WET SIDE

SAFETY MANUAL INDEX

Laboratory Safety at a Glance

Revised 04/2012

Important Resources & Contacts

Fire

Alert people and activate fire alarm
- Call Knoxville Fire Department at 911
- Evacuate building (do not use elevators)
- Notify building manager and supervisor

Personal Safety: 911
Knoxville Police: 911
Ambulance Service: 911
UT Police: 974-3111
EH&S website: web.utk.edu/~ehss

Lab Safety Coordinator: Pam Koontz, 974-5084
Haz. Waste Management: April Case, 974-5084
Radiation Safety Dept.: Marsha Smith, 974–5580
Biological Safety Officer: Brian Ranger, 974-1938
Principal Investigator: _____

Report Safety Concerns to
safety@tennessee.edu

Facilities Services: 946-7777
Media Relations: 974-2225

EH&S Training

web.utk.edu/~ehss/training/training.htm

- All employees must take training outlined in laboratory primer and by PI
- All employees must complete required training and associated quizes and provide a copy of completion to PI
- Employees must update training anually
- Employees must update training when work activities change

Employees working in labs must be supervised until ALL training is completed

Chemical Hygiene & Safety

web.utk.edu/~ehss

Chemical Hygiene

- No eating or drinking in labs
- Read MSDS before using chemical
- Use appropriate Personal Protective Equipment
(PPE)—refer to primer for guidance (e.g. lab coat, closed-toe shoes, safety glasses)
- Use gloves suitable for chemical and task-refer to primer for guidance

Chemical Management

- Label all secondary containers with chemical, owner, date, and hazard
- Use Chemical Inventory System (CI) (web.utk.edu/~ehss) or contact Pam Koontz pjkoontz@utk.edu

Hazardous Waste Disposal

- Refer to UT Waste Management Plan EC 1 for storage, labeling, and disposal guidelines.
- Store all hazardous waste in a Sattelite Accumulation Area (SAA)
- Notify EH&S liasion to start or to dismantle a SAA
- Take EH&S Hazardous Waste Generator training
before using SAA
- Hazardous waste should be brought to waste room at loading dock, or contact EH&S at 974- 5084 to coordinate a pickup. Contact April Case
acase3@utk.edu for more information

Principal Investigator (PI)

- One PI for each lab space resolves safety issues
- Meet withPI before working in the lab
- Discuss new work with PI

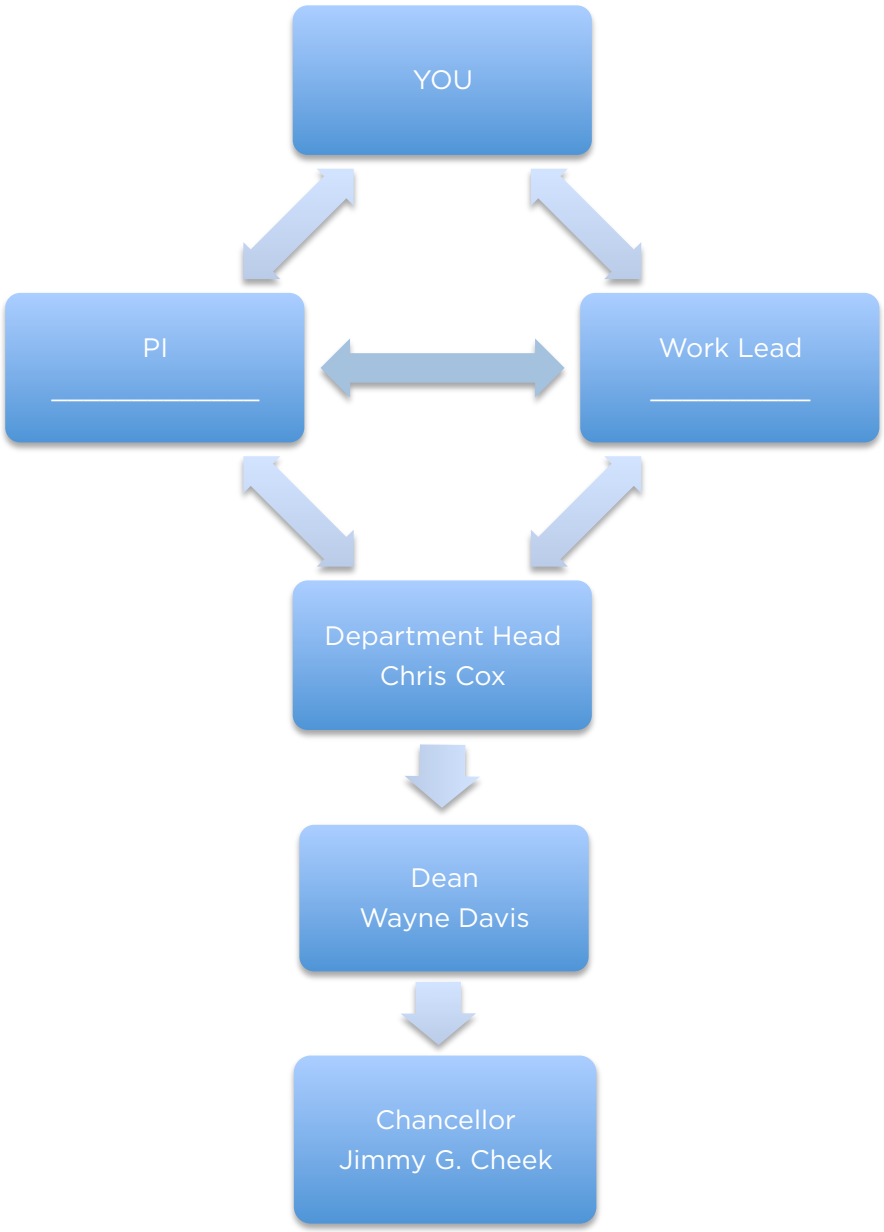
For a complete description of these and all other policies, please refer to the EH&S Website at **web.utk.edu/~ehss/**

Line Management at a Glance

Revised 04/2012
Environmental Health and Safety
web.utk.edu/~ehss

Authorization/Responsibility for SERF Room 729

Plan Work & Communicate
Lead PI needs to know all work conducted in this lab. Communicate with your supervisor about your scope of work, be it in the lab, office, or in the field.



Line Management Responsibility for EH&S
Line management is responsible for the protection of the public, the workers, and the environment. More specifically, Hazen Lab line managers are responsible for integrating EH&S into work and for ensuring active communication up and down the management line and with the workforce.

READING ACKNOWLEDGEMENT

I have read and understand the safety requirements outlined in this manual for this laboratory.

Name	Email	Phone Number	Principal Investigator

EMERGENCY CONTACT NUMBERS

Revised 06/2013

Fire

Alert people and activate fire alarm

- Call Knoxville Fire Department at 911
- Evacuate building (do not use elevators)
- Notify building manager and supervisor

Personal Safety: 911
Knoxville Police: 911
Ambulance Service: 911

UT Police: 974-3111

Emergency Safe Line: 656-7233

EH&S website:	web.utk.edu/~ehss	
EH&S	Chuck Payne	974-5084
Biological Safety Officer	Brian Ranger	974-1938
Radiation Safety	Marsha Smith	974-5580
General Campus Information		974-1000

Report Safety Concerns to safety@tennessee.edu

Facilities Services	946-7777
Office of Emergency Management	974-3061
Media Relations	974-2225
Principal Investigator	_____

UTK Laboratory Orientation/Training

Welcome to UTK's CEE Lab. This short training is to help orient those that are learning how to work in a laboratory environment as well as help those that are joining our lab to become acquainted with our procedures.

- **Safety** - # 1 priority – we have several hazardous agents in our laboratory and your safety and the safety of others is the most important thing here. If you notice anything unsafe or feel that the situation you have been placed in is unsafe, please let your lab supervisor and PI know so steps can be taken to ensure everything is in proper working/safe order.
- **Lab Space** – we have a large laboratory with several people sharing spaces as well as having "personal" space.
  - General Laboratory Space – these areas are used by everyone in the lab and should be clean before and after you use them. Nothing should be left there over night. You do not know who may need the space before you return. If it is critical that something not be moved, then leave a note making the next person aware of the situation.
  - Your personal laboratory space should be kept in a neat and orderly manner as to ensure that everyone is safe at all times.
- **Labeling of ALL bottles/tubes/etc…** - ***ALL*** bottles/tubes/etc… containing liquids, solids, powders or any other material ***MUST*** be labeled. This is an OSHA requirement and must be followed. If unlabeled items are found during an environmental safety inspection by the University, your PI/supervisor will receive notification of the violation. Do **NOT** store chemicals in food containers.
  - **Suggestions for labels**
    - add your initials/name so we know to whom it belongs
    - date made
    - expiration date
    - storage conditions
- **Equipment** – We have multiple types of analytical pieces of equipment in our laboratory. You ***may NOT*** use any equipment without first being trained by the

appropriate person. Several pieces of equipment that we have can be "delicate" and improper usage can cause thousands of dollars worth of repairs to be made. You must also "log in" in the appropriate Log Book whenever you are using a piece of equipment. These notebooks are necessary for keeping the equipment properly maintained as well as information that can be very useful if something goes wrong (that way we can find out what was in a sample, etc… so the proper repairs can be made for minimal cost). Training is required for many laboratory items listed under the OJT (On the Job Training) section of this safety manual such as the following items:

- **Electronic balances**
- **Bending beam rheometer**
- **Concrete compression machine**
- **Concrete mixers (portable and stationary)**
- **Coredry**
- **CTE**
- **Cut-off saw**
- **Cyclic direct shear machine**
- **Direct shear machine**
- **Extractors**
- **Extruders**
- **Freeze-thaw machine**
- **Gyratory compactor**
- **Impact hammer**
- **Impact testing machine**
- **Instron universal testing machine**
- **LA abrasion machine**
- **Loading frames**
- **Masonry saw**
- **Mechanical compactor**
- **MIST equipment**
- **Mixers**
- **MTS equipment**
- **NCAT oven**
- **Drying ovens**
- **Pressure aging vessel**
- **Pressuremeter**
- **Resonant frequency meter**
- **Rockwell hardness machine**
- **Sieve shakers**
- **Soil grinder**
- **Soldering station**

  - **Strain gage meter**
  - **Triaxial test equipment**
  - **Vacuum pumps**
  - **Viscometer**
  - **Water baths**
  - **Windsor probe**
- **Ordering –** Your PI will review ordering and procedures with you. Be sure to allow for delivery time when you are planning your experiments and items which need to be ordered.
- **Notebooks –** Laboratory notebooks are recommended and are to be kept in the laboratory. When keeping your notebook be sure to keep as detailed information on the items used and procedure as you can. You want to be specific enough so that if someone came behind you to repeat the experiment they will be able to do so without having to hunt you down. If you are continuously repeating the same experiment, then reference the pages where it is written step by step and then just write any exceptions and your results. A good example of what to include would be:
    - List of materials used in that particular experiment
    - Catalog #, lot # and manufacturer of materials
    - Procedure followed
    - Printout of results included (i.e. summary of test results, pictures of test setup, etc…)
- **General Laboratory Etiquette** – when working in a lab remember that courtesy will go a long way.
  - DO NOT borrow other peoples' items without their permission. You do not know how something was prepared and if what it is labeled is actually what you are needing.
  - If you borrow something, return it to the place that you got it from.
  - If you use a general laboratory space, then leave it clean and ready for the next person to use.
  - If you share space with someone else, please be courteous and leave it clean and ready to use.
  - Plan ahead – equipment and general areas in the lab are used by multiple people. Be sure to check for availability prior to starting a

lengthy experiment. Your priority is NOT someone else's priority. Some items have sign-in sheets which need to be used. If no one has signed up to use something, then it should be available. Be sure to think your experiments through prior to starting to be sure everything you need is there/available.

- General disposable supplies – we have lots of supplies in the lab used by everyone. If you are using something and notice that the item is low or completely out, please be courteous and fill it back up. If you take the last box of something, be sure to place an order request with all the necessary information so that it can be re-ordered in a timely manner.

_____ I have seen the Safety presentations.
Initials

_____ _____
Signature Date

_____ _____
Trainer Signature Date

LABORATORY SAFETY

EYE PROTECTION

- Federal law requires all laboratory workers to wear proper eye protection. The type of eye protection required depends on the type of work you are doing and must be determined and provided by the Principle Investigator in your lab.

- Prescription glasses provide little protection in the lab and are not ideal when worn alone. The different types of safety eyewear are available in designs that fit over most prescription lenses. Prescription safety eyewear is also available, but you may be responsible for purchase.

- Regular safety glasses are good general eye protection for many lab applications, but not for chemical work. Side shields do help. For chemical work, splash proof goggles are required.

- For a chemical splash in the eyes, go immediately to the closest eyewash, ask for help. If it's someone else, assist them. When working with chemicals, workstation should be no farther than a 10 second walk from an eyewash. If it's farther than that, move your work area.

  EYEWASH OPERATION: Turn on the eyewash, hold both eyes open with fingers, place eyes in direct contact with the water and roll your eyes around in their sockets to rinse out all the chemical. Rinse for 15 minutes. Get medical assistance.

- Never neutralize chemicals splashed in the eyes – always flush with water only

- Never use an emergency eye wash bottle – not enough liquid, can only rinse one eye, solution could be old

- You must never work alone in the laboratory

- Activate every eyewash at least weekly to verify operation and clear liquid flow

- Keep areas around eyewashes clear from clutter to provide quick and easy access in the event of an emergency

PROPER LAB ATTIRE

- Closed toe, closed heel shoes. Shoe material should be non-absorbent, such as leather. Canvas shoes, sandals, and shoes with ventilation should be avoided in the lab. If this type of shoe in unacceptable for everyday wear, keep a change of shoes at your desk and change before going into the lab to work. This also has the added benefit of keeping possibly chemical contaminated shoes out of your home and away from your children and pets.

- Clothing – long pants or skirts should be worn in the lab, no shorts. Again, you can keep a change of clothes for lab work.

- Wear your lab coats and launder or have laundered frequently, do not launder in a standard laundrymat or at home washing machine.

- Long hair should always be tied back when working in a lab.

GLOVES

- Chemical resistant gloves should be worn when working with chemicals. Latex gloves are usually a poor choice for chemical work as they do not provide adequate protection against many chemicals. Nitrile gloves are good, but are not resistant to all chemicals. To find out what type of glove is best for a particular chemical that you work with, refer to glove selection chart : PPE and Glove Selection or contact EHS for assistance.

Revised: 9/13/2013
By: CEE Safety Committee

LABORATORY SAFETY

MSDS

- Every lab worker should have access to MSDS for every chemical in the lab while in the lab. You should read the MSDS before handling any chemical. Know what the hazards are, how the chemical can affect you, how you can become contaminated (inhalation, absorption, ingestion, etc.), and what to do if you do become contaminated. The MSDS will also tell you what the incompatibilities are for a particular chemical, synonyms, the LD50 or toxicology, and will give disposal information. The MSDS should be read BEFORE you handle the chemical.

SAFE HANDLING OF CHEMICALS

- No food or drink in chemical labs. Period. Also, never, ever use food or drink containers to store chemicals. It's too easy to mistake a chemical in a drink container for an actual drink. Also, the material that the container is made out of may not be compatible with the chemical that you are putting in it, which will result in a spill.

- Use a fume hood if you need to. Always pull the sash down so that it protects your face from anything in the fume hood, and wear proper eye protection even with the sash pulled down. Aerosols can form when stirring or transferring liquids. Use a fume hood if the chemical is one that can be harmful if inhaled.

- Always wear the appropriate gloves when handling chemicals and wash your hands after de-gloving. De-glove by pulling the glove inside out as you pull it off your hand. Dispose of contaminated gloves as hazardous waste if the chemical is toxic.

- Always wear your lab coat and keep it fastened closed while handling chemicals.

- Label all containers all the time, even if it's water. It is very poor laboratory practice not to do so, and it's also against federal regulations.

- Never block access to safety showers, eye washes, or fire extinguishers. If you need these in an emergency, every second counts and you don't want to have to move clutter, or worse, large items, out of your way to get to them.

- When finished with them, return chemicals to their proper storage area. Ensure that your chemicals are stored with similar items. Never store oxidizing chemicals of any kind with flammables of any kind. Also, keep acids and bases separate from each other, and acids separate from flammables. Ensure that Nitric Acid, an oxidizing acid, is not stored with Glacial Acetic Acid, which is flammable.

- Keep any cyanide containing compound away from acids. When storage space is limited, use of secondary containment to segregate chemicals of different hazard classes is perfectly acceptable, with one exception. When you store acids in a metal flammable storage cabinet, and particularly with metal containers of flammables, it will make the metal corrode or rust, which could lead to a spill of the flammable material. Keep acids out of metal flammable cabinets and away from metal flammable storage containers.

- Properly dispose of all chemical wastes. Call EHS at 4-5084 if you are unsure.

- Promptly clean up any spills. This must be done correctly. If you are unsure or have not been trained in how to clean up chemical spills, then call EHS at 4-5084 and we will clean up your spill for you and properly dispose of the spill clean-up materials. Refer to Hazardous Waste Spill Clean-up Guide. There is no charge for this service and we have been trained in the proper methods of cleaning up chemical spills.

- You must know all the hazards associated with the chemicals that you handle. It is your health and life that will be affected, and possibly the health of your children. There is also the potential to seriously affect the health of the people working around you.

- You must know how to protect yourself from contamination and what to do if you do become contaminated. With some chemicals, there is not time to find out what to do after you become contaminated. You must be prepared beforehand. If you will be handling hydrofluoric acid (HF) at any time and in any concentrations, be

sure to go through our Hydrofluoric Acid Safety Powerpoint located on our website: http://web.utk.edu/~ehss/pdf/has.pdf

COMPRESSED GAS CYLINDER SAFETY

- Always use a cylinder cart to move compressed gas cylinders from one location to another, and always secure the cylinder to the cart with a chain or strap and buckle.

- Do not drop cylinders. Do not allow cylinders to strike each other. Keep all compressed gas cylinders capped until ready to use, then place the correct regulator on the valve, recap when work is finished. Always keep the cap on the cylinder while moving it and keep it in place until the cylinder is secured. Always cap empty cylinders. Do not tamper with the valves or safety devices or attempt to use a regulator that is not designed for use with the gas you are using. Never use an adapter to make a regulator fit your cylinder. Use the regulator that fits.

- Never use oil or grease or other combustible substances with oxygen cylinders, valves or regulators. Never deface or remove the product identification label on a cylinder. Do not use unlabeled cylinders. When you empty a cylinder, leave some positive pressure in the cylinder, close the valve, replace the cap, and mark the cylinder empty. Cylinder Status Tags are very convenient for marking cylinders as full, in use or empty. The Fisher catalog number for these is 18-999-792. Or use a piece of label tape, write “empty” on it and place it on the cylinder.

- When using compressed gas cylinders, you should know the properties and safety precautions of the gas before using it. Some gases can be particularly harmful. Never use oxygen as a substitute for compressed air. It is not the same thing! Oxygen will make any combustible material burn much more readily. Also, keep all electrical appliances and cords away from compressed gas cylinders.

- Always use a regulator when connecting cylinders to anything with a lower pressure service rating. Use only the regulator approved for the specific gas you are using and open the cylinder valve before adjusting the pressure on the regulator.

- Always close the valve and release all pressure on equipment connected to the cylinder at the end of a work shift and any time there will be an extended time of non-use (weekends, holidays; unless it’s a pice of equipment under continuous operation such as an incubator).

- Always bond and ground cylinders containing flammable gases.

- Compressed gas cylinders should always be stored in the upright position, they should never be laid over on their sides. Keep empty cylinders separate from full cylinders. Keep compressed gas cylinders away from sources of heat. Keep compressed oxygen cylinders separate from flammables by at least 20 ft or by a firewall, when in storage.

- Compressed gas cylinders must be secured at all times. The most cost-effective way to do this is to purchase a length of chain, 2 eyebolts and some type of fastener from the local hardware store. Secure the chain in one eyebolt and secure the eyebolts into a sturdy object such as a wall (make sure they are in the studs) or a lab bench. Anything moveable is not adequate. Loop the chain around the cylinder tightly and use the fastener to secure to the other eyebolt. If you purchase the cylinder clamps or brackets that have the nylon strap, use the buckle, do not tie the strap. Never secure cylinders to stairs, under stairs or anywhere near stairs or any other exit. Do not keep cylinders for years on end. Cylinders must have hydrostatic testing performed every 5-10 years (depending on the gas) to ensure the integrity of the cylinder. If you keep cylinders past their hydrostatic testing due date, the integrity of the cylinder may not be ensured. UT pays rent on cylinders, so it makes no difference if you return it before it’s empty.

- Remember, one major hazard with compressed gases is asphyxiation due to a slow leak that goes undetected. An otherwise harmless gas can displace enough oxygen in a room to kill.

CRYOGENICS

- Always use goggles, face shield and cold resistant gloves when handling cryogenic liquids. Make sure that any container used to hold cryogenic liquids are suitable for use with extreme cold.

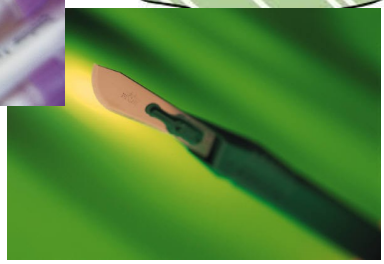
Guidance on Sharps Disposal Management

These guidelines apply to the disposal of sharp objects that are contaminated with any of the following hazardous materials: biological hazards (e.g., infectious agents, human blood/body fluids), hazardous chemicals, radioactive materials, and **ALL** blades, needles and syringes regardless of how they were used. Federal, State and local laws regulate proper disposal of sharps. These regulations serve several purposes:

1. Prevent personal injury.
2. Prevent contamination of personnel or the environment.
3. Ensure proper containment of laboratory and infectious waste during collection, transfer, and disposal.

What Are Sharps?

Sharps are any object with corners, edges, or projections that when inappropriately handled or disposed are capable of cutting or piercing skin or conventional waste containers.



Examples of sharps include:

- Hypodermic needles, syringes, tubing
- Blades (scalpels, razors)
- Sharp dental wires and appliances
- Microscope slides and cover slips
- Glass capillary tubes
- Pasteur pipettes
- Plastic pipette tips contaminated with hazardous materials
- Broken laboratory glassware.

How Do I Collect Sharps?:

All sharps must meet these minimum standards:

- rigid
- non-breakable and puncture resistant
- impervious to moisture and leak proof

In addition, all biologically infectious sharps must:

- have a lid which can be permanently closed
- red in color and/or labeled with a universal biohazard symbol

Collection Procedure:

Sharps containers **MUST** BE**:**

- stored near where the waste is generated and segregated from other waste

Sharps containers MUST **NOT:**

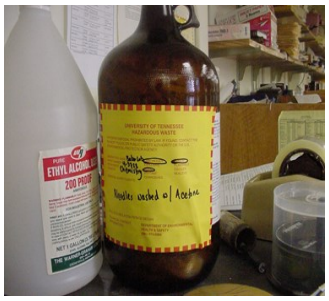
- be filled greater than 2/3 full
- be discarded in the regular trash
- contain free liquids

Guidance on Sharps Disposal Management

There are five types of waste sharps that are generated on campus:

1. **Sharps with chemical contamination**
2. **Sharps with radiological contamination**
3. **Sharps with biological/infectious contamination**
4. **Uncontaminated sharps**
5. **Uncontaminated lab glassware**

Sharps needs to be managed safely to ensure that someone is not injured.



Sharps with chemical contamination-collect in an opaque, puncture-proof container that can be closed/sealed. The container should be submitted to EHS with the appropriate UT hazardous waste label/description per EHS policy. The sharps container should **not** be red/orange or bear the biohazard label as our chemical waste contractor will not accept those. Please contact EHS at 974-5084 for guidance and information on where to take these containers for disposal.

Sharps with radiological contamination-collect in an opaque, puncture-proof container that can be closed/sealed. The container should be submitted to Radiation Safety with the appropriate hazardous label/description per Radiation Safety policy. The sharps container should **not** bear the biohazard label, or a UT hazardous waste label. Please contact 974-5580 or radiationsafety@utk.edu for additional information.

Sharps with biological/infectious contamination-collect in an FDA-approved sharps container bearing the universal biohazard waste symbol. These can be ordered from Fisher Scientific, VWR or a number of other lab suppliers. Please refer to bio-hazardous sharps waste management at http://biosafety.utk.edu/waste/ or contact Office of Biosafety at 974–5547.

Uncontaminated sharps—Although there are no additional hazards (beyond the physical injury risk) and hazardous waste regulations do not typically address uncontaminated sharps, best practices indicate collecting them as described for biological/infectious sharps. These should be brought to EHS for disposal.

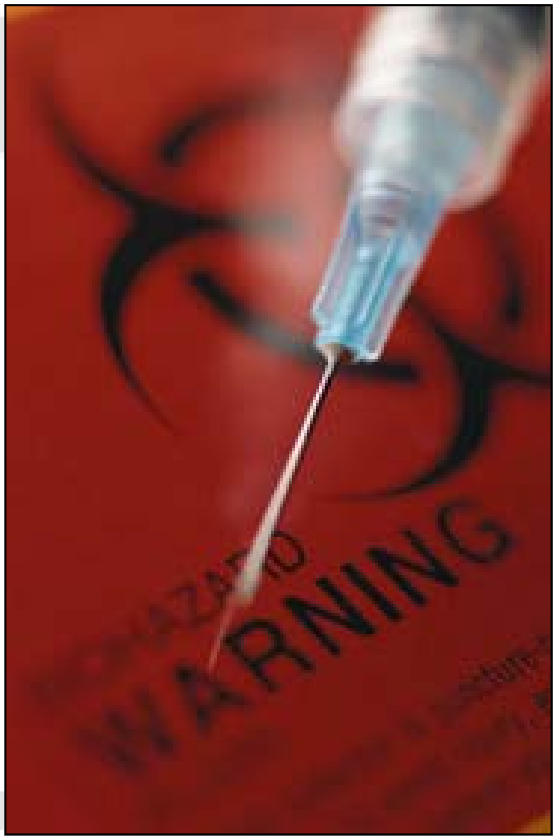
Lab Glassware-Lab glassware can be triple-rinsed and disposed of as non-contaminated glassware, with the exception of empty glassware once containing acutely toxic (p-listed) waste, which must be managed as a hazardous waste (for a list of these substances, visit, http://web.utk.edu/~ehss/pdf/ahs.pdf; for guidance on hazardous waste disposal, please contact EHS). Although there are no additional hazards (beyond the physical injury risk), these should still be collected in a puncture-proof container (e.g., plastic container or broken glass box), labeled as broken glass, and taken to the dumpster for disposal. For questions, please contact EHS at 974-5084.

SHARPS: Safe Handling and Disposal Practices

What is considered a Biohazardous “Sharp”?

<u>Any item that is:</u>

- Sharp enough to puncture the skin and
- Biologically-contaminated



These items require careful handling & specific disposal

SHARPS: Safe Handling and Disposal Practices

- Eliminate use of sharps if other technologies are feasible
- Organize tasks to limit sharps exposure
- Keep sharps container within arm’s reach
- Don’t bend or break sharps
- Use disposables and safer sharps devices where feasible

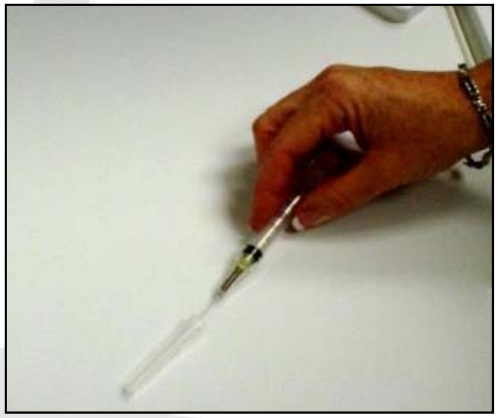
SHARPS: Safe Handling and Disposal Practices

- Do not handle sharps with 2 hands
- Don’t pass a sharp device from one hand to another
- Unless a protocol has been approved to do so by the Biosafety office:

  RECAPPING OF SHARPS IS PROHIBITED!!!

SHARPS: Recapping Needles (When Permitted)

1. Place the cap of the syringe on the counter and place the needle into the cap with one hand.



2. Pick up the syringe with the cap on the needle with one hand.

3. Click the cap into place with your thumb. Do not handle with two hands.

SHARPS: Safe handling and Disposal Practices

Glassware and Breakages

- As a measure to preempt breakages in the lab, consider the use of plastic ware when available

- If a breakage does occur, do not touch glass with hands. Instead, employ mechanical means to remove debris.

