should be labeled with the researcher's name and the corresponding page number of the research notebook.

15. Body fluids used in experimental techniques or from accidents should be handled in special ways. Contact the laboratory supervisor and

Departmental Chemical Hygiene Officer for appropriate protocol (see section III.J of this Chemical Hygiene Plan).

16. Chemicals which have a limited shelf life--peroxidizable solvents, e.g., diethyl ether; chemicals which decompose upon storage to form potentially dangerous pressures, e.g., formic acid; chemicals which can become unstable upon storage, e.g., moist picric acid which can become explosive upon water evaporation--require special procedures. These chemicals should be ordered on an as-needed basis in quantities no greater than anticipated for six months usage. Container sizes should be minimized. Containers will be dated upon receipt and upon opening.

E. Equipment and Glassware Safety

1. Beware of broken glass. Do not use damaged, cracked or broken glassware. Fire polish any chipped edges on beakers, test tubes, stirring rods, etc... or replace with a new item.

2. Dispose of broken glassware and dangerous items such as syringes in special containers. Do not place in the regular trash. These items should be as clean as possible of chemical contamination before disposal.

3. Wrap evacuated glass containers (with, for example, black electrical tape) to protect against implosion.

4. Broken glass cuts deeply. When inserting thermometers or glass tubing into stoppers or corks, lubricate them with water or glycerine and twist, using short strokes and minimum pressure. Covering the thermometer or tubing with a towel protects hands and fingers from injury in case the article being inserted breaks.

5. Treat a test tube, graduated cylinder, or separatory funnel as you would a gun. Never point these items at anyone, especially when it is being heated or agitated. Never look down into a test tube or flask in which an experiment is being conducted.

6. Be careful with Bunsen burners, hot plates, hot plate-stirrers and other hot objects. Remember that hot glass looks just like cool glass.

7. Use carts, trays, boxes or other containers to transport materials between the stockroom and labs or between labs.

8. Do not store equipment, backpacks, coats, chemicals or other materials on the floor or in other places where laboratory workers can trip or knock over the item, or in places that would block fire exits.

9. Electrical equipment always means the chance of shock or fire. Do not touch with wet hands or while standing on a wet floor. Report any shocks and defective equipment to the laboratory supervisor. Do not attempt to repair the equipment yourself. Equipment cords should not be entangled or allowed to drape in inappropriate locations (e.g., sinks). All electrical powered equipment should be wired with safety ground and 3-prong plugs. Extension cords are not appropriate. Report frayed cords or defective plugs to personnel in the Chemistry Department Stockroom. Be especially careful around equipment with moving parts. These items can catch your clothing or open up suddenly, showering you with dangerous material.

10. Never take equipment, chemicals, or glassware out of the Chemistry Department without the consent of the laboratory supervisor.

11. Before leaving the laboratory, clean up your lab area and turn off and put away all unused equipment. Assure that all gas and water valves have been turned off. Return borrowed equipment to the stockroom.

F. Laser Safety

i. Laser Classification

Lasers are generally classified and controlled according to the following criteria (based upon ANSI Z136.1-2007):

Class 1: Low-power lasers and laser systems that cannot emit radiation levels greater than the Maximum Permissible Exposure (MPE). Class 1 lasers and laser systems are incapable of causing eye damage and are therefore exempt from any control measures.

Class 1M: Considered to be incapable of producing hazardous exposure conditions during normal operation unless the beam is viewed with optical instrument such as telescope. Exempt from any control measures other than prevention of potentially hazardous optically aided viewing.

Class 2: Visible (400 – 700 nm), low power lasers or laser systems that are incapable of causing eye damage unless they are viewed directly for an extended period (greater than 1000 seconds). Sufficient eye protection is usually provided by the aversion response.

Class 2M: Visible (400 – 700 nm), low power lasers or laser systems that are incapable of causing eye damage unless viewed with certain optical aids.

Class 3: Medium-power lasers and laser systems capable of causing eye damage with short-duration exposures to the direct or specularly reflected beam.

Class 3R: Potentially hazardous under some direct and specular reflection viewing conditions if the eye is focused and stable but the probability of an injury is small. The laser will not pose either a fire hazard or diffuse reflection hazard.

Class 3B: May be hazardous under direct and specular reflection viewing conditions, but it normally not a diffuse reflection or fire hazard.

Class 4: High power lasers and laser systems capable of causing severe eye damage with short-duration (<0.25 s) exposures to the direct, specularly reflected, or diffusely reflected beam. Class 4 lasers and laser systems are capable of causing severe skin damage and igniting flammable and combustible materials. Class 4 lasers may also produce laser generated air contaminants (LGAC) and hazardous plasma radiation.

ii. Laser Hazard Control Precautions

1. Eye Protection: laboratory supervisors who operate or supervise the operation of a laser are responsible for determining the need for laser eye protection for a particular laser. If required, eye protection will be provided by the supervisor for staff and visitors to the area.

2. Dye lasers normally use a lasing medium composed of a complex fluorescent organic dye dissolved in an organic solvent. These dyes vary greatly in toxicity, mutagenicity, and potential carcinogenicity. All dyes must be treated as hazardous chemicals. Most solvents suitable for dye solutions are flammable and toxic by inhalation and/or skin absorption.

3. The minimum laser radiant energy or laser power level required for the application should always be used.

4. Warning signs should be posted at entrances and in prominent locations near the laser work area when the laser is in operation.

5. Beam Control: To minimize direct eye exposure, the following precautions should be observed:

    a. Do not intentionally look directly into the laser beam or at a specular reflection, regardless of its power.
    b. The laser beam should be safely terminated at the end of its useful path.
    c. The beam path should be located at a point other than eye level when standing or when sitting at a desk.

d. The laser must be oriented such that the beam is not directed toward entry doors or aisles.
e. Specular reflections should be minimized.
f. The laser system should be securely mounted on a stable platform to maintain the beam in a fixed position during operation and limit beam traverse during adjustments.
g. Primary beams and dangerous reflections must be confined to the optical table.
h. Beam paths should be clearly identified and they must not cross populated areas or traffic paths.
i. Alignment of laser optical systems (mirrors, lenses, beam deflectors, etc.) must be performed in such a manner that the primary beam, or a specular or diffuse reflection of a beam, does not expose the eye to dangerous levels of radiation.
j. When the beam path is not totally enclosed, the laser system should be located so that the beam will be outside the normal eye-level range, which is between 1.2 to 2 meters from the floor.

The intensity of laser radiation is often such that exposure can result in serious and permanent injury to skin and eyes. There are also a number of non-beam hazards associated with laser systems. These include electrical shock, exposure to dyes and chemicals, and production of potentially hazardous beam plumes.

iii. Laser Operation

Laboratory supervisors are responsible for restricting access to laser facilities only to authorized personnel, developing standard operating procedures, training other laser users, wearing appropriate personal protective equipment, and conducting laser activities in a safe manner. The laboratory supervisor is also responsible for ensuring all laser users under their supervision are properly trained and conduct laser activities in a safe manner.

G. Compressed & Condensed Gases

i. General Notes

1. Cylinders must be stored and transported in a manner to prevent their falling. Escaping gas from a broken cylinder valve can propel a cylinder through a brick wall.

2. Some gases are toxic, some flammable. Knowing about the gas you are working with is as important as knowing about the reactants in your experiment.

3. Always use a cylinder cart to transport cylinders.

4. Cylinders should be stored and moved with caps in place. Cylinders and caps have either coarse threads or fine threads. Do not force a cap with one type of threading on a cylinder with a different type of threading, e.g., a coarse threaded cap on a fine threaded cylinder.

5. Cylinders should be chained or strapped at all times and placed out of the way in the lab. Do not use a cylinder cart as a securing device in your lab.

