Laboratory Compliance:
A Research Staff Handbook
Research Administration Office
INTRODUCTION

About the Handbook

This Handbook is intended to be an instructive guide for research staff which includes university associate-researchers, student workers, and volunteers. It has been designed to inform UA COM-P laboratory members about key laboratory compliance regulations mandated by OSHA that require oversight by UA COM-P Manager of Laboratory Operations, and the Research Administration Office.

Included in the Handbook are the following areas:

- Laboratory Training Requirements
- Laboratory Safety Orientation
- Appropriate Dress in the Laboratory
- Food or Drink in Laboratory Areas
- Research Laboratory Safety/Services Available
- Centrifuge Safety Instructions
- Shared Laboratory Equipment
- Safe Handling of Liquid Nitrogen
- What to Do in an Emergency
- Emergency Contact Numbers
- Emergency Evacuation Procedures
Laboratory Training Requirements

The following training modules must be completed before access to the research laboratories can be obtained:

- Biosafety (includes Biosecurity and Bloodborne Pathogens) - available online through CITI;
- General Laboratory Chemical Safety;
- Radiation Safety;

All laboratory safety compliance is monitored by the Chair of the Environmental, Health and Safety Committee, Kerr Whitfield, PhD, and the Manager of Laboratory Operations, Sepideh S. Hockley at the UA COM-P.

Laboratory Safety Orientation

All incoming laboratory members are required to attend a laboratory safety orientation which must be completed during the first week of joining the laboratory. New research staff should contact the Manager of Laboratory Operations to schedule an orientation.

Appropriate Dress in the Laboratory

- Closed toe shoes
- No sandals or flip-flops
- Long pants or skirts preferred
- No shorts or skirts above the knee
- Long hair should be tied back
- Safety goggles
- Lab coats
- Remove lab coats before entering common areas e.g. administrative offices, break rooms, etc.
- Always wear gloves when performing experiments
- Remove gloves before leaving the laboratory area

Food or Drink in Laboratory Areas

No food or drink is permitted in the laboratory areas at ABC-1, Chandler Innovations, or 3rd floor of TGen.
**Hepatitis B Vaccine**

It is recommended that individuals working with human tissue samples receive the Hepatitis B vaccine series or a titer. At UA Employee Health provides vaccinations to laboratory researchers per submitted protocols. At UA COM-P, these services are provided by UA-T Employee Health and received from Concentra Health Clinics locations in Phoenix. Requests for Hepatitis B vaccination should be made through the Manager of Laboratory Operations. In the case where a researcher chooses not to receive the Hepatitis B vaccine, a Declination Form must be completed and submitted to the Manager of Laboratory Operations.

**Biosafety, Biosecurity and Bloodborne Pathogens**

[http://risk.arizona.edu/healthandsafety/](http://risk.arizona.edu/healthandsafety/)

The Occupational Safety and Health Administration (OSHA) regulates facilities where employees could be exposed to bloodborne pathogens by promoting safe work practices to minimize the incidence of disease caused by these pathogens. Relative to this goal, OSHA enacted the *Bloodborne Pathogen Standard* (29CFR1910.1030). The purpose of the standard is to reduce occupational exposure to human *bloodborne pathogens* (PDF format) that employees may come in contact with in the workplace and to establish a framework for training and medical response.

**The University of Arizona's Exposure Control Plan**

The Department of Risk Management and Safety, UA-T has developed an *Exposure Control Plan* (PDF format) (ECP) to comply with the standard. The ECP provides guidelines and procedures to prevent or minimize occupational exposure to bloodborne pathogens. The ECP is policy of the University of Arizona.

Biosafety training which includes modules on Biosecurity and Bloodborne Pathogens is available online through the CITI Program website [www.citiprogram.org](http://www.citiprogram.org), and is mandatory for employees with a reasonably anticipated exposure to human blood, body fluids, and other potentially infectious materials. Due to the open bay nature of the UA COM-P laboratories, all research staff are considered potentially at risk of exposure whether or not they work directly with human samples. Thus, Biosafety, is mandatory for all research staff and faculty and must be completed before access to the research laboratories is obtained. New research staff should contact the Manager of Laboratory Operations to schedule training.
Radiation Safety
http://radcon.arizona.edu/
As a leading academic and research institution, the UA COM-P strives to maintain a safe and healthy working and learning environment for faculty, staff, students and visitors. The cooperation of the entire campus community is needed to realize this goal. This is particularly true of research that involves radiation sources, where the Radiation Control Office (RCO), Principal Investigators (PI) and Department Heads, and laboratory workers share the responsibility for creating and maintaining a safe workplace.

