

THE SCHOOL OF
PACKAGING



MICHIGAN STATE
UNIVERSITY

SITE SPECIFIC SAFETY
AND
STANDARD OPERATING PROCEDURES
DOCUMENT

1.0 SCOPE

The purpose of this document is to supplement the MSU Chemical Hygiene Plan to provide site specific laboratory safety and standard operating procedures for the School of Packaging (SoP). All researchers, students, and employees are to comply with these procedures to ensure the safe and efficient operation of the School's labs. Safety is the responsibility of everyone working in university laboratories, and is essential to facilitating a clean and hazard free environment.

2.0 ADMISSION TO THE SCHOOL OF PACKAGING LABORATORIES

The following procedures must be followed before individuals will be allowed to work in the School of Packaging laboratories. The omission of any of these steps may result in the denial of lab use or other appropriate action.

All online training course can be access at <https://ehs.msu.edu/training/index.html>.

- 2.1 **Complete the Lab Safety Basics + Biologicals (No Bloodborne Pathogens) Training Track** given by MSU Environmental Health and Safety (EHS). This training track consists of the following required courses and is to be taken online at the EHS training website above.
 - 2.1.1 **Chemical Hygiene, Lab Safety, and Hazardous Waste:** Covers general chemical hygiene and hazardous waste regulations and procedures. You must take the Hazardous Waste Refresher course annually to continue to be eligible to conduct work in the SoP labs.
 - 2.1.2 **Cryogen Safety:** Covers the safe use of cryogens, including liquid nitrogen.
 - 2.1.3 **Compressed Gas Cylinder Safety:** Covers general hazards and proper handling techniques of compressed gas cylinders.
 - 2.1.4 **Biosafety Principles:** Covers general hazards and proper handling techniques of biological materials. Select the "Lab/Microbe" module when given the option midway through the course. You must take the Biosafety Refresher course annually to continue to be eligible to conduct work in the SoP labs.
 - 2.1.5 **Lab Security Awareness:** Covers lab security and access control.
 - 2.1.6 **Asbestos in the Lab Setting:** Covers potential asbestos hazards in lab equipment and supplies.
 - 2.1.7 **Autoclave Safety:** Covers general procedures for safe operation of autoclaves.
- 2.2 **Complete the Non-medical Sharps Waste Management course** given by EHS. This course is to be taken online at the EHS training website above.
- 2.3 **Review the MSU Chemical Hygiene Plan** which can be found at the EHS website at <https://ehs.msu.edu/assets/docs/chem/msu-chem-hygiene-plan.pdf> and in the Lab Manager's office, room 175. The MSU Chemical Hygiene plan provides a general guide for handling hazardous chemicals in laboratories. Guidelines outlined in this document must be strictly followed to ensure compliance with regulatory agency requirements.
- 2.4 **Review the MSU Hazardous Waste Disposal Guidance** which can be found at the EHS website at <https://ehs.msu.edu/waste/waste-disposal-guidance.html>. The MSU Hazardous Waste Disposal website details how to properly dispose of waste materials. Guidelines must be strictly followed to ensure compliance with regulatory agency requirements.

- 2.5 **Review this School of Packaging Site Specific Safety document** in its entirety and become familiar with the policies and procedures within.
- 2.6 **Complete the School of Packaging Site Specific training** with the Laboratory Manager. This on-site orientation reviews safety items that were discussed in the online modules and standard operating procedures specific to the School of Packaging. Please make arrangements for this training by contacting the Laboratory Manager via email.
- 2.7 **Fill out the Application to Work in School of Packaging Laboratory form and submit to the Laboratory Manager, room 175.** This form can be obtained from the School of Packaging Lab Manager's office, room 175, from page 19 of this document, or from <https://www.canr.msu.edu/packaging/research/internal-info-for-lab-users/>.

3.0 STANDARD OPERATING PROCEDURES

The following standard operating procedures must be observed when using the School of Packaging laboratories and equipment. Failure to observe these procedures can result in the loss of lab privileges or other appropriate action.

3.1 **Work hours**

Standard work hours for the School of Packaging are considered to be Monday through Friday between the hours of 7:00am and 5:00pm. For individuals who demonstrate that work needs to be conducted outside of this time frame, you must obtain approval to work after hours from the Laboratory Manager or appropriate faculty member. Hazardous work must never be performed when alone in the labs.

3.2 **General housekeeping**

Keep work areas clean and uncluttered. Clean up work area at the conclusion of your experiment or equipment use, including floors, bench tops, equipment, and tools. Dispose of gloves and paper products in appropriate waste bins. Clean glassware and put in proper storage area. Dispose of any broken non-contaminated glass in broken glass disposal box and dispose of sharps in sharps containers. If you have items such as materials, extrudate, or specimens that need to be stored, please arrange to have them stored in one of the School of Packaging storage rooms by contacting the Laboratory Manager or appropriate faculty member.

3.3 **Security**

Report any suspicious or malicious activity observed in the School of Packaging. Never give access to labs or offices to unknown individuals. Keep keys secured at all times, and always keep lab doors closed and locked.

3.4 **Instrument specific training**

After admission to the School of Packaging, you must contact the Laboratory Manager to obtain equipment training. You cannot use the equipment by yourself until you have demonstrated that you can operate it independently and proficiently.

3.5 **Instrument reservation schedules**

Instrument reservation system can be accessed at <http://web2.msue.msu.edu/packaging/>. This is to be used to reserve equipment time, and is MANDATORY FOR THE USE OF EVERY INSTRUMENT. The reservation schedule is also used as the instrument log book to keep

track of usage. Please reserve the equipment for only the time needed, and if plans change and you will not be using your allotted time, please remove your reservation as soon as possible. Individuals that consistently fail to reserve time for the use of instruments will be subject to appropriate corrective action, which can include having lab privileges revoked. If you are more than 30 minutes late for a reserved time, your time block may be forfeited.

3.6 Broken or malfunctioning equipment

Report broken or malfunctioning equipment to the Laboratory Manager. Damaged equipment can be a safety hazard, and reporting equipment problems ensures that it stays operational for everyone to use. If you make a mistake resulting in equipment damage, please report to the Laboratory Manager. Mistakes, while not endorsed, are common in a learning environment and reporting them is necessary to keep equipment operational and to ensure individuals learn correct operation methods.