6. Use the correct regulator for a particular gas; never attempt to use improvised adaptors.

7. Electrically ground cylinders that contain flammable gases must be electrically grounded.

ii. Cylinder Changing Procedures

1. Wearing goggles, obtain a full cylinder from room 4136. Do not place empty cylinders into room 4136.
2. Move the cylinder to your lab with a cylinder cart.
3. Place the initials of the Laboratory Supervisor on the paper tag attached to the full cylinder.
4. Remove the empty cylinder from the system (use a crescent wrench, not a pipe wrench which roughens the edges of the nut) and replace the cap.
5. Install the new cylinder.
6. Take the capped, empty cylinder to the holding area in front of the third floor Chemistry Department Stockroom, room 3409; leave it there on the cart. Notify stockroom personnel of its presence.
7. If transporting between floors, place the cylinder (full or empty) on the elevator, press the desired floor button and get off. Either have meet it at its destination, or have someone else meet it and remove the cylinder from the elevator. Never ride the elevator with any gas cylinder (empty or full).

iii. Procedure for Dispensing a Compressed Gas

1. After the cylinder has been secured with a safety clamp, remove the cap and screw on the pressure regulator using a crescent wrench.

2. Make sure the flow control valve (the needle valve on the outlet side of the regulator) is closed (clockwise, finger tight) and the delivery pressure screw (the screw that delivers pressure from one side of the regulator to

the other) is closed (counterclockwise until it feels loose). Both gauges should read zero.

3. Open (counterclockwise) the main valve (top of the gas cylinder) fully by hand. The cylinder pressure gauge will now register the cylinder pressure.

4. Turn the delivery pressure adjusting screw clockwise until the desired reading on the delivery pressure gauge is reached.

5. The flow rate can now be adjusted using the flow control valve.

6. Shut off the gas supply by closing the valves in the same order in which they were opened. Shut off the main tank first and allow the residual compressed gas in the valves to escape. When the gauges read zero, shut the delivery pressure screw and the flow control valve.

iv. Procedure for Transporting, Dispensing, & Using Liquid Nitrogen

1. Do not transport liquid nitrogen in the elevator with passengers present including yourself. Only larger quantities of liquid nitrogen should be transported in the elevator—160 L and 30 L dewars. When transporting in the elevator, place the dewar on the elevator, press the desired floor button, get off and either meet the elevator at its destination or have someone there to meet it and take the dewar off the elevator. Smaller quantities of liquid nitrogen 1-5 L can be carried from 4136 to your lab in a dewar. Do wear goggles when carrying a small dewar filled with liquid nitrogen and it's also a good idea to wear leather or Cryo-gloves. Be mindful of hall and stair traffic when doing this. Avoid doing this between classes or other times when there is a lot of traffic in the hallways or stairs.
2. Goggles and loose-fitting leather gloves must be worn when dispensing liquid nitrogen.
    a. You are strongly encouraged to cover exposed skin by wearing a lab coat if you are wearing short-sleeved shirt and/or shorts.
    b. Shoes covering the entire foot are required.
    c. These protocols are posted in 4136 and 4142 as a reminder to all users.
    d. There are two 30 L dewars in 4136. Dispense liquid nitrogen from the dewar with the "Use First" tag. If this dewar is empty, move the tag to the other dewar and dispense from it. Do not dispense from both dewars simultaneously.
    e. Make certain the door to 4136 is kept open when you are dispensing liquid nitrogen.
    f. Close the dewar valve and leave 4136 immediately if the oxygen sensor alarm sounds.

g. In the event that the valve on the dewar becomes stuck (frozen) in the open position, do not spend an undo amount of time trying to close it. Rather, leave the room and get help.
h. Dispense the liquid nitrogen into the dewar, but don't fill it more than 80 % full. Do not dispense it into common glassware or other uninsulated containers.
i. Enter the approximate quantity of liquid nitrogen you dispensed in the logbook along with your name and the date.
j. If you are uncertain about any aspect of these operations, please ask for assistance.

3. One of the most common uses of liquid nitrogen is for cooling vacuum traps. Be aware that liquid nitrogen is cold enough to condense oxygen which can be extremely hazardous especially if the liquid oxygen were to come into contact with a substance that is easily oxidized. If you use liquid nitrogen to cool vacuum traps, please make certain you know the proper steps to take to avoid oxygen condensation that can result in a violent explosion.

H. Fume Hoods

1. Fume hoods will be inspected annually by EHS. Hood face velocities will be determined by readings taken over a grid across the open hood face. Copies of these reports are available through EHS and will be stored in the Department of Chemistry Office.
2. Markings on each hood will indicate proper sash positioning for optimum performance.
3. A simple visible test can be done to check for hood flow. Tape a piece of KimWipe to the sash of the hood and note its movement when the exhaust fan is turned on. A properly functioning hood should cause the Kim Wipe to flutter into the hood.
4. Questions regarding fume hood operation should be directed to the laboratory supervisor, Departmental Chemical Hygiene Officer, or Campus Hygiene Officer.
5. Fume hoods should not be used for storage of chemicals or solvents.

I. Hazardous Waste Procedures

i. General

1. It is the responsibility of the laboratory supervisor and lab workers to discard or dispose of chemicals in an environmentally sound manner and to assist with inventory procedures for complying with this Chemical Hygiene Plan. Each entry should be recorded each time as they are added to the waste container.

2. Absolutely **NO** chemicals or chemical materials are to be put down the drain or placed in the trash without prior authorization from the lab supervisor. Any sink/sewer or trash disposal of chemicals from the laboratory is the responsibility of the laboratory supervisor in consultation with the Departmental Chemical Hygiene Officer and Campus Chemical Hygiene Officer.

ii. The following rules apply for all "satellite" hazardous waste (HW) collection locations (laboratory collection).

1. The volume of HW accumulated at a satellite point must not exceed 55 gallons.

2. Containers must be labeled "Hazardous Waste" and labeled with chemical names **as Metal waste or Organic waste**. All waste containers & their formatted labels should be provided by the Stockroom.

3. Containers must be labeled with the date upon which accumulation of the waste began and the date it was transported from the lab to the satellite location.

4. Containers must be compatible with the collected hazardous waste and be sealed with a lid at all times other than when waste is being added.

5. Containers must be inspected weekly by the laboratory supervisors or under the supervision of the laboratory supervisor. The results of such inspections will be recorded on the HW container log sheet.

6. Containers should not be filled more than 70% full.

7. Incompatible wastes must not be mixed nor should the containers of these wastes be stored near each other (for example, cyanides must be stored well away from acids).

8. All students and student employees must be trained by their supervisor in proper hazardous waste procedures.

9. Hazardous waste should be handled so as to minimize unplanned releases (for example, HW containers should not be stored in sinks with drains and should be stored within secondary confinement systems).

10. Bulk organic waste (at EIU) consists of solvents and spent reaction mixtures that are predominantly solvents and that contain no chemicals of the type listed within Appendix B. Bulk organic waste should have a label, available in the Chemistry Department Stockroom, on the container (usually 3 to 5 gallons) denoting that it is "Bulk Organic Waste" and that it is flammable and toxic. A log sheet describing the solvents and quantities should accompany each container. When the hazardous waste container is 70% full , notify personnel in the Chemistry Department Stockroom.

11. If by mistake, an incompatible waste was added to the wrong container, notify the Stockroom personnel immediately and change that container before further use.

J. Blood Borne Pathogen Precautions

i. Universal Precautions

Precaution must be observed when dealing with body fluids of any types and amounts. Always wear personal protective equipment in exposure situations. The only safe assumption during cleaning up of body fluids is that the fluid contains the infectious HIV, HBV, HCV, and various and other blood borne pathogens. Where differentiation of types of body fluids is difficult or impossible, all body fluids are to be considered as potentially infectious.

ii. Accidental spillage (cuts, nosebleeds, etc...)

1. When blood or body fluids are released, isolate the area to be cleaned and disinfected by lacing a barrier tape around the site, post appropriate signs, and contact a BSW or Work Control.

2. Our institution has established a specific set of procedures to provide hepatitis B vaccinations to laboratory workers who have a potential for an exposure to blood borne pathogens and post-exposure evaluation and follow-up for all laboratory workers and students who have had an exposure incident to blood borne pathogens. Contact the University Chemical Hygiene Officer.

iii. Storage

1. Containers, refrigerators, and freezers containing any potentially infectious materials must be labeled BIOHAZARD.

2. All containers of potentially infectious blood, blood components, or blood products at this facility must be properly labeled. A proper label must include at least the use of the BIOHAZARD symbols, fluorescent orange, or orange-red background with contrasting lettering.