  Examples:
  - Broom and dustbin
  - Tongs
  - Cardboard

SHARPS: Safe handling and disposal practices:

<u>Disposal of sharps:</u>

- Use proper containers for disposal
- Containers must:
  - Be the right size for the job
  - Be manufactured as a sharps container
  - Have the lid installed
  - Have the lid closed when not in use or for transport

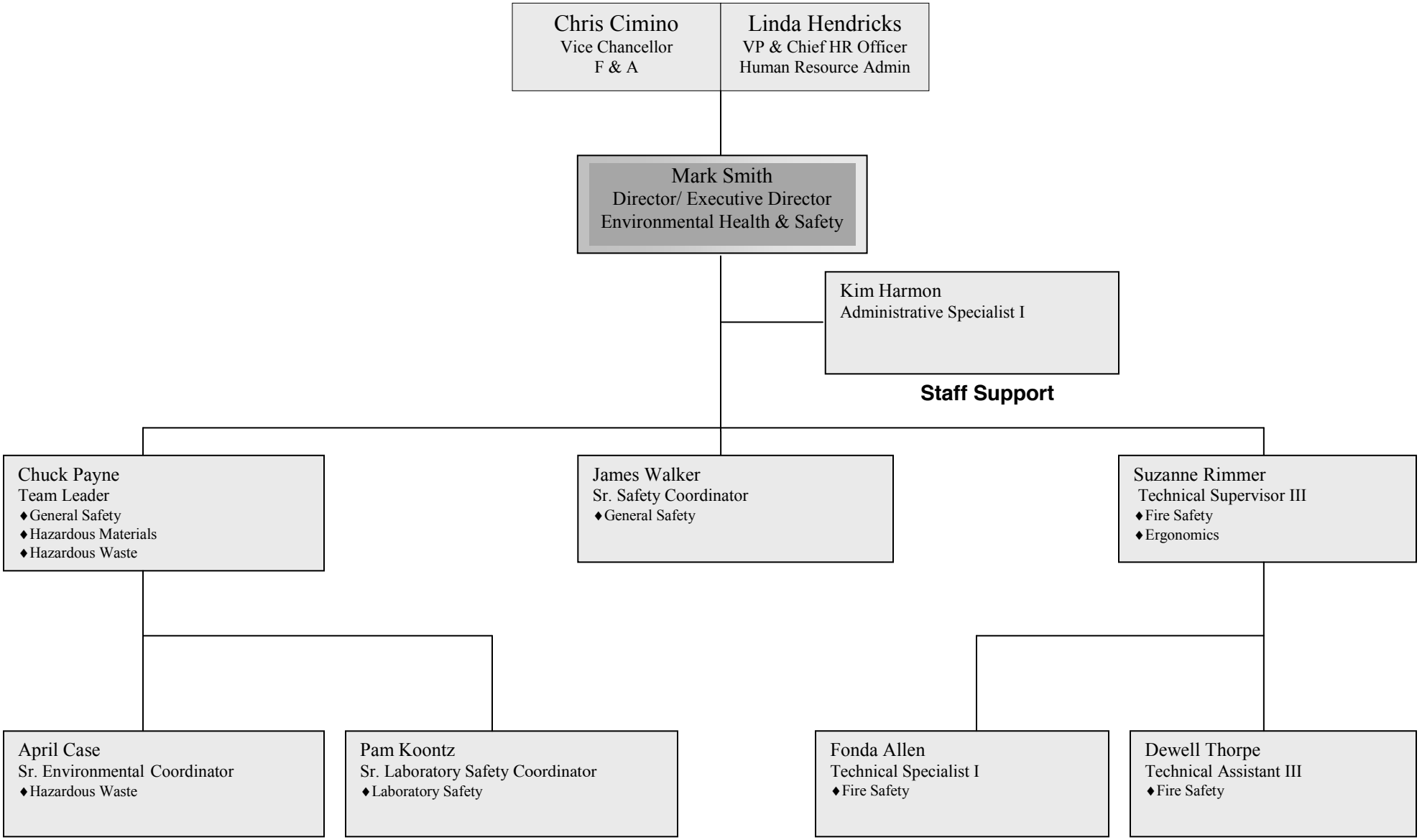
Use safe sharps handling & disposal practices:

Sharps Container Disposal:

- Permanently close container when it is ¾ full and wipe down exterior with disinfectant.
- Submit containers to EH&S during regular waste collection hours on Knoxville campus.
- Others - contact BSO for assistance.

Remember:
NO chemical hazards in the sharps containers! If you have mixed waste, contact the appropriate safety officer for assistance!

EHS DEPARTMENTAL ORGANIZATIONAL CHART



Environmental Health & Safety

Personnel

Mark Smith, Director EHS	msmith38@utk.edu
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Fonda Allen, Senior Health & Safety Technical Spec. 1	fallen1@utk.edu
Dewell Thorpe, Health & Safety Technical Asst. III	dthorpe2@utk.edu

Contact

Environmental Health & Safety
916 Twenty-Second Street
Knoxville, Tennessee 37996-3503

Phone: 865-974-5084
Fax: 865-974-0094
http://web.utk.edu/~ehss/personnel2/personnel2k.html

Other UT Sources

Biosafety Office
Campus Safety Guide
Facilities Services
Institute of Agriculture Safety Office (UTIA)
Office of Research Compliance
Office of Risk Management
Radiation Safety Office
Safety

EH&S Safety Manual Index

Topics Include: General Safety (GS), Fire Safety (FS), Environmental Compliance (EC), Hazardous Materials Management (HM)

For Complete information about each EH&S module, visit *http://ehs.utk.edu/safety%20manual/Safetymanual2kj.html*

Name of Policy	Policy Number
Accident Investigations	GS 35
Actions of Regulatory Agencies	GS 30
AED's	GS 145
Air Monitoring	HM 30
Air Pollution - Title V permit	EC 40
All Terrain Vehicles	GS 130
Arsenic	HM 40
Art and Theater Hazardous Waste Guidelines	EC 2
Asbestos Management Plan	EC 45
Bicycles	GS 140
Bloodborne pathogens	GS 10

EH&S Safety Manual Index

EH&S Safety Manual Index

EH&S Safety Manual Index

Revised Date: 9/13/2013

EH&S Safety Manual Index

Revised Date: 9/13/2013

EH&S Safety Manual Index

Appendix A – List of Required Training Programs

The following table contains a list of required training programs for OSHA, EPA and DOT. Standards that have the following notation **(Construction)** indicate there is a similar standard in the OSHA construction Standard (29 CFR 1926). In some cases the construction standard may be a different name and have different training requirements. Contact EHS for custom safety programs.

A – Skillsoft B1 – EHS (classroom) B2 – EHS (self study- DVD)

B3- EHS (self-study- paper copy) B4- EHS (self study –Blackboard) C- Offsite

General Industry Program	Applicability	Source of Training
1910.38 Emergency Action Plans	All	A, B1
1910.39 Fire Prevention Plans **(Construction)**	All	B1
1910.66 Powered platforms for Building Maintenance	Employee who operate powered platforms	C
1910.95 Occupational noise exposure **(Construction)**	Employees exposed to more than 85dBA averaged over 8 hours	A, B1, C
1910.110 Storage and handling of liquefied petroleum gases	Researchers and maintenance personnel who handle LP gas	C
1910.111 Storage and handling of anhydrous ammonia	Researchers	C
1910.120 Hazardous waste operations and emergency response **(Construction)**	Employees who management hazardous material spills	C
1910.132 Personal protective equipment (PPE)	Employees who wear PPE	A,B1
1910.134 Respiratory protection **(Construction)**	Employee who use a respirator	A,B1

General Industry Program	Applicability	Source of Training
1910.145 Specifications for accident prevention signs and tags	Maintenance personnel	
1910.146 Permit-required confined spaces	Telephone Services, Facilities Services	A,B1
1910.147 The control of hazardous energy (lockout/tagout)	Employees who service or repair	A,B1,B
1910.157 Portable fire extinguishers	All	A,B1
1910.160 Fixed extinguishing systems, general	Employees who may be exposed to the extinguishing agent	C
1910.165 Employee alarm systems	All	A,B1
1910.177 Servicing multi-piece and single piece rim wheels	Motor Pool	C
1910.178 Powered industrial trucks	Employees who operate forklifts and other powered industrial trucks	A,B,C
1910.252 Welding, cutting and brazing--General Requirements	Employees who conduct welding, brazing, cutting (torch or arc)	A, C
1910.253 Oxygen-fuel gas welding and cutting **(Construction)**	Employees who conduct oxy-acetylene, -propane, MAPP or other fuel gas cutting or welding	C
1910.254 Arc welding and cutting **(Construction)**	Employees who perform arc welding and cutting	C
1910.255 Resistance welding	Maintenance, Engineering Shop, Art Shop	C
1910.264 Laundry machinery and operations	Athletic Department	C
1910.268 Telecommunications	Telephone Services	C

General Industry Program	Applicability	Source of Training
1910.269 Electric power generation, transmission, and distribution	Facilities Services – High voltage workers	C
1910.332 Electrical—safety-related work practices	Employees who work maintain electrical systems	A, C
1910.1001 Asbestos **(Construction)**	Maintenance personnel, Telephone Services	A,B1,C
1910.1003 4-Nitrobiphenyl	Research involving this chemical	None currently
1910.1004 alpha-Naphthylamine	Research involving this chemical	None currently
1910.1006 Methyl chloromethyl ether	Research involving this chemical	None currently
1910.1007 3,3'-Dichlorobenzidine (and its salts)	Research involving this chemical	None currently
1910.1008 bis-Chloromethyl ether	Research involving this chemical	None currently
1910.1009 beta-Naphthylamine	Research involving this chemical	None currently
1910.1010 Benzidine	Research involving this chemical	None currently
1910.1011 4-Aminodiphenyl	Research involving this chemical	None currently
1910.1012 Ethyleneimine	Research involving this chemical	None currently
1910.1013 beta-Propiolactone	Research involving this chemical	None currently
1910.1014 2-Acetylaminofluorene	Research involving this chemical	None currently
1910.1015 4-Dimethylaminoazobenzene	Research involving this chemical	None currently

General Industry Program	Applicability	Source of Training
1910.1016 N-Nitrosodimethylamine	Research involving this chemical	None currently
1910.1017 Vinyl chloride **(Construction)**	Research involving this chemical	None currently
1910.1018 Inorganic arsenic **(Construction)**	Research involving this chemical, Steam Plant personnel who enter the boilers	B1
1910.1025 Lead **(Construction)**	Maintenance personnel	B1
1910.1026 Hexavalent chromium (VI) **(Construction)**	Employees who weld or cut (torch or arc) stainless steel. Researcher who work with this substance	None currently
1910.1027 Cadmium **(Construction)**	Research involving this substance. Also Art Dept and welders	None currently
1910.1028 Benzene **(Construction)**	Research involving this chemical	None currently
1910.1030 Bloodborne pathogens	Employees who come in contact with human blood and other bodily fluids	A, B1,B2, C
1910.1044 1,2-dibromo-3-chloropropane **(Construction)**	Research involving this chemical	None currently
1910.1045 Acrylonitrile **(Construction)**	Research involving this chemical	None currently
1910.1047 Ethylene oxide **(Construction)**	Research involving this chemical	None currently
1910.1048 Formaldehyde **(Construction)**	Research involving this chemical	A, C

General Industry Program	Applicability	Source of Training
1910.1050 Methylenedianiline **(Construction)**	Research involving this chemical	None currently
1910.1051 1,3 Butadiene	Research involving this chemical	None currently
1910.1052 Methylene chloride **(Construction)**	Research involving this chemical	B1
1910.1096 Ionizing radiation	Employees who may be exposed to ionizing radiation	See Radiation Safety
1910.1200 Hazard communication **(Construction)**	Employees who handle hazardous chemicals	A,B1,B2
1910.1450 Occupational exposure to hazardous chemicals in laboratories	Laboratory work involving chemicals	A,B1
Construction		
1926.404 Ground Fault Protection	Facilities Services	C
1926.454 Scaffolding	Facilities Services	A, B1
1926.503 Fall Protection	Faculties Services	A, B1
1926.602 Material Handling Equipment	Facilities Services	C
1926. 651 Excavations, Trenching and Shoring	Faculties Services	A
1926.701 Concrete and Masonry	Facilities Services	C
1926.703 Requirements for Cast-in-Place Concrete	Facilities Services	C
1926.803 Compressed Air	Facilities Services	C
1926.852 Chutes	Facilities Services	C
1926.1053 Ladders	Employees who use ladders in a construction setting	A

General Industry Program	Applicability	Source of Training
Environmental Programs		
40 CFR Spill Prevention Control and Countermeasures	Employee who have oil in their work area in qualities exceeding 55 gallons	A, B1,B2
40 CFR 261. Hazardous Waste	Individuals who produce or handle hazardous waste	A,B1,
40 CFR Storm Water Pollution Prevention Plan	Steam Plant employees	A,B1
40 CFR Universal Waste	Maintenance personnel and those who generate waste batteries, mercury containing devices	A,B1,B2
Transportation Standard		
DOT Standard	Individuals who ship hazardous materials or sign hazardous waste manifests	C
IATA	Individuals who ship hazardous material by air	C

Please insert any active permits into this section that pertains to any work that is being done.

ON JOB TRAINING (OJT) FORM

OJT Skill(s)/Topic:_____

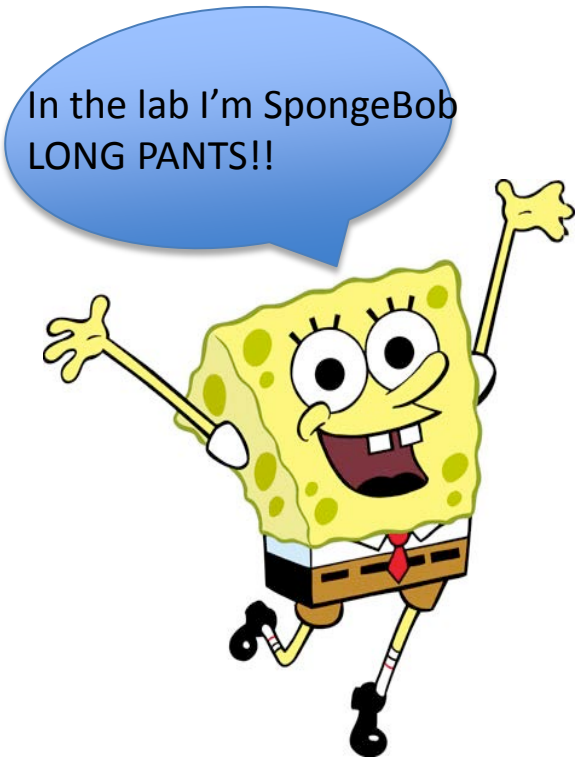
DATE	Trainer/Instructor Signature	Employee Supervisor Name	Employee Name Printed	Employee Signature

Page_____of_____

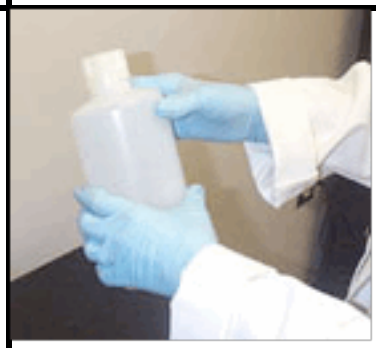
Revised Date: 9/13/2013

Basic PPE: PERSONAL PROTECTIVE EQUIPMENT and Dress Code to be FOLLOWED AT ALL TIMES when working in the lab

Personal Protective Equipment (PPE) - Specialized clothing or equipment worn by employees for protection against health and safety hazards. Personal protective equipment is designed to protect many parts of the body, i.e., eyes, head, face, hands, feet, and ears.



PPE SAFETY: Glove Selection Chart

Glove Material	Intended Use	Advantages and Disadvantages	Example Photos
Latex (natural rubber)	Incidental contact	✓ Good for biological and water-based materials. ✓ Poor for organic solvents. ✓ Little chemical protection. ✓ Hard to detect puncture holes. ✓ Can cause or trigger latex allergies	
Nitrile	Incidental contact (disposable exam glove) Extended contact (thicker reusable glove)	✓ Excellent general use glove. Good for solvents, oils, greases, and some acids and bases. ✓ Clear indication of tears and breaks. ✓ Good alternative for those with latex allergies.	

PPE SAFETY: Glove Selection Chart

Glove Material	Intended Use	Advantages and Disadvantages	Example Photos
Butyl rubber	Extended contact	✓ Good for ketones and esters. ✓ Poor for gasoline and aliphatic, aromatic, and halogenated hydrocarbons.	
Neoprene	Extended contact	✓ Good for acids, bases, alcohols, fuels, peroxides, hydrocarbons, and phenols. ✓ Poor for halogenated and aromatic hydrocarbons. ✓ Good for most hazardous chemicals.	

PPE SAFETY: Glove Selection Chart

Glove Material	Intended Use	Advantages and Disadvantages	Example Photos
Norfoil	Extended contact	✓ Good for most hazardous chemicals. ✓ Poor fit (Note: Dexterity can be partially regained by using a heavier weight Nitrile glove over the Norfoil/Silver Shield glove.	
Viton	Extended contact	✓ Good for chlorinated and aromatic solvents. ✓ Good resistance to cuts and abrasions. ✓ Poor for ketones. ✓ Expensive.	

PPE SAFETY: Glove Selection Chart

Glove Material	Intended Use	Advantages and Disadvantages	Example Photos
Polyvinyl chloride (PVC)	Specific use	✓ Good for acids, bases, oils, fats, peroxides, and amines. ✓ Good resistance to abrasions. ✓ Poor for most organic solvents.	
Polyvinyl alcohol (PVA)	Specific use	✓ Good for aromatic and chlorinated solvents. ✓ Poor for water-based solutions.	

PPE SAFETY: Glove Selection Chart

Glove Material	Intended Use	Advantages and Disadvantages	Example Photos
Stainless steel **Kevlar** **Leather**	Specific use	✓ **Cut-resistant gloves.** ✓ Sleeves are also available to provide protection to wrists and forearms. (If potential for biological or chemical contamination: wear appropriate disposable gloves on top of your cut-resistant gloves and discard after use).	
Cryogenic Resistant Material **Leather**	Specific use	✓ For use with cryogenic materials. ✓ Designed to prevent frostbite. Note: Never dip gloves directly into liquid nitrogen.	

PPE SAFETY: Glove Selection Chart

Glove Material	Intended Use	Advantages and Disadvantages	Example Photos
Nomex	Specific use	✓ For use with pyrophoric materials. ✓ Consider wearing a flame-resistant glove such as a Nomex 'flight' glove with a thin nitrile exam glove underneath.	

Procedure Subject: **Hazardous Waste Management Plan**	Effective: 1/1/09
Areas Affected: Departments the generate hazardous waste.	Reviewed/Revised: 4/1/2010

1.0 Purpose, Applicability, and Scope

1.1 Purpose (Include regulatory requirements) - The purpose of this procedure is to provide a framework for those individuals on campus who generate or handle hazardous waste. Consult Title 40 Code of Federal Regulations or Environmental Health and Safety for additional information regarding hazardous waste.

1.2 Applicability – This shall apply to all students, staff and faculty on the Knoxville campus of the University of Tennessee.

1.3 Scope – This standard applies to all hazardous waste as defined in section 2.2 below.

2.0 Abbreviations, Acronyms, and Definitions

2.1 Abbreviations/Acronyms
DOT – Department of Transportation
EHS – Environmental Health and Safety
IATA- International Air Transportation Agency
RCRA-Resource Conservation and Recovery Act
SAA-Satellite Accumulation Area
TDEC-Tennessee Department of Environment and Conservation

2.2 Definition

Hazardous Waste – The EPA defines hazardous waste as a material that no longer has an intended value with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous wastes can exist as liquids, solids, contained gases, or sludges. They can be the by-products of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides.

In regulatory terms, a RCRA hazardous waste is either a listed waste that appears on one of the four hazardous wastes lists (F-list, K-list, P-list, or U-list), and/or exhibits at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity. Hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA) Subtitle C, which is enforced by the EPA on a federal level, and by TDEC on a state level.

3.0 Roles and Responsibilities

The management of hazardous chemical waste at the University consists of the coordination and direction of the waste generated in hundreds of laboratories and other campus facilities. To manage this large volume effectively, it is necessary to use the services and technical expertise of Environmental Health and Safety (EHS), faculty and staff members. This section briefly describes the function of each group and its role in the hazardous chemical waste management program.

a. University Administration

The chancellor of the University is responsible for the administration of policy pertaining to institutional safety and health-related matters. The chancellor oversees the administration of safety policies through the chain of authority within the institution, delegating to deans, department heads, principal investigators and supervisors the responsibility for ensuring safe work practices of those under their supervision and adherence to established policy and guidelines.

b. EHS

EHS is responsible for surveillance of all laboratory activities involving the use of toxic agents and all additional chemical and biological problem areas within the confines of the University. A list of staff members from EHS is available as attachment A.

Specific duties of the department include:

a. Monitor the implementation of the safety and health policies of the University.
b. Design and improve disposal procedures for chemical waste materials.
c. Prepare, submit, and maintain records, reports and manifests as required by government regulations.
d. Prepare applications for state and federal permits to generate and properly dispose of hazardous chemical waste.
e. Schedule and co-ordinate the activities of the hazardous waste contractors on campus.
f. Ensure the university's compliance with all applicable federal (EPA) and state (TDEC) environmental regulations concerning hazardous waste.
g. Ensure the university is making an effort to minimize the amounts of hazardous waste generated on campus.

c. Principal Investigator, Classroom Instructor or Supervisor

The principal investigator, classroom instructor, or supervisor has the direct responsibility for assuring that the policy and guidelines established herein are followed by all personnel, including other researchers under their jurisdiction.

d. Laboratory Worker and Other Individuals

The success of the hazardous chemical waste management program at the University is dependent on the conscientious efforts of the individual laboratory worker and staff employee. Because the laboratory workers frequently handle hazardous chemicals, it is essential that they follow the advice, policies, and procedures pertaining to hazardous materials handling. The individual staff members are expected to:

a. Manage and dispose of all chemical waste in accordance with established procedures set forth in this disposal guide
b. Maintain the identity of all chemicals with which they work.
c. Package and label surplus and waste chemicals in accordance with established procedures set forth in this disposal guide.
d. Seek the advice, when necessary, of EHS concerning the proper handling and disposal of hazardous chemicals.
e. Ensure they are properly trained on hazardous waste management, and that this documented training is refreshed on an annual basis.

4.0 **Procedures**

Containers

a. All containers must be leak-proof and chemically compatible with their contents. Lids should fit properly so that the container is leakproof.
b. When selecting a waste container, pay attention to the original container material to ensure waste added to the container is not incompatible with residues of the original material.
c. Bags may be used only for **dry** solids. Needles (capped or uncapped), pipettes, broken glass or other sharp-edged materials that are chemically contaminated are not acceptable in bags. All "sharps" should be placed in puncture-resistant containers.
d. Containers which show signs of contamination on their exterior are not acceptable regardless of their contents. EHS must take every step available to protect its staff from potential chemical hazards.
e. Containers and bags marked with **biohazard** or **radioactive** warnings are not acceptable for chemical waste disposal. If a waste has biological and/ or radiological and chemical hazards, please contact EHS for guidance before packaging.
f. Minimize void space in containers by assuring that collection containers should be filled to capacity (with a little head room for expansion) before requesting disposal or combining two containers of identical material into one.

g. When adding hazardous waste to a container, only the constituents that are specifically listed on the waste label should be added and care must be taken not to mix incompatibles.
h. All containers must be closed with a tight-fitting lid, unless waste is being added or removed from the container. It is illegal to store waste in an open container.

Labeling

In order to comply with state and federal regulations and University policy, the following information must appear on each container of hazardous waste.

a. "Hazardous Waste": State and federal regulations require that each container must be clearly marked with the words, "Hazardous Waste". EHS requires that all hazardous waste must be labeled with a UTK hazardous waste label. Labels can be obtained from EHS.
b. Generator's Name: The individual who is responsible for the area or process from which the waste originated and contact information (including name, phone # and room #) for the best person to contact if further information about the material is needed.
c. Chemical Constituents: Write all constituents, whether hazardous or non-hazardous, on the waste label. Formulas, trade names, abbreviations, and general names and nomenclature are not acceptable. The proper chemical name must be written out in its entirety. Provide percentage of constituents, if known. Estimates are acceptable.
d. Do not add an accumulation start date; this will be completed by EHS. The date will be added when the waste is brought to EHS for disposal.

Storage

a. Any container used for disposal and storage of waste must be marked with the information specified in the Labeling section immediately upon placing the first drop of waste into the container.
b. Whenever possible, store flammable waste liquids and waste corrosive liquids in cabinets designed for these materials.
c. Maximum amount that can accumulate in the lab is 55 gallons of hazardous waste or 1 kilogram of **acutely** toxic waste (Appendix B). If you accumulate more than the maximum amount, the waste needs to be removed from your lab no later than 3 days after these maximum amounts are reached.
d. All waste must be stored in secondary containment (i.e. cabinets and trays), and should be segregated according to hazard class (i.e. flammables, toxics, etc.). The EHS web-site has a partial list of common incompatible chemicals.
e. All hazardous waste should be stored in a Satellite Accumulation Area (SAA) which should be clearly marked with a sign (signs can be obtained from EHS).

Disposal

Hazardous waste should be brought to the following locations, or contact EH&S at 974-5084 to coordinate a pickup. Waste should never be left unattended outside the waste room.

Walters Waste room (Room M205):
Hours: Every Wednesday 1:00-2:00 p.m.
SERF (Science & Engineering Research Facility) Waste room (at loading dock):
Hours: Every Wednesday 2:00-3:00 p.m.

General Guidelines

a. Hazardous waste should never be disposed of down the sanitary sewer, the storm sewer, placed in the regular trash, by evaporation (a container without a lid implies evaporation for volatile substances), mixing with a biohazard, or mixing with a non-hazardous substance (i.e. dilution).
b. The following items are not classified as hazardous waste and are not included in this policy: sewage; regular trash; universal waste (fluorescent bulbs, batteries); radioactive and biohazard.
c. The burden of hazardous waste determination lies with the waste generator. If unsure whether a waste is hazardous, reviewing the material safety data sheet (MSDS) or original container labels are good starting points. Unlabeled containers present a number of problems. When in doubt, assume the waste is hazardous and manage as a hazardous waste. EHS should be consulted with any questions concerning hazardous waste determinations.
d. Every effort must be made to minimize and reduce the volumes of hazardous waste generated on campus. Please refer to UTK's Hazardous Waste Minimization Plan for ideas on waste reduction.

5.0 Recordkeeping

EHS shall serve as the primary location for records related to hazardous waste. Records shall be maintained on the following

a. Hazardous waste manifests
b. Annual reports
c. Land disposal restrictions
d. Waste stream profiles
e. Waste determinations
f. Disposal certificates
g. Waste Minimization Plan
h. Emergency Contingency Plan
i. Training
    i. DOT Hazardous Material Shipping
    ii. IATA Hazardous Materials Shipping

iii. OSHA Hazardous Waste Operations

j. Communiqués from and to:
   i. Regulatory agencies
   ii. Hazardous waste vendors
   iii. Generators of hazardous waste
   iv. University administration

Most of these records must be maintained for three years to meet regulatory requirements. However to be prudent these records will be kept indefinitely.

Training records shall be maintained by the individual department who whom the employee or student reports. Training records may also be kept in the IRIS.

6.0 Training and Information Requirements

The director of EHS shall ensure that select staff members in the department are adequately trained in the following subjects:

a. Hazardous substances
b. DOT and IATA shipping requirements
c. Hazardous waste management
d. Personal protective equipment
e. OSHA Hazwopper
e. Procedure for submitting the annual report to the Tennessee Department of Environment and Conservation

Department heads having individuals (staff, faculty and students) under their control who generate hazardous waste is required under federal and state law to ensure these individuals have been trained and that training must be documented. Training is available from EHS in the form of traditional classroom, self-study PowerPoint or online with Skillsoft. Training must be completed annually for individuals who generate and manage hazardous waste. For training information, refer to the EHS web-site or contact April Case at 974-5084, or at acase3@utk.edu.

7.0 Attachments

See attachments below

8.0 Associated Standards

OSHA 29 CFR 1910.120 (Hazardous Waste)
EPA 40 CFR 260-270 (Hazardous Waste)
Tennessee Code Annotated (1200-01-11)

Attachment A

WASTE MANAGEMENT CONTACTS
ENVIRONMENTAL HEALTH AND SAFETY

- Mark Smith - Director / Certified Hazardous Materials Manager / Certified Industrial Hygienist / Certified Safety Professional

  The Director is responsible for the overall coordination of the Hazardous Materials Management Program.

- Chuck Payne - EHS Team Leader / Certified Hazardous Materials Manager

  The EHS Team Leader provides expertise in the area of Hazardous Materials Safety and Health Protection Practices.

- April Case – Senior Environmental Coordinator/ Certified Hazardous Materials Manager

  The hazardous materials manager is responsible for the direct coordination of the Waste Management Program and laboratory inspection.

- Pam Koontz - Senior Laboratory Safety Coordinator/ Certified Hazardous Materials Manager

  The hazardous materials manager is responsible for the direct coordination of the Waste Management Program and laboratory inspection.

