Environmental Health & Safety

LABORATORY HAZARD AWARENESS TRAINING

FOR NON LABORATORY PERSONNEL
Objectives

• Hazard Awareness
  – Be familiar with the hazards, warning signs and labels

• Protective measures
  – PPE
  – Training

• Answer questions
Training Materials

The training topics listed comprise the required minimum training based on the employee's job roles and activities. The supervisor is responsible to ensure their employees receive adequate training according to the specific job tasks being performed.

Notes:
- The supervisor may need to augment the topics listed with other training materials of their own and/or unique to their work.
- Both initial and refresher training is required for each employee. Refresher training is at least every 3 years unless otherwise noted.
- The supervisor must ensure that all training is documented in writing. By viewing the training materials and acknowledging this via your ONID log-in, your training record will be uploaded into the Environmental Health & Safety Training Database.

Animal Handling
Fire and Life Safety
Laboratory and Chemical Safety
Laboratory Hazard Awareness Training for Non-Lab Personnel
New Employee
Occupational Health and Safety
Shipping of Hazardous Materials
Shop and Maintenance Personnel

Required Training:

Supplementary Safety Videos:
- Hazard Communication
- Hazardous and Universal Waste
- Lab Hazard Awareness for Non-Lab Personnel
- Animal Contact Questionnaire

Supervisor
X-Ray Safety

If you have any questions regarding the Training Identification Assessment or other training needs, please contact Environmental Health & Safety.
Hazard Controls

Remove Hazard
- Design it out
- Use something else

Engineering
- Isolate and guarding people from hazard
- LOTO
- Lower hood sash
- Seal open containers
- Ventilation
- Physical change to the workplace

Administrative
- Change the way people work
- Lab hazard signs
- Label hazards inside the lab
- Training and work scheduling
- Requires worker or employer to do something

PPE
- Protect worker from hazard – Last Resort
- Gloves
- Long pants, close-toed shoes
- Eye, ear, Tyvek, face shield…
- Requires worker to wear protective clothing

Most effective

Least effective
Hazard Communication Standard

“Communicate the hazards of hazardous chemical products”

- Manufacturers and suppliers required to provide information on chemical hazards.
- Employee access to information on chemical hazards
  - OSU’s Hazard Communication Plan

EH&S Safety Instruction “Right to Know”
SDS 
Hazard Communication

• Safety Data Sheets
  – SDS (formerly MSDS)
    • For each chemical, provides information on hazards
    • Standardized format
    • Procedures for handling hazardous chemicals

http://oregonstate.edu/ehs/sds
  – SDS training video (24min)
  – Online access to library of SDS
BON AMI® POWER FOAM GLASS CLEANER

1. PRODUCT AND COMPANY IDENTIFICATION

   Product Name: BON AMI® POWER FOAM GLASS CLEANER
   Trade name: Hard Surface Cleaner
   Use of the Substance/Mixture: S. C. Johnson and Son, Limited
   1 Webster Street
   Branford, ON N3T 5R1
   Emergency telephone number:
   24 Hour Transport & Medical Emergency Phone (866) 231-6406
   24 Hour International Emergency Phone (952) 852-4647
   24 Hour Canadian Transport Emergency Phone (CANUTEC) (613) 956-6666

2. HAZARDS IDENTIFICATION

   Emergency Overview
   Appearance / Odor: translucent / liquid / characteristic
   Immediate Concerns:
   Caution:
   Avoid contact with skin, eyes and clothing.
   Keep away from heat, sparks and flame.
   Do not puncture or incinerate.
   Do not store at temperatures above 120 Deg. F (60 Deg C), as container may burst.
   Contents under pressure.

   Potential Health Effects
   Exposure routes: Eye, Skin, Inhalation, Ingestion.
   Eyes:
   May cause:
   Mild eye irritation
   Skin:
   Prolonged or repeated contact may dry skin and cause irritation.
   Inhalation:
   No adverse effects expected when used as directed.
   Ingestion:
   May cause irritation to mouth, throat and stomach.
   May cause abdominal discomfort.
   Aggravated Medical Condition:
   Persons with pre-existing skin disorders may be more susceptible to irritating effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

   Hazardous chemicals present at or above reportable levels as defined by OSHA 29 CFR 1910.1200 or the Canadian Controlled Products Regulations are listed in this table:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutane</td>
<td>75-28-5</td>
<td>1.00 - 5.00</td>
</tr>
<tr>
<td>Propylene glycol monobutyl ether</td>
<td>5131-68-8</td>
<td>1.00 - 5.00</td>
</tr>
</tbody>
</table>

   For additional information on product ingredients, see www.whatisinsidescjohnson.com.

4. FIRST AID MEASURES

   Eye contact:
   Rinse with plenty of water. Get medical attention if irritation develops and persists.
   Skin contact:
   Rinse with plenty of water. Get medical attention if irritation develops and persists.
   Inhalation:
   Remove to fresh air. If breathing is affected, get medical attention.
   Ingestion:
   Rinse mouth with water.