3. Sharps containers should be used to properly store and dispose of sharps. Approved sharps containers are designed to isolate the cut or puncture hazard associated with handling sharp items such as needles, scalpels, or Pasteur pipettes. Approved sharps containers are: puncture resistant, red in color and labeled with a biohazard warning, leak-proof, closeable, and are available in the Stockroom.

4. Containers for reusable sharps must meet the same requirements as containers for disposable sharps, with the exception that they are not required to be closable. Reusable sharps will not be stored or processed in a manner that requires reaching **into** containers of contaminated sharps.

5. Any broken glass that is not a biohazard should be placed in Glass Disposal boxes, available in the Stockroom.

K. Emergency Procedures and Reporting

1. Report any accidents (injuries, spills, explosions, fire, etc...) to the laboratory supervisor immediately. Even minor injuries should be reported to ensure appropriate treatment. Medical staff can better treat cuts, burns, or inhalation of fumes. Within 24 hours of the incident, the laboratory supervisor is responsible for filling out the Eastern Illinois University Accident/Injury Report Form and giving the form to the Chemistry Department Office. A copy of the Incident Report is then sent to Business Affairs/ Risk Management, 1140 Old Main.

2. Treat minor burns immediately by placing the burned area under cold water for at least 15 minutes. Cold water markedly reduces the subsequent pain and blisters. Do not attempt to treat major burns; call an ambulance.

3. Treat chemical spills to the body by flushing the contaminated area for 15 minutes with water. Remove jewelry and contaminated clothing immediately. Modesty should not prevent the immediate removal of affected clothing. For large areas of contamination, rinse under an emergency shower. Check the MSDS or other reliable source to see if any delayed effects should be expected. Inform your laboratory supervisor immediately.

4. Contact of any lab chemical with the eyes requires immediate treatment. Flush the eyes with water for fifteen minutes, holding the eyelids away from the eyeball and moving the eyeball up and down and from side to side. Seek medical aid after the first aid is accomplished.

5. Inhalation of all laboratory chemicals should be minimized. Substances with a high level of acute toxicity (LD_{50}<50 mg), carcinogens and reproductive toxins must always be used in the hood. Threshold limit values, TLV's, and permissible exposure limits, PEVs, give respective long-term and short-term limits for exposure and are often quoted in the MSDS. Chemicals with PELs or TLVs less than 50 ppm must not be used outside a hood. Persons with a noticeable reaction to inhaled chemicals should be removed from the laboratory to fresh air and medical attention.

6. Ingestion of laboratory chemicals can be caused by eating, drinking, taking medicine, applying cosmetics, pipetting by mouth and chewing gum in the laboratory—all of which are forbidden. Should ingestion occur, follow instructions on the label of the chemical bottle or in the MSDS and seek medical attention if appropriate.

7. Clean up any spilled reagents immediately, especially near the balances or reagent shelf. Acid or base spills must be cleaned up thoroughly and the affected area rinsed with water. For larger acid spills, use the solid sodium bicarbonate, $NaHCO_3$, provided to neutralize the spill, then clean up thoroughly, and take the $NaHCO_3$ bottle to the Chemistry Department Stockroom for refill for future clean-ups. Custodians are not trained for chemical spill clean up; this is the responsibility of the lab workers and laboratory supervisor.

8. Small spills of low toxicity organic solvents (e.g., petroleum ether, hexanes, diethyl ether, tetrahydrofuran, alcohols, acetone) should be absorbed using vermiculite and the used vermiculite placed into a hood. Notify the Departmental Chemical Hygiene Officer so that the solvent/vermiculite can be dealt with properly. Vermiculite contaminated

with solvents is then sent to Environmental Control as Lab Pack Waste. Contact the Departmental Chemical Hygiene Officer or laboratory supervisor for spills larger than 500 mL or of any amount of highly toxic substances (see Appendix C).

9. Report allergies to your lab supervisor.

10. If you suspect you have been exposed to a hazardous substance, inform your laboratory supervisor to determine if you need to get medical attention, and file an incident report.

11. All larger chemical spills, accidents, fires, explosions, chemical exposure, etc... must be reported immediately to the Campus Environmental Health and Safety Department (x 7068). For after hours reporting, contact work control, x 3416.

12. Emergency exiting procedures for each laboratory including assembly point and verification of evacuation completeness (headcount) shall be documented. Emergency shut-off locations for gas and other utilities shall be documented and clearly marked. The Chemistry Department Chemical Hygiene Officer is responsible for this documentation.

13. If self-contained breathing apparatus, or respirators, are required for an emergency, the Charleston Fire Department will be called for such services.

14. A list of emergency phone numbers will be maintained at relevant telephones. The Chemistry Department Chemical Hygiene Officer has responsibility to maintain this list.

15. First Aid kits are located in each research lab and the Stockroom.

IV. Employee Training

Laboratory worker training shall include:

1. Detection methods and observations that may be used to detect the presence or release of a hazardous chemical. Examples of detection methods include visual appearance, odor, and an understanding of chemical monitoring devices.

2. Physical and health hazards of the chemicals.

3. The work practices, personal protective equipment, and emergency procedures to be used to ensure that the employee may protect himself/herself from overexposure to hazardous chemicals.

   The Safety Data Sheets will generally contain much of the above information needed to comply with the information and training requirements of the OSHA Lab Standard. Hence, laboratory workers should peruse and understand the relevant MSDSs and/or other comparable literature on the hazardous chemicals which are used or stored in their laboratory. SDS sheets are available on the web.

4. Additional training for specific lab hazards must be provided by the laboratory supervisor.

5. Laboratory workers shall be made aware of the existence of this CHP. A copy of the CHP will be available in each research laboratory, the Chemistry Department Stockroom, and the Chemistry Department Office.
6. Upon receiving training as described in this CHP, laboratory workers will fill out and sign an appropriate signature sheet (see Appendix D), and kept in the CHP binder in each lab.

V. Prior Approval

1. The circumstances under which a particular laboratory operation, procedure or activity are to be carried out shall require prior approval from the employer or the employer's designee before implementation.

2. The responsibility for approval of the acquisition and use of toxic chemical agents rests with the laboratory supervisor. Certain materials including radioactive materials, recombinant DNA, and certain biohazards require prior internal approval at various levels. If there are questions concerning the need for approval, the Campus Chemical Hygiene Officer and the department chair should be consulted.

VI. Medical Consultation

An opportunity to receive medical consultation shall be provided under the following circumstances: if an employee develops any symptoms thought to arise from chemical overexposure; after an event such as a major spill, leak or explosion which may have resulted in an overexposure; or, an overexposure is identified as the result of an evaluation by lab supervisor or the Chemical Hygiene Officer. Health Service will designate one or more physicians at any given time to be consulting physicians. Following notification of overexposure, arrangements for an appropriate medical examination must be completed before the exposed individual may return to work. Any medical examination required by this Plan shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. Records of any medical examination will be maintained at Health Service.

VII. Special Provisions for Select Carcinogens, Reproductive Toxins and Acutely Toxic Chemicals

A. General

1. For chemicals considered as select carcinogens, reproductive toxins or acutely toxic chemicals specific consideration shall be given to the following provisions which shall be included where appropriate: (a) Establishment of a designated area (b) Use of containment devices such as fume hoods or glove boxes (c) Procedures for safe removal of contaminated waste (d) Decontamination procedures.

2. In addition to the general safety guidelines mentioned in the first section and throughout the CHP, special precautions are needed when handling genotoxins, reproductive toxins and chemicals with a high degree of acute toxicity. A minimum set of guidelines that should be followed are listed below. The lab supervisor should ensure that these and other precautions designed to minimize risk of exposure to these substances are taken.

B. Guidelines

1. Quantities of these chemicals used and stored in the laboratory should be minimized, as should their concentrations in solution or mixtures.

2. Work with genotoxins, reproductive toxins and acutely toxic chemicals should be performed within a functioning fume hood, biological safety cabinet, ventilated glove box, sealed system, or other system designed to minimize exposure to these substances. (The exhaust air from the ventilation systems may require scrubbing before being released into the atmosphere.) In all cases, work with these types of chemicals shall be done in such a manner that the OSHA permissible exposure limits or similar standards are not exceeded.