3.7 General safety principles

The following general safety principles must be observed at all times when working in the School of Packaging laboratories. Repeat offenders and the failure to comply with these standards can result in appropriate corrective action and the revocation of lab privileges.

3.7.1 Wear appropriate personal protective equipment (PPE) which may include aprons, gloves, lab coats, splash shields, safety glasses, and goggles. Safety glasses must be procured by individuals using the lab and must be worn any time the potential for impact or splashing exists. Undergraduate students and teaching assistants must wear safety glasses at all times during lab classes. See Appendix B at the end of this document for eye and face protection recommendations.

3.7.1.1 Minimum dress code requirements for all labs:

- 3.7.1.1.1 Safety glasses when working with chemicals or machines with moving parts
- 3.7.1.1.2 Tie long hair back to prevent catching in machines or getting into chemicals
- 3.7.1.1.3 No dangling jewelry or scarves (tuck into shirt or remove)
- 3.7.1.1.4 Closes-toe shoes
- 3.7.1.1.5 Protective gloves, as needed (e.g., chemical or heat resistant)

3.7.1.2 Additional requirements in labs where chemicals are stored or used:

- 3.7.1.2.1 Long pants or skirt which fully cover legs to top of shoes
- 3.7.1.2.2 Lab coat while working with chemicals

3.7.1.3 Additional requirements when using cryogenics

- 3.7.1.3.1 Long pants or skirt that covers legs to top of shoes (don't tuck into shoes or roll cuffs because it traps LN2)
- 3.7.1.3.2 Lab coat
- 3.7.1.3.3 Face shield
- 3.7.1.3.4 Cryo gloves

3.7.1.4 Additional requirements when using heated equipment

- 3.7.1.4.1 Long pants or skirt that covers legs to top of shoes
- 3.7.1.4.2 Long sleeves and/or lab coat to cover arms
- 3.7.1.4.3 Thick insulated gloves

- 3.7.2 Be familiar with the chemicals and compounds you are using for experimental setups and with the operation of lab equipment. If necessary, review hazards and proper handling techniques outlined in the applicable Safety Data Sheets (SDS).
- 3.7.3 Know the location of emergency equipment such as eyewash stations, safety showers, telephones, and fire alarms. Know emergency response procedures, which can be found in Section 5.0 of this document.
- 3.7.4 No food or drink to be used for human consumption is allowed into the labs.
- 3.7.5 Report any observed unsafe conditions or practices in the lab to the Laboratory Manager, your research advisor, or course instructor.

3.8 Chemicals

3.8.1 Labeling

All chemicals, including water, in the School of Packaging laboratories must be labeled with the following information:

- 3.8.1.1 Unabbreviated chemical name (unless abbreviation key is posted nearby)
- 3.8.1.2 Owner. Color-coded sticker dots may be used to indicate lab group who owns it. Dots are available from PI or lab manager and key is posted in each lab.
- 3.8.1.3 Date of acquisition or preparation
- 3.8.1.4 Hazards identification

Compounds missing any of this information are subject to disposal without notification and assessment of fines. Please reference Appendix A and C for proper labeling techniques.

3.8.2 Chemical check-in procedures/addition to inventory

Each Principal Investigator (PI) has a group-specific chemical inventory. PI's and their chosen delegates may access the inventory at <https://ehs.msu.edu/lab-clinic/chem/inventory/>. All chemicals must be logged into the appropriate chemical inventory database and must be labeled using the following process:

- 3.8.2.1 Directly notify your PI, your group's delegate, or Lab Manager of the need to add an item to the inventory. Alternatively, you may fill out the SoP Chemical Inventory Update sheet located on the clipboard in each laboratory (example on page 18).
- 3.8.2.2 Label the chemical container with the following information, printed neatly:
 - Unabbreviated chemical name
 - Your name and date of acquisition
 - Last name of your PI or color-coded sticker dot
 - Hazards of the chemical
- 3.8.2.3 It will be your responsibility to ensure your chemicals remain properly labeled.

3.8.3 Chemical check-out procedure/removal from inventory

All manufacturer's chemical containers that are emptied must be removed from the School of Packaging chemical inventory using the following process:

3.8.3.1 Directly notify your PI, your group's delegate, or Lab Manager of the need to remove an item from the inventory. Alternatively, you may fill out the SoP Chemical Inventory Update sheet located on the clipboard in each laboratory (example on page 18).

3.8.3.2 Dispose of empty container according to section 3.9.7

3.8.4 **SDSs and MSU Chemical Hygiene Plan**

Chemical Safety Data Sheets (SDSs) are available from the chemical vendor, by contacting EHS or the Laboratory Manager, or from the ChemInventory system (user login required). You must review the SDS for the chemicals you are using and be familiar with associated hazards. The MSU Chemical Hygiene Plan is available in the Lab Manager's office, room 175, and on the EHS Web site at <https://ehs.msu.edu/assets/docs/chem/msu-chem-hygiene-plan.pdf>

3.8.5 **Chemical storage**

Do not store chemicals in offices, drawers, on benchtops, or in the open. Store chemical compounds in designated storage areas only. Store only compatible chemicals in storage areas. Please reference Appendix D for compatible chemical storage groups. Do not store flammable materials in the standard refrigerators – flammable rated fridges are available in rooms 163 and 167.

3.8.6 **Peroxide Formers**

Label all peroxide formers with a yellow tag when they enter the lab. Fill it out with date received, date opened, and dates tested (if applicable).

If you bring a peroxide-forming chemical into the lab, you are responsible for periodic testing of peroxides (3-months or one year depending on the chemical following APPENDIX G of Chemical Hygiene Plan). Lab manager can supply test strips upon request.

Uninhibited THF should be avoided if possible.

3.8.7 **Carcinogens**

Label carcinogenic chemicals with the cancer hazard sticker. Store only in cabinets that are also labeled with a cancer hazard sticker.