Radiation Control Office is advisory to the Vice President of Research (VPR), in UA -T on matters related to the campus Radiation Safety Program. The VPR delegates to the Radiation Safety Office the authority to oversee the use of radiation sources throughout the campus in Tucson and Phoenix. Thus, the Radiation Control Office has the authority to permit, deny or revoke authorization for individuals to obtain and use radiation sources. RCO staff perform regulatory required laboratory audits to identify and address safety and regulatory compliance issues while supporting the evolving research of our customers.

RCO provides radiation safety training for radiation users at UA COM-P once a month. Additional training dates are available at UA-T. Radiation safety training for non-radiation users is also available through the RCO upon request. Radiation safety training is mandatory for all research faculty and staff, and requires the completion of an RC-088. Contact the Manager of Laboratory Operations to register for training.

Radiation Safety training dates can be viewed on:
http://radcon.arizona.edu/training/rgmpe/schedule

Radioisotopes are ordered through RCO, purchased through Perkin Elmer and delivered to COM-P/ABC-1. Incoming radiation packages are processed by RCO staff on Tuesdays and delivered to the radiation worker. Back-up service is provided by the office of the Manager of Laboratory Operations if deliveries arrive on non-scheduled days.

Applications for laser use require the completion of an RC-050. Laser Radiation Protection training is provided by RCO as needed. A schedule of classes at UA-T can be found at: http://www.radcon.arizona.edu/lasers/new-worker/protection-course. Training is available at UA COM-P upon request.

The office of the Manager of Laboratory Operations provides monthly wipe surveys for the research laboratories. The results of the monthly wipe surveys are sent to the PIs and are available for inspection. PIs are responsible for ensuring that their radiation workers conduct after-use surveys and maintain an accurate radiation user notebook for the laboratory. The RCO and Manager of Laboratory Operations reserves the right to conduct routine audits of the laboratories and inspect radiation user notebooks to ensure safety compliance.

Requests for radiation waste pick-up should be made online through the RCO website. Guidelines for proper packaging of radioactive waste are available on Form RC-040.
Radioactive Waste Summary (RC-090) must be completed and attached to the outside of the waste container clearly identifying the responsible PI (radiation license holder). RCO staff will pick-up radiation waste on Tuesdays per online requests.

All necessary RCO forms are available on the RCO website. 
http://www.radcon.arizona.edu/radioactive-materials

**Laboratory Chemical Safety**

The Department of Risk Management & Safety (RM&S) created a UA Chemical Hygiene Plan for the interim Chemical Safety Committee (iCSC). It has been approved by the iCSC, the Research Policy Committee of the Faculty Senate, the Faculty Senate and by the President's Cabinet. It is based on the recommendations of the National Research Council in their publication, "Prudent Practices in the Laboratory – Handling and Disposal of Chemicals" and constitutes the Chemical Hygiene Plan (CHP) required by the U.S. Occupational Safety & Health Act (OSHA) of 1970 and regulations of the U.S. Department of Labor including 29 CFR 1910.1450 "Occupational Exposure to Hazardous Chemicals in Laboratories."

The purpose of this manual is to describe the proper use and handling practices and procedures to be followed by people working with hazardous chemicals in University of Arizona laboratories to protect them from potential health and physical hazards presented by chemicals used in the workplace, and to keep chemical exposures below specified limits.

