Safe Work Practices
Safe Sharps Use

Purpose and Introduction

The purpose of this document is to introduce some of the safe work practices for the handling of sharps in the laboratory. This includes the use or presence of hypodermic, surgical, suture or IV needles, syringes with needles, lancets, scalpels, blades and similar metallic sharp or pointed items that are capable of causing punctures, cuts, or tears in skin or membranes.

Risks and Hazards

Accidental inoculation/pricks/cuts with a contaminated needle or similar sharp objects is the primary risk when working with sharps. Some procedures with sharps also have the potential to produce sprays or aerosols. When working with blood and bodily fluids, all sharps used in diagnosis and research, including the manipulation and care of laboratory animals, should be considered potentially infectious. Sharps pose a risk to those who use them and sharps waste poses a health risk to those involved in its handling, transportation and disposal.

Accidents occur when people are trying to recap needles attached to syringes and this practice should be avoided whenever possible, if recapping must be done then precautions must be in place (see methods for recapping below).

Another procedure which poses a risk to personnel is the removal of the needle from a syringe. This procedure should only be attempted if absolutely necessary and should only be done after the needle has been recapped and with the use of a removal device such as pliers or artery forceps. For further information on how to remove a needle from a syringe see: https://www.ncbi.nlm.nih.gov/books/NBK138488/.

Personnel Training

All laboratory personnel and others whose work requires sharps and needle use must understand the chemical and biological hazards in the laboratory and be trained in appropriate safety precautions and procedures. Personnel must know, understand, and follow all standard practices and procedures. In addition to the mandated safety training provided by EHS, specific laboratory safety training shall be provided by the principal investigator or their designate and competence in safe technique must be

demonstrated before work is allowed. Completion of lab-specific training must be documented, dated and signed by both the trainee and trainer, and available for viewing on request by EHS personnel or external regulators. Documentation of all in-house training must be kept by the supervisor for a minimum of 5 years after the personnel has left the lab.

Personal Protective Equipment (PPE)

The PPE to be worn when working with sharps should be in accordance with the highest risk or possible hazard for the biological agent, material or chemical used in the procedure. Puncture-resistant gloves or gauntlets may be used depending on risk assessment. Eye and respiratory protection should be used if there is any chance of spray or the production of aerosols. The supervisor should advise whether these or any other extra PPE is required based on a risk assessment to identify potential risks in any lab procedure.

General Safety

- The use of needles, syringes and other sharp objects should be strictly limited
- Ensure that correct procedures are carefully followed for specific needle types and general safe use of sharp objects
- Caution must be used when handling sharps to avoid autoinoculation and the generation of aerosols during use and disposal
- Safer alternatives and Safety-Engineered Sharps Devices should be used whenever possible
- During and after needle use, avoid shearing, bending, recapping, or breaking needles (Canadian Biosafety Handbook (CBH) 21.2.2)
- Uncapped or exposed needles should be placed in a shallow tray during procedures. Never leave an exposed needle or sharps unattended or out of view
- When using needles, always keep them away from the body
- When working with animals ensure that they are carefully restrained prior to needle or sharp use

<u>Surgical use of syringes</u>

Additional precautions are required for sharp and needle use during surgery procedures.

- Agree on an area where sharps will be placed throughout the procedure
- Avoid hand-to-hand exchange of sharps by instead placing the sharps in the agreed area for other personnel to retrieve
- Double glove if appropriate

- Use blunt suture needles when possible
- Do not recap needles unless absolutely necessary (See below)

Recapping syringes

Disposable needles and syringes should not be replaced or recapped in their sheath or guard. Due to certain constraints however, sometimes needle recapping may be required. Use a Needle Recapping device or other method of holding the cap if that is the case. Please adhere to the following guidelines for manual needle recapping.