3.9 **Hazardous waste**

3.9.1 **General guidelines**

Generators of hazardous waste are responsible for the proper labeling and disposal of their waste. Leave the waste container in the same room where it is generated. If the waste product is not in the original container, a hazardous waste tag must be attached to it and must be completely filled out (See Appendix E). Hazardous waste tags can be obtained from the label station in room 163, from the Laboratory Manager, or from EHS. The container must bear the words "Hazardous Waste" and it must remain closed except when adding waste. All hazardous waste containers must be submitted to EHS for pickup within 90 days of first use. A hazardous waste pickup request will be submitted by the lab management team for all properly labeled/packaged waste placed on the cart in lab 163. For pickups from other labs, please notify the Laboratory Manager of the need for a pickup. **MAKE SURE TO DISPOSE OF YOUR WASTE**

BEFORE THE 90 DAY LIMIT. Failure to comply with these protocols will result in appropriate corrective action.

3.9.2 **Solid Waste**

3.9.2.1 Solid waste may be placed in an appropriate, leak-proof container.

Avoid placing solids into carboys because they are hard to empty when EHS consolidates them. Other items, like contaminated paper and gloves, may need to be placed into two layers of plastic bags.

3.9.2.2 The container must be labeled with the words HAZARDOUS WASTE and must remain closed when not adding waste. For plastic bags, it works nicely to put the bag into a 5-gallon bucket with a lid while it's being stored in the lab. The bucket must clearly say "HAZARDOUS WASTE" too.

3.9.2.3 A hazardous waste tag must be attached and completely filled out from the moment waste is first added. No abbreviations on waste tags.

3.9.3 **Liquid Waste**

3.9.3.1 Liquid waste may be placed into 5-gallon carboys (supplied free from EHS in every lab) or into reused containers that once held other chemicals (available under the table in room 163).

3.9.3.2 If reusing a container, make sure it's completely empty so there won't be any inadvertent reactions between chemicals.

3.9.3.3 The container must be labeled with the words HAZARDOUS WASTE and be closed when not adding waste.

3.9.3.4 A hazardous waste tag must be attached and completely filled out from the moment waste is first added. No abbreviations on waste tags.

3.9.4 **Sharps containers**

Red sharps containers are to be used for sharps disposal, which are defined as needles, syringes (with or without needle attached), scalpels, intravenous tubing with needles attached regardless of whether they are contaminated or not, and anything which is sharp enough to penetrate the skin and is contaminated with biological substances. Red sharps disposal containers are in all labs. If you need more containers, notify the Laboratory Manager. Please label each container with the date that the first item was placed in it. Notify the Laboratory Manager when 90 days have passed since the first use of the red container so that a pick-up may be requested.

Non-contaminated razor blades only should be disposed of in the yellow blades containers located in each laboratory.

3.9.5 **Glass disposal boxes**

The white glass disposal boxes located in the labs are for non-contaminated glass items only. Do not put paper products, gloves, razor blades, or any other items in them.

3.9.6 **Mercury spills**

In the event of a mercury spill, immediately contact the Laboratory Manager and do not attempt to clean it up yourself. If the cleanup is not done properly, the mercury contamination can be made worse. If the Laboratory Manager is not

available, please contact EHS directly. The MSU Chemical Hygiene Plan contains detailed information on how to handle mercury spills.

3.9.7 **Disposal of empty containers**

3.9.7.1 Solvent bottles

- 3.9.7.1.1 Leave cap off and place in fume hood overnight or until completely dry
- 3.9.7.1.2 Deface the chemical label by crossing out with black marker
- 3.9.7.1.3 Place container under table in room 163 to be reused for waste collection later, or remove cap and place container into white glass disposal box

3.9.7.2 Corrosive liquid bottles

- 3.9.7.2.1 Triple rinse with water and dry
- 3.9.7.2.2 Collect rinsate as hazardous waste if rinsate is hazardous
- 3.9.7.2.3 Deface chemical label by crossing out with black marker
- 3.9.7.2.4 Place clean, dry, defaced container in lab trash can, or if it's glass you must place in white glass disposal box in lab

3.9.7.3 Bottles from solids and low-volatility liquids

- 3.9.7.3.1 If rinsing is not expected to remove contamination from container (e.g. sticky or non-water miscible chemicals), then attach hazardous waste tag to it, fill tag out completely, and place on "Ready to be Picked Up" cart in room 163 for EHS disposal.
- 3.9.7.3.2 If rinsing would remove contamination from container, then rinse with water and dry.
- 3.9.7.3.3 Collect rinsate as hazardous waste if rinsate is hazardous
- 3.9.7.3.4 Deface the chemical label by crossing out with black marker
- 3.9.7.3.5 Place clean, dry, defaced container in lab trash can, or if it's glass you must place in white glass disposal box in lab

3.10 **Gas Cylinders**

3.10.1 **General**

Be aware of the physical and toxicological hazards of gases being used, such as flammability, oxidizing, pyrophoric, corrosive, toxic, irritant, and cryogenic gases, and be aware of those that can cause asphyxiation. Do not store cylinders containing incompatible gases together (i.e. oxygen with flammable gases). Keep gas cylinders secured at all times, and remove the regulator and put on a safety cap before transport. Use only approved restraints (do not use bungee cords etc.). Do not rely on cylinder color to identify cylinder contents, always read the product label description. Never force an inlet fitting onto a valve or use an adaptor. Use appropriate safety gear such as safety glasses and gloves when replacing cylinders. Emergency leaks - if the leak is significant or the gas involved is toxic or flammable, pull fire alarm, evacuate the area, and call 911.

3.10.2 **Gas cylinder use and ordering**

Spare gas cylinders are kept in the cylinder storage room (room 177) and must only be accessed by users authorized by the Laboratory Manager. Weekly

inventories are conducted, but please notify the Laboratory Manager when quantities are getting low according to Table 1 shown below. Users of instruments connected to liquid nitrogen dewars should monitor the level of the liquid nitrogen and notify the lab manager approximately one week before they are anticipated to be empty.