3. Compressed gas cylinders which contain acutely toxic chemicals such as arsine and nitrogen dioxide should be kept in ventilated gas cabinets.

4. The ventilation efficiency of the designated fume hood, glove box or gas cabinet, and the operational effectiveness of mechanical and electrical equipment used to contain or manipulate these special substances should be evaluated periodically by the laboratory personnel at intervals determined by the laboratory supervisor. The interval of evaluating systems may vary from weekly to biannually depending upon the frequency of usage, quantities employed and level of hazard.

5. Each laboratory utilizing these substances must designate an area for this purpose and must sign or mark this area with an appropriate hazard warning. The designated area may be an entire laboratory, an area of the laboratory, or a device such as a fume hood or glove box. The designated area should be marked with a DANGER, specific agent, AUTHORIZED PERSONNEL ONLY or comparable warning sign.

6. All laboratory workers who work in a laboratory which has an area designed for use with genotoxins, reproductive toxins and acutely toxic chemicals must be trained about the deleterious effects of these substances as well as signs and symptoms regarding exposure to these substances, whether or not they actually work with the substance themselves. Training to ensure the safe handling and storage of these substances is required for those who use these materials. This training is

the responsibility of the laboratory supervisor and must be done prior to the use of any of these materials.

7. Laboratory workers working with these chemicals must have access to appropriate protective equipment and clothing (available at no expense to the workers) and must be trained on how to properly utilize the safety equipment.

8. Detection equipment may be required in laboratories where chemicals (especially poisonous gases) with a high degree of acute toxicity are utilized.

9. All wastes contaminated with these substances should be collected and disposed of in a timely manner and appropriately as outlined in this CHP. For special disposal information, call the Campus Safety Officer (Ext. 3727). If possible and as soon as practical, waste products shall be destroyed by a suitable, generally acceptable chemical procedure to lessen or eliminate their toxicity.

10. The designated working area shall be thoroughly and appropriately decontaminated and cleaned at regular intervals determined by the laboratory supervisor. The interval may be as short as one day or as long as six months depending upon the frequency of usage and level of hazard.

11. Special precautions to avoid release and exposure to highly toxic chemicals, genotoxins and reproductive toxins must be utilized. For instance, volatile substances should be kept cool and contained in appropriate containers; gases should have properly functioning valves, check valves, regulators, containment which can withstand pressure buildup, and appropriate piping; and dispersive solids should be kept in closed containers, used in places with minimum air currents, and appropriate contact materials should be used to avoid static charging.

12. Emergency response planning for releases or spills shall be prepared by the lab supervisor and included in the training of the laboratory workers and others who may be affected in the building. The Campus Chemical Hygiene Officer and the Charleston Fire Department should be involved in this planning.

Key to Permeation Rate

	Simply Stated, Drops/hr Through a Glove (eyedropper-size drops)
E – Excellent; permeation rate of less than 0.9 μg/cm²/min.	0 to 1/2 drop
VG – Very Good; permeation rate of less than 9 μg/cm²/min.	1 to 5 drops
G – Good; permeation rate of less than 90 μg/cm²/min.	6 to 50 drops
F – Fair; permeation rate of less than 900 μg/cm²/min.	51 to 500 drops
P – Poor; permeation rate of less than 9000 μg/cm²/min.	501 to 5000 drops
NR – Not Recommended; permeation rate greater than 9000 μg/cm²/min.	5001 drops up

Note: The current revision to the ASTM standard permeation test calls for permeation to be reported in micrograms of chemical permeated per square centimeter of material exposed per minute of exposure, "μg/cm²/min."

Key to Permeation Breakthrough

>Greater than (time) <Less than (time)

Key to Degradation Ratings

E – Excellent; fluid has very little degrading effect.
G – Good; fluid has minor degrading effect.
F – Fair; fluid has moderate degrading effect.
P – Poor; fluid has pronounced degrading effect.
NR – Fluid was not tested against this material.

NOTE: Any test samples rated P (poor) or NR (not recommended) in degradation testing were not tested for permeation resistance. A dash (–) appears in those cases.

Specific Gloves Used for Testing

	Degradation	Permeation
Nitrile	Sol-Vex® 37-145 (11 mil/0.28 mm)	Sol-Vex® 37-165 (22 mil/0.54 mm)
Neoprene Unsupported	29-865 (18 mil/0.46 mm)	29-865 (18 mil/0.46 mm)
Polyvinyl Alcohol Supported	PVA™	PVA™
Polyvinyl Chloride Supported	Snorkel®	Monkey Grip™
Natural Rubber Latex	Canners 392 (19 mil/0.48 mm)	Canners 392 (19 mil/0.48 mm)
Neoprene/Latex Blend	Chemi-Pro 224 (27 mil/0.67 mm)	Chemi-Pro 224 (27 mil/0.67 mm)
Laminated LCP™ Film	Barrier 2-100 (2.5 mil/0.06 mm)	Barrier 2-100 (2.5 mil/0.06 mm)

Single palm thickness is listed in both mil and metric millimeter (mm) for Unsupported Gloves. Supported Gloves are specified by glove weight, not thickness.

Permeation/Degradation Resistance Guide for Ansell Gloves

The first square in each column for each glove type is color coded. This is an easy-to-read indication of how we rate this type of glove in relation to its applicability for each chemical listed. The color represents an overall rating for both degradation and permeation. The letter in each square is for Degradation alone…

- GREEN: The glove is very well suited for application with that chemical.
- YELLOW: The glove is suitable for that application under careful control of its use.
- RED: Avoid use of the glove with this chemical.