It is the policy of the University of Arizona to provide a safe and healthful workplace in compliance with OSHA regulations including the "Laboratory Standard" referenced above. This manual applies to all "laboratories" as defined below, and all people working in these labs, and their line management. These Lab Workers must become knowledgeable in the applicable details of this manual and fulfill their responsibilities as outlined. All operations performed in a laboratory must be planned and executed in accordance with the procedures outlined in the UA Chemical Hygiene Plan. In addition, each Lab Worker is expected to develop good personal chemical safety habits aimed at the reduction of chemical exposures to themselves, others, and the environment. The UA Chemical Hygiene Plan can be viewed at: 
http://risk.arizona.edu/healthandsafety/labchemicalsafety/manual/index.shtml

The Arizona Occupational Safety and Health Administration (AZ/OSHA) requires that all laboratories have a written Chemical Hygiene Plan (CHP) that includes laboratory-specific hazard and safety information. This information should be available in the SOP of the Laboratory. PIs can obtain a template CHP for their laboratory by contacting the Manager of Laboratory Operations.

General Laboratory Chemical Safety training is available on-line through the Desire to Learn (D2L) System. Additionally, Laboratory Chemical Safety Self-Evaluations are available through the Office of the Manager of Laboratory Operations, and should be taken annually.
In the near future, General Laboratory Chemical Safety training will be available through CITI.

**Research Laboratory Safety/Services Available**

**Hazardous Materials Management**

Storage: PIs are responsible for overseeing proper acquisition and storage of hazardous chemicals in their laboratories.

Disposal: The U.S. Environmental Protection Agency (EPA) regulates disposal of laboratory wastes. PIs are responsible for ensuring that employees and students working in their laboratory follow proper disposal procedures (please refer to **No Discharge Policy for ABC-1** discussed below). These procedures should be clearly defined in the SOPs of each laboratory. EH&S Chair or the Manager of Laboratory Operations will provide guidance in this area as needed. For additional information regarding procedures for the disposal of hazardous materials including biohazardous materials, batteries, light bulbs, etc. please refer to the Risk Management and Safety website link to Environmental Compliance:  
[http://risk.arizona.edu/environmentalcompliance/index.shtml](http://risk.arizona.edu/environmentalcompliance/index.shtml)

At COM-P spent fluorescent light bulbs and batteries should be turned into the Facilities Management office.

**Chemical Waste**

Chemical waste pick-up is coordinated as needed by the Manager of Laboratory Operations and is a service provided by UA-T Department of Risk Management and Safety. Laboratories should provide completed Chemical Inventory forms to the Manager of Laboratory Operations and should ensure chemical waste containers are appropriately tagged and stored in time for pick-up. At COM-P, chemical waste is stored in room 452 (dark room) of ABC-1, designated fume hoods at TGen, 3rd fl., and Chandler Innovations. Like chemicals are consolidated into barrels prior to pick-up, thus, it is important to accurately identify the contents of a waste container. Chemical waste tags and Chemical Inventory forms are available in the office of the Manager of Laboratory Operations. PIs should contact EH&S Chair or Manager of Laboratory Operations if they have questions about proper labeling and storage of hazardous waste materials.

**No discharge policy for the ABC-1 Building**

The current University of Arizona (UA) policy prohibits any disposal of hazardous waste into the sewer system. In order to comply with the UA wastewater policy the following policy must be adhered to by all faculty and laboratory personnel.

Items on the following list will always be disposed of properly by storing these items in
the laboratory as hazardous waste in appropriate containers for pick-up by the Risk Management Department.

No Sink Disposal list:
• Any gasoline, benzene, naphtha, solvent, fuel oil or any other liquids, solids, or gases which create or tend to create a fire or explosion hazard in the publicly owned treatment works (POTW), or to be injurious in any other way to the POTW.

• Any solids or viscous substances of such size or in such quantities that they may cause obstruction to flow in the sewer or be detrimental to POTW operations. These objectionable substances include, but are not limited to, asphalt, dead animals, ashes, sand, mud, straw, industrial process shavings, metal, glass, rags, feathers, grass clippings, tar, plastic resins, wood, blood, paunch manure, grease, bones, hair, fleshings, entrails, paper cups, paper dishes, milk cartons or other similar paper products, either whole or ground.

• Any amounts of petroleum oil, non-biodegradable cutting oil or products of mineral oil origin.

• Any biodegradable oils, fats and greases, such as lard, tallow or vegetable oil, in concentrations that may cause adverse effects on the POTW.

• Any waste having a pH lower than 6.0 or greater than 9.0 standard units.

• Any waste having a temperature of 140 degrees F or higher.

