





LABORATORY SAFETY GUIDELINE

Aflatoxin B1 [CAS No. 1162-65-8]

All users of Aflatoxin B1 must review this document before use. Aflatoxins are naturally occurring mycotoxins which are secondary metabolites of molds and among the most carcinogenic substances known. Among 18 different types of aflatoxins identified, major members are aflatoxin B1, B2, G1 and G2. Users should contact their EHS Lab Safety Advisor and department safety officer if they have questions before beginning work.

HAZARDS

	Fatal if swallowed, in contact with skin, or if inhaled.
	Carcinogenic to humans. May cause genetic defects. Suspected of damaging fertility or the unborn child. A broad range of symptoms can be found depending upon dosage, including, vomiting, abdominal pain hemorrhage, pulmonary edema, acute liver damage including liver function impairment, loss of function of the digestive tract, convulsions, and cerebral edema. Prolonged exposure to doses of <10 ug aflatoxin B1/kg/day causes no more than transient effects, 50 ug/kg/day minimum for clinically significant effects.

Aflatoxins are incompatible with oxidizing agents (e.g., peroxides, perchlorates, permanganates, chlorates, nitrates, chlorine, bromine, and fluorine), strong corrosive agents (hydrochloric, sulfuric and nitric acid, and sodium and potassium hydroxides), ammonia, and amines.

Although this material is not covered under COMS requirements, work with it as you would a BL2 level material. For assistance, contact biosafety@harvard.edu.

Laboratory activities with the highest risk of exposure to Aflatoxin B1 are:

- High energy-creating activities (centrifugation, sonication, high pressure systems, vortexing, tube cap popping)
- Handling of sharps (needles, scalpels, microtome blades, broken glass, etc.)
- Splash/droplet-creating activities (shaking incubators, liquid culturing, mechanical pipetting)
- Equipment contamination
- Exposed skin/uncovered wounds

PRECAUTIONS

Before starting work:

- Determine if you can use a less hazardous substance in place of Aflatoxin B1;
- Review manufacturer's Safety Data Sheet and additional chemical information at ehs.harvard.edu/safety-data-sheets-sds;
- Ensure that a written experimental protocol including safety information is available;
- Be familiar with general University emergency procedures in the [EHS Lab Emergency Response Guide](#);
- Order only the quantity you need in the most dilute solutions available that will meet experimental needs;
- Identify the location of the nearest eyewash and shower and verify that they are accessible;
- Locate and verify that appropriate spill cleanup materials are available, including the following:
 - **Toxin inactivation:** 2.5% sodium hypochlorite + 0.25 N sodium hydroxide for at least 30 minutes. This is a solution that you must prepare in the lab before you begin working with Aflatoxin B1.
- Ensure another person who knows emergency procedures is in the area.

During work:

- AVOID INHALATION! Perform all operations in a biosafety cabinet (for aerosol containment) and/or a chemical fume hood (for chemical extractions). Keep sash lowered as much as possible. Always work at least 6 inches in the ventilated enclosure, and behind the sash;
- AVOID CONTACT! Use appropriate personal protective equipment (PPE):
 - Wear a lab coat, a garment covering to the ankles, and closed-toed shoes.

- Safety glasses
- Nitrile gloves
 - Always consult Safety Data Sheet to ensure proper glove selection
 - Gloves must be thoroughly inspected prior to each use. Do not use damaged gloves;
 - Change gloves whenever you suspect they have become contaminated;
 - Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact;
 - Wash hands and forearms thoroughly with soap and water each time gloves are removed;
- Use materials and containers appropriate for Aflatoxin B1 use and remain aware of potential incompatibilities (addressed in the Hazards section of Safety Data Sheet). Keep the container used to store Aflatoxin B1 closed to avoid contact with air, light, and dust.
- Keep all containers tightly closed when not in use and during transport.

After completing the work:

- Aflatoxin B1 must be inactivated before disposal (see above). Then follow the subsequent steps.
- Dispose of Aflatoxin B1 waste following Harvard University [Hazardous Waste Procedures](#)
 - Hazardous Waste Classification: Toxic
- Return container to storage area following Harvard University [Lab Chemical Storage Guide](#)
 - Storage Group: Acutely Toxic;
 - Store in original containers or other appropriate containers;
 - Store primary container in designated and compatible secondary containers;
 - Store away from incompatibles;
- Clean your area: Use wet method cleaning to reduce dust during clean-up. Do not dry sweep.
- Wash hands and forearms thoroughly with soap and water before leaving the lab.

EMERGENCY PROCEDURES

First Aid

SKIN CONTACT

- Wash with plenty of tepid water for at least 15 minutes using the closest available sink, safety shower or drench hose. Remove any exposed clothing as well as any jewelry.
- Seek medical attention; call 911 on a landline phone for medical assistance (or provide location if calling on a mobile phone).

EYE CONTACT

- Using eyewash, flush eyes while holding eyelids open;
- Seek medical attention; call 911 on a landline phone for medical assistance (or provide location if calling on a mobile phone).

INHALATION

- **Seek medical attention immediately;** call 911 on a landline phone for medical assistance (or provide location if calling on a mobile phone).

INGESTION

- **Seek medical attention immediately;** call 911 on a landline phone for medical assistance (or provide location if calling on a mobile phone);
- Never give anything by mouth to an unconscious person.

Spill Response

OUTSIDE FUME HOOD OR VENTILATED ENCLOSURE

- Alert others and evacuate to a safe distance and prevent entry.
- Contact the University Operations Center at (617) 495-5560 [HMS/HSDM (617) 432-1901]
- Remain in a safe location until EH&S or other response personnel arrive.

INSIDE FUME HOOD OR VENTILATED ENCLOSURE (< 500 ml)

- If trained and confident, you may assist in the clean-up effort of small amounts, wearing PPE described above and using appropriate spill supplies.
 - Collect debris in appropriate container and move to your Satellite Accumulation Area. Label with appropriately completed hazardous waste tag and request a waste pickup.
- Otherwise close the fume hood sash and await support.
- Contact the University Operations Center at (617) 495-5560 [HMS/HSDM (617) 432-1901] if you need support or technical assistance.