Table 1. Gas Cylinder Order Chart	Gas	Notify Lab Supervisor When This Many Tanks Remain
	Nitrogen (99.97% purity)	3
	Nitrogen (UHP)	0
	Air (breathing)	1
	Air (zero)	0
	Helium (UHP - 99.999%)	1
	CO₂ (99.5% Purity)	0
	Hydrogen	0
	Oxygen	0
	2% H₂/Balance N₂	1

4.0 THE SCHOOL OF PACKAGING CHECK OUT PROCEDURES

When leaving the School of Packaging labs, please use the following procedure to ensure chemicals and items associated with your projects are taken care of:

- 4.1 **Transfer all chemicals to a designee or dispose** in accordance with the MSU Chemical Hygiene Plan if no longer needed or past usable life. Do not leave anything behind that is no longer needed by anybody in your group. Do not leave any unlabeled chemicals, or chemical-like items, behind.
- 4.2 **Fill out a School of Packaging lab checkout form** (available on page 20 in the appendix of this document)
- 4.3 **Return lab room and locker keys to Lab Manager.**

5.0 EMERGENCY/MEDICAL PROCEDURES

5.1 Life threatening incident/injury

Call 911

Emergency Facility

Sparrow Hospital ER
 1215 E. Michigan Avenue
 Lansing MI 48909
 517-364-4141

- 5.1.1 Use this emergency facility for critical emergencies: Severe burns, fractures, shock, seizure, shortness of breath, severe bleeding, chest pain, head injuries, motor vehicle accidents, chemical exposure – including all eye exposures, and smoke inhalation.
- 5.1.2 In an emergency, call 911 for ambulance transport to the emergency facility rather than driving there yourself.
- 5.1.3 If biological or chemical exposure, flush the area with water for 15 minutes.
- 5.1.4 Also use this facility for bloodborne pathogen exposure and non-life threatening incidents/injuries when Lansing Urgent Care is closed.

5.2 Non-life threatening incident/injury

- 5.2.1 *MSU Employees and Student Employees*
 - 5.2.1.1 If biological or chemical exposure, first flush the area with water for 15 minutes.
 - 5.2.1.2 Immediately report the incident to your supervisor (if available) and obtain an Authorization to Invoice MSU form (located in appendix on page 21).
 - 5.2.1.3 Take the Authorization to Invoice MSU form to the Primary Care Facility.

Primary Care Facility

Lansing Urgent Care
 505 North Clippert St
 Lansing MI 48912
 517-999-2273
 Open 24 hrs, 7 days a week

- 5.2.1.4 Fill out a Report of Claimed Occupational Injury or Illness (located on page 22) and have supervisor sign and submit within 24 hours of an injury/illness
- 5.2.1.5 Present result of visit to supervisor and follow all recommendations/restrictions.
- 5.2.1.6 Complete FMLA paperwork with MSU-HR if applicable
- 5.2.2 *Students (non-employee)*
 - 5.2.2.1 Immediately report the incident to your TA or instructor.
 - 5.2.2.2 Minor cuts can be treated with a first aid kit located in the main office, room 110 or lab manager's office, room 175.
 - 5.2.2.3 If you require medical attention, go to a health care provider of choice, keeping your medical insurance coverage in mind.

- 5.2.2.3.1 Enrolled MSU students are allowed three free medical office visits to Olin Health Center per year.
- 5.2.2.3.2 If a student is not feeling well enough to drive themselves to medical attention, TA or instructor will call 911 for a free evaluation by paramedics.
- 5.2.2.4 TA or instructor will fill out Injury/Property Damage Report (located in appendix on page 23) and send to MSU Risk Management at riskmgmt@msu.edu.

5.3 Chemical Spill

Follow procedures outlined in the MSU Chemical Hygiene Plan and applicable Safety Data Sheets (SDS).

5.4 Emergency Situation – Fire

The following steps are basic protocol for handling a fire or fire-related emergency situation in the laboratory:

- 1.) Pull the fire alarm.
- 2.) Evacuate the building and go to a rally point as indicated in Appendix F.
- 3.) Call 911 from a safe location.
- 4.) Provide details to a member of the School of Packaging Emergency Action Team at your rally point.

5.5 Tornado

Seek shelter in a designated tornado shelter area as indicated on the maps posted in the building. If unable to locate a designated shelter area, please shelter on the lowest level of the building in an interior room away from windows and doors.

6.0 APPENDICES

6.1 Appendix A. Guidelines for labeling chemicals – Please save for future reference

- 6.1.1 All chemicals, including water, MUST BE LABELED unless you are physically present to identify them. Even things just left overnight with the intention of continuing the next day must be labeled.
- 6.1.2 Labels must include owner name, date, and chemical name. Abbreviations or initials are not allowed unless a key is posted someplace in the lab. Lab manager can add items to the master key in the labs if you need. Short-term keys can be handwritten and posted near the items.
- 6.1.3 The labels must be sufficient so that somebody could walk into the lab without you and know what everything is and what hazards, if any, are present.
- 6.1.4 Non-hazardous things that appear as though they may be hazardous (powders, liquids, pellets, etc) must be labeled as either “Non-hazardous” or with the identification of the substance.
- 6.1.5 When several small vials are collected together in a large outer container (e.g. scintillation vials) you may place the label on the outer container. If you remove a vial from the outer container, then it must be labeled individually.
- 6.1.6 A sample ID is insufficient labeling. For example, when you dissolve PLA in tetrahydrofuran (THF) you need to identify THF as the solvent. Saying “PLA Sample 1” doesn’t give enough information to identify the hazardous component. It should say “PLA Sample 1 in THF” or something to that effect. Then make sure PLA and THF abbreviations are both on a key someplace in the lab.
- 6.1.7 Items left soaking by the sinks must also be labeled. Some people soak items in ethanol or methanol rather than water. We can’t make any assumptions.
- 6.1.8 Chemicals contained in syringes must be labeled too.
- 6.1.9 Failure to label chemicals results in creation of an “Unknown” which must be characterized and a fine must be paid before EHS will dispose of it. You don’t want to be the reason your advisor receives a large bill. Violations may also result in loss of lab privileges.
- 6.1.10 Please ask your advisor, lab manager, or MSU-EHS if you have questions about chemical safety.