• ABC-1 is a zero chemical discharge facility. No chemicals in any quantity can be poured into the drain system.

Please direct any questions regarding this policy to Sepideh S. Hockley, Manager of Laboratory Operations COM-PHX, at shockley@email.arizona.edu or (602) 827-8565. Additional clarification of any wastewater issues may be obtained by contacting Herb Wagner, Associate Director, Risk Management and Safety at hwagner@email.arizona.edu or (520) 621-7691.

**Biohazardous Waste**

Biohazardous waste is picked up every Friday from the cold rooms at COM-P ABC-1 building. Biohazard containers are located in the cold rooms on both the 3rd and 4th floors. A separate biohazard container is used for all animal carcasses and is located in cold room 351.
Dry Ice

Dry ice is delivered every Monday to UA COM-P and is deposited in the dry ice chest on the 4th floor of ABC-1. Special arrangements are made on State mandated holidays.

Cryogenics

Cryotanks are filled and maintained by the office of the Manager of Laboratory Operations. Liquid nitrogen is available in room 352 (ABC-1) for laboratory use. Training is provided on the proper method of dispensing liquid nitrogen safely by the Manager of Laboratory Operations.

Compressed Gases

50-lb CO2 compressed gas cylinders are provided for all tissue culture rooms. Specialty gases should be ordered through the office of the Manager of Laboratory Operations.

Laboratory Coat Laundry Service

A weekly laundry service is provided for laboratory coats. Pick-up is from the 3rd and 4th floors of ABC-1 every Wednesday. Laboratory coats in various sizes are provided by the department of Basic Medical Sciences for research staff and faculty within Basic Medical Sciences and will be identified by the UA COM-P Basic Medical Sciences logo. Individual owned coats can be dropped off for laundry provided they are clearly identifiable.
**Laboratory Safety Program**
EH&S Committee and the Laboratory Manager of Operations assist laboratories by providing hazard evaluations, work practice guidance, and training on:

- Carcinogens and other hazardous chemicals
- Shower/eyewash units and other safety equipment
- Chemical Hygiene Plans and other required safety documents
- Personal Protective Equipment (PPE) appropriate for laboratories
- Chemical exposure monitoring
- Required approval for use of radioactive materials, radiation-producing machines, lasers, biohazardous agents, and toxic gases
- Proper use of specific shared laboratory equipment such as centrifuges, scintillation counters, plate readers, etc.

**Chemical Inventory**: The Manager of Laboratory Operations maintains an inventory of hazardous materials for the entire UA COM-P campus including the laboratories at Chandler and the 3rd floor of the Tgen building. PIs are responsible for ensuring that all hazardous materials they control are listed in their inventory. Chemical inventories are required by environmental, occupational, and Fire Code regulations and are kept in a secure central database prepared and maintained by the Manager of Laboratory Operations.

**MSDS Sheets**
http://www.msds.com
The PI of each laboratory is responsible for maintaining a complete notebook containing all the MSDS sheets on chemicals used in their laboratory. In addition, the Manager of Laboratory Operations maintains a complete binder in which all the MSDS sheets for UA COM-P labs are compiled. PIs should provide to the Manager of Laboratory Operations copies of their MSDS sheets. The laboratory employees and students may need guidance on other research safety and compliance topics. The UA-T Department of Risk Management and Safety covers a variety of laboratory safety and compliance issues for easy reference at:
http://risk.arizona.edu/healthandsafety/index.shtml
Centrifuge Safety Instructions

UA COM-P provides a number of centrifuges for shared use. Instructions for use are posted above each of these instruments and must be followed in order to avoid injury and damage to equipment. Users must sign up each time they use one of the shared centrifuges and indicate the rotor being used. Sign-up sheets are posted on the centrifuges.