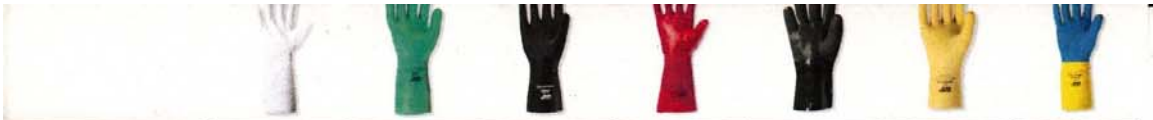
CHEMICAL	LAMINATE FILM BARRIER			NITRILE SOL-VEX			UNSUPPORTED NEOPRENE 29-865			SUPPORTED POLYVINYL ALCOHOL PVA			POLYVINYL CHLORIDE (Vinyl) SNORKEL			NATURAL RUBBER CANNERS AND HANDLERS*			NEOPRENE/ NATURAL RUBBER BLEND CHEMI-PRO*		
	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate
1. Acetaldehyde	■	380	E	P	—	—	E	10	F	NR	—	—	NR	—	—	E	7	F	E	10	F
2. Acetic Acid	■	150	—	G	270	—	E	60	—	NR	—	—	F	180	—	E	110	—	E	260	—
3. Acetone	▲	>480	E	NR	—	—	E	10	F	P	—	—	NR	—	—	E	10	F	G	10	G
4. Acetonitrile	▲	>480	E	F	30	F	E	20	G	■	150	G	NR	—	—	E	4	VG	E	10	VG
5. Acrylic Acid	—	—	—	G	120	—	E	390	—	NR	—	—	NR	—	—	E	80	—	E	65	—
6. Acrylonitrile	E	>480	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7. Allyl Alcohol	▲	>480	E	F	140	F	E	140	VG	P	—	—	P	60	G	E	>10	VG	E	20	VG
8. Ammonia Gas	■	19	E	▲	>480	—	▲	>480	—	—	—	—	■	6	VG	—	—	—	■	27	VG
9. Ammonium Fluoride, 40%	—	—	—	E	>360	—	E	>480	—	NR	—	—	E	>360	—	E	>360	—	E	>360	—
10. Ammonium Hydroxide	E	30	—	E	>360	—	E	250	—	NR	—	—	E	240	—	E	90	—	E	240	—
11. Amyl Acetate	▲	>480	E	E	60	G	NR	—	—	G	>360	E	P	—	—	NR	—	—	P	—	—
12. Amyl Alcohol	—	—	—	E	30	E	E	290	VG	G	180	G	G	12	E	E	25	VG	E	45	VG
13. Aniline	▲	>480	E	NR	—	—	E	100	P	F	>360	E	F	180	VG	E	25	VG	E	50	G
14. Aqua Regia	—	—	—	F	>360	—	G	>480	—	NR	—	—	G	120	—	NR	—	—	G	180	—
15. Benzaldehyde	▲	>480	E	NR	—	—	NR	—	—	G	>360	E	NR	—	—	G	10	VG	G	25	F
16. Benzene, Benzol	▲	>480	E	P	—	—	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
17. Benzotrichloride	—	—	—	E	>480	E	NR	—	—	—	—	—	—	—	—	NR	—	—	NR	—	—
18. Benzotrifluoride	—	—	—	E	170	G	F	—	—	E	—	—	G	<10	F	P	50	G	—	—	—
19. Bromine Water	—	—	—	E	>480	E	E	>480	E	—	—	—	—	—	—	—	—	—	—	—	—
20. 1-Bromopropane	▲	>480	E	■	23	F	■	<10	P	▲	>480	E	■	<10	F	■	<10	P	■	<10	P
21. Bromopropionic Acid	▲	>480	—	F	120	—	E	420	—	NR	—	—	G	180	—	E	190	—	G	180	—
22. Butyl Acetate	▲	>480	E	F	75	F	NR	—	—	G	>360	E	NR	—	—	NR	—	—	P	—	—
23. Butyl Alcohol	▲	>480	E	E	>360	E	E	210	VG	F	75	G	G	180	VG	E	20	VG	E	45	VG
24. Butyl Carbitol	—	—	—	E	323	E	G	188	F	E	>480	E	E	397	VG	E	44	G	E	148	G
25. Butyl Cellosolve	▲	>480	E	E	90	VG	E	120	F	■	120	G	P	—	—	E	45	G	E	40	G
26. gamma-Butyrolactone	▲	>480	E	NR	—	—	E	190	F	E	120	VG	NR	—	—	E	60	G	E	100	F
27. Carbon Disulfide	▲	>480	E	G	30	F	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
28. Carbon Tetrachloride	—	—	—	G	150	G	NR	—	—	E	>360	E	F	25	F	NR	—	—	NR	—	—
29. Cellosolve Acetate	▲	>480	E	F	90	G	E	40	P	▲	>360	E	NR	—	—	E	10	G	E	15	G
30. Cellosolve Solvent	E	>480	E	G	210	G	E	120	F	—	75	G	P	—	—	E	25	VG	E	20	VG
31. Chlorine Gas	▲	>480	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32. 2-Chlorobenzyl Chloride	—	—	—	E	120	E	P	—	—	E	>480	E	F	65	E	F	20	F	—	—	—
33. Chlorobenzene	▲	>480	E	NR	—	—	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
34. Chloroform	E	20	G	NR	—	—	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
35. Chloronaphthalene	▲	>480	E	P	—	—	NR	—	—	G	>360	E	NR	—	—	NR	—	—	P	—	—
36. 2-Chlorotoluene	—	—	—	G	120	G	NR	—	—	F	—	—	F	—	—	NR	—	—	NR	—	—
37. ortho-Chlorotoluene	—	—	—	G	120	G	NR	—	—	F	—	—	F	—	—	NR	—	—	NR	—	—
38. Chromic Acid, 50%	—	—	—	F	240	—	NR	—	—	NR	—	—	G	>360	—	NR	—	—	NR	—	—
39. Citric Acid, 10%	—	—	—	E	>360	—	E	>480	—	P	—	—	E	>360	—	E	>360	—	E	>360	—
40. Cyclohexanol	▲	>480	E	E	>360	E	E	390	VG	G	>360	E	E	360	E	E	10	G	E	20	G
41. Cyclohexanone	▲	>480	E	F	103	G	P	—	—	E	>480	E	NR	—	—	P	—	—	P	—	—
42. 1, 5-Cyclooctadiene	—	—	—	E	>480	E	NR	—	—	—	—	—	P	—	—	NR	—	—	NR	—	—
43. Diacetone Alcohol	▲	>480	E	G	240	E	E	140	G	■	150	G	NR	—	—	E	15	VG	E	60	VG
44. Dibutyl Phthalate	—	—	—	G	>360	E	F	<10	F	E	>360	E	NR	—	—	E	20	—	G	>360	E
45. Diethylamine	▲	>480	E	F	45	F	P	—	—	NR	—	—	NR	—	—	NR	—	—	NR	—	—

Note: All numeric designations within the product classifications are denoted in minutes.

▲ A degradation test against this chemical was not run. However, since its breakthrough time is greater than 480 minutes, the Degradation Rating is expected to be **Good** to **Excellent.**

■ A degradation test against this chemical was not run. However, in view of degradation tests performed with similar compounds, the Degradation Rating is expected to be **Good** to **Excellen**

*CAUTION: This product contains natural rubber latex which may cause allergic reactions in some individuals.