5. FIREFIGHTING MEASURES

   Suitable extinguishing media:
   Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
   Specific hazards during firefighting:
   Aerosol Product - Containers may rocket or explode in heat of fire.
   Further information:
   Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.

   Flash point:
   < -7 C
   < 19.4 °F
   Method: Tag Closed Cup (TCC)
   Note: Propellant
6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Remove all sources of ignition. Wear personal protective equipment.

Environmental precautions: Outside of normal use, avoid release to the environment.

Methods for cleaning up: If damage occurs to aerosol can: Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Use only non-sparking equipment. Clean residue from spill site.

7. HANDLING AND STORAGE

Handling
Advice on safe handling: Do not puncture or incinerate. Avoid breathing vapors, mist or gas. Do not spray toward face. Do not use in areas without adequate ventilation. Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS.

Advice on protection against fire and explosion: Keep away from heat and sources of ignition.

Storage
Requirements for storage areas and containers: Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst. Keep container closed when not in use. Keep in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>mg/m3</th>
<th>ppm</th>
<th>Non-standard units</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutane</td>
<td>78-28-5</td>
<td>-</td>
<td>1.000 ppm</td>
<td>-</td>
<td>ACGIH TWA</td>
</tr>
</tbody>
</table>

Personal protective equipment

Respiratory protection: No personal respiratory protective equipment normally required.

Hand protection: No special requirements.

Eye protection: No special requirements.

Skin and body protection: No special requirements.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: liquid
Color: translucent
Odor: characteristic
pH: 11 at 25°C (undiluted)
Melting point: no data available
Boiling point: no data available
Freezing point: no data available
Flash point: < -7°C < 19.4°F Method: Tag Closed Cup (TCC) Propellant
Hazardous Waste Training

- Training is required for everyone generating or processing hazardous chemical wastes
  - 21min video and quiz
Universal Waste
Hazardous Waste

• Certain haz wastes universally generated in large quantities with limited hazard
• Exempt from full haz waste regs

• Training Required! (11min video)
  – Proper handling, storage, labeling and disposal
Universal Waste
Warning Signs—entry
LAB HAZARDS

Chemical  Biological  Radiation

Lasers  Animal  Physical
Chemical Hazards

- Chemicals are the most common health hazards in laboratories

- Can combine with other chemicals to make new hazards
Types of Chemical Hazards

Health Hazards

- Acute Toxicity
- Skin Corrosion/Irritation
- Serious Eye Damage/Eye Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicology
- Target Organ System Toxicity-Single Exposure
- Target Organ Systemic Toxicity-Repeated Exposure
- Aspiration Toxicity

Pathways to Exposure

- Inhalation
- Ingestion
- Absorption
Safe Work Practices

Have lab personnel move hazards

Wear gloves

• Other PPE

Wash your hands after performing any task, after removing gloves, always before eating

Avoid

• Hand-mouth contact
• Hand-eye contact
• Protect wounds
Personal Hygiene

- If soap and water are not present, alcohol-based hand sanitizers may be used, but **soap and running water is more effective and preferred**.

- Avoid wearing jewelry.
- Keep fingernails short.
Types of PPE

- Head – hard hats, bump caps
- Eye – safety glasses and goggles
- Face – face shields
- Hearing – earplugs, earmuffs
- Hands – gloves
- Foot – safety shoes
- Clothing - vests
Contact Transmission

• In the workplace, direct contact can occur between animals and humans.
• Also important, contact with animal blood, body fluids, tissues, cages or other inanimate surfaces where animals have been housed or used.
Biological Hazards

Can cause a variety of health effects ranging from skin irritation and allergies to infections, and even death.

Look for information about the biological hazards that may be present in the workplace.
  – Make sure you receive all the information relevant to your tasks.

Ask lab personnel
Protection from Biological Hazards

• Personal protective equipment
  – barriers to clothing, skin, eyes, nose, mouth

• Good personal hygiene
  – handwashing

• Environmental infection control
  – cleaning or disinfection of surfaces or equipment and tools
Radiation Hazards

Two ways that you can be exposed to radiation

1. Internal exposure
   - By mouth, nose, eyes, or any open cut

2. External exposure
   - Ionizing radiation is passed through the body and/or absorbed by tissues
Common Radiation Signs

On x-ray machines

— THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED —

CAUTION — TO BE OPERATED ONLY BY QUALIFIED PERSONNEL —
Minimizing Personal Hazards

When working in a radiation laboratory
• Observe all radiation signs
• Do not empty radioactive trash
• Do not use or service radioactive labeled equipment without authorization from Radiation Safety

! CAUTION !
This system may be contaminated with radioactive material. Contact Radiation Safety prior to the performance of any maintenance or the removal of any portion of this system. Radiation Safety Office 7-2227