- Suzanne Rimmer - Technical Supervisor III

  The Safety Inspection supervisor provides expertise in fire protection, coordinates the first aid fire protection equipment (fire extinguisher) maintenance and inspection program.

- Jim Walker - Senior Safety Coordinator

  Provides assistance to the hazardous materials manager.

- Kim Harmon - Program Resource Specialist

  In addition to clerical support, the departmental senior secretary provides administrative assistance to all the staff members.

Attachment B

LIST OF ACUTE CHEMICALS AND WASTE CODES

Acutely Hazardous Waste		
Chemical Name	**Federal P Code**	**CAS Registry Number**
Acetaldehyde, chloro-	P023	107-20-0
Acetamide, N-(aminothioxomethyl)-	P002	591-08-2
Acetamide, 2-fluoro-	P057	640-19-7
Acetic acid, fluoro-, sodium salt	P058	62-74-8
1-Acetyl-2-thiourea	P002	591-08-2
Acrolein	P003	107-02-8
Aldicarb	P070	116-06-3
Aldicarb sulfone	P203	1646-88-4
Aldrin	P004	309-00-2
Allyl alcohol	P005	107-18-6
Aluminum phosphide	P006	20859-73-8
5-(Aminomethyl)-3-isoxazolol	P007	2763-96-4
4-Aminopyridine	P008	504-24-5
Ammonium picrate	P009	131-74-8
Ammonium vanadate	P119	7803-55-6
Argentate(1-), bis(cyano-C)-,potassium	P099	506-61-6
Arsenic acid	P010	7778-39-4
Arsenic oxide	P012	1327-53-3
Arsenic oxide	P011	1303-28-2
Arsenic pentoxide	P011	1303-28-2
Arsenic trioxide	P012	1327-53-3
Arsine, diethyl	P038	692-42-2
Arsonous dichloride, phenyl-	P036	696-28-6
Aziridine	P054	151-56-4
Aziridine, 2-methyl-	P067	75-55-8
Barium cyanide	P013	542-62-1
Benzenamine, 4-chloro-	P024	106-47-8
Benzenamine, 4-nitro-	P077	100-01-6
Benzene, (chloromethyl)-	P028	100-44-7
1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-,	P042	51-43-4
Benzeneethanamine, alpha,alpha- dimethyl-	P046	122-09-8
Benzenethiol	P014	108-98-5
7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate.	P127	1563-66-2
Benzoic acid, 2-hydroxy-, compd. With (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1).	P188	57-64-7
2H-1-Benzopyran-2-one, 4-hydroxy-3-(3- oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%	P001	\1\81-81-2
Benzyl chloride	P028	100-44-7

Beryllium powder	P015	7440-41-7
Bromoacetone	P017	598-31-2
Brucine	P018	357-57-3
2-Butanone, 3,3-dimethyl-1(methylthio)-, O-[methylamino)carbonyl] oxime	P045	39196-18-4
Calcium cyanide	P021	592-01-8
Carbamic acid, [(dibutylamino)- thio]methyl-, 2,3-dihydro-2,2- dimethyl- 7-benzofuranyl ester.	P189	55285-14-8
Carbamic acid, dimethyl-, 1-[(dimethyl- amino)carbonyl]- 5-methyl-1H- pyrazol-3-yl ester.	P191	644-64-4
Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H- pyrazol-5-yl ester.	P192	119-38-0
Carbamic acid, methyl-, 3-methylphenyl ester.	P190	1129-41-5
Carbofuran.	P127	1563-66-2
Carbon disulfide	P022	75-15-0
Carbonic dichloride	P095	75-44-5
Carbosulfan	P189	55285-14-8
Chloroacetaldehyde	P023	107-20-0
p-Chloroaniline	P024	106-47-8
1-(o-Chlorophenyl)thiourea	P026	5344-82-1
3-Chloropropionitrile	P027	542-76-7
Copper cyanide	P029	544-92-3
m-Cumenyl methylcarbamate.	P202	64-00-6
Cyanides (soluble cyanide salts), not otherwise specified	P030	
Cyanogen	P031	460-19-5
Cyanogen chloride	P033	506-77-4
2-Cyclohexyl-4,6-dinitrophenol	P034	131-89-5
Dichloromethyl ether	P016	542-88-1
Dichlorophenylarsine	P036	696-28-6
Dieldrin	P037	60-57-1
Diethylarsine	P038	692-42-2
Diethyl-p-nitrophenyl phosphate	P041	311-45-5
O,O-Diethyl O-pyrazinyl phosphorothioate	P040	297-97-2
Diisopropylfluorophosphate (DFP)	P043	55-91-4
1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa- chloro-1,4,4a,5,8,8a,-hexahydro-,(1alpha,4alpha,4abeta,5alpha,8alpha,8 abeta)-	P004	309-00-2
1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa- chloro-1,4,4a,5,8,8a-hexahydro-,(1alpha,4alpha,4abeta,5beta,8beta,8ab eta)-	P060	465-73-6
2,7:3,6-Dimethanonaphth[2,3-b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,alpha,7beta, 7aalpha)-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,(1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta, 7aalpha)-, & metabolites	P051	72-20-8
Dimethoate	P044	60-51-5
alpha,alpha-Dimethylphenethylamine	P046	122-09-8
Dimetilan.	P191	644-64-4
4,6-Dinitro-o-cresol, & salts	P047	534-52-1
2,4-Dinitrophenol	P048	51-28-5
Dinoseb	P020	88-85-7
Diphosphoramide, octamethyl-	P085	152-16-9

Diphosphoric acid, tetraethyl ester	P111	107-49-3
Disulfoton	P039	298-04-4
Dithiobiuret	P049	541-53-7
1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O- [(methylamino)-carbonyl]oxime.	P185	26419-73-8
Endosulfan	P050	115-29-7
Endothall	P088	145-73-3
Endrin	P051	72-20-8
Endrin, & metabolites	P051	72-20-8
Epinephrine	P042	51-43-4
Ethanedinitrile	P031	460-19-5
Ethanimidothioc acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester.	P194	23135-22-0
Ethanimidothioic acid,N-[[(methylamino)carbonyl]oxy]-,methyl ester	P066	16752-77-5
Ethyl cyanide	P101	107-12-0
Ethyleneimine	P054	151-56-4
Famphur	P097	52-85-7
Fluorine	P056	7782-41-4
Fluoroacetamide	P057	640-19-7
Fluoroacetic acid, sodium salt	P058	62-74-8
Formetanate hydrochloride.	P198	23422-53-9
Formparanate.	P197	17702-57-7
Fulminic acid, mercury(2+) salt	P065	628-86-4
Heptachlor	P059	76-44-8
Hexaethyl tetraphosphate	P062	757-58-4
Hydrazinecarbothioamide	P116	79-19-6
Hydrazine, methyl-	P068	60-34-4
Hydrocyanic acid	P063	74-90-8
Hydrogen cyanide	P063	74-90-8
Hydrogen phosphide	P096	7803-51-2
Isodrin	P060	465-73-6
Isolan.	P192	119-38-0
3-Isopropylphenyl N-methylcarbamate.	P202	64-00-6
3(2H)-Isoxazolone, 5-(aminomethyl)-	P007	2763-96-4
Manganese,bis(dimethylcarbamodithioato-S,S')-,	P196	15339-36-3
Manganese dimethyldithiocarbamate.	P196	15339-36-3
Mercury, (acetato-O)phenyl-	P092	62-38-4
Mercury fulminate (R,T)	P065	628-86-4
Methanamine, N-methyl-N-nitroso-	P082	62-75-9
Methane, isocyanato-	P064	624-83-9
Methane, oxybis[chloro-	P016	542-88-1
Methane, tetranitro- (R)	P112	509-14-8
Methanethiol, trichloro-	P118	75-70-7
Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)-carbonyl]oxy]phenyl]-, monohydrochloride.	P198	23422-53-9
Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[(methylamino)carbonyl]oxy]phenyl]-	P197	17702-57-7
6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10- hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide	P050	115-29-7

4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	P059	76-44-8
Methiocarb.	P199	2032-65-7
Methomyl	P066	16752-77-5
Methyl hydrazine	P068	60-34-4
Methyl isocyanate	P064	624-83-9
2-Methyllactonitrile	P069	75-86-5
Methyl parathion	P071	298-00-0
Metolcarb.	P190	1129-41-5
Mexacarbate.	P128	315-8-4
alpha-Naphthylthiourea	P072	86-88-4
Nickel carbonyl	P073	13463-39-3
Nickel cyanide	P074	557-19-7
Nicotine, & salts	P075	54-11-5
Nitric oxide	P076	10102-43-9
p-Nitroaniline	P077	100-01-6
Nitrogen dioxide	P078	10102-44-0
Nitrogen oxide NO	P076	10102-43-9
Nitroglycerine	P081	55-63-0
N-Nitrosodimethylamine	P082	62-75-9
N-Nitrosomethylvinylamine	P084	4549-40-0
Octamethylpyrophosphoramide	P085	152-16-9
Osmium tetroxide	P087	20816-12-0
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	P088	145-73-3
Oxamyl.	P194	23135-22-0
Parathion	P089	56-38-2
Phenol, 2-cyclohexyl-4,6-dinitro-	P034	131-89-5
Phenol, 2,4-dinitro-	P048	51-28-5
Phenol, 2-methyl-4,6-dinitro-, & salts	P047	534-52-1
Phenol, 2-(1-methylpropyl)-4,6-dinitro-	P020	88-85-7
Phenol, 2,4,6-trinitro-, ammonium salt ®	P009	131-74-8
Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester).	P128	315-18-4
Phenol, (3,5-dimethyl-4-(methylthio)-,methylcarbamate	P199	2032-65-7
Phenol, 3-(1-methylethyl)-, methylcarbamate.	P202	64-00-6
Phenol, 3-methyl-5-(1-methylethyl)-,methyl carbamate.	P201	2631-37-0
Phenylmercury acetate	P092	62-38-4
Phenylthiourea	P093	103-85-5
Phorate	P094	298-02-2
Phosgene	P095	75-44-5
Phosphine	P096	7803-51-2
Phosphoric acid, diethyl 4-nitrophenylester	P041	311-45-5
Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester	P039	298-04-4
Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)methyl] ester	P094	298-02-2
Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester	P044	60-51-5
Phosphorofluoridic acid, bis(1-methylethyl) ester	P043	55-91-4
Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	P089	56-38-2
Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	P040	297-97-2
Phosphorothioic acid,O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester	P097	52-85-7

Phosphorothioic acid, O,O,-dimethyl O(4-nitrophenyl) ester	P071	298-00-0
Physostigmine.	P204	57-47-6
Physostigmine salicylate.	P188	57-64-7
Plumbane, tetraethyl-	P110	78-00-2
Potassium cyanide	P098	151-50-8
Potassium cyanide K(CN)	P098	151-50-8
Potassium silver cyanide	P099	506-61-6
Promecarb	P201	2631-37-0
Propanal, 2-methyl-2-(methylthio)-,O-[(methylamino)carbonyl]oxime	P070	116-06-3
Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime.	P203	1646-88-4
Propanenitrile	P101	107-12-0
Propanenitrile, 3-chloro-	P027	542-76-7
Propanenitrile, 2-hydroxy-2-methyl-	P069	75-86-5
1,2,3-Propanetriol, trinitrate	P081	55-63-0
2-Propanone, 1-bromo-	P017	598-31-2
Propargyl alcohol	P102	107-19-7
2-Propenal	P003	107-02-8
2-Propen-1-ol	P005	107-18-6
1,2-Propylenimine	P067	75-55-8
2-Propyn-1-ol	P102	107-19-7
4-Pyridinamine	P008	504-24-5
Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts	P075	54-11-5
Pyrrolo[2,3-b]indol-5-ol,1,2,3,3a,8,8a-hexahydro-1,3a,8- trimethyl-, methylcarbamate (ester), (3aS-cis)-.	P204	57-47-6
Selenious acid, dithallium(1+) salt	P114	12039-52-0
Selenourea	P103	630-10-4
Silver cyanide	P104	506-64-9
Silver cyanide Ag(CN)	P104	506-64-9
Sodium azide	P105	26628-22-8
Sodium cyanide	P106	143-33-9
Sodium cyanide Na(CN)	P106	143-33-9
Strychnidin-10-one, & salts	P108	57-24-9
Strychnidin-10-one, 2,3-dimethoxy-	P018	357-57-3
Strychnine, & salts	P108	57-24-9
Sulfuric acid, dithallium(1+) salt	P115	7446-18-6
Tetraethyldithiopyrophosphate	P109	3689-24-5
Tetraethyl lead	P110	78-00-2
Tetraethyl pyrophosphate	P111	107-49-3
Tetranitromethane	P112	509-14-8
Tetraphosphoric acid, hexaethyl ester	P062	757-58-4
Thallic oxide	P113	1314-32-5
Thallium(I) selenite	P114	12039-52-0
Thallium(I) sulfate	P115	7446-18-6
Thiodiphosphoric acid, tetraethylester	P109	3689-24-5
Thiofanox	P045	39196-18-4
Thioimidodicarbonic diamide	P049	541-53-7
Thiophenol	P014	108-98-5

Thiosemicarbazide	P116	79-19-6
Thiourea, (2-chlorophenyl)-	P026	5344-82-1
Thiourea, 1-naphthalenyl-	P072	86-88-4
Thiourea, phenyl-	P093	103-85-5
Tirpate.	P185	26419-73-8
Toxaphene	P123	8001-35-2
Trichloromethanethiol	P118	75-70-7
Vanadic acid, ammonium salt	P119	7803-55-6
Vanadium pentoxide	P120	1314-62-1
Vinylamine, N-methyl-N-nitroso-	P084	4549-40-0
Warfarin, & salts, when present at concentrations greater than 0.3%	P001	81-81-2
Zinc, bis(dimethylcarbamodithioato- S,S')-,	P205	137-30-4
Zinc cyanide	P121	557-21-1
Zinc phosphide	P122	1314-84-7
Ziram.	P205	137-30-4

Guidance for Hazardous Waste Spill Cleanup in Laboratories

Introduction

Chemical spills and accidents need to be minimized as much as possible. If a chemical spill should occur, a quick response with a stocked chemical spill kit will help minimize potential harm to personnel, equipment and laboratory space. This guidance document provides a list of the minimal equipment required for a spill kit. You may add equipment to the kit, provided all personnel are proficient in its use. An example would be adding a metallic mercury spill kit. Contact EHS for information and guidance in construction of a more specialized spill kit (for use with mercury, hydrofluoric acid, etc). The Principle Investigator or Supervisor should be responsible for reviewing their spill cleanup procedures with you, as outlined in the Chemical Hygiene plan.

Note that the majority of chemical spills can be prevented or minimized by:

1. Maintaining a neat and organized work area;
2. Performing a laboratory procedure review prior to conducting new experimental procedures;
3. Storing liquid chemicals in secondary containment bins;
4. Keeping reagent chemical containers sealed or closed at all times, except when removing contents;
5. Ordering reagent chemicals in plastic or plastic coated glass containers whenever possible;
6. Using secondary containment to store and move chemicals.

Types of Spills that **Cannot** Be Handled by Laboratory Personnel

If the spill is too large for you to handle, involves more than 500 ml of any hazardous material, involves materials listed in the table below; is a threat to personnel, students or the public; or involves a corrosive, highly toxic, or reactive chemical, call EHS at 974-5084 or 911 for assistance.

Table 1: Chemicals that should not be cleaned up by laboratory personnel

Chemical Class	Example
Strong Acids - Any acid that is concentrated enough to fume or emit acid gases	Fuming Sulfuric Acid Red Nitric Acid Hydrofluoric Acid Perchloric Acid
Strong Bases - Any base that is concentrated enough to emit vapors	Ammonium Hydroxide
Poison by Inhalation - Any chemical that readily emits vapors / gases at normal temperature and pressure that are extremely toxic by inhalation	Phosphorous Oxychloride Titanium Tetrachloride Formates Isocyanates
Reactive - Any chemical that is sensitive to air, water, shock, friction and/or temperature	Dry Picric Acid Lithium Aluminum hydride Sodium Borohydride Phosphorus Metal Organic Peroxides
Mercury - Any mercury compound	Metallic Mercury Mercury Salts Aqueous Mercury Solutions
Extremely Toxic - Any chemical that is readily absorbed through the skin and is extremely toxic at small concentrations	Benzene Sodium Cyanide

Types of Spills that **Can** Be Handled by Laboratory Personnel

Minor spills do not necessarily need the assistance of EHS. Laboratory workers who have had the proper training and possess the appropriate equipment can safely and effectively handle the majority of chemical spills that occur in the laboratory. In addition, spills involving multiple chemicals may pose various hazards. Always contact EHS if multiple chemicals are involved in a spill.

Except for the chemical classes in Table I, labs can handle spills involving one liter or less of liquid and one pound or less of a solid. If the spill is large, contact EHS to assist with the clean-up. Refer to the Hazardous Materials Safety Manual or the chemical spill section of the Chemical Hygiene Plan for specific spill clean-up techniques. Contact EHS with any questions or concerns about proper spill clean-up practices.

General Spill Clean-up Procedures

In the event of a chemical spill, first decide if you are trained, knowledgeable and equipped to handle the incident. **Immediately evacuate the lab and call 911 if there is a possibility of an acute respiratory hazard present or if you need assistance to clean up the spill. Never proceed to clean up a spill if you do not know the hazards associated with the chemical or if you are unsure of how to clean up the spill. If anyone is injured or contaminated, call 911 and begin decontamination measures or first aid, if trained.**

Don the personal protective equipment from the spill kit; splash goggles and nitrile/Silver Shield combination gloves. Always ask a fellow researcher for assistance. They should also don splash goggles and nitrile/Silver Shield combination gloves. Make sure that all forms of local exhaust, i.e. fume hoods, are operating. It is normally not advisable to open the windows. If broken glass is involved, do not pick it up with your gloved hands. Use the scoop or tongs to place it in the bag, then place the bag in a strong cardboard box or plastic container. Follow the procedures provided below based on the class and type of chemical.

All tools used in the clean-up need to be decontaminated (plastic scoop, tongs, etc.). Remove all gross contamination with a wet paper towel. Dispose of the contaminated paper towels as waste. Rinse the tools off with copious amounts of water. Dispose of the gloves as waste. Dry the tools off and place back into the spill kit along with the splash goggles. Contact EHS to obtain replacement gloves and spill clean-up material.

Liquid Spills other than flammable liquids

Spread the chemical spill powder over the spill starting with the edges first. This will help to confine the spill to a smaller area. Spread enough powder over the spill to completely cover the liquid. There should be no free liquid. Use plastic scoop to ensure that the liquid was completely absorbed by the powder. Pick up the powder with scoop and place in the polyethylene bag. Wipe the area down with a wet paper towel. Dispose of paper towel with the waste generated from the spill clean-up. Seal bag with tape and attach a completed UT hazardous waste label on the bag.

Flammable Liquid Spills

Control all sources of ignition. Lay the chemical spill pads over the spill and allow them to soak up the material. Allow pads to completely soak up liquid. Pick up pads with tongs or other device that minimizes direct contact with a gloved hand. Place in a polyethylene bag. Wipe the area down with a wet paper towel. Dispose of paper towel with the waste generated from the spill clean-up. Seal bag with tape and attach a completed UT hazardous waste label on the bag.

Solid Spills

Use the plastic scoop to place the spilled material into the polyethylene bag. Care should be taken so as not to create dust or cause the contaminated powder to become airborne. After the bulk of the material is cleaned up, wet a spill pad and wipe the area down. Place the pads into the polyethylene bag. Wipe the area down with a wet paper towel. Dispose of paper towel with the waste generated from the spill clean-up. Seal bag with tape and attach a completed orange hazardous waste sticker on the bag.

Note: Precautions must be taken to minimize exposure to the spilled chemical. Be careful not to step in the spilled material and track it around. Contact EHS and 911 if an exposure to a chemical occurs.

Below is a list of the minimum items that should be included in a spill kit for your lab:

1 - 5 gallon pail with lid
10 - Universal Chemical Absorbent Pads
1- bag diatomaceous earth or vermiculite (do not use with hydrofluoric acid spills)
1- box baking soda
1- dustpan and brush
1- Plastic Scoop
10- Plastic Bags
2 - pair of Nitrile/Silver Shield Combination Gloves
2 - pair of splash goggles
5 - EHS Hazardous Waste Labels
1 - Laboratory Chemical Spill Clean-Up Procedure

You can either assemble your own spill kit or purchase one from a supplier, such as Fisher Scientific or Lab Safety Supply. Below are some suggestions for ready-made kits you can buy. Everyone working in the lab should know where the spill kit is located and how to use it properly.

For any questions about assembling a hazardous material/waste spill kit or questions about spills, please contact EHS at 974-5084.

Table 2: Examples of Ready-Assembled Spill Kits that can be purchased

Product	Description	Catalog #
	Fisher Scientific Laboratory Spill Cleanup Kit: • One instruction sheet/MSDS • Two gloves • Two 9 x 16 in. (22.9 x 40.6cm) polybags • Two twist ties • Two blank shipping tags • One dust pan and brush • One bag vermiculite absorbent • Acid: One bottle neutralizing mixture (Calcium Hydroxide, Sodium Carbonate, Calcium Carbonate and Litmus Powder) • Caustic: One bottle neutralizing mixture (Citric Acid Anhydrous and Litmus Powder) • Solvent: I bag diatomaceous earth	Catalog # S80201A (Acid Spill Cleanup Kit) $106.50 Catalog #: S80201B: (Caustic Spill Cleanup Kit) $100.50/ea Catalog #: S80201C: (Solvent Spill Cleanup Kit): $100.25/ea All kits contain enough material to cleanup 1 liter spill.
	Fisher Scientific: Fisherbrand Chemical Spill Mini Spill Kit Each kit includes one carton Safety Sorbent particulate, one pair of side vent goggles, one pair gloves, two scraper cards for brushing up spills, one yellow disposal bag with tie.	Catalog #: 19-034-159 Case of 6 for $127.15
	Lab Safety Supply Economy Spill Kit, 5 gal Spill Control Carry Bag Kit, Gallons Sorbed per Pkg. 5, Depth 4 In., Height 16 In., Dia. 20 In., Material Color Yellow, Universal, Standards Meets UN, Includes (10) 15 x 19 In. Pads, (2) 3 In. x 4 ft. SOCs, (1) Pair Nitrile Gloves, (1) Disposal Bag, (1) Instruction Sheet	Catalog #: 2GUS1: $61.65/each

Chemical Inventory Guidelines and Template

NOTE 1: *For the few labs that use the on-line interface to update your chemical inventory yourself, this will continue to be a supported feature in the chemical inventory program. If you have updated your inventory in the past 6 months via the on-line database interface, you may disregard this message.*

NOTE 2: *This is also an opportunity to inspect your chemicals and take action on any that are abandoned or unwanted, have faded/missing/illegible labels, and/or are deteriorating; e.e chemicals with bulging lids, cracked containers, past expiration date, or have lost purity and are no longer usable and should be discarded.*

Due Date and Contact Information

New and updated chemical inventories are due on March 1. Your campus point of contact to submit inventories or for assistance is:

Knoxville Campus: Pam Koontz at pjkoontz@utk.edu or phone 4-5084

Ag Campus: Tiffany Morrison at tiffany@utk.edu or phone 4-7144

Necessary Inventory Components

Please use the format shown in the example submission. At a minimum it must include:

Building # or Building Name	*A valid building number or building name to which you have been assigned*
Room #	*A valid room number to which you have been assigned*
CAS #	*A valid CAS number. NOTE: Mixtures do not require CAS numbers*
Compound Name	*Write full name of the compound or product. Do not use abbreviations or formulas. For products that have multiple hazardous ingredients (i.e. mixtures or multi-ingredient products) there isn't a straightforward way to inventory each ingredient in the mixture. Put the product name in the compound name field, and in parenthesis include the primary hazardous ingredients including percentages (if known). For example, "Aqua Regia (hydrochloric acid 75%, nitric acid 25%)."* *Include ALL compressed gases in the inventory; emergency responders need to know these locations in fire events. Put the Units as "Each," the Container as "Cylinder" and list the number of cubic feet that the cylinder originally held.*
Purity or concentration	*Purity of compound/mixture (defaults to 100% if left blank)*
# of Containers	*Number of Containers (defaults to 1 if left blank)*

Quantity	*Quantities should represent typical amounts; don't get bogged down trying to measure exact amounts. For example, a partially used container is entered as the jar apacity, not how much changed in the past year, e.g., a 500 gram container doesn't need to specify 300 v. 200 grams full, it is just 500 grams.*
Units	*Measurement Units (see Units Abbreviations)*
Container	*Container Type (see Container Abbreviations)*
Principal Investigator	*Principal Investigator responsible for chemicals*
Phone #	*Phone number of Principal Investigator*

NOTE: As you work with the Excel spreadsheet, you may adjust column widths but please do not delete any columns or change their order. All the fields are required information in the database, so please attempt to provide complete information for each chemical, including the CAS number (except for mixtures, where CAS is left blank).

Exemptions

The following items do not need to be included on the inventory:

1. **Non-hazardous substances**; it is not necessary to inventory non-hazardous buffers, solutions, or powders
2. Prescription and over-the-counter **medication taken by personnel**
3. **Consumer Chemicals** used in a manner similar to domestic-type application, e.g. small containers of white-out.
4. **Hazardous waste**
5. **Consumer products**, e.g., cigarette lighters, in the workplace that contain hazardous materials and are for personal use.
6. Substance containing less than 1% of hazardous material (less than 0.1% carcinogens)
7. **Biohazards**
8. **Radioisotopes**
9. Hazardous materials (gasoline, oil, anti-freeze, etc.) found in University-owned or private **vehicles** and considered integral to the vehicle's operation
10. Hazardous materials that are part of the building, e.g., lead paint, or contained in an article, e.g., furniture.
11.

Formatting

Multiple Rooms - If a substance belonging to a department or research group is moved periodically between several rooms or labs, it will be acceptable to list the location within a range of rooms. Example room 423-429 or 423, 465, 466.

Chemical Inventory Guidelines and Template

Container Volume - For simplicity it is permissible to enter the listed amount of hazardous chemical on the container at the time it was purchased as opposed to the actual volume or mass.

Compressed Gases - The volume of the compressed gases may be listed as the number of cubic feet of the gas that the cylinder originally held when filled.

MSDS - Consult the chemical's MSDS to determine if substance is hazardous or contain hazardous components. If the MSDS does not provide clear information, contact EHS.

Trade Secret - Contact EHS regarding chemicals that are a trade secret. In general, EHS will seek to include the hazard class (e.g. flammable liquid), but no the exact substance where confidentiality must be preserved.

Updates - When making updates, include the new date for all compounds, not just the few compounds that have been added or updated.

Units and Container Types - Use the provided lists of abbreviations included in this section when indicating the appropriate types of units and containers.

Chemical Storage

Storage According to Hazard Classes

The following guidelines are provided for the safe storage of hazardous materials in accordance with their hazard classes:

Consult the **EH&S Chemical Safety Web Page** for additional guidance. This contains Material Safety Data Sheet and toxicological databases. An EH&S Industrial Hygienist can also be consulted, if additional assistance is needed.

Acids
- o Segregate acids from reactive metals such as sodium, potassium, magnesium, etc.
- o Segregate oxidizing acids from organic acids, flammable and combustible materials.
- o Segregate acids from chemicals which could generate toxic or flammable gases upon contact, such as sodium cyanide, iron sulfide, calcium carbide, etc.
- o Segregate acids from bases.
- o See Control Procedures for Acids and Bases.

Bases
- o Segregate bases from acids, metals, explosives, organic peroxides and easily ignitable materials.
- o See Control Procedures for Acids and Bases.

Solvents (Flammable and Halogenated Solvents)
- o Store in approved safety cans or cabinets.
- o Segregate from oxidizing acids and oxidizers.
- o Keep away from any source of ignition: heat, sparks, or open flames.
- o See Control Procedures for Flammable and Combustible Liquids.

Oxidizers
- o Store in a cool, dry place.
- o Keep away from combustible and flammable materials.
- o Keep away from reducing agents such as zinc, alkali metals, and formic acid.

Cyanides
- o Segregate from acids and oxidizers.

Water Reactive Chemicals
- o Store in a cool, dry place away from any water source.
- o Make certain that a Class D fire extinguisher is available in case of fire.
- o See Control Procedures for Water Reactive Chemicals.

Pyrophoric Substance
- o (Materials which will react with the air to ignite when exposed, e.g., white phosphorus.)
- o Store in a cool, dry place making provisions for an airtight seal.

Light Sensitive Chemicals
- o Store in amber bottles in a cool, dry, dark place.

Peroxide Forming Chemicals
- o Store in airtight containers in a dark, cool, and dry place.
- o Label containers with receiving, opening, and disposal dates.
- o Periodically test for the presence of peroxides.
- o See Control Procedures for Peroxide Forming Compounds.

Toxic Chemicals
- o Store according to the nature of the chemical, using appropriate security where necessary.

Incompatible Chemicals List

Incompatible Chemicals

Certain hazardous chemicals should not be mixed or stored with other chemicals because a severe reaction can take place or an extremely toxic reaction product can result. The label and MSDS will contain information on incompatibilities.

