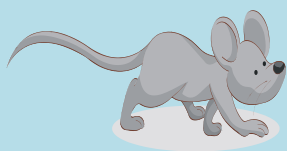


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Isoflurane Use in Labs By Jessica Tyre

Isoflurane is a halogenated anesthetic gas commonly used in University animal research facilities and individual laboratories. Isoflurane is a clear, colorless volatile liquid at standard temperature and pressure with a mild ether-like odor. It is known to cause serious eye irritation and human exposure to waste anesthetic gases has been associated with reproductive effects. Signs of acute exposure can include nausea, vomiting, nose/throat/respiratory irritation, headache, dizziness, drowsiness, skin irritation. Signs of chronic exposure include hypotension (low blood pressure), tachycardia (increased heart rate), respiratory depression, and elevated blood glucose.

Regulatory Limits: The Occupational Safety and Health Administration (OSHA) does not have a Permissible Exposure Limit (PEL) for Isoflurane. The National Institute of Occupational Safety and Health (NIOSH) have established a Recommended Exposure Limit (REL) of 2 ppm as a ceiling limit over a 1-hour time period for all halogenated anesthetic agents. Based on potential risks it is recommended that no worker should be exposed to greater than 2 ppm of any halogenated anesthetic agent including Isoflurane.

Air Monitoring: Area monitoring and personal monitoring can be requested to assess potential exposures in the laboratory work area. The monitoring is performed using a monitoring badge that measures concentrations in the room or by placing a badge in an employee's breathing zone during surgeries or other procedures when working with Isoflurane. Air monitoring can be requested by contacting Environment, Health & Safety (EHS) at extension 2046.

Engineering Controls: Isoflurane must be used in a well-ventilated room for which there is no recirculation of exhaust air. Active scavenging is optimal for removing waste gas and can include any of the following:

- Delivery of anesthetic inside a certified chemical fume hood or ducted biological safety cabinet (BSC).
- Connection of vaporizer and/or induction box exhaust hose into a certified chemical fume hood or ducted BSC.
- Connections of vaporizer and/or induction box exhaust hose to a house vacuum.

Passive scavenging can be used safely if procedures are followed. Passive scavenging relies on the positive pressure from the anesthetic gas delivery system and/or the exhalation effort of the animal to drive contaminated exhaled air through a specially designed activated carbon charcoal filter. The charcoal canister will adsorb and remove the waste gas before being discharged back into the room. Charcoal canisters have a finite effective life span, which can be monitored by weight.

PPE: The following personal protective equipment (PPE) should be worn during all surgical procedures: nitrile gloves, a lab coat, and safety glasses.

Waste Disposal: Unused solutions of Isoflurane will be disposed of as a hazardous material through EHS.

Accidents or Injuries: If Isoflurane is splashed on an individual or in eyes, flush for 15 minutes with copious quantities of water and contact Security at X366.

Spill Procedures: Do not attempt to clean-up if you feel unsure of your ability to do so or if you perceive the risk to be greater than normal laboratory operations. Small volumes of Isoflurane evaporate readily at normal room temperatures, and may dissipate before any attempts to clean up or collect the liquid are initiated. If a small spill occurs, rapidly absorb any liquid with absorbent pads or paper towels and place in chemical fume hood for safe evaporation. If a large spill occurs, notify others in the area and evacuate room immediately and call Security at X366.

Safety Spotlight

Our December Safety Spotlight is on **Fume Hood Safety**. You can find more information on this topic in Chapter 16-Laboratory Safety in the UNE Safety Manual located on the EHS web page.

New Vaneometer flow monitor:



Do NOT store chemicals in hoods.



Hoods are certified annually



Fume hoods are checked quarterly by EHS and annually by an outside vendor. The velocity of the air at the face of the hood is measured with the sash at the maximum height recommended for operation and use. The results are posted on a sticker, which is attached to the lower right-hand corner of the sash. Hoods that do not meet the minimum exhaust requirements during the annual or quarterly inspections are posted "out-of-service" and Facilities Management is notified about the need for repairs. When repairs have been made, EHS will test the fume hood again for proper operation before putting the fume hood back into service.

Procedures for Proper Use of Fume Hoods:

- Before using the hood, make sure air is entering the hood and it is functioning properly. Report any problems.
- Do not block baffle openings or place bulky items in the hood that will prevent air from entering the baffle opening.
- Conduct work at least six inches from the edge of the hood.
- Lower the sash to marked use setting to protect you from dangerous reactions.
- Keep hood clean and uncluttered.
- Wipe up spills immediately.
- Be aware that drafts from open windows, open doors, fans, air conditioners, or high traffic walkways may interfere with normal hood exhaust.
- If hood malfunctions or ceases to operate, secure work area and materials, close the sash, and report condition to Facilities Management.
- Do not alter or remove flow alarms on hoods. Report any problems to the lab manager and contact Facilities to address the issue.
- Keep sashes in closed position when not in use to conserve heat/fuel use.

