

OVERVIEW

Hazard Characteristics

- Suspected reproductive toxin
- No safe exposure limit
- Flammable solid, reacts violently with oxidizing agents

Background Information Summary

Streptozotocin (STZ) is a highly toxic chemical and is considered cytotoxic to pancreatic beta cells. It can be used to induce diabetes in rats and/or mice and is commonly obtained as a non-pharmaceutical grade compound.

Because STZ is suspected to be a reproductive toxin, employees who are pregnant, nursing, or actively trying to become pregnant are advised to avoid contact with the chemical itself, and to avoid treated animals for at least 48 hours after the most recent administration.

EXPOSURE AND HAZARD INFORMATION

Exposure Route	Symptoms	Immediate Actions after Exposure
Inhalation	Not thought to produce respiratory irritation, but inhalation of dusts or fumes, especially for prolonged periods, may produce discomfort.	- Fresh air - Seek medical attention
Oral/Ingestion	May be damaging to the health if ingested.	- Drink water, two glasses at most - Seek medical attention
Eyes/Mucous Membranes	Direct contact with eyes may cause transient discomfort characterized by tearing or conjunctival redness. Slight abrasive damage, and foreign body irritation in some individuals is possible.	- Flush eyes with water for 15 minutes - Contact Ophthalmologist - Seek medical attention
Injection	Accidental injection may be damaging to health.	- For accidental needle sticks flush the area with water for 15 minutes - Animal bites are not thought to be hazardous - Seek medical attention
Skin	Not thought to be a skin irritant, but abrasive damage may result from prolonged exposure. Systemic effects may result following absorption. Open cuts or irritated skin should not be exposure to STZ.	- Remove contaminated clothing - Rinse with water for 15 minutes - Seek medical attention

Health Effects

Acute	May cause damage to organs with only a single exposure
Chronic	May cause damage to organs with only a single exposure

Hazards and Exposure Limits	
Physical Hazards	- Flammable solid; in case of fire use dry sand, dry chemical, or alcohol resistant foam to extinguish - Development of hazardous combustion gases or vapors is possible in event of fire. SCBA is recommended for firefighting measures - Violent reaction possible with strong oxidizing agents
Exposure Limits	There is no established safe occupational exposure limit

Controls	
Containment, and Engineering and Administrative Controls	- All manipulation including administration to animals, must take place in a chemical fume hood over absorbent padding - Microisolators or other containment type housing is recommended for treated animals - Procedures should minimize aerosol production
PPE	- General: Chemical resistant/nitrile gloves, safety glasses/goggles, lab coat or disposable gown. - For any work outside of a chemical fume hood an N95 respirator must be worn - Cage changes and cleaning: Double nitrile gloves, Tyvek suit or Tyvek sleeves over fluid resistant apron or lab coat, face shield and safety glasses (first cage change, see cage management)
Emergency Equipment	Showers and eyewash station must be readily available

MEDICAL SURVEILLANCE

No medical surveillance is required, but individuals should be aware of exposure signs and symptoms.

TRAINING

General training required for any chemical use:

- Review of relevant information including fact sheets, SOPs, and SDS. This review should include training on hazards, symptoms of exposure, PPE, and emergency procedures.
- UW Lab Safety Training Series - New Employee Orientation, Regulated Waster Generator, and Laboratory Safety "Chemical Hygiene & GHS/OSHA

SIGNAGE AND RESTRICTED AREA INFORMATION

Signage must indicate when STZ is actively being handled, and should remain until toxin is no longer in use, or until it has been 72 hours since animals in the room have been treated with STZ, whichever is later.

Cage cards should specify that animals have been treated with STZ and must indicate whether bedding or cages are considered contaminated (contamination persists for a minimum of 3 days after injection).

ANIMAL METABOLISM OF CHEMICAL

Animals and their waste are considered hazardous for a minimum of 72 hours after administration with STZ. After 72 hours animals and their waste are no longer considered contaminated.

DISINFECTION AND INACTIVATION

- Glassware and other non-porous material can be cleaned by soaking in 10% bleach for 24 hours.
- Surfaces should be cleaned with a 10% bleach solution or detergent.

CAGE/HOUSING MANAGEMENT

- Bedding and animal waste is considered contaminated for a minimum of 72 hours after animals have been treated with STZ.
- The first cage change should occur no sooner than 72 hours after toxin administration. After the first cage change animal waste and bedding is no longer considered hazardous as long as animals have not received any additional doses of STZ.
- Regardless of contamination, all cage change procedures should minimize aerosol production.

WASTE DISPOSAL

- All bedding and animal waste from initial cage changes should be done in a Biosafety Cabinet when possible, and an N95 must be worn if a BSC is not available. Bedding from the first cage change should be autoclaved prior to disposal.
- Bedding and waste from additional/non-contaminated cage changes can be bagged and disposed of as non-hazardous.
- Materials used to clean surfaces, unused chemical, used needles/syringes, and all disposable materials contaminated with STZ must be autoclaved prior to disposal as non-hazardous waste.

SPILLS/RELEASES

- For large spills, evacuate the room to allow for dissipation of aerosols. Clean up of large spills requires the use of an appropriate respirator.
- Liquid spill: Use absorbent pads to wipe up liquid. Disinfect surface with a 10% bleach solution.
- Powder spills: Wipe up powder with wipes and soapy water. Disinfect surface with 10% bleach solution.
- For assistance/guidance with clean up, call the Regulated Material Management Center (RMMC) 766-3698 or 766-3697.

EMERGENCIES/MEDICAL GUIDANCE FOR EXPOSURES

- For accidental ingestion, contact Poison Control
- In case of medical emergency call 911, or seek attention immediately:
 - During business hours: Iverson Urgent Care is the occupational health provider, and it is available to assist in the arrangement of medical evaluation and treatment
 - After business hours: Emergency Room or Urgent Care
- https://www.uwyo.edu/safety/procedures/incident-injury_reporting.html

CONTACT INFORMATION

Poison Control:	1-800-222-1222
Chemical Specialist:	Kevin Macartney: 307-766-6116
Occupational Health:	Bailey Wallace: 307-766-3203

Acknowledgment

This document was developed using adapted material from Colorado State University, with modifications to reflect institutional policies and procedures at University of Wyoming.