PURPOSE & Description

The purpose of this SOP is to delineate the minimum standards for the use of dimethyl sulfoxide (DMSO) when administered to rodents by injection. DMSO is commonly used as a solvent for therapeutic and toxic agents that are not water soluble. DMSO easily penetrates biologic membranes and is frequently used as a drug delivery system. DMSO is not an inert vehicle, it has anti-inflammatory, analgesic and diuretic properties, impacts platelet aggregation and provokes histamine release. DMSO can inhibit anticholinesterase activity and inhibits alcohol dehydrogenase so it can potentiate the effects of drugs such as alcohol, insulin, and atropine.

Scope

This SOP applies to the Principal Investigator (PI) and their laboratory staff.

This applies to independent use of DMSO. Additional precautions will be required when DMSO is used in conjunction with other chemicals.

Responsibilities

PIs are responsible for the training of their research staff and the continued participation in following safety guidelines.

If DMSO is being used in a solution with a hazardous chemical, PI and laboratory staff are responsible for following the [Policy on Handling Animals Exposed to Hazardous Chemicals](https://iacuc.ufl.edu/secure/wp-content/uploads/sites/3/Policy-on-Handling-Animals-Exposed-to-Hazardous-Chemicals.pdf).

When building procedures in GoIACUC, “DMSO” can be entered either as a “TEAM” substance as non-hazardous, or the Standard Library substance that is marked “hazardous,” may be used.

Definitions

* **Clear time** – The period of time required to allow for excretion of a hazardous chemical before standard handling practices can be used.
* **Safety-engineered sharps** –a non-needle sharp or needle device with a built-in safety feature or mechanisms that effectively reduces the risk of an exposure incident. More information on safety engineered sharps can be found here: [[UF EHS Safety-Engineered Sharps Fact Sheet](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D)](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D).

Hazard Identification & Control Measures

**Potential Hazards**

* **Physical Hazards**
  + Needlestick (injection)
  + Dermal - DMSO readily penetrates skin and may carry other dissolved chemicals into the body
  + Flammable

Hazard Identification & Control Measures (Cont.)

**Engineering Controls / Administrative Controls**

* No specific engineering controls are required for use of DMSO when used independently.
* Syringes used for injection should comply with the details outlined in [UF EHS Safety-Engineered Sharps Fact Sheet](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D).
* Rodents should be appropriately restrained prior to administration, as described in the approved Animal Use Protocol (AUP).
* Gloves should be changed frequently, at a minimum when contaminated with DMSO or torn, and before handling animals in other experimental groups.
* Hands and arms should be washed with soap and water upon completion of work.

**Personal Protective Equipment (PPE)**

* Appropriate lab attire including skin protection, closed shoes, and eye protection.
* Long-sleeve gown or long-sleeve dedicated lab coat
* Gloves

Procedure

* Prior to working with chemical hazards in rodents, all work must be described in an approved AUP.

Special Handling and Storage Requirements

* DMSO storage and transport containers should be shatter-resistant, rigid, shock-resistant, leak-proof, and made of a non-reactive material which can be easily cleaned and decontaminated in the event of a leak.
* Personal protective equipment (PPE) as described above must be worn when handling DMSO, in addition to any PPE requirements of the animal room or secondary chemical agent. Hands and arms should be washed with soap and water after removing PPE.
* Needles and sharps used with DMSO must be disposed of immediately in a sharps container. Do not reuse, bend, or recap needles. Safety-engineered sharps should be used whenever possible.
* An approved solution should be used for decontamination of equipment and areas exposed to

DMSO.

Waste Disposal Procedures

* DMSO alone does not require additional waste stream practices (used DMSO is treated as regular waste), however, DMSO is often a vehicle to a chemical hazard that requires a higher waste stream.
* Unused portions of DMSO (including spill cleanup) must be disposed of as Regulated Hazardous Waste through [UF EHS Hazardous Waste Management](https://www.ehs.ufl.edu/forms/hazardous-waste-forms/)

Emergency Response (Spill & Accident Procedures)

**Spills**

* If a small spill occurs, clean up with an approved solution (e.g. Peroxigard). Collect spilled material and clean up material into appropriately labeled, nonmetallic waste container.
* For large spills, call EH&S Chemical and Radioactive Waste Disposal group at 352-392-8400 for clean-up assistance.
* See [UF EHS Spill Response](https://www.ehs.ufl.edu/departments/research-safety-services/hazardous-waste-management/spill-response/#:~:text=Call%20EH&S%20Chemical%20and%20Radioactive%20Waste) for additional information

**Needlesticks**

* Allow to bleed freely. If necessary, control bleeding by applying direct pressure with a sterile gauze or bandage.
* Immediately wash with copious quantities of soap and water.
  + If eyes or mucous membranes are exposed, irrigate the area for at least 15 minutes with water.
* Seek medical treatment.
* Report the incident to the PI/supervisor and Environmental Health and Safety (352) 392-1591 and submit an online Injury /Incident Report (<https://apps.ehs.ufl.edu/incidents/>).

**If an emergency occurs outside of normal work hours, contact the University Police Department at 352-392-1111 or call 911.**

**Emergency Contact Numbers:**

* Principal Investigator: xxx-xxx-xxxx
* Lab Manager: xxx-xxx-xxxx
* Poison Control Center: 800-222-1222
* Emergency: 911
* EH&S: 352-392-1591

**Physical Address on Campus:**

[Add your lab’s address here.]

References

* [Policy on Handling Animals Exposed to Hazardous Chemicals](https://iacuc.ufl.edu/secure/wp-content/uploads/sites/3/Policy-on-Handling-Animals-Exposed-to-Hazardous-Chemicals.pdf)
* [[UF EHS Safety-Engineered Sharps Fact Sheet](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D)](https://webfiles.ehs.ufl.edu/Safety_Eng_Sharps.pdf#:~:text=What%20is%20a%20safety-engineered%20sharp%3F%20The%20U.S.%20Occupational,effectively%20reduces%20the%20risk%20of%20an%20exposure%20incident.%E2%80%9D)
* [UF EHS Spill Response](https://www.ehs.ufl.edu/departments/research-safety-services/hazardous-waste-management/spill-response/#:~:text=Call%20EH&S%20Chemical%20and%20Radioactive%20Waste)
* [UF EHS Hazardous Waste Management](https://www.ehs.ufl.edu/forms/hazardous-waste-forms/)

Documents and attachments

List applicable forms and attachments here.