

Benzene

Standard Operating Procedures for Chemicals or Processes	
1 Process (if applicable)	Injections of Benzene Standards for Gas Chromatograph Calibrations and Sample Analyses (Note: <i>All use of benzene is strictly regulated by Wyoming OSHA.</i>)
2 Hazardous Materials and Chemicals	Benzene, at known and unknown concentrations.
3 Environmental / Ventilation Controls	Benzene-containing solutions should be dispensed and used only in a properly operating fume hood. Syringe purging should also be done in the fume hood.
4 Personal Protective Equipment (PPE)	Chemical splash goggles, butyl or natural rubber gloves, and a lab coat or apron is required.
5 Special Handling Procedures & Storage Requirements	Mixing and dispensing done in an operating fume hood with all sources of ignition turned off (hot plates, burners, etc.). Benzene stored in metal safety cans or glass bottles (1 liter maximum) as much as possible. Transported in spill-proof carriers. Benzene is stored in a flammable cabinet, separate from acids, bases, and oxidizers. The flammable cabinet is located _____.
6 Spill and Accident Procedures	Try to stop the spill if it is on-going. Remove all sources of ignition from the spill area. If splash on skin occurs, wash immediately with soap and water and remove any contaminated apparel while washing. Call 911 in the event of a spill beyond lab staff capabilities. Use absorbent pads or vermiculite to clean up small fume hood spills or to dike larger spills. Absorbent pads are stored in _____. If a spill of more than ___ ml of benzene occurs outside the fume hood, vacate the room, close the door and call 911. If the quantity of benzene is in solution and does not easily evaporate, a spill cleanup by a contractor could be obtained by calling UW Safety - RMMC at 307-766-3698. Otherwise, the benzene could be allowed to evaporate. After clean-up or evaporation, room air must be monitored by UW Safety prior to re-occupancy.
7 Waste Disposal	For spills: place used absorbent in metal can with leak-proof lid. Over-pack with additional absorbent. Seal can. For all waste, label with Hazardous Waste Label, accumulate according to requirements, and send in Chemical Collection Request or Routine Pickup request, both available online at http://www.uwyo.edu/safety
8 Special Precautions for Animal Use (i.e., IACUC approval)	*
Particularly hazardous substance involved?	<input checked="" type="checkbox"/> YES: Blocks 9 to 11 are Mandatory <input type="checkbox"/> NO: Blocks 9 to 11 are Optional.
9 Approval Required	Users must receive specific physical and health hazard information and safe laboratory work practices training from their supervisor. Representative breathing zone air sampling shall be taken to ensure that exposures do not exceed regulated levels. (Contact UW Safety for additional information.)
10 Decontamination	Immediately wash with soap and water.
11 Designated Area	Room _____. Special signage may be required depending on air sampling results.

Individual Chemical SOP Example

 University of Wyoming Safety Web: www.uwyo.edu/safety/ Phone: (307) 766-3277 Email: uwehs@uwyo.edu Regulated Materials Management Center Phone: (307)766-3698 Fax: (307)766-3699 Email: HAZMAT@uwyo.edu

Name (print) (Assessor):	Title:
Signature (Assessor):	Date:
Name (print) (PI, Lab Manager, or Unit Head):	Title:
Signature (PI, Lab Manager, or Unit Head):	Date:
Date Sent to UW Safety:	

Additional Information about Benzene

OSHA Exposure Limits:

8-hour Permissible Exposure Limit (PEL): 1.0 ppm
15-minute Short Term Exposure Limit (STEL): 5.0 ppm
8-hour Action Level (AL): 0.5 ppm

Hazards:

Benzene liquid is highly flammable. It should be stored in tightly closed containers in a cool, well ventilated area. Benzene vapor may form explosive mixtures in air. All sources of ignition must be controlled. Use non-sparking tools when opening or closing benzene containers. Fire extinguishers, where provided, must be readily available. Know where they are located and how to operate them. Smoking is prohibited in areas where benzene is used or stored.

Benzene can affect your health if inhaled, if it contacts skin or eyes, or if ingested. The most frequent work place route of entry is by inhalation, but benzene can be absorbed through the intact skin and will be absorbed faster through abraded skin.

High, short-term (acute) exposures may result in feelings of breathlessness, irritability, euphoria, giddiness, or irritation of the eyes, nose or respiratory tract. Also, headache, dizziness and feelings of nausea or intoxication may occur. Severe exposures may lead to convulsions and loss of consciousness.

Periodic exposures at lower levels (chronic exposures) may result in various blood disorders, ranging from anemia to leukemia (an irreversible, fatal disease). Many blood disorders associated with benzene exposure may occur without symptoms.

Exposure Monitoring

The supervisor must determine by breathing zone air monitoring if employees are over the AL or STEL. If levels are below the AL and STEL, no further air sampling is required unless procedures change. Affected employees must be informed of air monitoring results within 15 days of the supervisor receiving the results.

Training Requirements:

The Principal Investigator or supervisor must provide initial training to all personnel using benzene. If airborne levels reach or exceed the AL, annual benzene training is required. The training content must

Individual Chemical SOP Example



include the hazards of benzene, safety information, regulatory requirements, signs and symptoms of possible exposures to benzene, and medical surveillance requirements.

Medical Surveillance

Any employee who is exposed to benzene above the AL for more than 30 days per year, or exposed to benzene above the PEL for more than 10 days per year, must be evaluated by the Occupational Health Nurse. Based on the evaluation results, the nurse may recommend further evaluation, exposure restrictions, or job reassignment. Contact UW Safety at 307-766-3277 for safety information, guidance for air monitoring strategies, equipment and analytical result interpretation.