The following incompatibility matrix and table contains examples of incompatible chemicals:

Chemical Incompatibility Matrix

	Acids, Inorganic	Acids, Oxidizing	Acids, Organic	Alkalis (Bases)	Oxidizers	Poisons, inorganic	Poisons, organic	Water reactives	Organic solvents
Acids, Inorganic			X	X		X	X	X	X
Acids, Oxidizing			X	X		X	X	X	X
Acids, Organic	X	X		X	X	X	X	X	
Alkalis (Bases)	X	X	X				X	X	X
Oxidizers			X				X	X	X
Poisons, inorganic	X	X	X				X	X	X
Poisons, organic	X	X	X	X	X	X			
Water reactives	X	X	X	X	X	X			
Organic solvents	X	X		X	X	X			

X = Not compatible – do not store together

Know the properties of the chemicals used.

The chemical incompatibilities discussed below are by no means exhaustive. As a result, it is important for laboratory personnel to thoroughly research the properties of the chemicals they are using. Material Safety Data Sheets (MSDSs) have sections on chemical incompatibility. The container's label should also provide storage guidelines.

Avoid mixing incompatible waste materials.

A number of serious laboratory accidents have occurred when people have poured incompatible waste materials into hazardous waste containers. Use separate waste containers for each type of waste. Consult an EH&S Waste Generator Specialist for guidance.

Store incompatible chemicals separately.

Common storage problems in laboratories can lead to mixing incompatible chemicals. The most serious of these is the storage of acids (especially oxidizing acids) with flammable solvents. Contact of a concentrated oxidizing acid with a flammable solvent would likely result in a fire or an explosion. This is not an unlikely scenario in the event of an earthquake. Storage of chemicals in alphabetical order on shelves often results in incompatible chemicals being stored together. For example, alphabetical arrangement could result in hydrogen peroxide (a strong oxidizer) being stored next to hydrazine (a very strong reducer).

Incompatible Chemicals List

CHEMICAL	KEEP OUT OF CONTACT WITH
Acetic Acid	Chromic acid, nitric acid, hydroxyl compounds, ethylene glycol, perchloric acid, peroxides, permanganates
Acetone	Concentrated nitric and sulfuric acid mixtures, and strong bases
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury
Alkali Metals	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, the halogens
Ammonia, anhydrous	Mercury, chlorine, calcium hypochlorite, iodine, bromine, hydrofluoric acid
Ammonium Nitrate	Acids, metal powders, flammable liquids, chlorates, nitrites, sulfur, finely divided organic or combustible materials
Aniline	Nitric acid, hydrogen peroxide
Arsenic materials	Any reducing agent
Azides	Acids
Bromine	Same as chlorine
Calcium Oxide	Water
Carbon (activated)	Calcium hypochlorite, all oxidizing agents
Carbon tetrachloride	Sodium
Chlorates	Ammonium salts, acids, metal powders, sulfur, finely divided organic or combustible materials
Chromic Acid and Chromium trioxide	Acetic acid, naphthalene, camphor, glycerol, glycerin, turpentine, alcohol, flammable liquids in general
Chlorine	Ammonia, acetylene, butadiene, butane, methane, propane (or other petroleum gases), hydrogen, sodium carbide, turpentine, benzene, finely divided metals
Chlorine Dioxide	Ammonia, methane, phosphine, hydrogen sulfide
Copper	Acetylene, hydrogen peroxide
Cumene Hydroperoxide	Acids, organic or inorganic
Cyanides	Acids
Flammable Liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens

Incompatible Chemicals List

Hydrocarbons	Fluorine, chlorine, bromine, chromic acid, sodium peroxide
Hydrocyanic Acid	Nitric acid, alkali
Hydrofluoric Acid	Ammonia, aqueous or anhydrous, glass
Hydrogen Peroxide	Copper, chromium, iron, most metals or their salts, alcohols, acetone, organic materials, aniline, nitromethane, flammable liquids
Hydrogen Sulfide	Fuming nitric acid, other acids, oxidizing gases, acetylene, ammonia (aqueous or anhydrous), hydrogen
Hypochlorites	Acids, activated carbon
Iodine	Acetylene, ammonia (aqueous or anhydrous), hydrogen
Mercury	Acetylene, fulminic acid, ammonia
Nitrates	Sulfuric acid
Nitric Acid (concentrated)	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases, copper, brass, any heavy metals
Nitrites	Acids
Nitroparaffins	Inorganic bases, amines
Oxalic Acid	Silver, mercury
Oxygen	Oils, grease, hydrogen; flammable liquids, solids, or gases
Perchloric Acid	Acetic anhydride, bismuth and its alloys, alcohol, paper, wood, grease and oils
Peroxides, organic	Acids (organic or mineral), avoid friction, store cold
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium chlorate and perchlorate	Sulfuric and other acids
Potassium Permanganate	Glycerin, ethylene glycol, benzaldehyde, sulfuric acid
Selenides	Reducing agents
Sodium nitrite	Ammonium nitrate and other ammonium salts
Sodium Peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl acetate, methyl acetate, furfural
Sulfides	Acids
Sulfuric Acid	Potassium chlorate, potassium perchlorate, potassium permanganate (or compounds with similar light metals, such as sodium, lithium,

Incompatible Chemicals List

	etc.)
Tellurides	Reducing agents

From Manufacturing Chemists' Association, Guide for Safety in the Chemical Laboratory, pp. 215-217, Van Nostrand Reinhold, 2nd Edition.

Policy Subject: **Chemicals Requiring Review Prior to Use**	Effective: 1/01/09
Affected Areas: Laboratories at the University	Review/Revised: 12/15/08

Policy

It shall be the policy of the University of Tennessee to comply with applicable regulations regarding hazardous substances. The Occupational Safety and Health Administration's (OSHA) Chemical Hygiene Plan requires review and approval for work involving "particularly hazardous" substances.

This plan has been developed to fulfill that requirement.

Scope

Appendix A of this procedure contains a list of chemicals have been identified as being particularly hazardous. The criteria used to develop this list include the following:

a. Carcinogens

b. Explosives

c. Highly reactive substances

d. Substances that have a low threshold for reporting if accidentally released to the environment

e. Extremely toxic substances

f. Reproductive hazards

g. Department of Homeland Security’s Chemical Facilities Anti-Terrorism Standard

A search of Appendix A may be conducted by the chemical's name or Chemical Abstract Services (CAS) number.

Note the requirements of this plan apply to chemicals that are stored in the work area, are in current use or have been proposed for use. This plan also applies to byproducts generated in the workplace. The requirements of this plan apply to substances containing more than 0.1 of 1% of the substances found in Appendix A or meet a similar hazard.

This program does not apply to radionuclides, biohazards or the Select Agents List.

Other Particularly Hazardous Substances Not Found on the List

Appendix A is not an all-inclusive list. When work with a particularly hazardous substance is proposed, it shall be the responsibility of the principal investigator to follow the approval process listed below.

Approval Process

Individuals working with chemicals should follow the steps below:

1. Review chemicals currently stored in the work area or that are will be used to determine if any substance is found on Appendix A. Determine whether the threshold concentration and quantity have been exceeded.

2. If one or more of the substances is present in greater than 0.1% complete Appendix B and submit to Environment, Health and Safety.

3. EHS will review the application, solicit additional information if necessary, and communicate the results of the review to the applicant.

4. The applicant and EHS will retain a copy of Appendix B.

Screening

Starting in 2009 and at least annually thereafter, EHS shall compare the annual chemical inventory to the list of chemicals found in Appendix A to identify chemicals that fall under this policy. When a substance is identified on the inventory that is also found in Appendix A, verification shall be made by EHS that an approval has been provided in accordance with this policy.

Standards

29 CFR 1910.1450
Department of Homeland Security, Chemical Facility Anti-terrorism Standard

Forms

1. List of Substances Requiring Review Before Use (Appendix A)
2 Hazardous Substance Use Review (Appendix B)

Appendix B
Hazardous Substance Use Review

Please see Appendix A of this plan to determine if there are any hazardous substances in the workplace that require review prior to use. Answers may be completed on a separate sheet of paper.

I. General Use Information

Location where substance will be used _____

Applicant's name and contact phone number _____

A. Describe how the substance will be used?

B. In which physical state (solid, liquid, gas) will this substance be used?

C. What concentrations will be used?

D. What quantity of the hazardous substance will be stored in the work area?

E. How will waste materials containing the hazardous substance be managed?

F. What provisions have been made for spill control?

G. Have less hazardous alternatives been investigated for substitution?

H. How will non-lab workers (custodians, maintenance) be protected?

I. Will medical monitoring of workers be necessary?

II. Personal Protective Equipment

A. What type(s) of personal protective equipment (PPE) will be used?

B. Will the PPE be discarded or decontaminated after use?

III. Training and Information

A. Will there be a Material Safety Data Sheet Available?

B. Will special signs or labels be necessary?

C. Will workers who handle the substance receive any special training?

IV. Controls

A. Will any of the following controls be necessary? (Check all that apply)

a. Chemical fume hood

b. Respiratory protection

c. Glove box

d. Controlled entry or other security features

e. Safety shower

f. Eye wash

g. Flammable liquid storage cabinet

h. Acid Storage Cabinet

V. **Other Safety, Health and Environmental Protection Information**

APPENDIX A By Name

CHEMICAL	CAS#	Minimum Amount (lbs)
(E)-CROTONALDEHYDE [(E)-2-BUTENAL]	123-73-9	
1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU)	13909-09-6	
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU)	13010-47-4	
1,1-Dimethylhydrazine (UDMH)	57-14-7	
1,2,3-Trichloropropane	96-18-4	
1,2-Dibromo-3-chloropropane	96-12-8	
1,2-Dibromoethane	106-93-4	
1,2-Dichloroethane	107-06-2	
1,2-Diethylhydrazine	1615-80-1	
1,2-Dimethylhydrazine	540-73-8	
1,2-Epoxybutane	106-88-7	
1,3-Bis(2-chloroethylthio)-n-propane	63905-10-2	CUM 100g
1,3-Butadiene	106-99-0	
1,3-Dichloropropene	542-75-6	
1,3-Propane Sultone	1120-71-4	
1,4-Bis(2-chloroethylthio)-n-butane	142868-93-7	CUM 100g
1,4-Butanediol Dimethylsulfonate	55-98-1	
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	
1,4-Dioxane	123-91-1	
1,5-Bis(2-chloroethylthio)-n-pentane	142868-94-8	CUM 100g
1,6-Dinitropyrene	42397-64-8	
1,8-Dinitropyrene	42397-65-9	
1-[(5-Nitrofurfurylidene)amino]-2-imidazolidinone	555-84-0	
1-Amino-2-methylanthraquinone	82-28-0	
1-CHLORO-2,4-DINITROBENZENE	99-65-0	
1-Chloro-2-methylpropene	513-37-1	
1H-Tetrazole	288-94-8	400
1-Naphthylamine	134-32-7	
1-Nitropyrene	5522-43-0	
2-(2-Formylhydrazino)-4-(5-nito-2-furyl)thiazole	3570-75-0	
2,2-DINITROPROPYL ACRYLATE	zzz	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	
2,4,6-TETRANITRO-N-METHYLANILINE	zzz	
2,4,6-Trichlorophenol	88-06-2	
2,4-Diaminoanisole	615-05-4	
2,4-Diaminoanisole Sulfate	39156-41-7	
2,4-Diaminotoluene	95-80-7	
2,4-DINITROPHENYLHYDRAZINE	zzz	
2,4-Dinitrotoluene	121-14-2	
2,6-Dimethylaniline (2,6-Xylidine)	87-62-7	
2,6-Dinitrotoluene	606-20-2	
2-Acetylaminofluorene	53-96-3	
2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole	712-68-5	
2-Aminoanthraquinone	117-79-3	
2-Aminonaphthalene	91-59-8	
2-Chloroethylchloro-methylsulfide	2625-76-5	CUM 100g
2-Methyl-1-nitroanthraquinone	129-15-7	
2-Methylaziridine	75-55-8	
2-Naphthylamine	91-59-8	
2-Nitofluorene	607-57-8	
2-Nitropropane	79-46-9	
3-(N-Nitrosomethylamino)propionitrile	60153-49-3	
3,3'-Dichloro-4,4'-diaminodiphenyl ether	28434-86-8	
3,3-Dichlorobenzidine	91-94-1	
3,3-Dichlorobenzidine Dihydrochloride	612-83-9	
3,3'-Dimethoxybenzidine	119-90-4	
3,3'-Dimethylbenzidine	119-93-7	
3,9-Dinitrofluoranthene	22506-53-2	
3-BROMOPROPYNE T-BUTYL PERBENZOATE	zzz	

3-Chloro-2-methylpropene	563-47-3	
3-Methylcholanthrene (3-MC)	56-49-5	
3-PROMOPROPYNE (PROPARGYL BROMIDE)	106-96-7	
4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone	64091-91-4	
4,4-Methylene-bis(2-chloraniline)	101-14-4	
4,4'-Methylene-bis(2-methylaniline)	838-88-0	
4,4-Methylenebis(N,N-dimethylbenzenamine)	101-61-1	
4,4-Methylenedianiline	101-77-9	
4,4-Methylenedianiline Dihydrochloride	13552-44-8	
4,4-Oxydianiline	101-80-4	
4,4'-Thiodianiline	139-65-1	
4-Aminobiphenyl (4-Aminodiphenyl)	92-67-1	
4-Chloro-o-phenylenediamine	95-83-0	
4-Dimethylaminoazobenzene	60-11-7	
4-Nitrobiphenyl	92-93-3	
4-Nitropyrene	57835-92-4	
4-Vinyl-1-cyclohexene Diepoxide	106-87-6	
4-Vinylcyclohexene	100-40-3	
5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)amino]-2-oxazolidinone	3795-88-8	
5-Methylchrysene	3697-24-3	
5-Nitroacenaphthene	602-87-9	
5-Nitrobenzotriazol	2338-12-7	400
6-Nitrochrysene	2/8/7496	
7,12-Dimethylbenz (a) anthracene	57-97-6	
7H-Dibenzo[c,g]carbazole	194-59-2	
A-a-C(2-Amino-9H-pyridol[2,3-b]indole)	26148-68-5	
ACETAL	105-57-7	
ACETALDEHYDE	75-07-0	
Acetamide	60-35-5	
ACETIC ACID	64-19-7	
ACETONE	67-64-1	
ACETONE CYANOHYDRIN	75-86-5	
ACETONE THIOSEMICARBAZIDE	1752-30-3	
ACETONITRILE	75-05-8	
ACETYLENE	74-86-2	
ACETYLIDES OF HEAVY METALS	zzz	
ACROLEIN [2-PROPENAL]	107-02-8	
ACRYLAMIDE	79-06-1	
ACRYLONITRILE [2-PROPENENITRILE]	107-13-1	
ACRYLYL CHLORIDE [2-PROPENOYL CHLORIDE]	814-68-6	
Adriamycin®	25316-40-9	
AF-2([2-(2-furyl)-3-(5-nitro-2-furyl)]	3688-53-7	
a-Hexachlorocyclohexane	319-84-6	
ALDICARB	116-06-3	
ALDRIN	309-00-2	
ALKYLLITHIUMS	CLASS	
ALLYL ALCOHOL [2-PROPEN-1-OL]	107-18-6	
ALLYLAMINE [2-PROPEN-1-AMINE]	107-11-9	
Aluminum (powder)	7429-90-5	100
ALUMINUM CHLORIDE ANHYDROUS	7446-70-0	
ALUMINUM ORPHORITE	zzz	
ALUMINUM PHOSPHIDE	20859-73-8	
ALUMINUM TRICHLORIDE	zzz	
AMAONAL	zzz	
AMATEX	zzz	
AMATOL	zzz	
AMINOPTERIN	N/A	
AMITON OXALATE	3734-97-2	
Amitrole	61-82-5	
AMMONAL	zzz	

AMMONIA (ANHYDROUS) - CONCENTRATION 20% OR GREATER	7664-41-7	
AMMONIUM HYDROXIDE	1336-21-6	
AMMONIUM NITRATE	6484-52-2	
Ammonium nitrate,	6484-52-2	400
AMMONIUM PERCHLORATE	7790-98-9	
Ammonium perchlorate	7790-98-9	400
AMMONIUM PICRATE	131-74-8	
Ammonium picrate	131-74-8	400
AMMONIUM SALT LATTICE	2307-55-3	
ANILINE	62-53-3	
Antimony Trioxide	1309-64-4	
ANTIMYCIN A	1397-94-0	
ANTU [1-NAPHTHALENYLTHIOUREA]	86-88-4	
Aramite®	140-57-8	
Aroclor® 1254 (under Polychlorinated Biphenyls)	11097-69-1	
Aroclor® 1260 (under Polychlorinated Biphenyls)	11096-82-5	
ARSENIC PENTOXIDE	1303-28-2	
Arsenic trichloride	7784-34-1	2.2
ARSENOUS OXIDE [ARSENIC TRIOXIDE]	1327-53-3	
ARSENOUS TRICHLORIDE	7784-34-1	
Arsine	7784-42-1	15
ARSINE [ARSENIC HYDRIDE]	7784-42-1	
ARYLLITHIUMS	CLASS	
Asbestos and Asbestos compounds	1332-21-4	
Auramine	492-80-8	
Aurothio-d-glucopyranose (Aurothioglucose)	12192-57-3	
Azaserine	115-05-6	
Azathioprine	446-86-6	
AZIDES OF HEAVY METALS	CLASS	
AZINPHOS-ETHYL	2642-71-9	
AZINPHOS-METHYL [GUTHION]	86-50-0	
Aziridine	151-56-4	
BARATOL	zzz	
Barium azide	18810-58-7	400
Barium Chromate	10294-40-3	
b-Butyrolactone	3068-88-0	
Benzene	71-43-2	
BENZENE, 1-(CHLOROMETHYL)-4-NITRO-	100-14-1	
BENZENEARSONIC ACID	98-05-5	
Benzidine	92-87-5	
BENZIMIDAZOLE	3615-21-2	
Benzo (a) pyrene (BAP)	65996-93-2	
Benzo[a]pyrene	50-32-8	
Benzofuran	271-89-6	
BENZOTRICHLORIDE [BENZOIC TRICHLORIDE]	98-07-7	
BENZOYL PEROXIDE	94-36-0	
Benzyl Violet 4B	1694-09-3	
Beryllium Aluminum Alloy	12770-50-2	
Beryllium Chloride	7787-47-5	
Beryllium Fluoride	7787-49-7	
Beryllium Hydroxide	13327-32-7	
Beryllium Oxide	1304-56-9	
Beryllium Phosphate	13598-15-7	
Beryllium Sulfate Tetrahydrate	7787-56-6	
Beryllium Zinc Silicate	39413-47-3	
BETA-PROPIOLACTONE	57-57-8	
b-Hexachlorocyclohexane	319-85-7	
BICYCLO[2.2.1] HEPTANE-2-CARBONITRILE	15271-41-7	
Bis(2-chloroethyl)sulfide	505-60-2	
Bis(2-chloroethylthio)methane	63869-13-6	CUM 100g

Bis(2-chloroethylthiomethyl)ether	63918-90-1	CUM 100g
Bis(chloroethyl) Nitrosourea	154-93-8	
Bis(chloromethyl) Ether (BCME)	542-88-1	
BIS(CHLOROMETHYL) KETONE	534-07-6	
Bis(dimethylamino)benzophenone	90-94-8	
BIS-TRINITROETHYL CARBONATE	zzz	
BIS-TRINITROETHYLNITRAMINE	zzz	
BITOSCANATE	4044-65-9	
Bleomycins	11056-06-7	
Boron tribromide	10294-33-4	45
Boron trichloride	10294-34-5	45
BORON TRICHLORIDE [TRICHLOROBORANE]	10294-34-5	
Boron trifluoride	7637-07-2	45
BORON TRIFLUORIDE [TRIFLUOROBORANE] 7637-07-2	7/2/7637	
BORON TRIFLUORIDE W/METHYL ETHER	353-42-4	
b-Propiolactone	57-57-8	
BROMADIOLONE	28772-56-7	
BROMINE	7726-95-6	
Bromine chloride	13863-41-7	45
Bromine trifluoride	7787-71-5	45
Bromodichloromethane	75-27-4	
BUTADIENE	106-99-0	
BUTYL TETRYL	zzz	
Butylated Hydroxyanisole (BHA)	25013-16-5	
BUTYLLITHIUMS	CLASS	
C.I. Acid Red 114	6459-94-5	
C.I. Basic Red 9 Monohydrochloride	569-61-9	
C.I. Direct Blue 15	2429-74-5	
C.I. Direct Brown 95 (Benzidine based dye)	16071-86-6	
CADMIUM AMIDE	22750-53-4	
CADMIUM OXIDE	1306-19-0	
CADMIUM STEARATE	2223-93-0	
Caffeic Acid	331-39-5	
CALCIUM ARSENATE	7778-44-1	
CALCIUM CARBIDE	75-20-7	
CALCIUM HYDRIDE	7789-78-8	
CALCIUM NITRATE	10124-37-5	
CAMPHECHLOR	8001-35-2	
CANTHARIDIN	56-25-7	
Captafol	6/1/2425	
CARBACHOL CHLORIDE	51-83-2	
CARBAMIC ACID	26419-73-8	
CARBOFURAN	1563-66-2	
Carbon Black	1333-86-4	
CARBON DISULFIDE	75-15-0	
CARBON MONOXIDE	630-08-0	
CARBON TETRACHLORIDE	56-23-5	
CARBONIC ACID	26419-73-8	
CARBONYL CHLORIDE (PHOSGENE)	75-44-5	
Carbonyl fluoride	353-50-4	45
Carbonyl sulfide	463-58-1	500
Catechol	120-80-9	
CHLORADANE	57-74-9	
Chlorambucil	305-03-3	
Chloramphenicol	56-75-7	
CHLORATES	CLASS	
Chlordane	57-74-9	
Chlordecone	143-50-0	
Chlorendic Acid	115-28-6	
Chlorinated Paraffins (C12, 60% Chlorine)	108171-26-2	

CHLORINE	7782-50-5	
Chlorine	7782-50-5	500
Chlorine pentafluoride	13637-63-3	15
Chlorine trifluoride	7790-91-2	45
CHLORMEQUAT CHLORIDE	999-81-5	
CHLOROACETIC ACID	79-11-8	
CHLOROBUTADIENE	627-22-5	
CHLOROFORM	67-66-3	
CHLOROMETHYL ETHER	542-88-1	
CHLOROMETHYL METHYL ETHER (AND RELATED COMPOUNDS)	107-30-2	
CHLOROPHACINONE	3691-35-8	
Chloroprene	126-99-8	
Chlorosarin	1445-76-7	CUM 100g
Chlorosoman	7040-57-5	CUM 100g
Chlorothalonil	1897-45-6	
CHLOROTRIFLUOROETHYLENE	79-38-9	
CHLOROXURON	1982-47-4	
Chlorozotocin	54749-90-5	
CHROMIUM TRIOXIDE AND OTHER CHROMIUM (VI) SALTS	10025-73-7	
Cisplatin	15663-27-1	
Citrus Red No.2	6358-53-8	
COBALT	62207-76-5	
COBALT CARBONYL	10210-68-1	
COLCHICINE	64-86-8	
COPPER ACETYLIDE	12540-13-5	
COUMAPHOS	56-72-4	
COUMATETRALYL	5836-29-3	
CRESOL, O-	95-48-7	
CRIMIDINE	535-89-7	
CROTONALDEHYDE [2-BUTENAL]	4170-30-3	
CUMENE	98-82-8	
CUMENE HYDROPEROXIDE	zzz	
Cupferron	135-20-6	
CUPROUS NITRIDE	zzz	
Cyanogen	460-19-5	45
CYANOGEN BROMIDE	506-68-3	
Cyanogen chloride	506-77-4	15
CYANOGEN IODIDE	506-78-5	
CYANURIC FLUORIDE	675-14-9	
CYANURIC TRAIZIDE	zzz	
Cycasin	14901-08-7	
CYCLOHEXANE	110-82-7	
CYCLOHEXIMIDE	66-81-9	
CYCLOHEXYLAMINE [CYCLOHEXANAMINE]	108-91-8	
CYCLOPENTENE	287-92-3	
Cyclophosphamide	50-18-0	
CYCLOTETRAMETHYLENE TETRANITRAMINE	2691-41-0	
CYCLOTRIMETHYLENE TETRANITRAMINE	zzz	
CYCLOTRIMETHYLENE TRINITRAMINE	zzz	
Danthron	117-10-2	
Daunomycin	20830-81-3	
DDT (Dichlorodiphenyltrichloroethane)	50-29-3	
DECABORANE (14)	17702-41-9	
Decabromobiphenyl	13654-09-6	
DF	676-99-3	CUM 100g
Di(2-ethylhexyl) Phthalate	117-81-7	
DIACETYL PEROXIDE	110-22-5	
DIACETYLENE	zzz	
DIALIFOR	10311-84-9	
DIAMINOTRINITROBENZENE	zzz	

DIAMINOTRINITROMETHYLENE TETRANITRAMINE	zzz	
Diazodinitrophenol	87-31-0	400
DIAZODINITROPHENOL	zzz	
DIAZOMETHANE	334-88-3	
Dibenz[a,h]acridine	226-36-8	
Dibenz[a,h]anthracene	53-70-3	
Dibenz[a,j]acridine	224-42-0	
Dibenzo[a,e]pyrene	192-65-4	
Dibenzo[a,h]pyrene	189-64-0	
Dibenzo[a,i]pyrene	189-55-9	
Dibenzo[a,l]pyrene	191-30-0	
DIBORANE	19287-45-7	
Diborane	19287-45-7	15
Dicarbazine	3/4/4342	
DICHLOROMETHANE	75-09-2	
Dichlorosilane	4109-96-0	45
Dichlorvos	62-73-7	
DICRYLAMINE	zzz	
DICYCLOPENTADIENE	zzz	
DIEPOXYBUTANE [2,2' BIOXIRANE]	1464-53-5	
DIETHYL ETHER	zzz	
Diethyl methylphosphonite	15715-41-0	2.2
Diethyl Sulfate	64-67-5	
Diethyleneglycol dinitrate	693-21-0	400
DIETHYLNITROSAMINE (AND RELATED NITROSAMINES)	CLASS	
Diethylstilbestrol	56-53-1	
DIGITOXIN	71-63-6	
Diglycidyl Resorcinol Ether	101-90-6	
DIGOXIN	20830-75-5	
Dihydrosafrole	94-58-6	
DIISOPROPYL PEROXYHYDROCARBONATE	zzz	
Diisopropyl Sulfate	10/6/2973	
DIMETHOATE	60-51-5	
DIMETHYL FORMAMIDE	68-12-2	
DIMETHYL SULFATE	77-78-1	
DIMETHYL SULFOXIDE	67-68-5	
Dimethylcarbamal Chloride	79-44-7	
DIMETHYLDICHLOROSILANE	75-78-5	
DIMETHYL-P-PHENYLENEDIAMINE	99-98-9	
DIMETILAN	664-64-4	
Dingu	55510-04-8	400
DINITORESORCINOL	zzz	
DINITROCRESOL [4,6-DINITRO-O-CRESOL]	534-52-1	
DINITROETHYLENEUREA	zzz	
Dinitrofluoranthene	105735-71-5	
Dinitrogen tetroxide	10544-72-6	15
DINITROGLYCERINE	zzz	
Dinitrophenol	25550-58-7	400
DINITROPHENOL	51-28-5	
DINITROPHENOXY STARCH	zzz	
DINITROPHENYL HYDRAZINE	119-26-6	
Dinitroresorcinol	519-44-8	400
DINITROTOLUENE	25321-14-6	
DINOSEB	88-85-7	
DINOTERB	1420-07-1	
DIOXANE	123-91-1	
DIPHACINONE	82-66-6	
Dipicryl sulfide	2217-06-3	400
DIPICRYL SULFONE	zzz	
Dipicrylamine [or] Hexyl	131-73-7	400