Eye and Face Protection in MSU Laboratories

Appropriate eye and face protective equipment must be worn at all times in those labs where eye hazards exist. Guidelines for selecting appropriate eye and face protection

Safety Glasses	Chemical Splash Goggles	Face Shield + Chemical Splash Goggles
 <p>Required when: An impact hazard exists or when working with low hazard chemicals*, or when a low probability of splash exists.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Pipeting • Handling closed bottle of injurious chemical • Mixing solutions • Opening centrifuge tubes 	 <p>Required when: Working with smaller amounts of corrosive or injurious chemicals* and a reasonable probability of splash exists.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Pouring acid out of a 1 pint bottle • Pouring methylene chloride from a 1 liter bottle • Working with liquids under pressure 	 <p>Required when: Working with larger quantities of corrosive chemicals* and / or a high probability of eye and face injury exists.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Working with an acid bath • Pouring 4 liters of acid into a container • Handling highly reactive chemicals that may spatter

* Refer to the MSDS for additional hazard information. Please refer to the PPE Assessment for specific operations.

Note: Ordinary prescription glasses do not provide adequate protection against eye injury. Eye protection equipment must be ANSI Z87 approved. For more information on the MSU Eye and Face Protection policy, visit our web page at: www.orcbs.msu.edu/chemical/eye_face.htm

ORCBS Contact Information: • Phone: 355-0153 • Fax: 353-4871 • E-mail: orcbs@msu.edu • Web: www.orcbs.msu.edu • Hot-Line: 432-SAFE

Proper Labeling for Containers of Hazardous Chemicals in MSU Laboratories

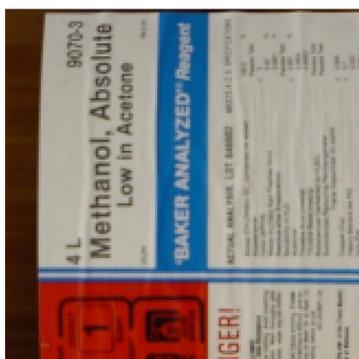
Labeling Basics

For containers labeled by the manufacturer: (see left)

1. Inspect the label on incoming containers.
2. Replace damaged or semi-attached labels.

For transferred products or prepared solutions labeled by the user*: (see right)

1. Label each chemical container with the chemical name and hazard warning.
2. Refer to the Material Safety Data Sheet (MSDS) for hazard warnings.



Alternate Method for Labeling Multiple Small Containers

Legend Method:

1. Label containers with abbreviated chemical name and hazard warning.
2. Provide a key in a visible location in the lab with complete chemical name.
3. Document that employees are trained on the labeling system.

Box or Tray Method:

1. Put containers in box or tray.
2. Label tray with chemical name and hazard warning.
3. If containers are removed from box/tray they must be properly labeled or returned to the box or tray within the workshift.*
4. Document that employees are trained on the labeling system.



Peroxidizable Chemicals

Must be labeled with:

1. Date Received
2. Date Opened
3. Date Tested
4. Test Results

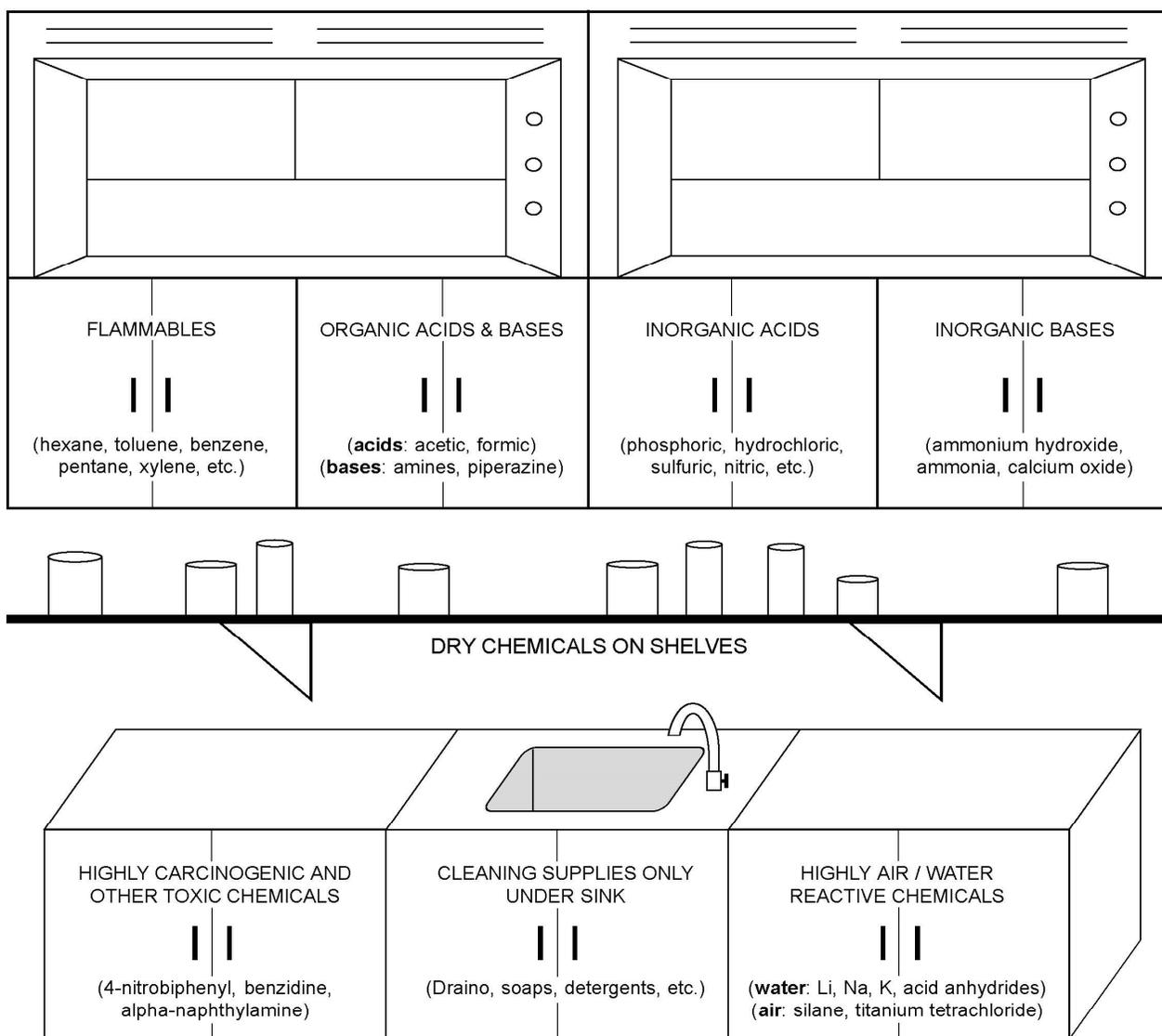
See CHP Appendix H for more information.