Drain pipes and Fume hood ducts
Radioactive/Biological Hazard Overview

• Radioactive and biohazard material must be secured
  – Only authorized individuals should have access.
• Material or waste with radiation or biohazard labels should never be handled by non-authorized individuals
• Notify lab director of any work that will be done in the lab before starting
• Radioactive and biohazard waste must be segregated from other hazardous waste
  – picked up by EH&S
Laser Classification

Class 1
Class 2
Class 3R (3A)

Protection by "Blink Reflex"

Class 4
Class 3B

DANGEROUS
WARNING

Class 4 Laser Controlled Area

Authorized personnel only when “Laser In Use” light illuminated

Invisible Ultraviolet Laser Radiation.
Avoid eye or skin exposure to direct or scattered radiation.

Laser Protection Required:
OD≥6 @ 248nm

KrF Excimer 248nm 6W

Lab Contact: Dr. Janet Tate, office Wngr 485
OSU Laser Safety Officer Daniel Harlan, ph. 541-737-7082

Weniger Hall Room 475

Feb 2, 2016
Laser precautions

- Do not enter if light is on
- If unsure, contact lab personnel
- Do not place any objects in beam path
Animal Exposure

Allergies, also known as hypersensitivities, are inappropriate responses of the immune system to allergens.

Any type of animal can release allergens.

- Common: rats, guinea pigs, rabbits, mice
- Less common: swine, cattle, sheep
Animal Exposure

**background information**

- Repeated exposure required to develop allergy
  - Allergies never develop from single exposure
  - Sensitization usually requires many exposures

- Most allergies develop in persons who repeatedly handle animals rather than those who enter animal areas but do not handle the animals
Animal Exposures
Recommendations

1. All persons who must enter animal facilities to conduct repairs or do other work will be offered the opportunity of enrolling in the animal handler occupational health program.

2. Persons who repeatedly enter animal rooms to conduct repairs or do work other than animal handling are encouraged to enroll in the animal handler occupational health program.

3. Persons who have only occasional need to enter an animal room, but have a history of allergies (especially animal allergies) or asthma are strongly encouraged to enroll in the animal handler occupational health program.

- Enrollment forms and detailed information about the animal handler occupational health program are available on the EH&S web site:
  - [http://oregonstate.edu/ehs/bio/animal-handler](http://oregonstate.edu/ehs/bio/animal-handler)
  - Matt Philpott
Other Lab Hazards

- Cryogenic
- Confined Space
- UV Lights
- Heat
- Mechanical
- Electrical
Gas Cylinder Safety

- All compressed gas cylinders must be secured above the center of gravity by approved supports
- Cylinders in transit, storage, or not in use must have valve cap on
- Only move cylinders with appropriate cylinder cart

EH&S Gas Cylinder Safety Instruction
http://oregonstate.edu/ehs/safety-instructions
• Never wear gloves outside of the laboratory,
• Avoid contaminating objects such as phones, keyboards, etc.
Never touch your skin to the outside of either glove

**PROPER GLOVE REMOVAL:**

**Step 1:** Grab glove on outside next to wrist.

**Step 2:** Pull off inside-out. Place in gloved hand.

**Step 3:** Place fingers by wrist under glove.

**Step 4:** Push up inside-out and fold around glove in hand.

**Step 5:** Throw used gloves in proper disposal unit.

**Step 6:** Wash hands thoroughly.
Be prepared for emergencies.
Emergency Shower/Eyewash Station

- The area around showers and eye washes must be unobstructed
- Safety showers and eyewashes are tested by EH&S yearly
Personal Contamination

- Flush contaminated area with water
- Remove contaminated clothing
- Rinse with water for 15 minutes
- Seek medical attention if irritation persists
Fires

– Let the Fire Department fight fires
– When in doubt, call 911, pull a fire alarm, exit the building.
– Small fires can sometimes be extinguished, but can quickly get out of control – especially if there are flammable chemicals involved.

You should not use an extinguisher without training.

OSU fire extinguisher training
http://oregonstate.edu/ehs/training
(11min video)
Spills

- Small spills of hazardous materials can often be dealt with by you and laboratory personnel.
  - Warn others – secure the area
  - Put on/wear personal protective equipment before attempting to clean or contain a spill.
  - Use absorbent materials to contain and soak up liquids; if biological, use effective disinfectant.
  - Use appropriate containment (bags, etc.) to collect and dispose of absorbed hazardous materials.

For assistance: EH&S “On Call”
Contact FS WCC 541-737-2969
Medical Emergencies

For emergencies, dial 911.

– For splashes of hazardous chemical or biological materials into the eyes, nose or mouth, flush extensively with water using an eyewash station; seek medical attention.

– For sharps accidents, cuts or abrasions, cleanse the wound with soap and water, treat with antiseptic from the First Aid Kit, then seek medical attention as necessary.
Questions?

ehs.oregonstate.edu  737-2273