Direct Black 38	1937-37-7		
Direct Blue 6	2602-46-2		
Disperse Blue 1	2475-45-8		
DISULFOTON	298-04-4		
DITHIAZANINE IODIDE	514-73-8		
DITHIOBIURET	541-53-7		
DIVINYL ACETYLENE	zzz		
Doxorubicin hydrochloride (See Adriamycin®)	25316-40-9		
EDNATOL	zzz		
EMETINE, DIHYDROCHLORIDE	316-42-7		
ENDOSULFAN	115-29-7		
ENDOTHION 2778-04-3	4/3/2778		
ENDRIN	72-20-8		
EPICHLOROHYDRIN [(CHLOROMETHYL)OXIRANE]	106-89-8		
EPN	2104-64-5		
ERGOCALCIFEROL	50-14-6		
ERGOTAMINE TARTRATE	379-79-3		
Erionite	66733-21-9		
ERYTHRITOL	149-32-6		
ERYTHRITOL TETRANITRATE	7297-25-8		
ETHANOL	64-17-5		
ETHIDIUM BROMIDE	zzz		
ETHYL ACETATE	141-78-6		
Ethyl Acrylate	140-88-5		
Ethyl Carbamate	51-79-6		
Ethyl Methanesulfonate	62-50-0		
ETHYL METHYL KETONE PEROXIDE	70299-48-8		
ETHYL NITRITE	109-95-5		
Ethyl phosphonyl difluoride	753-98-0	CUM 100g	
ETHYL-4,4-DINITROPENTANOATE	zzz		
Ethyldiethanolamine	139-87-7		220
ETHYLENE DIBROMIDE	106-93-4		
Ethylene Dichloride	107-06-2		
ETHYLENE FLUOROHYDRIN	371-62-0		
ETHYLENE GLYCOL DIMETHYL ETHER	629-14-1		
ETHYLENE OXIDE [OXIRANE]	75-21-8		
Ethylene Thiourea	96-45-7		
ETHYLENEDIAMINE [1,2-ETHANEDIAMINE]	107-15-3		
ETHYLENEIMINE [AZIRIDINE]	151-56-4		
Ethylphosphonothioic dichloride	993-43-1		2.2
ETHYL-TETRYL	zzz		
FENAMIPHOS	22224-92-6		
FLUENETIL	4301-50-2		
FLUORIDES (INORGANIC)	CLASS		
FLUORINE	7782-41-4		
Fluorine	7782-41-4		15
FLUOROACETAMIDE	640-19-7		
FLUOROACETIC ACID	144-49-0		
FLUOROACETYL CHLORIDE	359-06-8		
FLUOROURACIL	51-21-8		
FORMALDEHYDE [FORMALIN]	50-00-0		
FORMETANATE HYDROCHLORIDE	23422-53-9		
FORMPARANATE	17702-57-7		
FUBERIDAZOLE	3878-19-1		
FULMINATING GOLD	CLASS		
FULMINATING MERCURY	CLASS		
FULMINATING PLATINUM	CLASS		
FULMINATING SILVER	CLASS		
FURAN	110-00-9		
GALATINIZED NITROCELLULOSE	zzz		

GALLIUM TRICHLORIDE	13450-90-3	
GELATINIZED NITROCELLULOSE	zzz	
GENZENE	zzz	
Germane	7782-65-2	45
GERMANIUM	7440-56-4	
Germanium tetrafluoride	7783-58-6	15
g-Hexachlorocyclohexane	58-89-9	
Glu-P-1 (2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole)	67730-11-4	
Glu-P-2 (2-Aminodipyrido[1,2-a:3',2'-d]imidazole)	67730-10-3	
Glycidaldehyde	765-34-4	
Glycidol	556-52-5	
Griseofulvin	126-07-8	
GUANYL	zzz	
GUANYL NITRASAMINO	zzz	
Guanyl nitrosaminoguanylidene hydrazine		400
GUANYLTETRAZENE	zzz	
HC Blue No.1	2784-94-3	
HEAVY METAL AZIDES	CLASS	
Heptachlor	76-44-8	
Hexabromobiphenyl	67774-32-7	
Hexachlorobenzene	118-74-1	
Hexachlorocyclohexane	608-73-1	
Hexachloroethane	67-72-1	
Hexaethyl tetraphosphate and compressed gas mixtures	757-58-4	500
Hexafluoroacetone	684-16-2	45
HEXAGEN	zzz	
HEXAMETHYLPHOSPHORAMIDE	680-31-9	
HEXANE (AND RELATED HYDROCARBONS)	110-54-3	
HEXANITE	zzz	
HEXANITRODIPHENYLAMINE	131-73-7	
HEXANITROSTIBILENE	zzz	
Hexanitrostilbene	20062-22-0	400
HEXANITROSTILBENE	zzz	
HEXOGEN	zzz	
Hexolite	121-82-4	400
HMX	2691-41-0	400
HN1 (nitrogen mustard-1)	538-07-8	CUM 100g
HN2 (nitrogen mustard-2)	51-75-2	CUM 100g
HN3 (nitrogen mustard-3)	555-77-1	CUM 100g
HYDRAZINE	302-01-2	
Hydrazine Sulfate	10034-93-2	
HYDRAZINIUM NITRATE	13464-92-6	
Hydrazobenzene	122-66-7	
HYDRAZOIC ACID	7782-79-8	
HYDROBROMIC ACID AND HYDROGEN BROMIDE	10035-10-6	
HYDROCHLORIC ACID AND HYDROGEN CHLORIDE	7647-01-0	
HYDROCYANIC ACID	74-90-8	
HYDROGEN	133-74-0	
Hydrogen bromide (anhydrous)	10035-10-6	500
HYDROGEN CHLORIDE	7647-01-0	
Hydrogen chloride (anhydrous)	7647-01-0	500
HYDROGEN CYANIDE	74-90-8	
Hydrogen cyanide	74-90-8	15
Hydrogen fluoride (anhydrous)	7664-39-3	45
HYDROGEN FLUORIDE AND HYDROFLUORIC ACID	7664-39-3	
Hydrogen iodide, anhydrous	10034-85-2	500
HYDROGEN PEROXIDE	7722-84-1	
Hydrogen peroxide (concentration of at least 35%)	7722-84-1	400
Hydrogen selenide	7783-07-5	15
HYDROGEN SELENIDE 7783-07-5	7/5/7783	

Hydrogen sulfide	7783-06-4	45
HYDROGEN SULFIDE 7783-06-4	6/4/7783	
HYDROQUINONE	123-31-9	
Indeno[1,2,3-cd]pyrene	193-39-5	
IODINE	7553-56-2	
Iron Dextran Complex	9004-66-4	
IRON, PENTACARBONYL-	13463-40-6	
ISOBENZAN	297-78-9	
ISOBUTYRONITRILE	78-82-0	
ISOCYANIC ACID,3,4-DICHLOROPHENYL ESTER	102-36-3	
ISODRIN	465-73-6	
ISOPHORONE DIISOCYANATE	4098-71-9	
Isoprene	78-79-5	
ISOPROPYL CHLOROFORMATE	108-23-6	
ISOPROPYL ETHER	108-20-3	
ISOPROPYLMETHYPYRAZOLYL DIMETHYLCARBAMATE	119-38-0	
Isopropylphosphonothioic dichloride	1498-60-8	2.2
Isopropylphosphonyl difluoride	677-42-9	CUM 100g
Kanechlor® 500	37317-41-2	
KETENE	463-51-4	
Lasiocarpine	303-34-4	
Lead Acetate	301-04-2	
LEAD AMIDE	zzz	
LEAD AND ITS INORGANIC COMPOUNDS	CLASS	
LEAD AZIDE	13424-46-9	
Lead azide	13424-46-9	400
LEAD MANNITE	zzz	
LEAD MONONITRORESORCINATE	zzz	
LEAD PICRATE	zzz	
LEAD SALTS	CLASS	
Lead styphnate	15245-44-0	400
LEAD STYPHNATE	zzz	
LEPTOPHOS	21609-90-5	
LEWISITE	541-25-3	
Lewisite 1	541-25-3	CUM 100g
Lewisite 2	40334-69-8	CUM 100g
Lewisite 3	40334-70-1	CUM 100g
LINDANE [HEXACHLOROCYCLOHEXANE]	58-89-9	
LITHIUM	7439-93-2	
LITHIUM ALUMINUM HYDRIDE	zzz	
LITHIUM HYDRIDE	7580-67-8	
Magenta (containing CI Basic Red 9)	632-99-5	
Magnesium (powder)	7439-95-4	100
MAGNESIUM ORPHORITE	zzz	
MALONONITRILE	109-77-3	
MANGANESE, TRICARBONYL METHYL-	12108-13-3	
MANNITOL HEXANITRATE	15825-70-4	
MDEA	105-59-9	220
MeA-a-C (2-Amino-3-methyl-9H-pyrido[2,3-b]indole	68006-83-7	
Medroxyprogesterone acetate	71-58-9	
MeIQ (2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)	77094-11-2	
MeIQx (2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)	77500-04-0	
Melphalan	148-82-3	
MERCURIC ACETATE	1600-27-7	
MERCURIC CHLORIDE	7487-94-7	
MERCURIC OXIDE	21908-53-2	
MERCURY	7439-97-6	
Mercury fulminate	628-86-4	400
MERCURY TARTATE	zzz	
MERCURY TARTRATE	zzz	

Merphalan	531-76-0	
METHACRYLONITRILE	126-98-7	
METHACRYLOYL CHLORIDE	920-46-7	
METHACRYLOYLOXYETHLY ISOCYANATE	30674-80-7	
METHAMIDOPHOS	10265-92-6	
METHANESULFONYL FLUORIDE	558-25-8	
METHANOL	67-56-1	
METHIDATHION	950-37-8	
METHIOCARB [MERCAPTODIMETHUR]	2032-65-7	
METHOMYL	16752-77-5	
METHOXYETHYLMERCURIC ACETATE	151-38-2	
METHYL 2-CHLOROACRYLATE	80-63-7	
METHYL ACETYLENE	zzz	
METHYL BROMIDE [BROMOMETHANE]	74-83-9	
METHYL CHLOROFORMATE	79-22-1	
Methyl Chloromethyl Ether	107-30-2	
METHYL CYCLOPENTANE	96-37-7	
METHYL ETHYL KETONE	78-93-3	
METHYL FLUOROSULFATE	421-20-5	
METHYL FLURORACETATE	453-18-9	
METHYL HYDRAZINE	60-34-4	
METHYL IODIDE	74-88-4	
METHYL ISOCYANATE [ISOCYANATOMETHANE]	624-83-9	
METHYL ISOTHIOCYANATE	556-61-6	
Methyl mercaptan	74-93-1	500
METHYL MERCAPTAN [METHANETHIOL]	74-93-1	
Methyl Methanesulfonate	66-27-3	
METHYL PARATHION [PARATHION METHYL]	298-00-0	
METHYL PHOSPHONIC DICHLORIDE	676-97-1	
METHYL THIOCYANATE	556-64-9	
METHYL TRICHLOROSILANE	75-79-6	
METHYL VINYL KETONE	78-94-4	
METHYL-4,4-DINITROPENTANOATE	zzz	
Methylazoxymethanol	590-96-5	
Methylazoxymethanol acetate	592-62-1	
Methylchlorosilane	993-00-0	45
METHYL-ISOBUTYL KETONE	zzz	
METHYLMERCURIC DICYANAMIDE	502-39-6	
Methylphosphonothioic dichloride	676-98-2	2.2
Methylthiouracil	56-04-2	
METOLCARB	1129-41-5	
Metronidazole	443-48-1	
MEXACARBATE	315-18-4	
Michler's Ketone [4,4-(Dimethylamino)benzophenone]	90-94-8	
Mirex	2385-85-5	
MITOMYCIN C	50-07-7	
Monocrotaline	315-22-0	
MONOCROTOPHOS	6923-22-4	
MONONITROTOLUENE	zzz	
MUSCIMOL [5-(AMINOMETHYL)-3-ISOXAZOLOL]	2763-96-4	
MUSTARD GAS	505-60-2	
N,N-(2-diethylamino)ethanethiol	100-38-9	2.2
N,N-(2-diisopropylamino)ethanethiol	5842-07-9	2.2
N,N-(2-dimethylamino)ethanethiol	108-02-1	2.2
N,N-(2-dipropylamino)ethanethiol	5842-06-8	2.2
N,N-Bis(chloroethyl)-2-naphthylamine (Chlornaphazine)	494-03-1	
N,N'-Diacetylbenzidine	613-35-4	
N,N-Diethyl phosphoramidic dichloride	1498-54-0	2.2
N,N-Diethyldithiocarbamic acid 2-chloroallyl ester	95-06-7	
N,N-Diisopropyl phosphoramidic dichloride	23306-80-1	2.2

N,N-Dimethyl phosphoramidic dichloride	677-43-0	2.2
N,N-Dipropyl phosphoramidic dichloride	40881-98-9	2.2
N-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide	531-82-8	
Nafenopin	3771-19-5	
N-Ethyl-N-nitrosourea	759-73-9	
NICKEL CARBONYL [NICKEL TETRACARBONYL]	13463-39-3	
NICOTINE SULFATE	65-30-5	
Niridazole	61-57-4	
NITRATED CARBOHYDRATE	zzz	
NITRATED GLUCOSIDE	zzz	
NITRATED POLYHYDRIC ALCOHOL	zzz	
NITRIC ACID	7697-37-2	
Nitric acid	7697-37-2	400
Nitric oxide	10102-43-9	15
NITRIC OXIDE [NITROGEN OXIDE (NO)]	10102-43-9	
Nitrilotriacetic Acid	139-13-9	
NITROBENZENE	98-95-3	
Nitrobenzene	98-95-3	100
Nitrocellulose	9004-70-0	400
Nitrofen	1836-75-5	
NITROGEN DIOXIDE	10102-44-0	
NITROGEN MUSTARD [MECHLORETHAMINE]	51-75-2	
Nitrogen mustard hydrochloride	55-86-7	2.2
Nitrogen Mustard Hydrochloride	55-86-7	
Nitrogen Mustard N-oxide	126-85-2	
NITROGEN TRICHLORIDE	10025-85-1	
NITROGEN TRIIODIDE	13444-85-4	
Nitrogen trioxide	10544-73-7	15
NITROGLYCERIDE	zzz	
NITROGLYCERIN	55-63-0	
Nitroglycerine	55-63-0	400
NITROGLYCIDE	zzz	
NITROGLYCOL	zzz	
NITROGUANDINE	zzz	
NITROGUANIDIENE	556-88-7	
Nitromannite	15825-70-4	400
Nitromethane	75-52-5	400
NITRONIUM PERCHLORATE	zzz	
NITROPARAFFINS	zzz	
Nitrostarch	9056-38-6	400
Nitrosyl chloride	2696-92-6	15
Nitrotriazolone	932-64-9	400
NITROUREA	556-89-8	
N-Methyl-N-nitro-N-nitrosoguanidine (MNNG)	70-25-7	
N-Methyl-N-nitrosourea	684-93-5	
N-Methyl-N-nitrosourethane	615-53-2	
N-Nitrosodiethanolamine	1116-54-7	
N-Nitrosodiethylamine	55-18-5	
N-Nitrosodimethylamine	62-75-9	
N-Nitrosodi-n-butylamine	924-16-3	
N-Nitrosodi-n-propylamine	621-64-7	
N-Nitrosomethylethylamine	10595-95-6	
N-Nitrosomethylvinylamine	4549-40-0	
N-Nitrosomorpholine	59-89-2	
N-Nitroso-n-butyl-N-(3-carboxypropyl)amine	38252-74-3	
N-Nitroso-n-butyl-N-(4-hydroxybutyl)amine	11/6/3817	
N-Nitroso-N-ethylurea	759-73-9	
N-Nitrosonornicotine	16543-55-8	
N-Nitrosopiperidine	100-75-4	
N-Nitrosopyrrolidine	930-55-2	

N-Nitrososarcosine	13256-22-9	
NORBORMIDE	991-42-4	
Norethisterone	68-22-4	
o,o-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate	78-53-5	2.2
o-Aminoazotoluene	97-56-3	
o-Anisidine	90-04-0	
o-Anisidine Hydrochloride	134-29-2	
Octabromobiphenyl	61288-13-9	
Octolite	57607-37-1	400
Octonal	78413-87-3	400
O-DINITROBENZENE	zzz	
Oil Orange SS	2646-17-5	
O-Mustard (T)	63918-89-8	CUM 100g
o-Nitroanisole	91-23-6	
ORGANIC ACID HALIDES AND HYDRIDES	CLASS	
ORGANIC AMINE NITRATES	CLASS	
ORGANIC NITRAMINES	CLASS	
ORGANIC PEROXIDES	CLASS	
ORGANORHODIUM COMPLEX (PMN-82-147)	CLASS	
OSMIUM TETROXIDE	20816-12-0	
o-Tolidine (3,3'-dimethylbenzidine)	119-93-7	
o-Toluidine	95-53-4	
o-Toluidine Hydrochloride	636-21-5	
OUABAIN	630-60-4	
OXAMYL	23135-22-0	
Oxazapam	604-75-1	
OXYGEN	7782-44-7	
Oxygen difluoride	7783-41-7	15
OXYGEN DIFLUORIDE (FLUORINE MONOXIDE)	7783-41-7	
Oxymetholone	434-07-1	
OZONE	10028-15-6	
OZONIDES	CLASS	
Palygorshite (attapulgite)	12174-11-7	
p-Aminoazobenzene	60-09-3	
Panfuran S	794-93-4	
PARAQUAT DICHLORIDE	1910-42-5	
PARAQUAT METHOSULFATE	2074-50-2	
PARIS GREEN [CUPRIC ACETOARSENITE]	12002-03-8	
PBBs (Polybrominated Biphenyls)	67774-32-7	
PCBs (Polychlorinated Biphenyls)	1336-36-3	
p-Chloroaniline	106-47-8	
p-Chloro-o-toluidine	95-69-2	
p-Chloro-o-toluidine Hydrochloride	3165-93-3	
p-Cresidine	120-71-8	
PENTABORANE	19624-22-7	
PENTADECYLAMINE	2570-26-5	
Pentolite	8066-33-9	400
PENTOLITE	zzz	
PERACETIC ACID [ETHANEPEROXOIC ACID]	79-21-0	
PERCHLORATES OF HEAVY METALS	CLASS	
PERCHLORIC ACID (AND INORGANIC PERCHLORATES)	7601-90-3	
Perchloroethylene	127-18-4	
PERCHLOROMETHYLMERCAPTAN	594-42-3	
Perchloryl fluoride	7616-94-6	45
PEROXIDES	CLASS	
PEROXYACETIC ACID	79-21-0	
PETN	78-11-5	400
Phenacetin	62-44-2	
Phenazopyridine Hydrochloride	136-40-3	
Phenobarbital	50-06-6	

PHENOL	108-95-2	
PHENOL, 3-(METHYLETHYL)-, METHYCARBAMATE	64-00-6	
PHENOL,2,2'-THIOBIS(4-CHLORO-6-METHYL)	4418-66-0	
PHENOXARSINE,10,10'-OXYDI-	58-36-6	
Phenoxybenzamine Hydrochloride	63-92-3	
PHENYL DICHLOROARSINE	696-28-6	
Phenyl Glycidyl Ether	122-60-1	
PHENYLDICHLOROARSINE (LEWISITE VARIANT)	696-28-6	
PHENYLHYDRAZINE HYDROCHLORIDE	59-88-1	
PHENYLMERCURY ACETATE	62-38-4	
PHENYLSILATRANE	2097-19-0	
PHENYLTHIOUREA	103-85-5	
Phenytoin	57-41-0	
PhIP (2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine)	105650-23-5	
PHORATE	298-02-2	
PHOSACETIM	4104-14-7	
PHOSFOLAN	947-02-4	
Phosgene	75-44-5	15
PHOSGENE (CARBONYL CHLORIDE)	75-44-5	
PHOSMET	732-11-6	
Phosphine	7803-51-2	15
PHOSPHINE (HYDROGEN PHOSPHIDE)	7803-51-2	
PHOSPHONOTHIOIC ACID	50782-69-9	
Phosphorus	7723-14-0	400
PHOSPHORUS (YELLOW OR WHITE)	7723-14-0	
PHOSPHORUS OXYCHLORIDE	10025-87-3	
Phosphorus oxychloride	10025-87-3	220
PHOSPHORUS PENTACHLORIDE	10026-13-8	
PHOSPHORUS PENTOXIDE	1314-56-3	
PHOSPHORUS TRICHLORIDE	12/2/7719	
Phosphorus trichloride	7719-12-2	45
PHYSOSTIGMINE	57-47-6	
PHYSOSTIGMINE, SALICYLATE (1:1)	57-64-7	
PICRAMIC ACID	96-91-3	
PICRAMIDE	zzz	
PICRATOL	zzz	
PICRIC ACID (DRY)	88-89-1	
Picrite	556-88-7	400
PICROTOXIN	124-87-8	
PICRYL CHLORIDE	88-88-0	
PICRYL FLUORIDE	zzz	
PICRYL SULPHONIC ACID	zzz	
Piperazine Estrone Sulfate	7280-37-7	
PIPERDINE	110-89-4	
POLYNITRO ALIPHATIC COMPOUND	CLASS	
POTASSIUM (METAL)	9/7/7440	
POTASSIUM AMIDE	17242-52-3	
POTASSIUM ARSENITE	10124-50-2	
Potassium bromate	1/2/7758	
Potassium chlorate	3811-04-9	400
POTASSIUM CYANIDE	151-50-8	
POTASSIUM DINITROBENZOFOROXANE	zzz	
POTASSIUM HYDRIDE AND SODIUM HYDRIDE	7693-26-7	
Potassium nitrate	7757-79-1	400
POTASSIUM NITROMINOTETRAZOLE	7646-69-7	
Potassium perchlorate	7778-74-7	400
Potassium permanganate	7722-64-7	400
POTASSIUM SILVER CYANIDE	506-61-6	
Procarbazine Hydrochloride	366-70-1	
PROMECARB	2631-37-0	

PROPARGYL BROMIDE [3-BROMOPROPYNE]	106-96-7		
PROPIONITRILE [PROPANENITRILE]	107-12-0		
PROPIOPHENONE, 4'-AMINO-	70-69-9		
PROPYL CHLOROFORMATE	109-61-5		
PROPYLENE OXIDE [METHYLOXIRANE]	75-56-9		
PROPYLENEIMINE [2-METHYLAZIRIDINE]	75-55-8		
Propylphosphonothioic dichloride	2524-01-8		2.2
Propylphosphonyl difluoride	690-14-2	CUM 100g	
Propylthiouracil	51-52-5		
PROTHOATE	2275-18-5		
PYRENE	129-00-0		
PYRIDINE	110-86-1		
PYRIDINE,4-AMINO-	504-24-5		
PYRIDINE,4-NITRO-,1-OXIDE	1124-33-0		
PYRIMINIL	53558-25-1		
QL	57856-11-8	CUM 100g	
Radon	10043-92-2		
RDX	121-82-4		400
RDX and HMX mixtures	121-82-4		400
Reserpine	50-55-5		
Saccharin	81-07-2		
Safrole	94-59-7		
SALCOMINE	14167-18-1		
SARIN	107-44-8		
Sarin	107-44-8	CUM 100g	
SELENIOUS ACID	7783-00-8		
Selenium hexafluoride	7783-79-1		15
Selenium Sulfide	7446-34-6		
SEMICARBAZIDE HYDROCHLORIDE	563-41-7		
Sesquimustard	3563-36-8	CUM 100g	
SILICON TETRACHLORIDE	10026-04-7		
Silicon tetrafluoride	7783-61-1		45
SILVER ACETYLIDE	7659-31-6		
SILVER AMIDE	65235-79-2		
SILVER AND ITS COMPOUNDS	7440-22-4		
SILVER AZIDE	13863-88-2		
SILVER STYPHNATE	zzz		
SILVER TETRAZENE	13086-63-0		
SODATOL	zzz		
SODIUM	7440-23-5		
SODIUM AMATOL	zzz		
SODIUM AMIDE	7782-92-5		
SODIUM ARSENATE	7631-89-2		
SODIUM ARSENITE	7784-46-5		
SODIUM AZIDE	26628-22-8		
Sodium azide	26628-22-8		400
SODIUM BOROHYDRIDE	16940-66-2		
SODIUM CACODYLATE	124-65-2		
Sodium chlorate	7775-09-9		400
SODIUM CYANIDE (NA(CN))	143-33-9		
SODIUM DINITRO-O-CRESOLATE	zzz		
Sodium Equilin Sulfate	16680-47-0		
Sodium Estrone Sulfate	438-67-5		
SODIUM FLUOROACETATE	62-74-8		
SODIUM HYDRIDE	7646-69-7		
SODIUM HYDROXIDE AND POTASSIUM HYDROXIDE	1310-73-2		
Sodium nitrate	7631-99-4		400
SODIUM NITRATE-POTASSIUM NITRATE EXPLOSIVE MIXTURE	7632-00-0		
Sodium o-phenylphenate	132-27-4		
SODIUM PICRAMATE	zzz		

SODIUM SELENATE	13410-01-0	
SODIUM SELENITE	10102-18-8	
SODIUM TELLURITE	10102-20-2	
Soman	96-64-0	CUM 100g
STANNANE, ACETOXYTRIPHENYL-	900-95-8	
STANNIC CHLORIDE	7646-78-8	
Sterigmatocystin	10048-13-2	
Stibine	7803-52-3	15
Streptozotocin	18883-66-4	
Strontium Chromate (7789-06-2)	6/2/7789	
STRYCHININE	57-24-9	
STRYCHININE, SULFATE	60-41-3	
STYPHNIC ACID	82-71-3	
STYRENE	100-42-5	
Styrene-7,8-oxide	96-09-3	
Sulfallate	95-06-7	
SULFUR CHLORIDE	10025-67-9	
Sulfur dioxide (anhydrous)	7446-09-5	500
SULFUR DIOXIDE (LIQUID) 7446-09-5	9/5/7446	
Sulfur mustard (Mustard gas (H))	505-60-2	CUM 100g
SULFUR TETRAFLUORIDE	7783-60-0	
Sulfur tetrafluoride	7783-60-0	15
SULFUR TRIOXIDE [SULFURIC ANHYDRIDE] 7446-11-9	11/9/7446	
SULFURIC ACID	7664-93-9	
SYPHNIC ACID	zzz	
TABUN	77-81-6	
Tabun	77-81-6	CUM 100g
Tamoxifen and its salts	CLASS	
T-BUTYL PERBENZOATE	zzz	
T-BUTYL PEROXYACETATE	zzz	
T-BUTYLHYDROPEROXIDE	zzz	
T-DIBUTYL PEROXIDE	zzz	
TELLURIUM HEXAFLUORIDE	7783-80-4	
Tellurium hexafluoride	7783-80-4	15
TERT-BUTYL HYDROPEROXIDE	zzz	
TETAHYDROFURAN	zzz	
TETRACENE	zzz	
TETRAFLUOROETHYLENE	116-14-3	
TETRAHYDROFURAN	109-99-9	
TETRAHYDRONAPHTHALENE	119-64-2	
TETRAMETHYLLEAD [TETRAMETHYLPLUMBANE]	75-74-1	
Tetranitroaniline	53014-37-2	400
TETRANITROCARBAZOLE	641-16-7	
TETRANITROMETHANE	509-14-8	
TETRAZENE	109-27-3	
Tetrazene	109-27-3	400
TETRYL	479-45-8	
THALLIUM SULFATE	10031-59-1	
THALLOUS CARBONATE[THALLIUM(L)CARBONATE]	6533-73-9	
THALLOUS CHLORIDE	7791-12-0	
THALLOUS MALONATE	2757-18-8	
THALLOUS SULFATE [THALLIUM(L) SULFATE]	7446-18-6	
Thioacetamide	62-55-5	
THIOCARBAZIDE	2231-57-4	
Thiodiglycol	111-48-8	2.2
THIOFANOX	39196-18-4	
THIOSEMICARBAZIDE	79-19-6	
Thiotepa; Tris(1-aziridinyl)phosphine Sulfide	52-24-4	
Thiourea	62-56-6	
THIOUREA, (2-CHLOROPHENYL)-	5344-82-1	

THIOUREA, (2-METHYLPHENYL)-	614-78-8	
Thorium Dioxide	1314-20-1	
TITANIUM TETRACHLORIDE	7550-45-0	
Titanium tetrachloride	7550-45-0	45
TNT	118-96-7	400
TOLUENE	108-88-3	
TOLUENE DIISOCYANATE	26471-62-5	
TOLUENE-2,4-DIISOCYANATE	584-84-9	
TOLUENE-2,6-DIISOCYANATE	91-08-7	
Torpex	67713-16-0	400
Toxaphene	8001-35-2	
Treosulfan	299-75-2	
TRIALKYALUMINUMS	CLASS	
TRIAMIPHOS	1031-47-6	
TRICHLORO (CHLOROMETHYL) SILANE	1558-25-4	
TRICHLORO(DICHLOROPHENYL)SILANE	27137-85-5	
Trichloroethylene	79-01-6	
TRICHLORONATE	327-98-0	
Triethanolamine	102-71-6	220
Triethanolamine hydrochloride	637-39-8	220
TRIETHOXYSILANE	998-30-1	
Triethyl phosphite	122-52-1	220
TRIETHYLENE GLYCOL DINITRATE	112-27-6	
TRIFLUOROACETIC ACID	76-05-1	
Trifluoroacetyl chloride	354-32-5	45
Trifluorochloroethylene	79-38-9	500
Trimethyl phosphite	121-45-9	220
TRIMETHYLALUMINUM (AND RELATED ORGANOALUMINUM COMPOUNDS)	75-24-1	
TRIMETHYLCHLOROSILANE	75-77-4	
TRIMETHYLOLETHANE	zzz	
TRIMETHYLOLETHANE TRINITRATE	zzz	
TRIMETHYLOLPROPANE PHOSPHITE	824-11-3	
TRIMETHYLTIN CHLORIDE (AND OTHER ORGANOTIN COMPOUNDS)	1066-45-1	
TRIMONITE	zzz	
TRINITRATENITROCELLULOSE	zzz	
Trinitroaniline	26952-42-1	400
TRINITROANILINE	zzz	
Trinitroanisole	606-35-9	400
TRINITROANISOLE	zzz	
TRINITROBENZENE	99-35-4	
Trinitrobenzene	99-35-4	400
Trinitrobenzenesulfonic acid	2508-19-2	400
TRINITROBENZENESULFONIC ACID	zzz	
TRINITROBENZOIC ACID	129-66-8	
Trinitrobenzoic acid	129-66-8	400
TRINITROCHLOROBENZENE	28260-61-9	
Trinitrochlorobenzene	88-88-0	400
TRINITROCRESOL	602-99-3	
TRINITROETHYLFORMAL	zzz	
TRINITROETHYL-O-CARBONATE	zzz	
TRINITROETHYL-O-FORMATE	zzz	
TRINITROFLUORENONE	129-79-3	
Trinitrofluorenone	129-79-3	400
TRINITRO-M-CRESOL	602-99-3	
Trinitro-meta-cresol	602-99-3	400
Trinitronaphthalene	55810-17-8	400
TRINITRONAPHTHALENE	zzz	
TRINITROPHENETOL	zzz	
Trinitrophenetole	4732-14-3	400
Trinitrophenol	88-89-1	400