ORCBS Contact Information:

Phone: 355-0153
 Fax: 353-4871
 E-Mail: orcbs@msu.edu
 Web: www.orcbs.msu.edu
 Hot-Line: 432-SAFE

* If the container is created and emptied within the workshift and is under the control of the person transferring the chemical, it does not have to be labeled.

COMPATIBLE CHEMICAL STORAGE GROUPS



Major Chemical Storage Units with Examples:

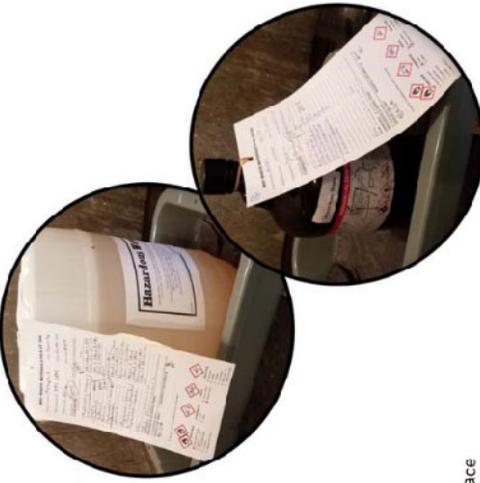
<i>Organic Acids:</i>	propionic acid, trichloroacetic acid, acetic anhydride, acetyl bromide
<i>Organic Bases:</i>	hydroxylamine, ethylimine, tetramethylethylenediamine, triethylamine, phenylhydrazine
<i>Inorganic Acids:</i>	hydrobromic acid, chlorosulfonic acid, sulfuryl chloride, hydriodic acid, stannous chloride
<i>Inorganic Bases:</i>	hydrazine, sodium hydroxide and potassium hydroxide solutions
<i>Oxidizers:</i>	nitrates, persulfate, peroxides, iodates, nitric acid, chlorates, ozone, nitrites, permanganate
<i>Flammables:</i>	methanol, tetrahydrofuran, ethyl ether, ethyl acetate, heptane, ethanol, acetone
<i>Water Reactive:</i>	alkali metals such as Li, Na, K; lithium aluminum hydride; calcium hydride
<i>Air Reactive:</i>	silane, silicon tetrachloride, white or yellow phosphorus
<i>Carcinogens:</i>	2-acetylaminofluorene, benzene, chloroform, methylene chloride, formaldehyde
<i>Peroxide Formers:</i>	isopropyl ether, p-dioxane, tetrahydrofuran, ethyl ether

Michigan State University ORCBS, 11/01

Appendix D – Compatible Chemical Storage Group Recommendations

ELEMENTS OF PROPER HAZARDOUS WASTE STORAGE

PROPER HAZARDOUS WASTE CONTAINER STORAGE



- 1) **COMPATIBILITY**
 - Ensure chemicals are compatible with container type
 - Ensure chemicals are compatible with each other
- 2) **LABELING**
 - Deface label if using own container
 - Mark container with the words "Hazardous Waste"
 - Fill out Waste Tag as shown on right
- 3) **STORAGE**
 - Keep containers closed
 - **DO NOT OVERFILL**, leave space at top of container for expansion
 - Store materials in secure area at the point of generation
 - ****DO NOT accumulate more than 55-gallons of hazardous waste at any given time****
- 4) **DISPOSAL**
 - Within 90 days of the Start Date that chemicals were added (or if container is filled prior to 90 days), fill out a pick up request at: <http://ehs.msu.edu>.

EMERGENCY RESPONSE CONTACT INFORMATION:	
MSU Police/East Lansing Fire	911
MSU Police Cadet Desk	(517) 355-2221
EHS Emergency Coordinator	(517) 355-0153
After Hours Response	Call MSU Police Cadet Desk



Environmental Health and Safety
MICHIGAN STATE UNIVERSITY

4000 Collins Road, B20
 Lansing, MI 48910 (517) 355-0153
hazwaste@msu.edu
<http://ehs.msu.edu/waste/index.html>

MSU WASTE MATERIALS PICK UP TAG

Project Leader: _____ Dept: _____
 Bldg. & Room No.: _____ Phone: _____
 Filled Out By: _____ Accumulation Start Date: _____

Container Size: _____ Solid Liquid Comminuted Items
 Contents: **UNABBRIVIATED** Chemical Name(s) Volume, Percentage or Concentration (ppm) Amount

Water Balance _____
 COLOR Colorless Light Brown Other _____
 CONSISTENCY Watery Viscous/Only Other _____
 BIOLOGICAL & ANIMAL ITEMS: Biohazardous Agents

FOR EHS USE ONLY

TO BE COMPLETED AS WASTE IS ACCUMULATED AT POINT OF GENERATION
 If material is hazardous, please check all hazards that apply:

IGNITABLE	CORROSIVE	TOXIC	REACTIVE
<input type="checkbox"/> Flammable Liquid	<input type="checkbox"/> Acid	<input type="checkbox"/> Heavy Metal	<input type="checkbox"/> Peroxide
<input type="checkbox"/> Flammable Gas	<input type="checkbox"/> Base	<input type="checkbox"/> Pesticide/Toxic	<input type="checkbox"/> Self-Heating
<input type="checkbox"/> Flammable Solid	<input type="checkbox"/> Oxidizer	<input type="checkbox"/> Phosphoric	<input type="checkbox"/> Cyanide
<input type="checkbox"/> Organic Peroxide		<input type="checkbox"/> Water Reactive	<input type="checkbox"/> Organic Peroxide

- Fill out location information immediately. Start Date begins upon first drop of waste added to container.
- Use **UNABBRIVIATED** chemical names of each material poured into container.
- Record actual amounts of material added to container.
- Check balance water as necessary.
- **Amount of waste in container must match listed materials at all times****
- Fill in when full or within 90 days
- As waste is accumulated in container, identify all potential hazards by checking all boxes, as applicable.