The following centrifuges are available for shared use:
- Beckman Coulter Optima L-100 XP Ultracentrifuge – 3rd floor ABC-1
- Beckman Coulter Optima Max Ultracentrifuge (table-top) – 3rd floor ABC-1
- Beckman Coulter J-26XP high speed centrifuge

Beckman Coulter – Centrifugation 101: Unravel the Mysteries of Centrifugation

A DVD is available, courtesy of Beckman Coulter, in the office of the Manager of Laboratory Operations which highlights basic safety concerns with regards to centrifugation. Laboratory staff should view the DVD prior to using departmental shared centrifuges. Viewing of the DVD should be scheduled through the office of the Manager of Laboratory Operations.
Instructions for Use of Shared Centrifuges:

OPTIMA L-100 XP Preparative Ultracentrifuge – Beckman Coulter

Rotors for L-100 XP: Type 45Ti (fixed angle), SW-32 Ti (swinging bucket), SW-55Ti (swinging bucket)

Departmental rotors are marked with a pink dot on the lid or the rotor body

1. Fill out the user log even for brief runs
2. Turn on the centrifuge – switch is located on right side panel
3. Key switch position should be in the normal position (arrow on key pointing left) for closed door centrifugation
4. Make sure the O-ring of the rotors do not dry out and have vacuum grease applied to them.
5. Make sure you have tubes approved for your rotor & high-speed spins (i.e. not just any 15 or 50 ml conical plastic tubes, such as Corning). Each tube must have an equally weighed balance positioned across from it in the rotor. Swinging bucket rotors must have all buckets hanging on the rotor to prevent an imbalance.
6. If you want to precool/heat the chamber without the rotor, make sure door is closed
   a. press PRECOOL/HEAT
   b. select desired temperature
   c. press Start Temp
   d. press STOP & VACUUM to vent the chamber when you are ready to load your rotor.
7. Check that the rotor is seated properly on the drive spindle assembly. Secure rotor or rotor lid by turning knob clockwise.
8. Close the door.
9. Use the touch screen to set the run parameters and select your settings from the drop-down menu or key in the numbers.
   a. SPEED (between 1000 rpm and rotor maximum speed)
   b. TIME (up to 999 hr and 59 min; or Hold for a continuous run)
   c. TEMP (between 0°C - 40°C)
10. Hit ENTER & START within 5 seconds to begin run (hitting STOP will end a run that has started). The vacuum will be activated. The rotor will not accelerate beyond 3000 rpm until the chamber pressure drops below 750 microns.
11. Check your high speed spins after a few minutes to make sure there are no error messages.
12. When run ends, press VACUUM to vent the chamber, open door, retrieve samples, close the door, and turn off centrifuge.
13. Check for spills / leaks / broken tubes. Decontaminate if necessary.
14. Wipe off old SPINKOTE around threads of rotor or buckets, reapply sparing amount of new SPINKOTE after you finish using the rotor.
15. Immediately notify the Lab Coordinator or Manager of Lab Operations if error messages or problems arise.

OPTIMA MAX Preparative Ultracentrifuge – Beckman Coulter

Rotors for OPTIMA MAX: MLA-130 (fixed angle), MLA-55 (fixed angle)
Departmental rotors are marked with a burgundy dot on the rotor lid

1. Fill out the user log even for brief runs
2. Turn on the centrifuge 30 minutes prior to your run.
3. Press DOOR to stop the vacuum.
4. Make sure the O-ring of the rotors do not dry out and have vacuum grease applied to them.
5. Make sure you have tubes approved for your rotor & high-speed spins. Each tube must have an equally weighed balance positioned across from it in the rotor.
6. Check that the rotor is seated properly on the drive spindle assembly. Secure rotor or rotor lid by turning knob clockwise.
7. Close the door.
8. Select the parameter keys and set your run parameters.
   a. SPEED (between 5000 – 130,000 rpm)
   b. TIME (up to 99 hr and 59 min)
   c. TEMP (between 0°C - 40°C)
9. Hit ENTER/DISPLAY & START to begin run (hitting STOP will end a run that has started).
10. Check your high speed spins after a few minutes to make sure there are no error messages.
11. When run ends, press DOOR to vent the chamber, open door, retrieve samples, turn off centrifuge, and close the door.
12. Check for spills / leaks / broken tubes. Decontaminate if necessary.
13. Wipe off old SPINKOTE around threads of rotor, reapply sparing amount of new SPINKOTE after you finish using the rotor.
14. Immediately notify the Lab Coordinator or Manager of Lab Operations if error messages or problems arise.
AVANTI J-26 XPI High Performance Centrifuge – Beckman Coulter

Rotors for Avanti: JA-25.50 (fixed angle), JA-14 (fixed angle), JA-17 (fixed angle), JS-5.3 (swinging bucket)
Departmental rotors are marked with a red dot on the knob of the rotor lid

Before starting a run

1. Fill out the user log, even for brief runs.
2. Make sure the O-ring of the rotors do not dry out and have vacuum grease applied to them.
3. Turn on the centrifuge & step on the foot pedal to open the door.
4. Make sure you seat the rotor pins in the correct position! Failure to do so will result in a damaged rotor which may cost ~ $10,000.00 to replace!!!!