TRINITROPHENOL	zzz	
TRINITROPHENYLMETHYLNITRAMINE	zzz	
TRINITROPHLOROGLUCINOL	4328-17-0	
Trinitroresorcinol	82-71-3	400
TRINITRORESORCINOL	zzz	
TRINITROTOLUENE (TNT)	118-96-7	
TRINONAL	zzz	
TRIPHENYLTIN CHLORIDE	639-58-7	
Tris(2,3-dibromopropyl) Phosphate	126-72-7	
TRIS(2-CHLOROETHYL)AMINE	555-77-1	
Tris(aziridinyl)-phosphine sulfide	52-24-4	
Tritonal	54413-15-9	400
TRITONAL	zzz	
Trp-P-1 (3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole)	62450-06-0	
Trp-P-1 (3-Amino-1-methyl-5H-pyrido[4,3-b]indole)	62450-07-1	
Trypan Blue	72-57-1	
Tungsten hexafluoride	7783-82-6	45
Uracil mustard	66-75-1	
UREA NITRATE	513-80-4	
Urethane	51-79-6	
VALINOMYCIN	2001-95-8	
VANADIUM PENTOXIDE	1314-62-1	
VINYL ACETATE MONOMER [VINYL ACETATE]	108-05-4	
VINYL ACETYLENE	689-97-4	
Vinyl Bromide	593-60-2	
VINYL CHLORIDE	75-01-4	
VINYL ETHERS	109-93-3	
Vinyl Fluoride	72-02-5	
VINYL PYRIDINE	1337-81-1	
VINYLIDENE CHLORIDE	75-35-4	
VX	50782-69-9	CUM 100g
WARFARIN	81-81-2	
WARFARIN SODIUM	129-06-6	
XYLYLENE DICHLORIDE	28347-13-9	
Zinc Chromate	13530-65-9	
ZINC PHOSPHIDE	1314-84-7	
ZINC, DICHLORO--	58270-08-9	
ZIRCONIUM PICRAMATE	zzz	
ZIRCONIUM TETRACHLORIDE	zzz	

Appendix A by CAS#APPENDIX A By Name

CHEMICAL	CAS#	Minimum Amount (lbs)
Captafol	6/1/2425	
ENDOTHION 2778-04-3	4/3/2778	
Diisopropyl Sulfate	10/6/2973	
N-Nitroso-n-butyl-N-(4-hydroxybutyl)amine	11/6/3817	
Dicarbazine	3/4/4342	
POTASSIUM (METAL)	9/7/7440	
SULFUR DIOXIDE (LIQUID) 7446-09-5	9/5/7446	
SULFUR TRIOXIDE [SULFURIC ANHYDRIDE] 7446-11-9	11/9/7446	
6-Nitrochrysene	2/8/7496	
BORON TRIFLUORIDE [TRIFLUOROBORANE] 7637-07-2	7/2/7637	
PHOSPHORUS TRICHLORIDE	12/2/7719	
Potassium bromate	1/2/7758	
HYDROGEN SULFIDE 7783-06-4	6/4/7783	
HYDROGEN SELENIDE 7783-07-5	7/5/7783	
Strontium Chromate (7789-06-2)	6/2/7789	
PhIP (2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine)	105650-23-5	
1,2,3-Trichloropropane	96-18-4	
BENZENE, 1-(CHLOROMETHYL)-4-NITRO-	100-14-1	
SULFUR CHLORIDE	10025-67-9	
CHROMIUM TRIOXIDE AND OTHER CHROMIUM (VI) SALTS	10025-73-7	
NITROGEN TRICHLORIDE	10025-85-1	
PHOSPHORUS OXYCHLORIDE	10025-87-3	
Phosphorus oxychloride	10025-87-3	220
SILICON TETRACHLORIDE	10026-04-7	
PHOSPHORUS PENTACHLORIDE	10026-13-8	
OZONE	10028-15-6	
THALLIUM SULFATE	10031-59-1	
Hydrogen iodide, anhydrous	10034-85-2	500
Hydrazine Sulfate	10034-93-2	
HYDROBROMIC ACID AND HYDROGEN BROMIDE	10035-10-6	
Hydrogen bromide (anhydrous)	10035-10-6	500
N,N-(2-diethylamino)ethanethiol	100-38-9	2.2
4-Vinylcyclohexene	100-40-3	
STYRENE	100-42-5	
Radon	10043-92-2	
Sterigmatocystin	10048-13-2	
N-Nitrosopiperidine	100-75-4	
SODIUM SELENITE	10102-18-8	
SODIUM TELLURITE	10102-20-2	
NITRIC OXIDE [NITROGEN OXIDE (NO)]	10102-43-9	
Nitric oxide	10102-43-9	15
NITROGEN DIOXIDE	10102-44-0	
4,4-Methylene-bis(2-chloraniline)	101-14-4	
CALCIUM NITRATE	10124-37-5	
POTASSIUM ARSENITE	10124-50-2	
4,4-Methylenebis(N,N-dimethylbenzenamine)	101-61-1	
4,4-Methylenedianiline	101-77-9	
4,4-Oxydianiline	101-80-4	
Diglycidyl Resorcinol Ether	101-90-6	
COBALT CARBONYL	10210-68-1	
ISOCYANIC ACID,3,4-DICHLOROPHENYL ESTER	102-36-3	
METHAMIDOPHOS	10265-92-6	
Triethanolamine	102-71-6	220
Boron tribromide	10294-33-4	45
BORON TRICHLORIDE [TRICHLOROBORANE]	10294-34-5	
Boron trichloride	10294-34-5	45
Barium Chromate	10294-40-3	
DIALIFOR	10311-84-9	
TRIAMIPHOS	1031-47-6	
PHENYLTHIOUREA	103-85-5	
Dinitrogen tetroxide	10544-72-6	15
Nitrogen trioxide	10544-73-7	15
ACETAL	105-57-7	
MDEA	105-59-9	220
Dinitrofluoranthene	105735-71-5	
N-Nitrosomethylethylamine	10595-95-6	

1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7		
p-Chloroaniline	106-47-8		
TRIMETHYLTIN CHLORIDE (AND OTHER ORGANOTIN COMPOUNDS)	1066-45-1		
4-Vinyl-1-cyclohexene Diepoxide	106-87-6		
1,2-Epoxybutane	106-88-7		
EPICHLOROHYDRIN [(CHLOROMETHYL)OXIRANE]	106-89-8		
1,2-Dibromoethane	106-93-4		
ETHYLENE DIBROMIDE	106-93-4		
3-PROMOPROPYNE (PROPARGYL BROMIDE)	106-96-7		
PROPARGYL BROMIDE [3-BROMOPROPYNE]	106-96-7		
1,3-Butadiene	106-99-0		
BUTADIENE	106-99-0		
ACROLEIN [2-PROPENAL]	107-02-8		
1,2-Dichloroethane	107-06-2		
Ethylene Dichloride	107-06-2		
ALLYLAMINE [2-PROPEN-1-AMINE]	107-11-9		
PROPIONITRILE [PROPANENITRILE]	107-12-0		
ACRYLONITRILE [2-PROPENENITRILE]	107-13-1		
ETHYLENEDIAMINE [1,2-ETHANEDIAMINE]	107-15-3		
ALLYL ALCOHOL [2-PROPEN-1-OL]	107-18-6		
CHLOROMETHYL METHYL ETHER (AND RELATED COMPOUNDS)	107-30-2		
Methyl Chloromethyl Ether	107-30-2		
SARIN	107-44-8		
Sarin	107-44-8	CUM 100g	
N,N-(2-dimethylamino)ethanethiol	108-02-1		2.2
VINYL ACETATE MONOMER [VINYL ACETATE]	108-05-4		
Chlorinated Paraffins (C12, 60% Chlorine)	108171-26-2		
ISOPROPYL ETHER	108-20-3		
ISOPROPYL CHLOROFORMATE	108-23-6		
TOLUENE	108-88-3		
CYCLOHEXYLAMINE [CYCLOHEXANAMINE]	108-91-8		
PHENOL	108-95-2		
TETRAZENE	109-27-3		
Tetrazene	109-27-3		400
PROPYL CHLOROFORMATE	109-61-5		
MALONONITRILE	109-77-3		
VINYL ETHERS	109-93-3		
ETHYL NITRITE	109-95-5		
TETRAHYDROFURAN	109-99-9		
FURAN	110-00-9		
DIACETYL PEROXIDE	110-22-5		
HEXANE (AND RELATED HYDROCARBONS)	110-54-3		
Bleomycins	11056-06-7		
CYCLOHEXANE	110-82-7		
PYRIDINE	110-86-1		
PIPERDINE	110-89-4		
Aroclor® 1260 (under Polychlorinated Biphenyls)	11096-82-5		
Aroclor® 1254 (under Polychlorinated Biphenyls)	11097-69-1		
Thiodiglycol	111-48-8		2.2
N-Nitrosodiethanolamine	1116-54-7		
1,3-Propane Sultone	1120-71-4		
TRIETHYLENE GLYCOL DINITRATE	112-27-6		
PYRIDINE,4-NITRO-,1-OXIDE	1124-33-0		
METOLCARB	1129-41-5		
Azaserine	115-05-6		
Chlorendic Acid	115-28-6		
ENDOSULFAN	115-29-7		
ALDICARB	116-06-3		
TETRAFLUOROETHYLENE	116-14-3		
Danthron	117-10-2		
2-Aminoanthraquinone	117-79-3		
Di(2-ethylhexyl) Phthalate	117-81-7		
Hexachlorobenzene	118-74-1		
TRINITROTOLUENE (TNT)	118-96-7		
TNT	118-96-7		400
DINITROPHENYL HYDRAZINE	119-26-6		
ISOPROPYLMETHYPYRAZOLYL DIMETHYLCARBAMATE	119-38-0		

TETRAHYDRONAPHTHALENE	119-64-2	
3,3'-Dimethoxybenzidine	119-90-4	
3,3'-Dimethylbenzidine	119-93-7	
o-Tolidine (3,3'-dimethylbenzidine)	119-93-7	
PARIS GREEN [CUPRIC ACETOARSENITE]	12002-03-8	
p-Cresidine	120-71-8	
Catechol	120-80-9	
MANGANESE, TRICARBONYL METHYL-	12108-13-3	
2,4-Dinitrotoluene	121-14-2	
Trimethyl phosphite	121-45-9	220
Palygorshite (attapulgite)	12174-11-7	
Hexolite	121-82-4	400
RDX	121-82-4	400
RDX and HMX mixtures	121-82-4	400
Aurothio-d-glucopyranose (Aurothioglucose)	12192-57-3	
Triethyl phosphite	122-52-1	220
Phenyl Glycidyl Ether	122-60-1	
Hydrazobenzene	122-66-7	
HYDROQUINONE	123-31-9	
(E)-CROTONALDEHYDE [(E)-2-BUTENAL]	123-73-9	
1,4-Dioxane	123-91-1	
DIOXANE	123-91-1	
SODIUM CACODYLATE	124-65-2	
PICROTOXIN	124-87-8	
COPPER ACETYLIDE	12540-13-5	
Griseofulvin	126-07-8	
Tris(2,3-dibromopropyl) Phosphate	126-72-7	
Nitrogen Mustard N-oxide	126-85-2	
METHACRYLONITRILE	126-98-7	
Chloroprene	126-99-8	
Perchloroethylene	127-18-4	
Beryllium Aluminum Alloy	12770-50-2	
PYRENE	129-00-0	
WARFARIN SODIUM	129-06-6	
2-Methyl-1-nitroanthraquinone	129-15-7	
TRINITROBENZOIC ACID	129-66-8	
Trinitrobenzoic acid	129-66-8	400
TRINITROFLUORENONE	129-79-3	
Trinitrofluorenone	129-79-3	400
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU)	13010-47-4	
ARSENIC PENTOXIDE	1303-28-2	
Beryllium Oxide	1304-56-9	
CADMIUM OXIDE	1306-19-0	
SILVER TETRAZENE	13086-63-0	
Antimony Trioxide	1309-64-4	
SODIUM HYDROXIDE AND POTASSIUM HYDROXIDE	1310-73-2	
Thorium Dioxide	1314-20-1	
PHOSPHORUS PENTOXIDE	1314-56-3	
VANADIUM PENTOXIDE	1314-62-1	
ZINC PHOSPHIDE	1314-84-7	
HEXANITRODIPHENYLAMINE	131-73-7	
Dipicrylamine [or] Hexyl	131-73-7	400
AMMONIUM PICRATE	131-74-8	
Ammonium picrate	131-74-8	400
Sodium o-phenylphenate	132-27-4	
N-Nitrososarcosine	13256-22-9	
ARSENOUS OXIDE [ARSENIC TRIOXIDE]	1327-53-3	
Asbestos and Asbestos compounds	1332-21-4	
Beryllium Hydroxide	13327-32-7	
Carbon Black	1333-86-4	
AMMONIUM HYDROXIDE	1336-21-6	
PCBs (Polychlorinated Biphenyls)	1336-36-3	
HYDROGEN	133-74-0	
VINYL PYRIDINE	1337-81-1	
SODIUM SELENATE	13410-01-0	
LEAD AZIDE	13424-46-9	
Lead azide	13424-46-9	400

o-Anisidine Hydrochloride	134-29-2	
1-Naphthylamine	134-32-7	
NITROGEN TRIIODIDE	13444-85-4	
GALLIUM TRICHLORIDE	13450-90-3	
NICKEL CARBONYL [NICKEL TETRACARBONYL]	13463-39-3	
IRON, PENTACARBONYL-	13463-40-6	
HYDRAZINIUM NITRATE	13464-92-6	
Cupferron	135-20-6	
Zinc Chromate	13530-65-9	
4,4-Methylenedianiline Dihydrochloride	13552-44-8	
Beryllium Phosphate	13598-15-7	
Chlorine pentafluoride	13637-63-3	15
Phenazopyridine Hydrochloride	136-40-3	
Decabromobiphenyl	13654-09-6	
Bromine chloride	13863-41-7	45
SILVER AZIDE	13863-88-2	
1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU)	13909-09-6	
Nitrilotriacetic Acid	139-13-9	
4,4'-Thiodianiline	139-65-1	
ANTIMYCIN A	1397-94-0	
Ethyldiethanolamine	139-87-7	220
Aramite®	140-57-8	
Ethyl Acrylate	140-88-5	
SALCOMINE	14167-18-1	
ETHYL ACETATE	141-78-6	
DINOTERB	1420-07-1	
1,4-Bis(2-chloroethylthio)-n-butane	142868-93-7	CUM 100g
1,5-Bis(2-chloroethylthio)-n-pentane	142868-94-8	CUM 100g
SODIUM CYANIDE (NA(CN))	143-33-9	
Chlordecone	143-50-0	
FLUOROACETIC ACID	144-49-0	
Chlorosarin	1445-76-7	CUM 100g
DIEPOXYBUTANE [2,2' BIOXIRANE]	1464-53-5	
Melphalan	148-82-3	
Cycasin	14901-08-7	
ERYTHRITOL	149-32-6	
N,N-Diethyl phosphoramidic dichloride	1498-54-0	2.2
Isopropylphosphonothioic dichloride	1498-60-8	2.2
METHOXYETHYLMERCURIC ACETATE	151-38-2	
POTASSIUM CYANIDE	151-50-8	
Aziridine	151-56-4	
ETHYLENEIMINE [AZIRIDINE]	151-56-4	
Lead styphnate	15245-44-0	400
BICYCLO[2.2.1] HEPTANE-2-CARBONITRILE	15271-41-7	
Bis(chloroethyl) Nitrosourea	154-93-8	
TRICHLORO (CHLOROMETHYL) SILANE	1558-25-4	
CARBOFURAN	1563-66-2	
Cisplatin	15663-27-1	
Diethyl methylphosphonite	15715-41-0	2.2
MANNITOL HEXANITRATE	15825-70-4	
Nitromannite	15825-70-4	400
MERCURIC ACETATE	1600-27-7	
C.I. Direct Brown 95 (Benzidine based dye)	16071-86-6	
1,2-Diethylhydrazine	1615-80-1	
N-Nitrosonornicotine	16543-55-8	
Sodium Equilin Sulfate	16680-47-0	
METHOMYL	16752-77-5	
SODIUM BOROHYDRIDE	16940-66-2	
Benzyl Violet 4B	1694-09-3	
POTASSIUM AMIDE	17242-52-3	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	
ACETONE THIOSEMICARBAZIDE	1752-30-3	
DECABORANE (14)	17702-41-9	
FORMPARANATE	17702-57-7	
Nitrofen	1836-75-5	
Barium azide	18810-58-7	400
Streptozotocin	18883-66-4	

Dibenzo[a,i]pyrene	189-55-9	
Dibenzo[a,h]pyrene	189-64-0	
Chlorothalonil	1897-45-6	
PARAQUAT DICHLORIDE	1910-42-5	
Dibenzo[a,l]pyrene	191-30-0	
Dibenzo[a,e]pyrene	192-65-4	
DIBORANE	19287-45-7	
Diborane	19287-45-7	15
Indeno[1,2,3-cd]pyrene	193-39-5	
Direct Black 38	1937-37-7	
7H-Dibenzo[c,g]carbazole	194-59-2	
PENTABORANE	19624-22-7	
CHLOROXURON	1982-47-4	
VALINOMYCIN	2001-95-8	
Hexanitrostilbene	20062-22-0	400
METHIOCARB [MERCAPTODIMETHUR]	2032-65-7	
PARAQUAT METHOSULFATE	2074-50-2	
OSMIUM TETROXIDE	20816-12-0	
DIGOXIN	20830-75-5	
Daunomycin	20830-81-3	
ALUMINUM PHOSPHIDE	20859-73-8	
PHENYLSILATRANE	2097-19-0	
EPN	2104-64-5	
LEPTOPHOS	21609-90-5	
MERCURIC OXIDE	21908-53-2	
Dipicryl sulfide	2217-06-3	400
FENAMIPHOS	22224-92-6	
CADMIUM STEARATE	2223-93-0	
THIOCARBAZIDE	2231-57-4	
Dibenz[a,j]acridine	224-42-0	
3,9-Dinitrofluoranthene	22506-53-2	
Dibenz[a,h]acridine	226-36-8	
CADMIUM AMIDE	22750-53-4	
PROTHOATE	2275-18-5	
AMMONIUM SALT LATTICE	2307-55-3	
OXAMYL	23135-22-0	
N,N-Diisopropyl phosphoramidic dichloride	23306-80-1	2.2
5-Nitrobenzotriazol	2338-12-7	400
FORMETANATE HYDROCHLORIDE	23422-53-9	
Mirex	2385-85-5	
C.I. Direct Blue 15	2429-74-5	
Disperse Blue 1	2475-45-8	
Butylated Hydroxyanisole (BHA)	25013-16-5	
Trinitrobenzenesulfonic acid	2508-19-2	400
Propylphosphonothioic dichloride	2524-01-8	2.2
Adriamycin®	25316-40-9	
Doxorubicin hydrochloride (See Adriamycin®)	25316-40-9	
DINITROTOLUENE	25321-14-6	
Dinitrophenol	25550-58-7	400
PENTADECYLAMINE	2570-26-5	
Direct Blue 6	2602-46-2	
A-a-C(2-Amino-9H-pyridol[2,3-b]indole)	26148-68-5	
2-Chloroethylchloro-methylsulfide	2625-76-5	CUM 100g
PROMECARB	2631-37-0	
CARBAMIC ACID	26419-73-8	
CARBONIC ACID	26419-73-8	
AZINPHOS-ETHYL	2642-71-9	
Oil Orange SS	2646-17-5	
TOLUENE DIISOCYANATE	26471-62-5	
SODIUM AZIDE	26628-22-8	
Sodium azide	26628-22-8	400
CYCLOTETRAMETHYLENE TETRANITRAMINE	2691-41-0	
HMX	2691-41-0	400
Trinitroaniline	26952-42-1	400
Nitrosyl chloride	2696-92-6	15
TRICHLORO(DICHLOROPHENYL)SILANE	27137-85-5	
Benzofuran	271-89-6	

THALLOUS MALONATE	2757-18-8	
MUSCIMOL [5-(AMINOMETHYL)-3-ISOXAZOLOL]	2763-96-4	
HC Blue No.1	2784-94-3	
TRINITROCHLOROBENZENE	28260-61-9	
XYLYLENE DICHLORIDE	28347-13-9	
3,3'-Dichloro-4,4'-diaminodiphenyl ether	28434-86-8	
BROMADIOLONE	28772-56-7	
CYCLOPENTENE	287-92-3	
1H-Tetrazole	288-94-8	400
ISOBENZAN	297-78-9	
METHYL PARATHION [PARATHION METHYL]	298-00-0	
PHORATE	298-02-2	
DISULFOTON	298-04-4	
Treosulfan	299-75-2	
Lead Acetate	301-04-2	
HYDRAZINE	302-01-2	
Lasiocarpine	303-34-4	
Chlorambucil	305-03-3	
METHACRYLOYLOXYETHLY ISOCYANATE	30674-80-7	
b-Butyrolactone	3068-88-0	
ALDRIN	309-00-2	
MEXACARBATE	315-18-4	
Monocrotaline	315-22-0	
EMETINE, DIHYDROCHLORIDE	316-42-7	
p-Chloro-o-toluidine Hydrochloride	3165-93-3	
a-Hexachlorocyclohexane	319-84-6	
b-Hexachlorocyclohexane	319-85-7	
TRICHLORONATE	327-98-0	
Caffeic Acid	331-39-5	
DIAZOMETHANE	334-88-3	
BORON TRIFLUORIDE W/METHYL ETHER	353-42-4	
Carbonyl fluoride	353-50-4	45
Trifluoroacetyl chloride	354-32-5	45
Sesquimustard	3563-36-8	CUM 100g
2-(2-Formylhydrazino)-4-(5-nito-2-furyl)thiazole	3570-75-0	
FLUOROACETYL CHLORIDE	359-06-8	
BENZIMIDAZOLE	3615-21-2	
Procarbazine Hydrochloride	366-70-1	
AF-2([2-(2-furyl)-3-(5-nitro-2-furyl)]	3688-53-7	
CHLOROPHACINONE	3691-35-8	
5-Methylchrysene	3697-24-3	
ETHYLENE FLUOROHYDRIN	371-62-0	
Kanechlor® 500	37317-41-2	
AMITON OXALATE	3734-97-2	
Nafenopin	3771-19-5	
5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)amino]-2-oxazolidinone	3795-88-8	
ERGOTAMINE TARTRATE	379-79-3	
Potassium chlorate	3811-04-9	400
N-Nitroso-n-butyl-N-(3-carboxypropyl)amine	38252-74-3	
FUBERIDAZOLE	3878-19-1	
2,4-Diaminoanisole Sulfate	39156-41-7	
THIOFANOX	39196-18-4	
Beryllium Zinc Silicate	39413-47-3	
Lewisite 2	40334-69-8	CUM 100g
Lewisite 3	40334-70-1	CUM 100g
BITOSCANATE	4044-65-9	
N,N-Dipropyl phosphoramidic dichloride	40881-98-9	2.2
ISOPHORONE DIISOCYANATE	4098-71-9	
PHOSACETIM	4104-14-7	
Dichlorosilane	4109-96-0	45
CROTONALDEHYDE [2-BUTENAL]	4170-30-3	
METHYL FLUOROSULFATE	421-20-5	
1,6-Dinitropyrene	42397-64-8	
1,8-Dinitropyrene	42397-65-9	
FLUENETIL	4301-50-2	
TRINITROPHLOROGLUCINOL	4328-17-0	
Oxymetholone	434-07-1	

Sodium Estrone Sulfate	438-67-5	
PHENOL,2,2'-THIOBIS(4-CHLORO-6-METHYL)	4418-66-0	
Metronidazole	443-48-1	
Azathioprine	446-86-6	
METHYL FLURORACETATE	453-18-9	
N-Nitrosomethylvinylamine	4549-40-0	
Cyanogen	460-19-5	45
KETENE	463-51-4	
Carbonyl sulfide	463-58-1	500
ISODRIN	465-73-6	
Trinitrophenetole	4732-14-3	400
TETRYL	479-45-8	
Auramine	492-80-8	
N,N-Bis(chloroethyl)-2-naphthylamine (Chlornaphazine)	494-03-1	
FORMALDEHYDE [FORMALIN]	50-00-0	
Phenobarbital	50-06-6	
MITOMYCIN C	50-07-7	
ERGOCALCIFEROL	50-14-6	
Cyclophosphamide	50-18-0	
METHYLMERCURIC DICYANAMIDE	502-39-6	
DDT (Dichlorodiphenyltrichloroethane)	50-29-3	
Benzo[a]pyrene	50-32-8	
PYRIDINE,4-AMINO-	504-24-5	
Reserpine	50-55-5	
Bis(2-chloroethyl)sulfide	505-60-2	
MUSTARD GAS	505-60-2	
Sulfur mustard (Mustard gas (H))	505-60-2	CUM 100g
POTASSIUM SILVER CYANIDE	506-61-6	
CYANOGEN BROMIDE	506-68-3	
Cyanogen chloride	506-77-4	15
CYANOGEN IODIDE	506-78-5	
PHOSPHONOTHIOIC ACID	50782-69-9	
VX	50782-69-9	CUM 100g
TETRANITROMETHANE	509-14-8	
FLUOROURACIL	51-21-8	
DINITROPHENOL	51-28-5	
1-Chloro-2-methylpropene	513-37-1	
UREA NITRATE	513-80-4	
DITHIAZANINE IODIDE	514-73-8	
Propylthiouracil	51-52-5	
NITROGEN MUSTARD [MECHLORETHAMINE]	51-75-2	
HN2 (nitrogen mustard-2)	51-75-2	CUM 100g
Ethyl Carbamate	51-79-6	
Urethane	51-79-6	
CARBACHOL CHLORIDE	51-83-2	
Dinitroresorcinol	519-44-8	400
Thiotepa; Tris(1-aziridinyl)phosphine Sulfide	52-24-4	
Tris(aziridinyl)-phosphine sulfide	52-24-4	
Tetranitroaniline	53014-37-2	400
Merphalan	531-76-0	
N-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide	531-82-8	
BIS(CHLOROMETHYL) KETONE	534-07-6	
THIOUREA, (2-CHLOROPHENYL)-	5344-82-1	
DINITROCRESOL [4,6-DINITRO-O-CRESOL]	534-52-1	
PYRIMINIL	53558-25-1	
CRIMIDINE	535-89-7	
Dibenz[a,h]anthracene	53-70-3	
HN1 (nitrogen mustard-1)	538-07-8	CUM 100g
2-Acetylaminofluorene	53-96-3	
1,2-Dimethylhydrazine	540-73-8	
LEWISITE	541-25-3	
Lewisite 1	541-25-3	CUM 100g
DITHIOBIURET	541-53-7	
1,3-Dichloropropene	542-75-6	
Bis(chloromethyl) Ether (BCME)	542-88-1	
CHLOROMETHYL ETHER	542-88-1	
Tritonal	54413-15-9	400