This Information Applies Only to Ansell Occupational Healthcare Glove Brands

CHEMICAL	LAMINATE FILM BARRIER			NITRILE SOL-VEX			UNSUPPORTED NEOPRENE 29-865			SUPPORTED POLYVINYL ALCOHOL PVA			POLYVINYL CHLORIDE (Vinyl) SNORKEL			NATURAL RUBBER CANNERS AND HANDLERS*			NEOPRENE/ NATURAL RUBBER BLEND CHEMI-PRO*		
	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate
46. Di-Isobutyl Ketone, DIBK	▲	>480	E	E	120	F	P	—	—	G	>360	E	P	—	—	P	—	—	P	—	—
47. Dimethyl Acetamide, DMAC	▲	>480	E	NR	—	—	NR	—	—	NR	—	—	NR	—	—	E	15	G	E	30	G
48. Dimethyl Formamide, DMF	▲	>480	E	NR	—	—	E	40	F	NR	—	—	NR	—	—	E	25	VG	E	40	G
49. Dimethyl Sulfoxide, DMSO	▲	>480	E	E	>240	VG	E	360	G	NR	—	—	NR	—	—	E	180	E	E	150	E
50. Dioctyl Phthalate, DOP	▲	>480	E	G	>360	E	G	>480	E	E	30	F	NR	—	—	P	—	—	E	>360	E
51. Dioxane	▲	>480	E	NR	—	—	NR	—	—	P	—	—	NR	—	—	F	5	F	F	15	F
52. Electroless Copper	—	—	—	E	>360	—	E	>360	—	NR	—	—	E	>360	—	E	>360	—	—	—	—
53. Electroless Nickel	—	—	—	E	>360	—	E	>360	—	NR	—	—	E	>360	—	E	>360	—	E	>360	—
54. Epichlorohydrin	▲	>480	E	NR	—	—	P	—	—	E	300	E	NR	—	—	E	5	F	E	15	G
55. Ethidium Bromide, 10%	▲	>480	E	▲	>480	E	—	—	—	NR	—	—	—	—	—	—	—	—	—	—	—
56. Ethyl Acetate	▲	>480	E	NR	—	—	F	10	P	F	>360	E	NR	—	—	G	5	F	F	10	F
57. Ethyl Alcohol	▲	>480	E	E	240	VG	E	113	VG	NR	—	—	G	60	VG	E	37	VG	E	20	G
58. Ethylene Dichloride	▲	>480	—	NR	—	—	NR	—	—	E	>360	E	NR	—	—	P	—	—	P	—	—
59. Ethylene Glycol	▲	>480	E	E	>360	E	E	>480	—	F	120	VG	E	>360	E	E	>360	E	E	>480	E
60. Ethylene Oxide Gas	▲	234	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61. Ethyl Ether	▲	>480	E	E	120	G	F	<10	P	G	>360	E	NR	—	—	NR	—	—	NR	—	—
62. Ethyl Glycol Ether	▲	>480	E	G	210	G	E	120	F	■	75	G	P	—	—	E	25	VG	E	20	VG
63. Formaldehyde	▲	>480	E	E	>360	E	E	105	G	P	—	—	E	100	VG	E	10	G	E	15	VG
64. Formic Acid, 90%	▲	>480	—	F	240	—	E	>480	—	NR	—	—	E	>360	—	E	150	—	E	>360	—
65. Furfural	▲	>480	E	NR	—	—	E	30	P	F	>360	E	NR	—	—	E	15	VG	E	40	G-VG
66. Glutaraldehyde, 25%	—	—	—	—	>360	—	E	>480	E	P	—	—	E	>360	E	E	210	VG	E	—	—
67. Gasoline (hi-test)	■	170	E	E	>360	E	NR	—	—	G	>360	E	P	—	—	NR	—	—	NR	—	—
68. HCFC-141b	▲	>480	E	E	92	F	F	33	P	P	—	—	NR	—	—	NR	—	—	NR	—	—
69. HFE 7100	▲	>480	E	E	>480	E	E	>480	E	P	—	—	E	>480	E	E	120	E	—	—	—
70. HFE 71DE	▲	164	E	F	10	F	F	<10	F	F	>480	E	NR	—	—	NR	—	—	NR	—	—
71. Hexamethyldisilazane	▲	>480	E	E	>360	—	E	15	—	G	>360	—	P	—	—	F	15	F	F	40	F-G
72. Hexane	▲	>480	E	E	>360	E	E	40	F	G	>360	E	NR	—	—	NR	—	—	P	—	—
73. Hydrazine, 65%	—	—	—	E	>360	—	E	380	—	NR	—	—	E	>360	—	E	150	VG	E	>360	—
74. Hydrobromic Acid	▲	>480	—	E	>360	E	E	>480	—	NR	—	—	E	>360	E	E	>360	E	E	>360	E
75. Hydrochloric Acid, conc.	▲	>480	—	E	>360	—	E	>480	—	NR	—	—	E	>300	—	E	290	—	E	>360	—
76. Hydrochloric Acid, 10%	—	—	—	E	>360	—	E	>480	—	NR	—	—	E	>360	—	E	>360	—	E	>360	—
77. Hydrofluoric Acid, 48%	E	>480	—	E	334	—	E	>480	—	NR	—	—	G	155	—	E	190	—	E	153	—
78. Hydrogen Fluoride Gas	▲	>480	E	■	<15	P	—	—	—	—	—	—	—	—	—	E	<15	F	■	<15	F
79. Hydrogen Peroxide, 30%	—	—	—	E	>360	—	E	>480	—	NR	—	—	E	>360	—	E	>360	—	G	90	—
80. Hydroquinone, saturated	—	—	—	E	>360	E	E	140	F	NR	—	—	E	>360	E	G	>360	E	E	>360	—
81. Hypophosphorus Acid	—	—	—	E	>480	—	E	>480	—	—	—	—	—	—	—	E	>480	—	—	—	—
82. Isobutyl Alcohol	▲	>480	E	E	>360	E	E	470	E	P	—	—	F	10	VG	E	15	VG	E	45	VG
83. Iso-Octane	▲	>480	E	E	360	E	E	230	G	E	>360	E	P	—	—	NR	—	—	P	—	—
84. Isopropyl Alcohol	▲	>480	E	E	>360	E	E	<10	VG	NR	—	—	G	150	E	E	20	VG	E	40	VG
85. Kerosene	▲	>480	E	E	>360	E	E	170	P	G	>360	E	F	>360	E	NR	—	—	P	—	—
86. Lactic Acid, 85%	▲	>480	—	E	>360	E	E	>480	—	F	>360	E	E	>360	E	E	>360	—	E	>360	—
87. Lauric Acid, 36%/EtOH	—	—	—	E	>360	—	E	>480	—	NR	—	—	F	15	—	E	>360	—	E	>360	—
88. d-Limonene	▲	>480	E	E	>480	E	P	—	—	G	>480	E	G	125	G	NR	—	—	NR	—	—
89. Maleic Acid, saturated	—	—	—	E	>360	—	E	>480	—	NR	—	—	G	>360	—	E	>360	—	E	>360	—
90. Mercury	—	—	—	▲	>480	E	—	—	—	—	—	—	▲	>480	E	▲	>480	E	—	—	—

Note: All numeric designations within the product classifications are denoted in minutes.

▲ A degradation test against this chemical was not run. However, since its breakthrough time is greater than 480 minutes, the Degradation Rating is expected to be **Good** to **Excellent.**

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	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate	Degradation Rating	Permeation: Breakthrough	Permeation: Rate
91. 1-methoxy-2-acetoxypropane	▲	>480	E	E	200	F	G	37	F	E	>360	E	P	—	—	G	13	F	G	18	F
92. Methyl Alcohol	E	>480	E	E	198	VG	E	65	G	NR	—	—	G	45	G	E	20	VG	E	20	VG
93. Methylamine	▲	>480	E	E	>360	E	E	140	G	NR	—	—	E	135	VG	E	55	VG	E	80	VG
94. Methyl Cellosolve	E	440	E	F	11	G	P	—	—	G	30	G	P	—	—	E	20	VG	E	20	VG
95. Methylene Bromide	▲	>480	E	NR	—	—	NR	—	—	G	>360	E	NR	—	—	NR	—	—	NR	—	—
96. Methylene Chloride	E	20	VG	NR	—	—	NR	—	—	G	>360	E	NR	—	—	NR	—	—	NR	—	—
97. MDI (Isocyanate)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	>480	E
98. Methyl Amyl Ketone	E	>480	E	F	53	F	F	10	F	E	>360	E	NR	—	—	F	<10	F	F	<10	F
99. Methyl Ethyl Ketone, MEK	E	>480	E	NR	—	—	P	—	—	F	90	VG	NR	—	—	F	5	F	P	—	—
100. Methyl Glycol Ether	▲	>480	E	F	11	G	P	—	—	G	30	G	P	—	—	E	20	VG	E	20	VG
101. Methyl Iodide	▲	>480	E	NR	—	—	NR	—	—	F	>360	E	NR	—	—	NR	—	—	NR	—	—
102. Methyl Isobutyl Ketone	▲	>480	E	P	—	—	NR	—	—	F	>360	E	NR	—	—	P	—	—	P	—	—
103. Methyl Methacrylate	▲	>480	E	P	—	—	NR	—	—	G	>360	E	NR	—	—	P	—	—	NR	—	—
104. N-Methyl-2-Pyrrolidone	▲	>480	E	NR	—	—	NR	—	—	NR	—	—	NR	—	—	E	75	VG	F	40	G
105. Methyl t-Butyl Ether	E	>480	E	E	>360	E	P	—	—	G	>360	E	NR	—	—	NR	—	—	NR	—	—
106. Mineral Spirits, rule 66	▲	>480	E	E	>360	E	E	100	F	E	>360	E	F	150	VG	NR	—	—	G	20	F
107. Monoethanolamine	—	—	—	E	>360	E	E	260	E	F	>360	E	E	>360	E	E	50	E	E	50	E
108. Morpholine	▲	>480	E	NR	—	—	P	—	—	G	90	G	NR	—	—	G	20	G	E	30	F-G
109. Muriatic Acid	▲	>480	—	E	>360	—	E	>480	—	NR	—	—	E	>300	—	E	290	—	E	>360	—
110. Naphtha VM&P	▲	>480	E	E	>360	E	G	100	F	E	>420	E	F	120	VG	NR	—	—	NR	—	—
111. Nitric Acid, 10%	▲	>480	—	E	>360	—	E	>480	—	NR	—	—	G	>360	—	G	>360	—	E	>360	—
112. Nitric Acid, 70%	E	>480	—	NR	—	—	E	>480	—	NR	—	—	F	104	—	NR	—	—	G	90	—
113. Nitric Acid, Red Fuming	▲	>480	—	NR	—	—	NR	—	—	NR	—	—	P	—	—	NR	—	—	NR	—	—
114. Nitrobenzene	▲	>480	E	NR	—	—	NR	—	—	G	>360	E	NR	—	—	F	15	G	F	40	G
115. Nitromethane, 95.5%	▲	>480	E	F	30	F	E	60	G	G	>360	E	P	—	—	E	10	G	E	30	VG
116. Nitropropane, 95.5%	▲	>480	E	NR	—	—	E	<10	F	E	>360	E	NR	—	—	E	5	G	E	10	G
117. Octyl Alcohol	—	—	—	E	>360	E	E	218	E	G	>360	E	F	>360	E	E	30	VG	E	53	G
118. Oleic Acid	—	—	—	E	>360	E	F	13	G	G	60	E	F	90	VG	F	>360	—	G	120	—
119. Oxalic Acid, saturated	—	—	—	E	>360	—	E	>480	—	P	—	—	E	>360	—	E	>360	—	E	>360	—
120. Pad Etch 1(Ashland Chem.)	—	—	—	F	>360	—	E	>480	—	F	34	—	E	>360	—	E	>360	—	E	>360	—
121. Palmitic Acid, saturated	—	—	—	G	30	—	E	>480	—	P	—	—	G	75	—	G	5	—	E	193	—
122. Pentane	E	>480	E	E	>360	E	G	30	G	G	>360	E	NR	—	—	P	—	—	E	13	G
123. Pentachlorophenol, 5%	—	—	—	E	>360	E	E	151	F	E	5	F	F	180	E	NR	—	—	—	—	—
124. Perchloric Acid, 60%	—	—	—	E	>360	—	E	>480	—	NR	—	—	E	>360	—	F	>360	—	E	>360	—
125. Perchloroethylene	▲	>480	E	G	300	VG	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
126. Phenol	▲	>480	E	NR	—	—	E	353	G	F	>360	E	G	75	VG	E	90	—	E	180	—
127. Phosphoric Acid, conc.	▲	>480	—	E	>360	—	G	>480	—	NR	—	—	G	>360	—	F	>360	—	G	>360	—
128. PMA Glycol Ether Acetate	▲	>480	E	E	200	F	G	37	F	E	>360	E	P	—	—	G	13	F	G	18	F
129. Potassium Hydroxide, 50%	—	—	—	E	>360	—	E	>480	—	NR	—	—	E	>360	—	E	>360	—	E	>360	—
130. Propane Gas	—	—	—	▲	>480	E	▲	>480	E	—	—	—	■	7	VG	—	—	—	—	—	—
131. Propyl Acetate	—	—	—	F	20	G	P	—	—	G	120	VG	NR	—	—	P	—	—	P	—	—
132. Propyl Alcohol	▲	>480	—	E	>360	E	E	323	E	P	—	—	F	90	VG	E	20	VG	E	30	VG
133. Propylene Oxide	▲	>480	—	NR	—	—	NR	—	—	G	35	G	NR	—	—	P	—	—	P	—	—
134. Pyridine	▲	>480	E	NR	—	—	NR	—	—	G	10	F	NR	—	—	F	10	F	P	—	—
135. Rubber Solvent	—	—	—	E	>360	E	E	43	F	E	>360	E	NR	—	—	NR	—	—	NR	—	—