Methods to Recap Syringes_ - Only to be used if **absolutely necessary** for your procedure, remember to **never recap using both hands**

One handed Method

1. Place the cap of the needle on a flat hard surface
2. Hold the syringe in one hand with the needle facing downward towards the cap
3. Move the needle into the cap while ensuring that the free hand does not partake in the action
4. Ensure that the needle is firmly capped by lifting the capped needle and again applying pressure on the cap against the flat surface

Other methods

- Using a 50 ml. centrifuge tube and Styrofoam rack: Put the cap inside a centrifuge tube being held upright in a rack so that the needle can be inserted in the cap and firmly pushed down to seat the cap in place
- The cap could also be held using tongs, forceps or a clamp instead of using the tube and rack
- Commercial needle recapping devices are also available

Minimizing aerosol production when using syringes

- Sprays or aerosols may be produced when removing a needle from a serum vial that has been pressurized by injecting more air than the volume of liquid withdrawn. Before withdrawing the needle from the vial, wrap the needle and top of the rubber diaphragm lid with a disinfectant soaked absorbent pad
- Needle-locking syringes or syringe-needle units are recommended to reduce the possibility of aerosol production (Luer lock connectors)
- Dispose of needles directly into sharps waste container without further manipulation
- Depending on infectious/aerosolizable agent used, some SOPs may require (based on LRA) disinfectant to be sucked up into the syringe prior to disposal
- Do not clip used needles as this may produce aerosols

- Aerosols can be produced if the needle separates from the syringe or if the plunger separates from the syringe barrel
- Aerosols may be produced if liquids are forcibly discharged into containers with a syringe. Gently direct liquids against the side of containers
- Work over an absorbent, plastic-backed pad to avoid aerosol dispersion from drops falling on hard surfaces

First Aid Response for Needle Pricks

- Encourage the wound to bleed
- Wash injured area with soap and water
- Apply a thin layer of antibiotic cream or ointment and cover with dressing (i.e. adhesive bandage). If continuing to work in lab, ensure dressing is waterproof (CBH 21.2.2)
- Report incident to principal investigator, laboratory supervisor or acting alternate

First Aid Response for Cuts, and Grazes

- Apply pressure to stop the bleeding
- Wash injured area with soap and water
- Apply a thin layer of antibiotic cream or ointment and cover with dressing (i.e. adhesive bandage). If continuing to work in lab, ensure dressing is waterproof (CBH 21.2.2)
- Seek help if required, including if wound is deep, continues to bleed profusely after several minutes of applying pressure, blood spurts from the wound or if area around wound feels numb or cold. Medical emergency contacts: https://ehs.utoronto.ca/report-an-incident/emergency-procedures/medical-emergencyfirst-aid/
- Report incident to principal investigator, laboratory supervisor or acting alternate

✱ The use of antibiotic cream or ointment many cause allergic reactions, apply only if injured person has consented to its use.

Reporting Injuries

Personnel must immediately inform their supervisor of any injuries. Within 24 hours, the supervisor will have to file a report via the University of Toronto EHS website https://ehs.utoronto.ca/report-an-

incident/. Appropriate medical evaluation, surveillance, and treatment must be sought and provided if needed.

Broken Sharps and Disposal

Do not pick up sharp objects (e.g. broken glass) with your hands but rather with tongs, dust pan and brush, forceps etc. All sharps and other sharp objects including broken contaminated pipettes and glassware must be disposed of in the appropriate puncture-resistant dedicated sharps containers. Non contaminated broken glass should be put in appropriate containers for pickup by caretaking. Please see section 5.5.2 of the Laboratory Hazardous Waste Management and Disposal Manual for more information on broken glass disposal:

https://ehs.utoronto.ca/laboratory-hazardous-waste-management-and-disposal-manual/5-5-sharp-waste-management/#5.5.2

Waste Management

All laboratories that generate sharp or pointed waste are responsible for the segregation and packaging of their laboratory waste prior to its removal and disposal in accordance to the University of Toronto Sharp Waste Management Program. Needle waste contaminated with or containing viable biological materials and trace amounts of hazardous chemicals, singly or in any combination, can be collected together in the same sharps waste container for needle waste. In most cases, the quantity of potentially hazardous material adhering to used needles will be minimal and present in trace amounts only.

All liquids containing hazardous chemical, biological or radioactive materials must be drained from disposable syringes and collected for appropriate disposal. If working with aerosolizable bioagents, sharps waste must be decontaminated in the biological safety cabinet (BSC) prior to disposal.

If your sharps waste is contaminated with significant amounts of a hazardous chemical contact Environmental Protection Services (EPS) for further discussion on collection and disposal.