Chlorozotocin	54749-90-5	
N-Nitrosodiethylamine	55-18-5	
1-Nitropyrene	5522-43-0	
Dingu	55510-04-8	400
TRIS(2-CHLOROETHYL)AMINE	555-77-1	
HN3 (nitrogen mustard-3)	555-77-1	CUM 100g
1-[(5-Nitrofurfurylidene)amino]-2-imidazolidinone	555-84-0	
NITROGLYCERIN	55-63-0	
Nitroglycerine	55-63-0	400
Glycidol	556-52-5	
METHYL ISOTHIOCYANATE	556-61-6	
METHYL THIOCYANATE	556-64-9	
NITROGUANIDIENE	556-88-7	
Picrite	556-88-7	400
NITROUREA	556-89-8	
Trinitronaphthalene	55810-17-8	400
METHANESULFONYL FLUORIDE	558-25-8	
Nitrogen Mustard Hydrochloride	55-86-7	
Nitrogen mustard hydrochloride	55-86-7	2.2
1,4-Butanediol Dimethylsulfonate	55-98-1	
Methylthiouracil	56-04-2	
CARBON TETRACHLORIDE	56-23-5	
CANTHARIDIN	56-25-7	
SEMICARBAZIDE HYDROCHLORIDE	563-41-7	
3-Chloro-2-methylpropene	563-47-3	
3-Methylcholanthrene (3-MC)	56-49-5	
Diethylstilbestrol	56-53-1	
COUMAPHOS	56-72-4	
Chloramphenicol	56-75-7	
C.I. Basic Red 9 Monohydrochloride	569-61-9	
1,1-Dimethylhydrazine (UDMH)	57-14-7	
STRYCHININE	57-24-9	
Phenytoin	57-41-0	
PHYSOSTIGMINE	57-47-6	
BETA-PROPIOLACTONE	57-57-8	
b-Propiolactone	57-57-8	
Octolite	57607-37-1	400
PHYSOSTIGMINE, SALICYLATE (1:1)	57-64-7	
CHLORADANE	57-74-9	
Chlordane	57-74-9	
4-Nitropyrene	57835-92-4	
QL	57856-11-8	CUM 100g
7,12-Dimethylbenz (a) anthracene	57-97-6	
ZINC, DICHLORO--	58270-08-9	
COUMATETRALYL	5836-29-3	
PHENOXARSINE,10,10'-OXYDI-	58-36-6	
N,N-(2-dipropylamino)ethanethiol	5842-06-8	2.2
N,N-(2-diisopropylamino)ethanethiol	5842-07-9	2.2
TOLUENE-2,4-DIISOCYANATE	584-84-9	
g-Hexachlorocyclohexane	58-89-9	
LINDANE [HEXACHLOROCYCLOHEXANE]	58-89-9	
Methylazoxymethanol	590-96-5	
Methylazoxymethanol acetate	592-62-1	
Vinyl Bromide	593-60-2	
PERCHLOROMETHYLMERCAPTAN	594-42-3	
PHENYLHYDRAZINE HYDROCHLORIDE	59-88-1	
N-Nitrosomorpholine	59-89-2	
p-Aminoazobenzene	60-09-3	
4-Dimethylaminoazobenzene	60-11-7	
3-(N-Nitrosomethylamino)propionitrile	60153-49-3	
5-Nitroacenaphthene	602-87-9	
TRINITROCRESOL	602-99-3	
TRINITRO-M-CRESOL	602-99-3	
Trinitro-meta-cresol	602-99-3	400
METHYL HYDRAZINE	60-34-4	
Acetamide	60-35-5	
STRYCHININE, SULFATE	60-41-3	

Oxazapam	604-75-1		
DIMETHOATE	60-51-5		
2,6-Dinitrotoluene	606-20-2		
Trinitroanisole	606-35-9		400
2-Nitofluorene	607-57-8		
Hexachlorocyclohexane	608-73-1		
3,3-Dichlorobenzidine Dihydrochloride	612-83-9		
Octabromobiphenyl	61288-13-9		
N,N'-Diacetylbenzidine	613-35-4		
THIOUREA, (2-METHYLPHENYL)-	614-78-8		
2,4-Diaminoanisole	615-05-4		
N-Methyl-N-nitrosourethane	615-53-2		
Niridazole	61-57-4		
Amitrole	61-82-5		
N-Nitrosodi-n-propylamine	621-64-7		
COBALT	62207-76-5		
PHENYLMERCURY ACETATE	62-38-4		
Phenacetin	62-44-2		
Trp-P-1 (3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole)	62450-06-0		
Trp-P-1 (3-Amino-1-methyl-5H-pyrido[4,3-b]indole)	62450-07-1		
METHYL ISOCYANATE [ISOCYANATOMETHANE]	624-83-9		
Ethyl Methanesulfonate	62-50-0		
ANILINE	62-53-3		
Thioacetamide	62-55-5		
Thiourea	62-56-6		
CHLOROBUTADIENE	627-22-5		
Dichlorvos	62-73-7		
SODIUM FLUOROACETATE	62-74-8		
N-Nitrosodimethylamine	62-75-9		
Mercury fulminate	628-86-4		400
ETHYLENE GLYCOL DIMETHYL ETHER	629-14-1		
CARBON MONOXIDE	630-08-0		
OUABAIN	630-60-4		
Magenta (containing CI Basic Red 9)	632-99-5		
Citrus Red No.2	6358-53-8		
o-Toluidine Hydrochloride	636-21-5		
Triethanolamine hydrochloride	637-39-8		220
Bis(2-chloroethylthio)methane	63869-13-6	CUM 100g	
1,3-Bis(2-chloroethylthio)-n-propane	63905-10-2	CUM 100g	
O-Mustard (T)	63918-89-8	CUM 100g	
Bis(2-chloroethylthiomethyl)ether	63918-90-1	CUM 100g	
Phenoxybenzamine Hydrochloride	63-92-3		
TRIPHENYLTIN CHLORIDE	639-58-7		
PHENOL, 3-(METHYLETHYL)-, METHYCARBAMATE	64-00-6		
FLUOROACETAMIDE	640-19-7		
4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone	64091-91-4		
TETRANITROCARBAZOLE	641-16-7		
ETHANOL	64-17-5		
ACETIC ACID	64-19-7		
C.I. Acid Red 114	6459-94-5		
Diethyl Sulfate	64-67-5		
AMMONIUM NITRATE	6484-52-2		
Ammonium nitrate,	6484-52-2		400
COLCHICINE	64-86-8		
SILVER AMIDE	65235-79-2		
NICOTINE SULFATE	65-30-5		
THALLOUS CARBONATE[THALLIUM(L)CARBONATE]	6533-73-9		
Benzo (a) pyrene (BAP)	65996-93-2		
Methyl Methanesulfonate	66-27-3		
DIMETILAN	664-64-4		
Erionite	66733-21-9		
Uracil mustard	66-75-1		
CYCLOHEXIMIDE	66-81-9		
CYANURIC FLUORIDE	675-14-9		
METHANOL	67-56-1		
ACETONE	67-64-1		
CHLOROFORM	67-66-3		

DIMETHYL SULFOXIDE	67-68-5		
METHYL PHOSPHONIC DICHLORIDE	676-97-1		
Methylphosphonothioic dichloride	676-98-2		2.2
DF	676-99-3	CUM 100g	
Torpex	67713-16-0		400
Hexachloroethane	67-72-1		
Glu-P-2 (2-Aminodipyrido[1,2-a:3',2'-d]imidazole)	67730-10-3		
Glu-P-1 (2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole)	67730-11-4		
Isopropylphosphonyl difluoride	677-42-9	CUM 100g	
N,N-Dimethyl phosphoramidic dichloride	677-43-0		2.2
Hexabromobiphenyl	67774-32-7		
PBBs (Polybrominated Biphenyls)	67774-32-7		
MeA-a-C (2-Amino-3-methyl-9H-pyrido[2,3-b]indole	68006-83-7		
HEXAMETHYLPHOSPHORAMIDE	680-31-9		
DIMETHYL FORMAMIDE	68-12-2		
Norethisterone	68-22-4		
Hexafluoroacetone	684-16-2		45
N-Methyl-N-nitrosourea	684-93-5		
VINYL ACETYLENE	689-97-4		
Propylphosphonyl difluoride	690-14-2	CUM 100g	
MONOCROTOPHOS	6923-22-4		
Diethyleneglycol dinitrate	693-21-0		400
PHENYL DICHLOROARSINE	696-28-6		
PHENYLDICHLOROARSINE (LEWISITE VARIANT)	696-28-6		
N-Methyl-N-nitro-N-nitrosoguanidine (MNNG)	70-25-7		
ETHYL METHYL KETONE PEROXIDE	70299-48-8		
Chlorosoman	7040-57-5	CUM 100g	
PROPIOPHENONE, 4'-AMINO-	70-69-9		
2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole	712-68-5		
Benzene	71-43-2		
Medroxyprogesterone acetate	71-58-9		
DIGITOXIN	71-63-6		
Vinyl Fluoride	72-02-5		
ENDRIN	72-20-8		
Trypan Blue	72-57-1		
Piperazine Estrone Sulfate	7280-37-7		
ERYTHRITOL TETRANITRATE	7297-25-8		
PHOSMET	732-11-6		
Aluminum (powder)	7429-90-5		100
LITHIUM	7439-93-2		
Magnesium (powder)	7439-95-4		100
MERCURY	7439-97-6		
SILVER AND ITS COMPOUNDS	7440-22-4		
SODIUM	7440-23-5		
GERMANIUM	7440-56-4		
Sulfur dioxide (anhydrous)	7446-09-5		500
THALLOUS SULFATE [THALLIUM(L) SULFATE]	7446-18-6		
Selenium Sulfide	7446-34-6		
ALUMINUM CHLORIDE ANHYDROUS	7446-70-0		
METHYL BROMIDE [BROMOMETHANE]	74-83-9		
ACETYLENE	74-86-2		
MERCURIC CHLORIDE	7487-94-7		
METHYL IODIDE	74-88-4		
HYDROCYANIC ACID	74-90-8		
HYDROGEN CYANIDE	74-90-8		
Hydrogen cyanide	74-90-8		15
METHYL MERCAPTAN [METHANETHIOL]	74-93-1		
Methyl mercaptan	74-93-1		500
VINYL CHLORIDE	75-01-4		
ACETONITRILE	75-05-8		
ACETALDEHYDE	75-07-0		
DICHLOROMETHANE	75-09-2		
CARBON DISULFIDE	75-15-0		
CALCIUM CARBIDE	75-20-7		
ETHYLENE OXIDE [OXIRANE]	75-21-8		
TRIMETHYLALUMINUM (AND RELATED ORGANOALUMINUM COMPOUNDS)	75-24-1		
Bromodichloromethane	75-27-4		

VINYLIDENE CHLORIDE	75-35-4	
Ethyl phosphonyl difluoride	753-98-0	CUM 100g
CARBONYL CHLORIDE (PHOSGENE)	75-44-5	
PHOSGENE (CARBONYL CHLORIDE)	75-44-5	
Phosgene	75-44-5	15
TITANIUM TETRACHLORIDE	7550-45-0	
Titanium tetrachloride	7550-45-0	45
Nitromethane	75-52-5	400
IODINE	7553-56-2	
2-Methylaziridine	75-55-8	
PROPYLENEIMINE [2-METHYLAZIRIDINE]	75-55-8	
PROPYLENE OXIDE [METHYLOXIRANE]	75-56-9	
TETRAMETHYLLEAD [TETRAMETHYLPLUMBANE]	75-74-1	
Hexaethyl tetraphosphate and compressed gas mixtures	757-58-4	500
TRIMETHYLCHLOROSILANE	75-77-4	
DIMETHYLDICHLOROSILANE	75-78-5	
METHYL TRICHLOROSILANE	75-79-6	
LITHIUM HYDRIDE	7580-67-8	
ACETONE CYANOHYDRIN	75-86-5	
N-Ethyl-N-nitrosourea	759-73-9	
N-Nitroso-N-ethylurea	759-73-9	
PERCHLORIC ACID (AND INORGANIC PERCHLORATES)	7601-90-3	
TRIFLUOROACETIC ACID	76-05-1	
Perchloryl fluoride	7616-94-6	45
SODIUM ARSENATE	7631-89-2	
Sodium nitrate	7631-99-4	400
SODIUM NITRATE-POTASSIUM NITRATE EXPLOSIVE MIXTURE	7632-00-0	
Boron trifluoride	7637-07-2	45
Heptachlor	76-44-8	
POTASSIUM NITROMINOTETRAZOLE	7646-69-7	
SODIUM HYDRIDE	7646-69-7	
STANNIC CHLORIDE	7646-78-8	
HYDROCHLORIC ACID AND HYDROGEN CHLORIDE	7647-01-0	
HYDROGEN CHLORIDE	7647-01-0	
Hydrogen chloride (anhydrous)	7647-01-0	500
Glycidaldehyde	765-34-4	
SILVER ACETYLIDE	7659-31-6	
HYDROGEN FLUORIDE AND HYDROFLUORIC ACID	7664-39-3	
Hydrogen fluoride (anhydrous)	7664-39-3	45
AMMONIA (ANHYDROUS) - CONCENTRATION 20% OR GREATER	7664-41-7	
SULFURIC ACID	7664-93-9	
POTASSIUM HYDRIDE AND SODIUM HYDRIDE	7693-26-7	
NITRIC ACID	7697-37-2	
Nitric acid	7697-37-2	400
MeIQ (2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)	77094-11-2	
Phosphorus trichloride	7719-12-2	45
Potassium permanganate	7722-64-7	400
HYDROGEN PEROXIDE	7722-84-1	
Hydrogen peroxide (concentration of at least 35%)	7722-84-1	400
PHOSPHORUS (YELLOW OR WHITE)	7723-14-0	
Phosphorus	7723-14-0	400
BROMINE	7726-95-6	
MeIQx (2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)	77500-04-0	
Potassium nitrate	7757-79-1	400
Sodium chlorate	7775-09-9	400
DIMETHYL SULFATE	77-78-1	
CALCIUM ARSENATE	7778-44-1	
Potassium perchlorate	7778-74-7	400
TABUN	77-81-6	
Tabun	77-81-6	CUM 100g
FLUORINE	7782-41-4	
Fluorine	7782-41-4	15
OXYGEN	7782-44-7	
CHLORINE	7782-50-5	
Chlorine	7782-50-5	500
Germane	7782-65-2	45
HYDRAZOIC ACID	7782-79-8	

SODIUM AMIDE	7782-92-5	
SELENIOUS ACID	7783-00-8	
Hydrogen sulfide	7783-06-4	45
Hydrogen selenide	7783-07-5	15
OXYGEN DIFLUORIDE (FLUORINE MONOXIDE)	7783-41-7	
Oxygen difluoride	7783-41-7	15
Germanium tetrafluoride	7783-58-6	15
SULFUR TETRAFLUORIDE	7783-60-0	
Sulfur tetrafluoride	7783-60-0	15
Silicon tetrafluoride	7783-61-1	45
Selenium hexafluoride	7783-79-1	15
TELLURIUM HEXAFLUORIDE	7783-80-4	
Tellurium hexafluoride	7783-80-4	15
Tungsten hexafluoride	7783-82-6	45
ARSENOUS TRICHLORIDE	7784-34-1	
Arsenic trichloride	7784-34-1	2.2
ARSINE [ARSENIC HYDRIDE]	7784-42-1	
Arsine	7784-42-1	15
SODIUM ARSENITE	7784-46-5	
Beryllium Chloride	7787-47-5	
Beryllium Fluoride	7787-49-7	
Beryllium Sulfate Tetrahydrate	7787-56-6	
Bromine trifluoride	7787-71-5	45
CALCIUM HYDRIDE	7789-78-8	
Chlorine trifluoride	7790-91-2	45
AMMONIUM PERCHLORATE	7790-98-9	
Ammonium perchlorate	7790-98-9	400
THALLOUS CHLORIDE	7791-12-0	
PHOSPHINE (HYDROGEN PHOSPHIDE)	7803-51-2	
Phosphine	7803-51-2	15
Stibine	7803-52-3	15
PETN	78-11-5	400
Octonal	78413-87-3	400
o,o-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate	78-53-5	2.2
Isoprene	78-79-5	
ISOBUTYRONITRILE	78-82-0	
METHYL ETHYL KETONE	78-93-3	
METHYL VINYL KETONE	78-94-4	
Trichloroethylene	79-01-6	
ACRYLAMIDE	79-06-1	
CHLOROACETIC ACID	79-11-8	
THIOSEMICARBAZIDE	79-19-6	
PERACETIC ACID [ETHANEPEROXOIC ACID]	79-21-0	
PEROXYACETIC ACID	79-21-0	
METHYL CHLOROFORMATE	79-22-1	
CHLOROTRIFLUOROETHYLENE	79-38-9	
Trifluorochloroethylene	79-38-9	500
Dimethylcarbamal Chloride	79-44-7	
2-Nitropropane	79-46-9	
Panfuran S	794-93-4	
CAMPHECHLOR	8001-35-2	
Toxaphene	8001-35-2	
METHYL 2-CHLOROACRYLATE	80-63-7	
Pentolite	8066-33-9	400
Saccharin	81-07-2	
ACRYLYL CHLORIDE [2-PROPENOYL CHLORIDE]	814-68-6	
WARFARIN	81-81-2	
1-Amino-2-methylanthraquinone	82-28-0	
TRIMETHYLOLPROPANE PHOSPHITE	824-11-3	
DIPHACINONE	82-66-6	
STYPHNIC ACID	82-71-3	
Trinitroresorcinol	82-71-3	400
4,4'-Methylene-bis(2-methylaniline)	838-88-0	
AZINPHOS-METHYL [GUTHION]	86-50-0	
ANTU [1-NAPHTHALENYLTHIOUREA]	86-88-4	
Diazodinitrophenol	87-31-0	400
2,6-Dimethylaniline (2,6-Xylidine)	87-62-7	

2,4,6-Trichlorophenol	88-06-2	
DINOSEB	88-85-7	
PICRYL CHLORIDE	88-88-0	
Trinitrochlorobenzene	88-88-0	400
PICRIC ACID (DRY)	88-89-1	
Trinitrophenol	88-89-1	400
o-Anisidine	90-04-0	
Iron Dextran Complex	9004-66-4	
Nitrocellulose	9004-70-0	400
STANNANE, ACETOXYTRIPHENYL-	900-95-8	
Nitrostarch	9056-38-6	400
Bis(dimethylamino)benzophenone	90-94-8	
Michler's Ketone [4,4-(Dimethylamino)benzophenone]	90-94-8	
TOLUENE-2,6-DIISOCYANATE	91-08-7	
o-Nitroanisole	91-23-6	
2-Aminonaphthalene	91-59-8	
2-Naphthylamine	91-59-8	
3,3-Dichlorobenzidine	91-94-1	
METHACRYLOYL CHLORIDE	920-46-7	
N-Nitrosodi-n-butylamine	924-16-3	
4-Aminobiphenyl (4-Aminodiphenyl)	92-67-1	
Benzidine	92-87-5	
4-Nitrobiphenyl	92-93-3	
N-Nitrosopyrrolidine	930-55-2	
Nitrotriazolone	932-64-9	400
BENZOYL PEROXIDE	94-36-0	
Dihydrosafrole	94-58-6	
Safrole	94-59-7	
PHOSFOLAN	947-02-4	
METHIDATHION	950-37-8	
N,N-Diethyldithiocarbamic acid 2-chloroallyl ester	95-06-7	
Sulfallate	95-06-7	
CRESOL, O-	95-48-7	
o-Toluidine	95-53-4	
p-Chloro-o-toluidine	95-69-2	
2,4-Diaminotoluene	95-80-7	
4-Chloro-o-phenylenediamine	95-83-0	
Styrene-7,8-oxide	96-09-3	
1,2-Dibromo-3-chloropropane	96-12-8	
METHYL CYCLOPENTANE	96-37-7	
Ethylene Thiourea	96-45-7	
Soman	96-64-0	CUM 100g
PICRAMIC ACID	96-91-3	
o-Aminoazotoluene	97-56-3	
BENZENEARSONIC ACID	98-05-5	
BENZOTRICHLORIDE [BENZOIC TRICHLORIDE]	98-07-7	
CUMENE	98-82-8	
NITROBENZENE	98-95-3	
Nitrobenzene	98-95-3	100
NORBORMIDE	991-42-4	
Methylchlorosilane	993-00-0	45
Ethylphosphonothioic dichloride	993-43-1	2.2
TRINITROBENZENE	99-35-4	
Trinitrobenzene	99-35-4	400
1-CHLORO-2,4-DINITROBENZENE	99-65-0	
TRIETHOXYSILANE	998-30-1	
CHLORMEQUAT CHLORIDE	999-81-5	
DIMETHYL-P-PHENYLENEDIAMINE	99-98-9	
ALKYLLITHIUMS	CLASS	
ARYLLITHIUMS	CLASS	
AZIDES OF HEAVY METALS	CLASS	
BUTYLLITHIUMS	CLASS	
CHLORATES	CLASS	
DIETHYLNITROSAMINE (AND RELATED NITROSAMINES)	CLASS	
FLUORIDES (INORGANIC)	CLASS	
FULMINATING GOLD	CLASS	
FULMINATING PLATINUM	CLASS	

FULMINATING SILVER	CLASS	
FULMINATING MERCURY	CLASS	
HEAVY METAL AZIDES	CLASS	
LEAD AND ITS INORGANIC COMPOUNDS	CLASS	
LEAD SALTS	CLASS	
ORGANIC ACID HALIDES AND HYDRIDES	CLASS	
ORGANIC AMINE NITRATES	CLASS	
ORGANIC NITRAMINES	CLASS	
ORGANIC PEROXIDES	CLASS	
ORGANORHODIUM COMPLEX (PMN-82-147)	CLASS	
OZONIDES	CLASS	
PERCHLORATES OF HEAVY METALS	CLASS	
PEROXIDES	CLASS	
POLYNITRO ALIPHATIC COMPOUND	CLASS	
Tamoxifen and its salts	CLASS	
TRIALKYALUMINUMS	CLASS	
AMINOPTERIN	N/A	
2,2-DINITROPROPYL ACRYLATE	zzz	
2,4,6-TETRANITRO-N-METHYLANILINE	zzz	
2,4-DINITROPHENYLHYDRAZINE	zzz	
3-BROMOPROPYNE T-BUTYL PERBENZOATE	zzz	
ACETYLIDES OF HEAVY METALS	zzz	
ALUMINUM ORPHORITE	zzz	
ALUMINUM TRICHLORIDE	zzz	
AMAONAL	zzz	
AMATEX	zzz	
AMATOL	zzz	
AMMONAL	zzz	
BARATOL	zzz	
BIS-TRINITROETHYL CARBONATE	zzz	
BIS-TRINITROETHYLNITRAMINE	zzz	
BUTYL TETRYL	zzz	
CUMENE HYDROPEROXIDE	zzz	
CUPROUS NITRIDE	zzz	
CYANURIC TRAIZIDE	zzz	
CYCLOTRIMETHYLENE TETRANITRAMINE	zzz	
CYCLOTRIMETHYLENE TRINITRAMINE	zzz	
DIACETYLENE	zzz	
DIAMINOTRINITROBENZENE	zzz	
DIAMINOTRINITROMETHYLENE TETRANITRAMINE	zzz	
DIAZODINITROPHENOL	zzz	
DICRYLAMINE	zzz	
DICYCLOPENTADIENE	zzz	
DIETHYL ETHER	zzz	
DIISOPROPYL PEROXYHYDROCARBONATE	zzz	
DINITORESORCINOL	zzz	
DINITROETHYLENEUREA	zzz	
DINITROGLYCERINE	zzz	
DINITROPHENOXY STARCH	zzz	
DIPICRYL SULFONE	zzz	
DIVINYL ACETYLENE	zzz	
EDNATOL	zzz	
ETHIDIUM BROMIDE	zzz	
ETHYL-4,4-DINITROPENTANOATE	zzz	
ETHYL-TETRYL	zzz	
GALATINIZED NITROCELLULOSE	zzz	
GELATINIZED NITROCELLULOSE	zzz	
GENZENE	zzz	
GUANYL	zzz	
GUANYL NITRASAMINO	zzz	
GUANYLTETRAZENE	zzz	
HEXAGEN	zzz	
HEXANITE	zzz	
HEXANITROSTIBILENE	zzz	
HEXANITROSTILBENE	zzz	
HEXOGEN	zzz	
LEAD AMIDE	zzz	

LEAD MANNITE	zzz	
LEAD MONONITRORESORCINATE	zzz	
LEAD PICRATE	zzz	
LEAD STYPHNATE	zzz	
LITHIUM ALUMINUM HYDRIDE	zzz	
MAGNESIUM ORPHORITE	zzz	
MERCURY TARTATE	zzz	
MERCURY TARTRATE	zzz	
METHYL ACETYLENE	zzz	
METHYL-4,4-DINITROPENTANOATE	zzz	
METHYL-ISOBUTYL KETONE	zzz	
MONONITROTOLUENE	zzz	
NITRATED CARBOHYDRATE	zzz	
NITRATED GLUCOSIDE	zzz	
NITRATED POLYHYDRIC ALCOHOL	zzz	
NITROGLYCERIDE	zzz	
NITROGLYCIDE	zzz	
NITROGLYCOL	zzz	
NITROGUANDINE	zzz	
NITRONIUM PERCHLORATE	zzz	
NITROPARAFFINS	zzz	
O-DINITROBENZENE	zzz	
PENTOLITE	zzz	
PICRAMIDE	zzz	
PICRATOL	zzz	
PICRYL FLUORIDE	zzz	
PICRYL SULPHONIC ACID	zzz	
POTASSIUM DINITROBENZOFOROXANE	zzz	
SILVER STYPHNATE	zzz	
SODATOL	zzz	
SODIUM AMATOL	zzz	
SODIUM DINITRO-O-CRESOLATE	zzz	
SODIUM PICRAMATE	zzz	
SYPHNIC ACID	zzz	
T-BUTYL PERBENZOATE	zzz	
T-BUTYL PEROXYACETATE	zzz	
T-BUTYLHYDROPEROXIDE	zzz	
T-DIBUTYL PEROXIDE	zzz	
TERT-BUTYL HYDROPEROXIDE	zzz	
TETAHYDROFURAN	zzz	
TETRACENE	zzz	
TRIMETHYLOLETHANE	zzz	
TRIMETHYLOLETHANE TRINITRATE	zzz	
TRIMONITE	zzz	
TRINITRATENITROCELLULOSE	zzz	
TRINITROANILINE	zzz	
TRINITROANISOLE	zzz	
TRINITROBENZENESULFONIC ACID	zzz	
TRINITROETHYLFORMAL	zzz	
TRINITROETHYL-O-CARBONATE	zzz	
TRINITROETHYL-O-FORMATE	zzz	
TRINITRONAPHTHALENE	zzz	
TRINITROPHENETOL	zzz	
TRINITROPHENOL	zzz	
TRINITROPHENYLMETHYLNITRAMINE	zzz	
TRINITRORESORCINOL	zzz	
TRINONAL	zzz	
TRITONAL	zzz	
ZIRCONIUM PICRAMATE	zzz	
ZIRCONIUM TETRACHLORIDE	zzz	
Guanyl nitrosaminoguanylidene hydrazine		400

Go to this website for online MSDS

http://www.ilpi.com/msds/index.html

Where To Find
Material Safety Data Sheets
On The Internet

MSDS Topics	Free Sites	FAQ's	Regulations	Glossary	Software	Suppliers
	Books	Forum	Poll	Fun stuff	Quiz	Store
Understand MSDS's with our MS-Demystifier				Search ALL our MSDS info		

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Breaking updates (20-Feb):

- **New site added** - We have a new site for you today. See News Notes below for more information.
- **Final Rule Postponed** - OSHA's Final Rule for the GHS has been delayed by "no more" than 30 days. See News Notes below for more information.
- **We are now solar-powered** Our on-site solar array is now operational and provides 100% of our total electric energy consumption.

News Notes

- **New MSDS Resource** - We've added life sciences biochemical supplier Abcam PLC under Chemical manufacturers and suppliers. 24-Jan
- **The waiting is the hardest part** - The OMB has extended its review period for OSHA's formal adoption of the Globally Harmonized System by 30 days. The entire OHS/EHS/regulatory community is anxiously awaiting this new Final Rule, the biggest change in the regulations governing MSDS's and Hazard Communication in 25 years. 24-Jan
- **Lost but found** - Gelest broke their old MSDS URL but we have the new one for you under Chemical manufacturers and suppliers for details. 11-Jan
- **Looking for a job?** - NIOSH recently released a report which stated "although employers plan to hire at least 25,000 occupational safety and health professionals over the next five years, only about 12,000 new graduates are expected to be available from the academic programs that provide the needed pool of expertise nationally." Sound like something worth considering as a career. 11-Jan
- **Did you know?** This single page has been used over 10,600,000 times, our MSDS HyperGlossary has been used over 24,00,000 times, and MSDS FAQ 3,100,000 times! Check out our usage statistics or contact us about advertising opportunities on this and other pages.