Biological Safety Cabinets (BSC):

- Class II (vertical laminar flow) biological safety cabinets (BSC) provide a partial containment system for the safe handling of pathogenic organisms.
- To ensure safety, BSCs must be used correctly with good microbiological techniques and be in proper mechanical working order. Cabinets should be certified for performance upon installation and any time that the cabinet is moved or altered.

****IMPORTANT CHANGE****

EH&S in conjunction with Facilities Maintenance will be changing out electronic hood flow indicators as they fail with a different style called a Dwyer Vaneometer. OSHA, EPA and other safety ventilation requirements for fume hoods can now be quickly checked by laboratory personnel to verify that your hood is working properly before each use, as required by OSHA.

The Vaneometer Swing Vane Anemometers is a durable instrument that continuously displays face velocity of the fume hood making it easy for you to determine if the hood is functioning properly. The Vaneometer is designed to measure air velocities from as low as 25 feet/minute to as high as 400 feet/minute.

Labeling and Transfer of Chemicals

By Ronnie Souza

Permanent Container Labels

Employers must ensure that no worker uses, stores, or allows any other person to use or store any hazardous substance in a laboratory if the container (including bags, barrels, bottles, boxes, cans, cylinders, drums and reaction vessels) does not meet the following labeling requirements in OSHA's Hazard Communication standard [29 CFR 1910.1200(f)(1)]:

- The identity of the chemical and appropriate hazard warnings must be shown on the label.
- The hazard warning must provide users with an immediate understanding of the primary health and/or physical hazard(s) of the hazardous chemical through the use of words, pictures, symbols, or any combination of these elements.
- The name and address of the manufacturer, importer or other responsible party must be included on the label.
- The hazard label message must be legible, permanently displayed and written in English.

Portable (Secondary) Container Labels

Often, laboratory operations require transferring chemicals from the original labeled container into a secondary container (e.g., beaker, flask, or bottle). Portable containers must comply with the labeling requirements listed above if any of the following events occur:

- The material is not used within the work shift of the individual who makes the transfer.
- The worker who made the transfer leaves the work area.
- The container is moved to another work area and is no longer in the possession of the worker who filled the container.
- Labels on portable containers are not required if the worker who made the transfer uses all of the contents during the work shift.

When a secondary container is used for longer than one shift or does not meet the requirements outlined in the Permanent Container Labels section above, a label needs to be applied to the secondary container. This label must contain two key pieces of information: the identity of the hazardous chemical(s) in the container (e.g., chemical name) and the hazards present. There are many ways to communicate this hazard information. Employers should select a system that will work for each location.

Replacement Container Label

The existing label on a container entering the workplace from a supplier must not be removed, altered or defaced. If a chemical container's original label must be replaced, the new label must contain the same information as the original. Only use labels, ink and markings that are not soluble in the liquid content of the container.



Laboratory Safety: Centrifuges

By Ronnie Souza

Centrifuges, which operate at high speed, have great potential for injuring users if not operated properly. Unbalanced centrifuge rotors can result in injury or death. Sample container breakage can release aerosols that are harmful if inhaled.

The majority of all centrifuge accidents result from user error. To avoid injury, workers should follow the manufacturer's operating instructions for each make and model of centrifuge that they use.

Follow these steps for the safe operation of centrifuges:

- Ensure that centrifuge bowls and tubes are dry.
- Ensure that the spindle is clean.
- Use matched sets of tubes, buckets and other equipment.
- Always use safety centrifuge cups to contain potential spills and prevent aerosols.
- Inspect tubes or containers for cracks or flaws before using them.
- Avoid overfilling tubes or other containers (e.g., in fixed angle rotors, centrifugal force may drive the solution up the side of the tube or container wall).
- Ensure that the rotor is properly seated on the drive shaft.
- Make sure that tubes or containers are properly balanced in the rotor.
- Only check O-rings on the rotor if you are properly trained.
- Apply vacuum grease in accord with the manufacturer's guidelines.
- Do not exceed the rotor's maximum run speed.
- Close the centrifuge lid during operation.
- Make sure that the centrifuge is operating normally before leaving the area.
- Make sure that the rotor has come to a complete stop before opening the lid.
- When centrifuging infectious materials, wait 10 minutes after the rotor comes to a complete stop before opening the lid. If a spill occurs, use appropriate decontamination and cleanup procedures for the spilled materials.

Report all accidents to your supervisor and EH&S immediately.