Rotors will have 2 or 4 pins which can be viewed by looking down into the rotor from the top, bottom, or turning rotor on its side and looking into the drive hole; if the pins are missing or damaged - STOP - do not use the rotor!

One of the pins must be placed in between the two metal projections from the drive spindle assembly in the centrifuge.

5. Make sure you have tubes approved for your rotor & high-speed spins (i.e. not just any 15 or 50 ml conical plastic tubes, such as Corning). Each tube must have an equally weighed balance positioned across from it in the rotor. If using a swinging bucket rotor, make sure all buckets are in place.
6. Check that the rotor is seated properly on the drive spindle assembly. Secure rotor lid or knob by turning knob clockwise. If knob turns loosely and threads do not engage, the pins may not be seated properly on the hub.
7. Close the door by pressing down on top of the hand sticker on the door.
8. Recommended key switch position operating mode:
   NORMAL = regular closed-door centrifugation
Starting a run

9. Press individual function keys & soft keys or the keypad to select your parameters. Blinking indicates parameter can be changed. Blinking will occur until ENTER or another function key is pressed. (To change an entry before pressing ENTER, press CE. Press the function key again if you already pressed ENTER). An invalid parameter will also blink and a valid range is displayed. Fix the parameter and press ENTER.

   Rotor, Speed, Time, Temp, A/D (Default acceleration & deceleration rate is MAX)

10. Press ENTER & START within 5 seconds to begin run (hitting STOP will end a run that has started)
11. Check your high speed spins after a few minutes to make sure there are no error messages.
12. When run ends, open door with foot pedal, retrieve samples, close door, and turn off centrifuge.
13. Check for spills / leaks / broken tubes. Decontaminate if necessary.
14. Wipe off old SPINKOTE around threads of rotor or buckets, reapply sparing amount of new SPINKOTE after you finish using the rotor.
15. Immediately notify the Lab Coordinator or Manager of Lab Operations if error messages or problems arise.

*Figures are adapted from Beckman Coulter Avanti J-26 XPI CD Manual
Rotor Safety Tips

- Inspect rotor before each use to verify that all O-rings are present and in good shape.
- Replace damaged O-rings and lubricate with thin film of Vacuum grease.
- Make sure Rotor drive pin is aligned properly on centrifuge spindle.
- Clean and lubricate the rotor lid threads with a thin coat of Spinkote (white tube).
- Swinging bucket rotors must **always** have all buckets attached to prevent an imbalance.
- Clean up any spills immediately and report any problems with rotor or instrument to the Manager of Laboratory Operations, Sepideh S. Hockley (602-827-8565/602-653-9519), or the Laboratory Coordinator, Jennifer Jeung (602-827-2238/602-653-6209).
- Decontaminate/clean rotor by using mild non abrasive cleaner such as dish soap and rinsing. Turn rotor upside down to dry.

Centrifuge safety training is also provided several times a year by Beckman Coulter. Attendance is highly encouraged.

Additional Shared Equipment

UA COM-P provides a number of laboratory equipment for shared use. Instructions for use are posted above each of these instruments and must be followed in order to avoid injury and damage to equipment. Users must sign up each time they use one of the shared instruments. Sign-up sheets are posted next to each instrument. For a complete list of available shared equipment please refer to the BMS Shared Equipment Inventory posted on the BMS intranet, or contact the Manager of Laboratory Operations.