Laboratory Safety Inspection Report

TABLE OF CONTENTS

AUDIT FINDINGS

Question	Response	Details
A. General Work Environment		
1. Emergency eyewash stations are regularly tested and documented (at least monthly) by lab personnel?		
2. Emergency shower is tested at least annually by Facilities Services?		
3. Emergency eyewash and shower are accessible?		
4. Fire extinguisher is mounted on the wall and access is not blocked by equipment or supplies?		
5. All exits are clearance unobstructed?		
6. Aisles are uncluttered and are without tripping hazards?		
B. Documentation		
1. A written Chemical Hygiene Plan is available in the laboratory?		
2. A Lab Safety Agreement is signed and on file for everyone that works in the lab?		
3. Documentation of general lab safety and lab specific training is available?		
C. Personal Protective Equipment		
1. Required protective equipment (such as gloves, safety glasses, goggles) is available and in functional condition?		
D. Electrical Hazards		
1. Flexible cords are in good condition?		
2. Cover plates are in place for outlets and switches?		
3. Circuit breaker panels are unobstructed?		
4. Machine/instrument access panels are in place?		
8. Ground fault circuit interrupters (GFCI) are used for wet/exterior use?		
E. Chemical Storage		
1. Shelving is adequate for loads imposed?		

Question	Response	Details
2. Refrigeration units for chemical storage are labeled No Food?		
3. Chemical storage cabinets are properly labeled?		
4. Containers are clearly labeled with entire chemical name(s)?		
5. Containers are kept closed except during transfers?		
6. Storage of chemicals is strictly limited in actively used fume hoods?		
7. Containers are compatible with the chemical?		
8. Chemicals are segregated to avoid incompatibilities?		
9. Large/heavy containers are stored on lower shelves?		
10. Corrosives are not stored above eye level?		
11. Storage quantities are minimized?		
12. Secondary containers are used during transport of more than one pint of chemicals?		
13. Materials with shelf lives are dated and disposed of per supplier's recommendations?		
14. Lab check-out procedures for departing lab workers are in place?		
F. Flammables		
1. Flammables are stored in flammable liquid storage cabinet for more than 10 gallons per room?		
2. Refrigeration units are approved for flammables storage?		
3. Flammables are separated from strong oxidizers?		
4. Flammable liquids are not stored near hot plates or other ignition sources?		
G. Compressed Gases		
1. Compressed gases are used in well ventilated areas?		
2. Storage quantities are minimized?		

Question	Response	Details
3. Cylinders are secured from tipping by a chain or strap?		
4. Regulators are compatible with gas cylinder?		
5. Cylinder carts are used for transport?		
6. Protective valve caps are in place?		
7. Empty or unused gas cylinders are promptly returned to supplier?		
H. Waste Disposal		
1. Containers are kept sealed except during transfer?		
2. Containers are labeled with the UT Hazardous Waste label?		
3. Constituents of the waste described on the container label with complete chemical name and percentages?		
4. Hazardous waste storage area is labeled with yellow Hazardous Waste Storage Area sign?		
5. Separate disposal containers are available for broken glass?		
6. Containers are compatible with waste?		
I. Fume Hood		
1. Each chemical fume hood has been surveyed?		
2. Fume hood vents (baffles) are unobstructed?		
3. Fume hoods are used with sash in appropriate position?		
4. Chemical storage is strictly limited in actively used hoods?		
J. Training		
1. Workers have attended General Laboratory Safety Training?		
2. Workers have attended Emergency Action Plan Training?		
3. Workers have attended a laboratory orientation?		
4. Workers have had training beyond EHS training (lab specific training performed by PI)?		

Question	Response	Details
5. Training (EHS and departmental is documented)?		
K. Awareness: Do laboratory workers know		
1. what to do in the event of an emergency, such as fire, injury, including evacuation routes		
2. how to clean up chemical spills		
3. the location /contents of the Chemical Hygiene Plan		
4. the Chemical Hygiene Officer and Safety Manager for the department		
5. what an MSDS is and where to find them and other safety information		
6. what type of personal protective equipment to use and when to use it		
7. what to do with chemical waste		
8. what are the most hazardous materials you use and what precautions to take		
9. if any of the materials used in the lab are carcinogens, highly toxic agents or reproductive toxins. If so, have you completed a prior approval form?		
11. where and how to use emergency equipment, such as safety showers and eyewash stations		
12. to question unfamiliar visitors in the lab		
14. if anyone in the laboratory is conducting unauthorized research activities		
Summary		
Based on the findings and observations made on the day of this inspection, the laboratory in room # HERE are in general compliance with OSHA Standard 1910.1450 and UTIA laboratory safety requirements based on current operations.		
Corrective Actions		
Based on the observations presented in this report, there are no corrective actions for the Principal Investigator or laboratory personnel.		
Recommendations		
Recommendation:		

Question	Response	Details
Please sign upon Audit completion		

Permits

Please insert any active permits into this section that pertains to any work that is being done.

Name: **Minors in Laboratories and Shops**	Effective: February 28, 2013
Areas Affected: All areas on campus	Reviewed/Revised: February 28, 2013

Purpose, Applicability, and Scope

Purpose- To establish a safety policy and plan for University departments or coordinated programs hosting minors who will be performing independent work in laboratories and shops. Minors participating in supervised instructional programs (e.g. Governor's School, KidsU, etc.) or University-hosted/guided tours are excluded from this policy.

This policy does not contemplate or authorize a minor who is not enrolled in the University as a student to be hired as a University employee. Approval of the appropriate department head is required to hire a non-University student under the age of eighteen (18) as a University employee.

Abbreviations, Acronyms, and Definitions

Abbreviations/Acronyms

ACGIH – American Conference of Governmental Industrial Hygienists
CFR – Code of Federal Regulations
dBA – Decibels, A-weighted scale
EHS- Campus Environmental Health and Safety
IDLH – Immediate Dangerous to Life and Health
NFPA – National Fire Protection Association
NIOSH – National Institute for Occupational Safety and Health
OSHA – Occupational Safety and Health Administration
PI – Principal Investigator
SCBA- Self-Contained Breathing Apparatus
SCUBA – Self-Contained Underwater Breathing Apparatus
TCA – Tennessee Code Annotated

Definitions

"Campus Safety Resources" includes the following groups:

1. Biosafety Office
2. UT Knoxville Office of Environmental Health and Safety
3. UT Institute of Agriculture Safety Office
4. Radiation Safety Office
5. Risk Management Office

"Hazardous Substance" is defined as a chemical, biological, or radiological substance capable of causing injury. "Hazardous Substance" includes definitions, classifications, and criteria established by 29 C.F.R. 1910.1200 Appendix A.

"Laboratory" is defined as a location where teaching, experimentation, or research occurs that involves hazardous substances or physical hazards. Examples include, but are not limited to, chemistry labs, biology labs, and chemical engineering labs. The term laboratory does not include computer labs, geography labs, and similar spaces.

"Minor" is defined as any individual under 18 years of age and not enrolled in the University as a student.

"Physical hazard" includes, but is not limited to, the following:

1. Exposed energized conductors operating at more than 50 volts AC
2. Shear points, crush points, nip points, or run-in points that are not adequately guarded
3. Pressure vessels operating in excess of 15 pounds per square inch for compressed gases
4. Flammable liquids, solids or gases as defined by NFPA 30: Flammable and Combustible Liquids Code
5. Cryogenic fluids and reactive materials as defined by defined by NFPA 45: Standard on Fire Protection for Laboratories Using Chemicals
6. Noise above 90 decibels, A-weighted scale, averaged over an 8-hour day
7. Non-ionizing radiation that exceeds standards published by the American Conference of Governmental Industrial Hygienists (ACGIH)
8. Equipment producing ionizing radiation

"Principal investigator" is the administrative head of the research laboratory or shop. The principal investigator determines research/work objectives, designs experiments, and assigns responsibilities to laboratory/shop staff and students.

"Shop" is defined as an area where wood, metal, masonry, plastic or similar products are manipulated by any means, such as cutting, drilling, boring, fastening (nails, rivets, screws, welds, etc.), sanding, grinding, heating, priming, finishing, or any similar activities.

"Supervisor" is defined as the PI or other senior individual assigned by the PI who is competent in and can responsibly oversee the research/work procedures being performed to include proper technique(s) and safety precautions.

Roles and Responsibilities

1. The PI or designated supervisor shall:

    a. Complete the Safety Assurance form attached, Appendix A
    b. Ensure minors have received appropriate site-specific training
    c. Conduct a hazard assessment for the minors' assignments

d. Consult with campus safety resources as necessary
e. Provide any necessary personal protective equipment
f. Ensure minors do not undertake activities listed in Appendix B – Prohibited Activities
g. Maintain records as required under Recordkeeping section below

2. Campus Safety Resources shall:

a. Provide guidance to departments, supervisors, and PI regarding this procedure
b. Develop general lab/shop safety training
c. Work with campus deans, directors, department heads, or program managers to ensure this procedure is disseminated
d. Review and revise the procedure periodically
e. Maintain records as required under Recordkeeping section below
f. Keep the most current version of this procedure posted in the EHS safety manual and on safety office websites

Hazard Assessment and Safety Assurance

The PI or supervisor shall conduct a hazard assessment of the tasks likely to be conducted by the by minor(s). Note that the Campus Safety Resources are available to assist with the hazard assessment. The hazard assessment shall be documented.

No minor shall be permitted to participate in prohibited activities as listed in Appendix B – Prohibited Activities.

The PI or supervisor will prepare a descriptive form that describes the minor's tasks, to be signed by the minor and the parent/guardian. A template for this form is attached as Appendix A. This descriptive form must include, at a minimum, the following:

1. A detailed description of the minor's activities so that the minor and parent/guardian can make an informed decision about all risks associated with the proposed activity.
2. Hazard specific safety training that must be completed by the PI or supervisor with the minor.
3. Assurance that the minor will be supervised at all times while in the facility and never left alone.
4. Assurance that the laboratory/shop will be in full compliance with all applicable University safety programs and regulations.
5. Identify the PI or supervisor responsible for the minor's activity so that minors/parents/guardians know who to contact with questions or concerns about the activity.
6. The date(s) of the proposed activity for the minors/parents/guardians to consider.
7. Clear, unambiguous language that is understandable to a layperson.
8. A release completed by each minor/parent/guardian.
9. Adequate time for each minor/parent/guardian to review the descriptive form and sign the release.

Training and Information

A general safety orientation shall be provided and maintained by Campus Safety Resources. An electronic format will be made available through Campus Safety Resources' websites. Minors shall take all applicable modules (e.g. chemical safety, biological safety, etc.) of the general, self-study safety orientation before beginning work. In addition, a quiz shall be used to highlight key points and document understanding of the information. Quiz results should be forwarded to Campus Safety Resources so that completion of this requirement can be documented (see Recordkeeping Section below).

The minor's primary supervisor or PI shall address site-specific safety subjects. Subjects for this training shall be developed from the hazard assessment.

Recordkeeping

The following records shall be maintained as part of this program:

1. Training – general and specific
2. Written hazard assessment to cover any hazardous materials or associated procedures in the lab or shop (e.g. chemical hygiene plan; material safety data sheets; Institutional Biosafety Committee-approved registration documents for recombinant DNA, infectious agents, or biological toxins; standard operating procedures which address risk and risk mitigation)
3. Safety Assurance (Appendix A)

These records shall be maintained for at least three years in accordance with safety procedure GS 43: Records Retention for Safety, Health and Environmental Protection, found in the safety manual. Records shall be kept longer in the event the minor is injured or if litigation is expected.

Campus Safety Resource offices shall be responsible for maintaining the general safety training records. The PI or supervisor is responsible for maintaining the lab- or shop-specific safety training documentation, safety assurance forms, and written hazard assessments as listed above.

Standards and References

29 C.F.R. 1910.1200 Appendix A
T.C.A. 50-5-106

Appendix A – Safety Assurance

Name of Minor_____

Worksite Location_____

Activity(ies)_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Attach additional information if necessary

Responsible Principal Investigator or Supervisor

I agree to sponsor the minor(s) identified above and by my signature below agree that:

1. I have read, understand, and will adhere to The University of Tennessee policy on "Minors in Laboratories and Shops."
2. I will ensure the student has received the necessary training before participating.
3. I have reviewed or will review with the minor at the time of arrival on campus the hazards involved with participating in the lab or shop.
4. I have confirmed that necessary personal protective equipment appropriate for, and specific to, hazards will be provided.
5. This individual will be supervised at all times while in the laboratory or shop and never left alone.
6. The laboratory or shop in which the minor will be working is in compliance with all applicable University of Tennessee safety programs and regulations.

Name of Principal Investigator or Supervisor:	
PI/Supervisor Phone:	PI/Supervisor Email:
Signature:	Date:

Minor

1. I have read, been told, and agree to follow the safety policies of The University of Tennessee.
2. I acknowledge and agree that there are risks involved with the activity(ies) as described above.
3. I agree to complete safety/hazard or other required training provided by The University of Tennessee before participation in the activity(ies) described above.
4. I choose to voluntarily participate in this activity with full knowledge that the activity(ies) described above may be hazardous to me.
5. I agree that my participation may be suspended at any time, at the discretion of The University of Tennessee and its officers, agents, and employees, if I jeopardize my own safety or the safety of others.
6. I agree to release, indemnify, and hold harmless The University of Tennessee for any loss, liability, damage, or costs, including court costs and attorney's fees, that may occur as a result of my negligent or intentional act or omission while participating in the activity(ies) described above.

I HAVE CAREFULLY READ THIS DOCUMENT AND HAD SUFFICIENT TIME TO ASK QUESTIONS AND BE GIVEN ANSWERS. I SIGN THIS DOCUMENT VOLUNTARILY.

Name of Minor (print):	
Signature:	Date:

Parent/Guardian

I, _____,(PRINT NAME) am the parent or legal guardian of the participant who has signed above.

1. I have read and understand what my child will be doing and the risks involved.
2. I understand that I may contact the PI or supervisor if I have questions or concerns.
3. I agree that my child's participation may be suspended at any time, at the discretion of The University of Tennessee and its officers, agents, and employees, if the safety of my child or others becomes a concern.
4. I certify my child has adequate health insurance necessary to provide for and pay any medical costs that may directly or indirectly result from my participation in the activity(ies) described above.
5. I have read and I understand this information and I consent to my child taking part in the activity(ies) described above, and I fully enter into and agree to the above Assumption of Risk and Release from Liability set forth above.

Name of Parent or Legal Guardian (print):	
Signature:	Date:

Appendix B -- Prohibited Activities

The follow list of activities shall not be undertaken by minors:

1. Confined Spaces – Entry into a permit-required confined space
2. Fall Hazards - Presence where an unguarded fall hazard exists. Note this does not apply to ladders
3. Hot work involving welding, brazing or torch cutting
4. Lockout/Tagout - Equipment maintenance, set-up, repair, adjustment or testing that would require lockout/tagout
5. Excavation and Trenching - Presence in excavations
6. Heavy Equipment - Operation of backhoes, front end loaders, forklifts, bulldozers, trackhoes, bobcats, and similar heavy equipment
7. UT Vehicles - Operation of UT vehicles, including all-terrain vehicles, motorcycles, carts, and any other motorized or electric conveyances
8. Unguarded Power Transmission - Presence in close proximity to unguarded power transmission equipment such as fly wheels, rotating parts, drive belts/pulleys, screw conveyors, or any similar equipment
9. Operation of power-driven woodworking machines
10. Operation of power-driven metal-forming, punching and shearing machines
11. Operation of circular saws, band saws and guillotine shears
12. Hazmat Spills - Clean up spills of hazardous materials
13. Presence near powder-actuated fasteners
14. Scaffolding - Presence on scaffolding more than 10 feet above the ground
15. Construction Sites - Presence on construction sites
16. Exposure to noise sources exceeding 90 dBA
17. Handling open sources of radioactive materials, exposure to x-ray machines, or being left unattended with any type of ionizing radiation
18. Non-ionizing Radiation – Exposure to laser in hazard classes III or IV; exposure to non-ionizing radiation sources exceeding standards established by the American Conference of Governmental Industrial Hygienists
19. SCBA - Presence in situations where a self-contained breathing apparatus is necessary
20. IDLH - Presence in situations that are considered immediately dangerous to life and health as defined by the National Institute for Occupational Safety and Health (NIOSH)
21. Imminent Danger - Presence in situations that are considered an imminent danger (per safety policy number GS 102 (Imminent Danger); see the UT EHS Safety Manual at http://web.utk.edu/~ehss/)

22. Diving/Swimming – Where a self-contained underwater breathing apparatus (SCUBA) is used
23. Activities in or about establishments manufacturing or storing explosives or articles containing explosive components
24. Operation power-driven hoisting apparatuses
25. *Chemicals Requiring Approval Prior to Use* (per safety policy number HM 45; see the UT EHS Safety Manual at http://web.utk.edu/~ehss/) are not appropriate for minors to work with directly or in close proximity. These include chemicals which may be highly flammable or explosive, may have extremely unfavorable health implications, or possess a significant risk larger than the intended academic benefit
26. Any other activities that the Commissioner of Labor and Workforce Development has declared by regulation to be hazardous or injurious to the life, health, safety and welfare of minors

Comprehensive Laboratory Hazard Assessment and Controls Form

Building (if applicable) and Room #:
Department:
Completed by (print name and title):
Date Assessment Completed:
Name of Lab Project (if applicable):
Principal Investigator (print name):
Department Head (print name):

Instructions:

This form must be completed by the PI, Lab Supervisor, or their designee to conduct a laboratory hazard assessment specific to activities in their laboratories. The laboratory hazard assessment identifies hazards to employees and students and specifies personal protective equipment (PPE) to protect employees during work activities. The person conducting the assessment must verify that it is complete and that training has been conducted.

Review the Hazard Description (column 3) of each Exposure Condition (column 2) and check the ones that are present (column 1). For every condition present, review the Examples of Engineering Controls and Personal Protective Equipment (column 4) and then complete the Specific Engineering Controls and PPE (column 5) that you intend to use to reduce or eliminate the hazard.

Long pants or skirts, closed toed shoes, and full coverage shirts are minimum requirements for all laboratory work. Hair should be tied back and minimal jewelry should be worn. Additional PPE may be required based on the assessment below. Safety Data Sheets should always be reviewed before working with any new chemicals.

Please note: The PPE Hazard Assessment does not supplant the use of administrative or engineering controls as primary methods to mitigate hazards encountered in the laboratory. PPE is your last line of defense and whenever feasible administrative and engineering controls must be applied before PPE selections are made.

Lab Hazard Assessment Form

Check if Present	Exposure Condition	Hazard Description	Examples of Engineering Controls and Personal Protective Equipment (PPE)	Specific Engineering Controls and Personal Protective Equipment (PPE)
Biological Hazards: Contact BioSafety at 974-1938 with Questions				
☐	Animals	Splash, bites, exposure to animal body fluids; injuries due to animal size, caging; allergies, and disease transmission	Requires approval by IACUC	
☐	Human Blood or other potentially infectious materials	Disease transmission	May require special approval (contact Office of Biosafety); Blood-borne Pathogen training, and Universal Precautions	
☐	Infectious Pathogens	Disease transmission	Good microbiological methods, engineering controls, gloves	
☐	Recombinant DNA	Depends on nature of DNA segments, host vector systems. Introduction of foreign genetic materials into personnel or environment	Requires special approval (contact Office of Biosafety); Good microbiological methods, engineering controls, gloves	
☐	Select agents and toxins	Infectious agents and toxins with potential to pose a severe threat to human health.	Contact Office of Biosafety 974-1938 Requires special permission. See www.selectagents.gov	
☐	Human Subjects	Ensure rights, safety and welfare of human subjects.	Requires approval by Institutional Research Board (IRB) 974-7697	
Chemical Hazards Contact EHS at 974-5084 with questions				
☐	Chemicals,low hazard with low splash probability	Skin and eye irritation	Safety glasses, chemical resistant gloves, lab coat, closed shoe of good structure, long pants; Be aware of the nearest eyewash and shower and have appropriate spill kits on hand.	
☐	Compressed gases	Aphyxiation, accidental tip over, powerful sudden pressurized release, and pinch points	Gas cylinders must be secured to stationary objects in a safe location away from danger or impact; Safety glasses and gloves	

Lab Hazard Assessment Form

Check if Present	Exposure Condition	Hazard Description	Examples of Engineering Controls and Personal Protective Equipment (PPE)	Specific Engineering Controls and Personal Protective Equipment (PPE)
☐	Controlled Substances	Drugs and certain other chemicals (narcotic and non-narcotic)	Proper training, handling & dispensing procedures, recordkeeping, safety glasses; Under the jurisdiction of federal and state laws	
☐	Corrosive liquids w/reasonable probability of splash	Skin and eye damage	Chemical splash goggles and optional face shield, neoprene gloves, lab coat, closed shoes, chemical resistant apron and appropriate spill kits on hand.	
☐	Cryogenic liquids, ultra-cold freezers, dry ice	Aphyxiation, skin, eye and tissue damage, frostbite	Ventilation, safety glasses, goggles and optional face shields for splash hazards, insulated cryogenic gloves, closed toe shoes	
☐	Organic solvents	Skin/eye damage, absorption through skin, organ damage	Chemical splash goggles and optional face shield, heavy resistant gloves, lab coat, closed shoes, chemical resistant apron, eyewash and shower and appropriate spill kits available.	
☐	Volatile hazardous or highly hazardous chemicals	Inhalation of toxic vapors, skin contact	Fume hood, glove box, safety glasses, and gloves; specialty spill kits may be needed, respirators if outside of hoods—call EHS at 974-5084 first for selection/fit	
☐	EPA Regulated Hazardous Waste	Exposure,environmental release	Safety glasses, gloves, proper storage and disposal procedures; Training and safe handling procedures.	
☐	Special cleaning agents	Exposure, allergies	Safety Data Sheets, hazard communication training, proper procedures, gloves, safety glasses	

Lab Hazard Assessment Form

Check if Present	Exposure Condition	Hazard Description	Examples of Engineering Controls and Personal Protective Equipment (PPE)	Specific Engineering Controls and Personal Protective Equipment (PPE)
☐	Toxic Substances	Poisons, neurotoxins, teratogens, mutagens, carcinogens, and subsequent environmental impact.	Proper training, procedures, storage, and disposal	
☐	Hydrofluoric acid (HF)	HF can be fatal if absorbed through the skin; severe burns; contact with metals can cause a hydrogen fire	Face goggle and face shield; heavy chemical resistant gloves (i.e. polyvinyl chloride or neoprene); lab coat	Calcium Gluconate, the antidote to HF, must be available when using this corrosive liquid.
☐	Air or water reactive chemicals	Spontaneous fires;explosions	Work in glove box; Safety goggles; chemically resistant gloves; flame resistant lab coat	
☐	Perchloric Acid	Severe burns; explosion when in contact with flammables	Safety goggles; neoprene gloves; lab coat	Only use fume hoods approved for perchloric acid use
☐	Peroxidizable chemicals	Explosion; death	Date material when opened. Dispose through EHS within 6 months.	
☐	Potentially explosive chemicals	Explosion; death	Engineering controls specific to project will need to be used.	
☐	Washing glassware	Skin lacerations from broken glass	Safety glasses, thick patterned surfaces with no slip grip gloves, lab coat.	
☐	Ultraviolet radiation	Conjunctivitis, corneal damage, skin redness.	UV face shield and goggles, lab coat.	
☐	Hot Substances	Burns, Fire	Safety glasses. Lab coat. Thermal insulated gloves when needed .	
☐	Nano-particles	Unknown health hazards due to small size	Containment, respirators	
Radiological Hazards Contact Radiation Safety 974-5580				
☐	Ionizing Radiation	Cancer, teratogenic	Time,distance, shielding; Permit and controls approved by Radiation Safety Committee.	
☐	Non-Ionizing Radiation	Eye or skin damage, burns, heat, cancer.	Training, curtains (welding), signage, interlocks, beam blocks, safety eyewear	

Lab Hazard Assessment Form

Check if Present	Exposure Condition	Hazard Description	Examples of Engineering Controls and Personal Protective Equipment (PPE)	Specific Engineering Controls and Personal Protective Equipment (PPE)
Physical Hazards Contact EHS at 974-5084 with questions				
☐	Compression (pressure)	Injury from sudden release of energy from valves, compression chambers	Energy control, safety glasses, shields, body position	
☐	Confined Spaces	Exposure, falls, dangerous atmospheres, asphyxiation, noise, vibration	Buddy system, lanyards, ventilation, monitoring	
☐	Elevated heights	Fall injury	Lanyards, anchors	
☐	Energized Equipment	Pinch, crush, caught, pulled in, electrocution	Energy control, signage, guards, no jewelry, tie back long hair; and no loose clothing; Specialty NFPA 71 Arc Flash electrical training and other types of training may be required.	
☐	Extreme Environmental Conditions	Hypothermia (cold), frostbite (cold), heat exhaustion (heat) or heat stroke.	Training, physiological monitoring. Rest cycles and fluid replacement	
☐	Impact	Injury to head or body	Hard hat, impact resistant toed shoes, body position	
☐	Manipulation of large objects	Injury, death	Training, proper lifting equipment, procedures, inspections, buddy system	
☐	Material Handling	Physical injury, strains, sprains	Training, buddy system, gloves, standard operating procedures	
☐	Noise	Deafness, hearing damage, inability to communicate	Noise monitoring, hearing protection, training, and engineering controls (e.g., enclosures, baffles, mufflers)	
☐	Penetration	Injection, wounds	Training, padding of surfaces, signage, and body position	
☐	Respirable Dust	Lung damage	Local exhaust ventilation. monitoring, respirator. Contact EHS at 974-5084 for respirator fit testing and other information.	

Lab Hazard Assessment Form

Check if Present	Exposure Condition	Hazard Description	Examples of Engineering Controls and Personal Protective Equipment (PPE)	Specific Engineering Controls and Personal Protective Equipment (PPE)
☐	Vibrating Equipment	Cumulative trauma disorders.	Gloves, protective shoes, hearing protection	
☐	Hot Equipment (autoclaves); open flames (Bunsen Burners); high temperature ovens and furnaces	Burns; fires, explosions	Gloves, eye protection, training; specialty lab coats that are heat and flame resistant, long furnace tongs	
☐	Slip, Trip and Fall Hazards	Injury, Death	Wear closed-toed shoes that are slip resistant; Look and be aware of hazards.	
☐	Overhead Hazards	Injury, Death	Hard hat, limit access beneath	
☐	Centrifuge	Imbalanced rotor can lead to broken vials, cuts, exposure, centrifuge damage or destruction & impact injuries from rotor failure	Chemical goggles, lab coat, vinyl, or nitrile gloves. OnThe Job training	
☐	Apparatus with contents under pressure or vacuum	Eye or skin damage	Safety goggles, face shield; chemical resistant gloves; lab coat. Fume hood sash down or safety shield barrier	
☐	Work involving lasers (Class 3, Class 4)	Eye damage; skin damage	Appropriately shaded goggles with optical density based on individual beam parameters; appropriate skin protection when working with dyes	
☐	Sharps (including broken glass)	Cuts; exposure	Safety goggles or glasses; lab coat; gloves; leather closed toe shoes; sharps disposal containers & broken glass boxes	
☐	Moving compressed gas cylinders	Crushed foot/toes	Steel toed shoes, gas cylinder dollies/carts	

Lab Hazard Assessment Form

Check if Present	Exposure Condition	Hazard Description	Examples of Engineering Controls and Personal Protective Equipment (PPE)	Specific Engineering Controls and Personal Protective Equipment (PPE)
☐	Sonicator	Ear damage, exposure	Safety goggles; lab coat; gloves; ear plugs	
☐	Working with loud equipment, noises, sounds, alarms, etc..	Potential ear damage and hearing loss	Earplugs or ear muffs as necessary	
☐	Very cold equipment or dry ice	Frostbite, Hypothermia	Safety goggles; insulated gloves; lab coat	
☐	Spark Producing Operations (i.e. Metal Grinding, Welding)	Burns to hands, skins, eyes, hair, clothing.	Fire retardant apparel, gloves, and impact goggles. Keep hair short, covered, or tied away from sparks.	
☐	Working in nuisance dust	Skin or eye damage, respiratory damage	Safety goggles, appropriate gloves, lab coat, closed shoes or boots if necessary, pants, NIOSH approved dust mask or other respiratory protection (call EHS).	
☐	Crush or pinch	Injury, Amputation, Death	Follow warning signs on posted equipment; avoid wearing jewelry; avoid loose clothing	
☐	Off-site work	Bug bites; snake bites; heat exhaustion; cold exposure; falls; vehicle accidents; wild animals	Take first aid kit; emergency preparedness, to include 2-way radios if no cell phone service	

Lab Hazard Assessment Form

Unique or Lab Specific Activities

If your lab conducts any additional or unique activities that are not listed above, identify the potential hazards and appropriate PPE than add these activities to the Unique or Lab-Specific Activities section below. If a lab activity is similar but somewhat different than one of the common activities listed, include it in this section as well. **If you do not have any unique activities, please place "NA" in the first column under Activity Description.**

	Activity Description	Potential Hazard	Recommended PPE
A.			
B.			
C.			
D.			
E.			

Lab Hazard Assessment Form

Additional Comments:

Has this person taken a general Lab Safety Training Course? _____

Certification: I certify this hazard assessment was conducted according to University Policy and the signatures below indicate acknowledgement.

Completed by (print): _____ Date: _____

Completed by(signature):_____

Principal Investigator (print): _____ Date: _____

Principal Investigator (signature):_____