Vertere Chemical Inventory

By Peter Nagle

As many of you know, UNE has a computerized chemical inventory program, Vertere Inventory Manager (VIM), which is used to track the chemical inventory in our labs. What many don't know is that any owner or user of chemicals can have access to the inventory for their own and/or department inventories through our web-based system. If you would like to see the inventory system for yourself, contact Peter Nagle in EH&S for a user name and password. Afterwards go to une.vertere.com and enter your user name and password for access to Vertere. After gaining access, follow these steps:

- Click the home tab at the top of the column on the left hand side
- Click the chemical tab
- Click on the View/Update tab in the left hand column

The ensuing menu offers the following options to search the inventory: Location, PI, Department, Chemical name and CAS#. For security reasons most users will not be able to view chemicals owned outside of their department or be able to edit the inventory.

Most laboratory chemicals are inventoried including acids, bases, flammable solvents and oxidizers. The goal is to document all of our hazardous chemicals stored on campus for regulatory reasons and inventory control. Optional items for the inventory include the following: buffer solutions, bio-chemicals such as enzymes and proteins, lab media, and products intended for consumer use such as bleach or cleaning solutions. If you have any questions, contact Peter Nagle in the EH&S Department.

Common Laboratory Accidents

By Cat Martins, Benefits Administration Coordinator

The most common laboratory accident is a cut from broken glassware and sharp instruments.

- Teach employees working in the lab (including work study students) the proper method for using glassware and sharp instruments.
- Always inspect glassware before using it and do not use chipped, cracked, or severely scratched glassware.
- Never handle broken or chipped glass without using proper hand protection.
- Dispose of all broken glass in a container that is assigned for broken glass and never in the general garbage container.
- When replacing scalpel blades never use your fingers to grab and remove the scalpel blades. The safest method would be to use a tool such as a hemostat or a pair of vise grips.

If you suffer an injury while working, one of the most important things you can do is to report it. Even if the injury does not appear to require immediate medical attention, UNE asks for all injuries to be reported immediately to a supervisor, Safety & Security, or Human Resources. Accident reports to document your injury can be located on UNE's Human Resources website at <https://www.une.edu/hr/support/employee-support>.

For more information regarding the Accident Reporting process please contact Cat Martins in Human Resources at cmartins@une.edu or 207-602-2394.

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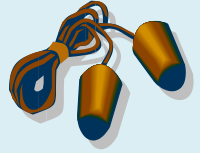


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UNE Hearing Conservation Program

By Jessica Tyre



Per OSHA 29CFR1910.95 Occupational Noise Exposure standard, protection against the effects of noise exposure shall be provided when the sound levels exceed those listed on Table G-16 – Permissible Noise Exposures (1) in the standard. The UNE Hearing Conservation Program is designed to protect the hearing of all employees and students on the UNE campus by ensuring that if any person is exposed to an 8-hour time weighted average (TWA) of 85 decibels or more, regular audiograms and hearing protection are provided.

When it is indicated that any employee's exposure level is equal to or exceeds an 8-hour TWA of 85 decibels, EHS will require the employee to participate in a monitoring program. The monitoring program is designed to identify employees that need to be included in the program and enable EHS to provide the proper hearing protection. When workers are highly mobile, or there are significant variations in sound levels or conditions that may be difficult to perform area testing, then the use of representative personal sampling will be used. Instruments used for monitoring are calibrated to ensure accuracy. Monitoring will take place whenever there is a change in a process, equipment, or the work area is changed in a way that it may impact additional employees. The EHS department will notify all exposed employees if they are at or above the 8-hour TWA of 85 decibels. Exposed employees have the right to observe all monitoring. Please notify EHS at x-2046 if you have any loud laboratory instruments that require you to wear ear plugs or ear muffs when in use.

The EHS department will establish and maintain an audiometric testing program available to employees at or above the 8-hour TWA of 85 decibels at no cost to the employee. Audiometric testing must be performed by a licensed or certified audiologist, otolaryngologist, or other qualified physician. A baseline audiogram is required within 6 months of the employee's first exposure at or above the action level; the EHS department will establish a valid baseline audiogram against which subsequent audiograms can be compared. (Within one year if using a mobile test van for testing). UNE will provide hearing protection at no cost to the employee, to all employees who have been exposed to an 8-hour TWA of 85 decibels or greater, has not had a baseline audiogram established, or have experienced a threshold shift.

Annual training is required as part of the Hearing Conservation Program. UNE provides on campus audiograms via a mobile testing van every spring for the employees in the program and the training is included at that time. For more information on the Hearing Conservation Program, please see Chapter 15 of the UNE Safety Manual.

UNE Chemical Sharing Listing

The UNE Chemical Sharing Program is a great way to reduce hazardous waste, reduce costs for your department, and have a positive environmental impact on campus. If you have any commonly used lab chemicals you are thinking of disposing of, please contact EHS so they can be listed in the next issues of EHS Lab Chatter as available for the UNE Chemical Sharing Program.

Chemicals currently available: *None*