Any questions regarding the use/operation of shared equipment should be referred to the Manager of Laboratory Operations.
Safe Handling of Liquid Nitrogen

When handling liquid nitrogen:

*Always protect exposed skin & eyes*
- Wear appropriate personal protective equipment
  - Face shield or goggles / lab coat (do not cuff sleeves) / feet should be enclosed by shoes / waterproof cryo-gloves
- At atmospheric pressure, liquid nitrogen boils at – 320°F (-196°C). Do not let unprotected parts of your body touch anything cooled by liquid nitrogen; cooled objects can cause frostbite or stick and tear your flesh when you free yourself. Use tongs to handle objects immersed in liquid nitrogen.
- Eyes can be damaged by exposure to cold gas from liquid nitrogen which would be too brief to affect the hands or face.
- Liquid nitrogen can boil when inserting warm objects.
- Never use hollow rods or tubes as dipsticks

*Make sure you have adequate ventilation*
- Work under the fume hood when dispensing liquid nitrogen
- Nitrogen gas is colorless and odorless. Liquid nitrogen has a large liquid to gas expansion ratio. One liter of liquid nitrogen can become 24.6 cu. Ft. (0.7 m³) of gas, displacing oxygen. Breathing air with less than 18% oxygen can very quickly result in dizziness, unconsciousness, and asphyxiation (suffocation).
- Never plug/close the vents on the liquid nitrogen storage tank

If someone becomes dizzy or loses consciousness, move to well-ventilated area immediately.

Contact help immediately:
Manager of Laboratory Operations (Cell) 602-653-9519
Laboratory Coordinator (Cell) 602-653-6209
Emergency Phone Number 911
What to Do in an Emergency

**Chemical Spill**
In the event of a chemical spill, refer to the MSDS sheets for toxicity warnings and recommended safety precautions. Spill pads are provided on the 3rd and 4th floor labs of ABC-1 and 3rd floor of TGen for clean-up of chemical spills. If additional assistance is required contact the office of the Manager of Laboratory Operations.

If the chemical spill causes exposure to skin, eyes or is ingested, refer to the guidelines provided in the MSDS sheets. If immediate medical attention is required, call 911, inform the P.I. Notify the Manager of Laboratory Operations and complete an Incident Report.

**Radiation Spill**
In the event of a radiation spill, the following steps must be taken to avoid further contamination:

1. Inform Radiation Control and receive guidance on how to proceed with the clean-up, if attempts at decontamination have proven unsuccessful;
2. Inform the Manager of Laboratory Operations so the contaminated area can be covered and marked with RAM tape as a warning to others;
3. Conduct a final wipe survey to ensure that the clean-up has been successful and cpm counts are within normal ranges. Provide the Manager of Laboratory Operations a copy of the scintillation counter readings indicating the area has been successfully decontaminated.
Emergency Contact Numbers

In the event of an accident, resulting in injury during regular work hours (8:00 am – 5:30 pm) call the First Responders team:

Pat Knox: 602-827-2016  
Jessica Coronado: 602-827-2033  
Marshall MacFarlane: 602-827-2045

Also, notify the Manager of Laboratory Operations, Sepideh S. Hockley: 602-827-8565/602-653-9519, shockley@email.arizona.edu

Security  
(602) 478-8169

Campus Security hours are as follows:

Monday – Friday:  6:30 am – 12:00 am  
Saturday & Sunday:  8:00 am – 8:00 pm

Please note students are only permitted on campus when Security is on site and must vacate at 11:30 pm on Monday – Friday, and 7:30 pm on Saturday and Sunday.

The Emergency call in line (602) 827-2222 provides 24/7 information regarding the campus emergency status.

Questions about laboratory safety? Where to get answers:  
UA-T Office of Risk Management and Safety:  
risk@email.arizona.edu  
Telephone: 520-621-1790  
Web site: http://risk.arizona.edu/index.shtml

UA-T Radiation Control Office:  
http://radcon.arizona.edu/  
rcohelp@u.arizona.edu  
520-626-6850
Emergency Evacuation Procedures

Building Monitors will assist with evacuation of the buildings at UA COM-Phx in the event of an emergency evacuation.

The following individuals are Building Monitors for ABC-1:

Nancy Gwilliam – 3rd and 4th floors
Sepideh S.Hockley – 3rd and 4th floors
____________ - 1st and 2nd floors

Research staff should familiarize themselves with the location of emergency exits and assembly areas.

Formal Emergency Evacuation Policy is currently under revision and will be incorporated into this document when the policy is available.
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