Note: All numeric designations within the product classifications are denoted in minutes.

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136. Silicon Etch	—	—	—	NR	—	—	E	>480	—	NR	—	—	F	150	—	NR	—	—	P	—	—
137. Skydrol hydraulic fluid	E	>480	E	NR	—	—	NR	—	—	F	—	—	NR	—	—	NR	—	—	NR	—	—
138. Sodium Hydroxide, 50%	E	>480	—	E	>360	—	E	>480	—	NR	—	—	G	>360	—	E	>360	—	E	>360	—
139. Stoddard Solvent	▲	>480	E	E	>360	E	E	139	F	E	>360	E	F	360	E	NR	—	—	G	10	F
140. Styrene	▲	>480	E	NR	—	—	NR	—	—	G	>360	E	NR	—	—	NR	—	—	NR	—	—
141. Sulfur Dichloride	—	—	—	G	>480	E	NR	—	—	—	—	—	—	—	—	NR	—	—	—	—	—
142. Sulfuric Acid, 95%	E	>480	—	NR	—	—	F	105	—	NR	—	—	G	70	—	NR	—	—	NR	—	—
143. Sulfuric Acid 120%, Oleum	▲	>480	E	—	—	—	F	53	G	—	—	—	F	25	G	—	—	—	—	—	—
144. Sulfuric 47% battery acid	—	—	—	E	>360	—	E	>480	—	NR	—	—	G	>360	—	E	>360	—	E	>360	—
145. Tannic Acid, 65%	—	—	—	E	>360	E	E	>480	—	P	—	—	E	>360	E	E	>360	—	E	>360	—
146. Tetrachloroethene	▲	>480	E	G	300	VG	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
147. Tetrahydrofuran, THF	▲	>480	E	NR	—	—	NR	—	—	P	90	G	NR	—	—	NR	—	—	NR	—	—
148. Toluene, toluol	▲	>480	E	F	10	F	NR	—	—	G	>360	E	NR	—	—	NR	—	—	NR	—	—
149. Toluene Di-Isocyanate (TDI)	▲	>480	E	NR	—	—	NR	—	—	G	>360	E	P	—	—	G	7	G	—	—	—
150. Triallylamine	▲	>480	E	—	>480	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
151. Trichloroethylene, TCE	▲	>480	E	NR	—	—	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—
152. Trichlorotrifluoroethane	—	—	—	E	>360	E	E	240	E	G	>360	E	NR	—	—	NR	—	—	NR	—	—
153. Tricresyl Phosphate, TCP	—	—	—	E	>360	E	G	<10	P	G	>360	E	F	>360	E	E	45	E	E	>360	E
154. Triethanolamine, 85%	—	—	—	E	>360	E	E	<10	G	G	>360	E	E	>360	E	G	>360	E	E	—	—
155. Turpentine	▲	>480	E	E	30	E	NR	—	—	G	>360	E	P	—	—	NR	—	—	NR	—	—
156. Vertrel MCA	▲	>480	E	E	110	G	E	20	F	F	>480	E	G	13	F	G	<10	F	G	<10	F
157. Vertrel SMT	E	<10	G	P	—	—	F	<10	P	G	17	G	G	<10	F	F	<10	F	P	—	—
158. Vertrel XE	E	105	E	E	>480	E	E	47	G	F	40	VG	G	303	E	E	17	VG	E	43	VG
159. Vertrel XF	E	>480	E	E	>480	E	E	>480	E	F	387	VG	E	>480	E	E	337	VG	E	204	VG
160. Vertrel XM	E	120	E	E	>480	E	E	105	E	F	10	G	P	—	—	E	23	VG	E	30	VG
161. Vinyl Acetate	▲	>480	E	F	18	F	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
162. Vinyl Chloride Gas	▲	>480	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
163. Xylene, Xylol	▲	>480	E	G	75	F	NR	—	—	E	>360	E	NR	—	—	NR	—	—	NR	—	—

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NOTE:

These recommendations are based on laboratory tests, and reflect the best judgement of Ansell Occupational Healthcare in the light of data available at the time of preparation and in accordance with the current revision of ASTM F 739. They are intended to guide and inform qualified professionals engaged in assuring safety in the workplace. Because the conditions of ultimate use are beyond our control, and because we cannot run permeation tests in all possible work environments and across all combinations of chemicals and solutions, these recommendations are advisory only. The suitability of a product for a specific application must be determined by testing by the purchaser.

The data in this guide are subject to revision as additional knowledge and experience are gained. Test data herein reflect laboratory performance of partial gloves and not necessarily the complete unit. Anyone intending to use these recommendations should first verify that the glove selected is suitable for the intended use and meets all appropriate health standards. Upon written request, Ansell will provide a sample of material to aid you in making your own selection under your own individual safety requirements.

NEITHER THIS GUIDE NOR ANY OTHER STATEMENT MADE HEREIN BY OR ON BEHALF OF ANSELL SHOULD BE CONSTRUED AS A WARRANTY OF MERCHANTABILITY OR THAT ANY ANSELL GLOVE IS FIT FOR A PARTICULAR PURPOSE. ANSELL ASSUMES NO RESPONSIBILITY FOR THE SUITABILITY OR ADEQUACY OF AN END-USER'S SELECTION OF A PRODUCT FOR A SPECIFIC APPLICATION.

Hazardous Waste Log Sheet
Organic Waste
(see other side for exclusions)

Bottle Number______________ Room Number________________

Date	Chemical Added	Estimated Volume Added	Inspection Information

Bulking of Liquid Waste

The ultimate disposal of our hazardous waste requires that these wastes be separated according to the method of disposal. The majority of our waste can be burned in a total consumption incinerator—a responsible and ecologically sound method. However, in order to use this method and to ensure the safety of those involved, that waste must exclude chemicals that would interfere with the incineration process or would react with common organic compounds.