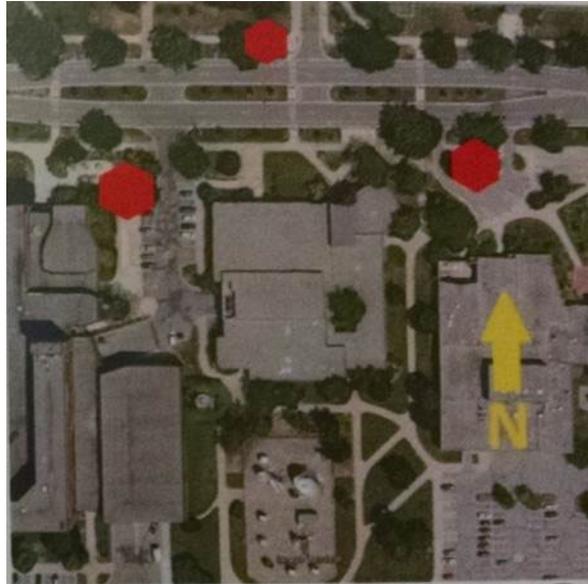


Refer to EHS website, using this QR code, for more detailed instructions about Chemical Hygiene and Hazardous Waste training, as well as waste disposal.

Aug 2021

School of Packaging

EMERGENCY EVACUATION RALLY POINTS



EVACUATION RALLY POINTS:

- 1) North side of building along Wilson Rd
- 2) West side of building on sidewalk by Communication Arts Building
- 3) East side of building by circular drive near Natural Resources Building

INCLEMENT WEATHER RALLY POINTS:

(proceed to these locations only as directed by Emergency Action Team Leader at your rally point)

- 1) Inside Communication Arts main lobby
- 2) Inside Natural Resources main lobby

Appendix F – Map Showing Evacuation Rally Points for Packaging Building

7.0 RELATED FORMS

Chemical Inventory Updates

MUST BE FILLED OUT ANY TIME A MANUFACTURER'S CHEMICAL CONTAINER IS BROUGHT INTO LAB or EMPTIED

*All Fields Required

<input type="checkbox"/> Add		<input type="checkbox"/> Discard	
Room #	Chemical Name	Container Size (include units)	Manufacturer
Person Filling Form	Faculty Owner	Date	Hazards <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive <input type="checkbox"/> Peroxide <input type="checkbox"/> Carcinogen

<input type="checkbox"/> Add		<input type="checkbox"/> Discard	
Room #	Chemical Name	Container Size (include units)	Manufacturer
Person Filling Form	Faculty Owner	Date	Hazards <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive <input type="checkbox"/> Peroxide <input type="checkbox"/> Carcinogen

<input type="checkbox"/> Add		<input type="checkbox"/> Discard	
Room #	Chemical Name	Container Size (include units)	Manufacturer
Person Filling Form	Faculty Owner	Date	Hazards <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive <input type="checkbox"/> Peroxide <input type="checkbox"/> Carcinogen

<input type="checkbox"/> Add		<input type="checkbox"/> Discard	
Room #	Chemical Name	Container Size (include units)	Manufacturer
Person Filling Form	Faculty Owner	Date	Hazards <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive <input type="checkbox"/> Peroxide <input type="checkbox"/> Carcinogen

Application To Work in SoP Laboratory

Print Form



Aaron Walworth
Laboratory Manager
School of Packaging
Michigan State University
448 Wilson Road, Rm 175
East Lansing, MI 48824-1223
Phone: 517-353-4439
walwort8@msu.edu

Notes:
- Please print clearly and legibly.

Date:	<input type="text"/>	Phone (optional):	<input type="text"/>
Name:	<input type="text"/>	E-mail Address:	<input type="text"/>
Department:	<input type="text"/>	MSU NetID:	<input type="text"/>
Advisor's Name:	<input type="text"/>	Advisor's e-mail:	<input type="text"/>

Project Title:

Instruments that will be used:
(costs will be provided upon request)

Key(s) to the labs will not be issued until all safety training on this application has been completed.
Training on specific instruments must be scheduled by contacting lab manager after completion of this general safety training.

Online training courses may be accessed at: <https://ehs.msu.edu/training/index.html>

Date applicant completed Lab Safety Basics + Biologicals (No Bloodborne Pathogens) EHS Training Track* (online):

*Must complete all sections of this track; **Requires annual refreshers

- 1) Chemical Hygiene, Lab Safety and Hazardous Waste**
- 2) Compressed Gas Cylinder Safety.....
- 3) Cryogen Safety.....
- 4) Lab Security Awareness.....
- 5) Asbestos in the Lab Setting.....
- 6) Biosafety Principles/Refresher (Choose Lab/Microbe Option)**
- 7) Autoclave Safety.....

Date applicant took EHS Non-Medical Sharps Waste Management Track (online):

Date applicant reviewed Chemical Hygiene Plan (https://ehs.msu.edu/_assets/docs/chem/msu-chem-hygiene-plan.pdf),
Waste Disposal Guidance (<https://ehs.msu.edu/waste/waste-disposal-guidance.html>), and SoP Site Specific Safety
Document (<https://www.canr.msu.edu/packaging/research/internal-info-for-lab-users/>).....

Date applicant attended the School of Packaging Site-Specific training (email to schedule with lab manager):
Upload a copy of your Site-Specific Training checklist to Ability Training system after completion.

Informed Consent Statement: By signing below, the applicant acknowledges they have been informed about the location and contents of the MSU Chemical Hygiene Plan, the School of Packaging Site Specific Safety and Standard Operating Procedures Document, SDS sheets, and MSU Hazardous Waste Disposal Info. Signing also acknowledges that the applicant has completed the listed trainings.

Trainee Signature: Date:

Advisor Signature: Date:

SoP Approval: Date:

Applicant Status (Check One): Staff M.S. Ph.D. Undergrad Other, please describe:

School of Packaging
Laboratory Checkout Form (rev 10-22-2021)

Either Part A or Part B must be completed prior to departure or graduation. A minimum of 10 business days' notice must be given. This will allow sufficient time for a joint meeting between lab user, PI, and lab manager. This meeting will confirm that there are no outstanding issues in the lab related to the project.