Sharps waste contaminated with radioactive materials must be kept separate from biologically or chemically contaminated sharps and disposed as radioactive waste. Any sharps container used for radioactive contaminated sharps must be labeled as radioactive.

See the section of the Laboratory Hazardous Waste Management Manual on sharps waste (Section 5.5) for further information: https://ehs.utoronto.ca/laboratory-hazardous-waste-management-and-disposal-manual/5-5-sharp-waste-management/.

Sharp Waste Containers

All needle and blade waste for disposal must be carefully collected in an approved needle and blade waste container. Puncture-resistant plastic sharps containers must comply with CSA Standard Z316.6-14 for the collection and disposal of needle and blade waste generated at the University of Toronto. Their capacities range from 1.4 to 7.6 litres. Labs must purchase their sharps waste containers as they are not supplied by the university. These containers are commercially available for purchase and are also available at UofT med and chemical stores.

- Never bend, shear, break, or recap disposable needles or remove from disposable syringes
- Immediately following use, place the item into the sharps disposal container
- Never reach into the sharps disposal container
- Never empty the contents of the sharps disposal container into another container
- Never remove the lid from the container
- Never overfill a sharps disposal container; no materials should be sticking out the top. Only fill up to the fill line on the container or when container is ¾ full
- Never force materials into a sharps disposal container
- Ensure lid is securely closed before container is picked up by EPS staff for disposal

Disposal of Sharps Waste Containers

St. George campus

To set up a pickup service or if you have any questions on hazardous material disposal/waste, contact Rob Provost, Manager, Environmental Protection Services (EPS) at 416-978-7000 or rob.provost@utoronto.ca , or contact the EPS directly at 416-946-3473, or hazwaste.ehs@utoronto.ca. EPS website: https://ehs.utoronto.ca/our-services/environmental-protection-services

UTM and UTSC campuses

Take your sealed sharps waste container to the hazardous waste storage area in your building/department for disposal. Ensure lid is secure and transport is done in a safe manner using secondary containment.

Resources

Berguer, R. (2004). Preventing sharps injuries in the operating room1. *Journal of the American College of Surgeons,199*(3), 462-467. doi: 10.1016/j.jamcollsurg.2004.04.018

Louisiana State University Health Sciences Center New Orleans, SOP for Safe Handling of Sharps: https://www.lsuhsc.edu/admin/pfm/ehs/docs/sharps.pdf

NCBI Resources/NIH books, WHO Best Practices for Injections and Related Procedures Toolkit: https://www.ncbi.nlm.nih.gov/books/NBK138491/

Public Health Agency of Canada, Canadian Biosafety Handbook: https://www.canada.ca/en/public-health/services/canadian-biosafety-standards-guidelines/handbook-second-edition.html

Public Health Agency of Canada, Canadian Biosafety Standard: https://www.canada.ca/en/public-health/services/canadian-biosafety-standards-guidelines/second-edition.html

University of California, Davis, Safety Services, SafetyNet #3, Sharps Safety Guidelines: https://safetyservices.ucdavis.edu/safetynet/sharps-safety-guidelines

University of California, Davis, Safety Services, SafetyNet #21, Minimizing Aerosol Exposure: https://safetyservices.ucdavis.edu/safetynet/minimizing-aerosol-exposure

University of Idaho, Laboratory Safety, Sharps Handling and Disposal: https://www.uidaho.edu/dfa/administrative-operations/ehs/safety-programs/laboratory-safety/sharps

University of Manitoba, Guidelines for the Safe Handling of Sharps: https://www.umanitoba.ca/admin/vp_admin/risk_management/ehso/media/Sharps_Safety.pdf

University of Maryland, Sharps Safety/Needle Recapping: https://essr.umd.edu/sites/essr.umd.edu/files/uploads/recap.pdf

University of Toronto, Environmental Protection Service, Laboratory Hazardous Waste Management and Disposal Manual: https://ehs.utoronto.ca/laboratory-hazardous-waste-management-and-disposal-manual/

WebMD, Hand Injury Treatment: https://www.webmd.com/first-aid/hand-injuries-treatment

For all additional safety and contact information, please visit our website www.ehs.utoronto.ca