The following is a list of chemicals that should be excluded from the general organic waste. Please contact the Chemistry Stockroom for alternative methods of disposal. This list is illustrative, not exhaustive. In general, do not place any strong reducing agent, oxidizing agent, catalyst, or unstable compound into the liquid organic waste.

All Solids
Monosubstituted acetylenes
Acids, mineral
Acyl halides
Aluminum
Ammonia solutions
Anhydrides, organic
Alkali and alkaline earth:
- carbides
- hydrides, e.g., NaH
- hydroxides, e.g. KOH
- metals
- oxides
- peroxides

Azides
Strong bases
Chlorates
Chromates
Chromic Acid
Chromium trioxide
Cyanides, inorganic
Dichromates
Halogenating agents
Hydrogen peroxide
Mercury and its amalgams
Heavy metal salts
Group IA and IIA metals
Metal hydrides
Nitrates, inorganic
Perchlorates
Peroxides
Permanganates
Persulfates
Phosphorus
Phosphorus pentoxide
Sulfides, inorganic
Sulfur

Each time you add to the liquid organic waste bottle, you must denote the chemical(s) added and the amount on the log sheet (see other side). Each log sheet will correspond to a bottle of waste. Attach a hazardous waste label to the bottle in use and write the bottle number on the log sheet. A new bottle for waste, log sheets, and hazardous waste labels can be obtained in the stockroom.

Other Waste

Solid waste and liquid waste that is unsuitable for bulking should have a label denoting the contents, the date, known hazards, and the generator. These wastes should be kept individually and not combined. Contact the Chemistry Stockroom for disposal.

Appendix C: Highly Toxic Chemicals—Examples

Acrolein
Arsine
Chlorine
Diazomethane
Diborane (gas)
Hydrogen cyanide
Hydrogen fluoride
Methyl fluorosulfonate
Nickel carbonyl
Nitrogen dioxide
Osmium tetroxide
Ozone
Phosgene
Sodium azide
Sodium cyanide
(and other cyanide salts)

Appendix D: Sample of Laboratory Worker Training Record Form

LIST OF LABORATORY PERSONNEL

Chemistry Department Building_____ Floor/Room_____ Phone (if present)_____

Laboratory Supervisor_____ Degree_____ CHP Read on_____ Signature_____

Name of Laboratory Worker	Major Field of Study	CHP Read on:	Dates of training course or semester enrolled in CHM 3500	Signature

Appendix E: Sample of Laboratory Information Sheet

LOCATION OF THE NEAREST SAFETY EQUIPMENT

Building/Floor/Room:_____ Phone (if present)_____

Safety Shower_____

Eye Wash Station_____

Fire Blanket_____

Fire Extinguisher (CO_2 or Dry Chemical) _____

Spill Clean-up Kits

- Acids_____
- Alkalis_____
- Organic Solvents_____
- Mercury_____

MSDS (Material Safety Data Sheets)_____

Personal Protective Equipment (PPE)

- Safety eye wear (goggles)_____
- Gloves_____
- Aprons_____
- Face Shields_____

Mask/Respirator_____

Laboratory Chemical Hygiene Plan_____

Safety References_____

POST A COPY OF THIS PAGE IN A CONSPICUOUS PLACE IN THE LABORATORY

Appendix F

Emergency Phone Numbers

Post in Lab

EMERGENCIES: CALL 911

BASIC FIRST AID

- **DEEP CUTS – Apply pressure to stop bleeding.**
- **SEVERE BURNS – Do not rinse area with water.**
- **CHEMICAL IN EYE – Continuously flush with water for 15 minutes.**
- **CHEMICALS ON SKIN – Remove affected clothing and rinse area on skin with water for 10 minutes.**

HEALTH SERVICE:
Phone: 581 - 3013
FALL & SPRING HOURS:

Monday – Friday	**8:00 AM – 5:00 PM**
Saturday – Sunday	**Closed**

SUMMER HOURS:

Monday –Thursday	**8:00 AM – 4:30 PM**
Friday	**8:00 AM – Noon**
Saturday – Sunday	**Closed**

PHYSICAL PLANT EMERGENCIES:
(Burst water pipes, temperature control, etc.)
After hours, phone Plant Operations at 217-581- 3416.

Each lab has two exits. Posted in each lab is an emergency response map which locates the lab classroom in relation to all building exits. Please become familiar with the location of both lab exits and nearby building exits.

EIU
Chemistry Department
Faculty Check-out Procedure

The purpose of faculty checkout by the department Chemical Hygiene Officer is to ensure that inappropriate, unsafe or unwanted materials are not left behind when faculty retire or otherwise abandon their laboratory. Chemical removal and the initial check by the department CHO should be accomplished at least two weeks prior to leaving. Please make the checkout efficient by observing the following.

1. Make sure that all reagent bottles and waste are labeled appropriately. Avoid shorthand notation and codes. Labeling a bottle as "chromium waste" is unacceptable. Listing the contents of the bottle is most useful, e.g., "5g chromium oxide on silica gel." All chemical waste should have a hazardous waste label (available in the stockroom).

2. Solvent stills, reaction flasks, storage flasks etc. should be free of chemical contamination.

3. All chemicals that are specific to your research only should be removed. Likewise reactive chemicals with short shelf lives. If the stockroom or other faculty do not want them, these chemicals should be labeled as hazardous waste and disposed of properly.

4. All unnecessary gas cylinders should be removed prior to leaving the laboratory.

5. All radioactive chemicals and sources should be located and reported.

6. Chemical storage areas, benches, sinks, hoods, refrigerators, freezers and cabinets should have their surfaces wiped down.

7. All papers, rags, empty bottles, boxes etc. should be properly disposed of prior to vacating the laboratory.

The Chair will not sign the checklist for leaving the university until the above conditions are met.

Appendix H

Incident Report Form

Eastern Illinois University Chemistry Department Incident Report

Report laboratory injuries, accidents, major spills/leaks or any fire. This form must be presented to the department Chemical Hygiene Officer within 24 hours of occurrence.

Date of Incident____/____/____ Time of Incident_____ AM or PM
Room Number _____ Lab Supervisor_____

Name, address, phone number and relationship to Laboratory Supervisor of person(s) involved in incident: _____
_____
_____

Name(s) of witnesses to incident:
_____
_____
_____
_____

Description of experiment/work/project being performed when the incident occurred and the nature of the incident, including contributory actions and conditions:

Fill in below if medical attention was required.
Explain the nature of the injuries:

Describe how the injuries were treated and by whom and method of transport, if applicable:

Signature of Lab Supervisor_____Date_____
Signature of Injured Party/Primary Actor_____Date_____

Eastern Illinois University

Chemistry Department

Facility Profile for Demonstrations

School _____

Room # _____

Room Dimensions: _____ ft x ____ ft

Approximate distance from demonstration area to audience: ____ ft

Number of people allowed in room per fire code: ____

Expected number of students per class: ____

Number of classes: ____

Utilities and related resources in demonstration room:

Useable sink	Y / N	
Electrical outlet, grounded	Y / N	
Electrical outlet, GFIC	Y / N	
Fume Hood available	Y / N	

Safety equipment in demonstration room:

Fire extinguisher (and if present, type)	Y / N	Type ____
First Aid Kit in room	Y / N	
Fire Blanket in room	Y / N	

Other:

Emergency evacuation plan in place	Y / N

Date: _____

Demonstration Requested by: _____

Eastern Illinois University
Chemistry Department
Demonstration Acknowledgement for Outreach Facility

Date of demonstration:

Teacher or primary contact at demonstration location:

Location:

Audience:

EIU Contact Information:

Name:

Phone:

Email:

Proposed Demonstrations (attach additional sheets if necessary):

Relevant Material Safety Data Sheets, MSDS (attach or include web link)

Teacher (primary contact) signature: _____ Date: _____

Principal (Supervisor)

Name: _____ Title: _____

Signature: _____ Date: _____

Please sign and return this page prior to the demonstration date. It may be sent electronically (a scanned copy will suffice) to the email address above or the original mailed to:

Chairperson
Department of Chemistry
Eastern Illinois University
600 Lincoln Ave.
Charleston, IL 61920