Part A

I hereby certify that I have properly disposed of all experimental materials I have acquired or used, or that I have arranged with my major professor for them to be handled appropriately. All chemicals/materials that I have acquired and/or used have been disposed of or stored in accordance with University policies and regulations.

Name (please print): _____

Signature: _____

Date: _____

Name of Major Professor: _____

I hereby certify that the student named above has properly disposed of all his/her experimental materials or other appropriate arrangements have been made for them. All chemicals/materials that were acquired and/or used have been disposed of or stored in accordance with University policies and regulations.

Signature of major professor: _____

Date: _____

Part B

I hereby certify that no experimental materials or samples were used for my project, thesis, or dissertation.

Name (please print): _____

Signature: _____

Date: _____

Name of Major Professor: _____

I hereby certify that no experimental materials or samples were used for this student's project, thesis, or dissertation.

Signature of major professor: _____

Date: _____

Report of Claimed Occupational Injury or Illness

Workers' Compensation
 1407 S. Harrison, Suite 110
 East Lansing, MI 48823
 Phone: 517-353-4434
 Fax: 517-432-4102

Note: Please complete the entire form

- ✓ Notify Public Safety of accidents requiring immediate investigation (517-355-2221).
- ✓ Send authorization (to invoice MSU) with employee, except in extreme emergency.
- ✓ Forward copies within 24 hours of accident for MIOSHA compliance.
- ✓ Please print or type this form. If completing online, use the tab key to move to each field.

Name of Claimant: _____ Social Security Number: ###-##-
(last name, first name and middle initial) (last 4 digits only)

Local/Home Address: _____ Z-PID Number: _____
(house number and street, city, state, zip code)

Date of Birth: _____ Male Female Phone Number: _____ Student Number: _____
(MM/DD/YYYY)

Date/Time of Claimed Event: _____ a.m. p.m. Time Employee Began Work _____ Day of Week: _____
(MM/DD/YYYY, 9:15 a.m.)

What was the employee doing just before the incident occurred? Describe the activity, as well as the tools, equipment, or materials the employee was using. Be specific:

Describe the events that caused the claimed injury/illness:

Union Affiliation: _____ Department Name: _____ Department code: _____
(please state if none) (8-digit number)

Job Title or Classification: _____ Years on Present Job: _____ University Address: _____

MSU Employment Date: _____ Supervisor: _____ Supervisor Phone Number: _____

Where did claimed injury/illness occur? (check one)

- On-Campus – Near or in what building? _____
- Off-Campus – on MSU Property – Address: _____
- Off-Campus – on University Business – City: _____

Describe Claimed Injury/Illness (Be specific, i.e. sprain, strain, body part, left/right):

Witness Name and Department or Address:

Was there Medical Treatment? Yes No Blood Clean-Up Required? Yes No Hospitalized? Yes No

First Medical Treatment Date? _____ Death? Yes No
(MM/DD/YYYY)

Place of Treatment (Name):

➔ To the best of my knowledge these statements are correct, and I have received a copy of this report:

Employee Signature: _____ Date: _____

Preventative Action to be Taken:

Department Account Number _____ Number of Days Employee will be
 Employee is Paid From: _____ Assigned to Alternate Work Duties:

Department Signatures

Supervisor: _____ Department Chair: _____
(Date) (Date)

Note: If employee is unable to work on any day following date of injury/illness, due to claimed injury/illness, report lost time and return to work date on Injury Absence Report (InjuryAbsenceReport.pdf)

DISTRIBUTION: Original to Workers' Compensation; 1 copy to each of the following: Department and Employee.

MICHIGAN STATE UNIVERSITY

INJURY/PROPERTY DAMAGE REPORT

Office of Risk Management & Insurance

Olds Hall

408 W. Circle Drive Rm 113

East Lansing, MI 48824

Phone (517) 355-5022

E-mail: riskmgmt@msu.edu

Please PRINT or TYPE

THIS FORM IS A CONFIDENTIAL – INTERNAL DOCUMENT TO BE COMPLETED BY MSU EMPLOYEE

TIME & PLACE	Date/Time of Incident	Location: Street, City, MSU Bldg. Rm #		
PREMISES CONDITION	Type of Premises		Conditions	
	<input type="checkbox"/> Construction Site	<input type="checkbox"/> Parking Lot	<input type="checkbox"/> Dry	<input type="checkbox"/> Uneven Surface
	<input type="checkbox"/> Hallway	<input type="checkbox"/> Sidewalk	<input type="checkbox"/> Icy	<input type="checkbox"/> Other:
	<input type="checkbox"/> Lobby/Entrance	<input type="checkbox"/> Stairway	<input type="checkbox"/> Snowy	
	<input type="checkbox"/> Office	<input type="checkbox"/> Street	<input type="checkbox"/> Wet	
	<input type="checkbox"/> Other:			
				Reported to Police Dept.:
				Report Number:
				<input type="checkbox"/> Not Reported
INCIDENT DESCRIPTION	DESCRIBE WHAT HAPPENED:			
INJURED PERSON	NAME		AGE	PHONE #
	ADDRESS			
DESCRIPTION OF INJURY	INJURY - Describe the type, severity, and body part involved			
	Was Medical Treatment Given? Yes <input type="checkbox"/> No <input type="checkbox"/>		Will seek treatment later <input type="checkbox"/>	
	Name of Medical Facility/Doctor		<input type="checkbox"/> Transported by Ambulance	
		<input type="checkbox"/> Transported by Other:		
PROPERTY DAMAGE	OWNER'S NAME		ADDRESS	PHONE #
	Describe the property and the damage			Estimated Repair/Replacement Cost
WITNESSES GIVE THE FULL NAME & ADDRESS OF EACH WITNESS	NAME		ADDRESS	PHONE#

NAME/TITLE OF MSU

EMPLOYEE COMPLETING THIS REPORT:

PHONE:

E-MAIL:

MSU DEPARTMENT:

DATE :

NAME/TITLE OF MSU EMPLOYEE'S SUPERVISOR:

PHONE:

E-MAIL:

SUPERVISOR'S SIGNATURE: