STANDARD OPERATING PROCEDURE

Use this form to document the Health and Safety information associated with the procedure.

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| **Procedure Title** | | Work in research fields | | | | | | |
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| **Dept** | ABE | |  | **Bldg/Rm** | N/A |  | **Supervisor** | Adina Howe |

**Procedure Overview** (brief description of the project)

The purpose of this document is to provide standard operating procedures for people working outdoors in research fields. These sites are often remote and can pose hazards uncommon to worker’s daily lives.

Outdoor work has the potential to expose the worker to extreme weather conditions. These include extreme temperatures, high winds, and precipitation. The potential for exposure to pesticides or other field inputs may also be a concern. In some instances, workers may be exposed to hazardous plants and wildlife.

**Health and safety information for materials used (**briefly describe the hazards associated with the materials and/or equipment **OR** document your hazard assessment in Section I)

High temperatures are common in Iowa summers and have the potential for causing heat exhaustion and heat stroke. Cold temperatures have their own hazards including hypothermia and frostbite. High winds can have a modulating effect on temperatures, exacerbating the hazards of cold temperatures. They can also cause unsecured items to become projectiles. Precipitation can cause slipping hazards, driving hazards, and exacerbate the hazards of cold temperatures. Intense sunlight can cause sunburn to unprotected skin.

Field inputs and their residues can expose workers to chemicals and pesticides as they work at the site.

Wildlife can be present in and around research fields and introduce their own hazards including the potential for bites, scratches, and exposure to diseases and venom. Insects can bite or sting creating potential for allergic reactions, rashes, and disease transmission.

Severe weather is particularly hazardous and may include hail, lightning strikes, and tornadoes.

**Hazard Control Measures**

Please select which type of lab coat, eye protection, and hand protection will be used (Lab coat, eye and hand protection, and closed toe/heel shoes must be selected as required by Section D of the ISU Laboratory Safety Manual.)

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|  | Latex gloves |  | Insulated gloves |  | Face shield |  | Respirator |
|  | Nitrile gloves |  | Safety glasses |  | Lab coat |  | Fume hood |
|  | Neoprene gloves |  | Vented goggles |  | Apron |  | Biosafety cabinet |
|  | Vinyl gloves |  | Splash goggles |  | Dust mask |  | Glove box |
|  | Fully enclosed shoes | | |  | Flame resistant lab coat | | |

***Other Control Measures***

Wide-brimmed hat, water bottle, sunscreen, insect repellent, weather forecasts, weather-appropriate clothing

**Methods** (Include step by step instructions detailing the process or attach this document to an existing method.)

Before leaving for the field, check the weather forecast for that day. Consider how the weather will affect driving and working conditions. Postpone or reschedule the trip for severe weather or if conditions will make going to the field particularly hazardous. Prepare necessary items to protect yourself from hazards such as a wide-brimmed hat and sunscreen in sunny weather and warm, layered clothing in cool and cold weather. Prepare breathable, waterproof outerwear and appropriate shoes in case of rain. Wear long-sleeved shirts, long pants, shoes, socks, and a hat or scarf to protect your body from pesticide residues. Always bring plenty of water or other hydrating fluids to drink periodically throughout the day. Pack a first aid kit for your vehicle along with soap, water, and paper towels for hand washing. It is recommended you drive an ISU vehicle or bring your ISU ID so that you are identifiable, especially if you may be challenged about your purpose at a particular site.

Plan to work with at least one other person whenever possible. Let people know where you are going and when to expect you back. Bring a cell phone to contact help if needed. Know the address of your location, nearest street intersection, or GPS coordinates so emergency personnel can be directed to you.

Ask the farm manager about any field inputs that have been applied prior to your arrival or are scheduled during your stay and about any hazards that may be associated with them. Keep your WPS (worker protection standard) training up to date and check the central location for information about pesticides that may have been sprayed on the field. Learn where the site’s first aid kit and hand washing sink are (if available).

After arriving at the field, be sure to take frequent water breaks and assess your condition throughout the day. Dehydration is a concern in both warm and cool weather. Locate sheltered areas near your worksite that can provide some relief from outdoor conditions during breaks. Wash your hands with soap and water before you eat, drink, smoke, chew gum or tobacco, and before using the toilet or your phone. Antibiotic gel will not rinse pesticide residues off your skin.

Be aware of your surroundings, many animals are well camouflaged in their habitat. Treat wildlife with caution. Carry wildlife or insect repellent as appropriate. Know if anyone in your group has allergies and learn where they keep their emergency supplies. Iowa has only four venomous snakes, and their bites are rarely fatal if treated. The massasauga and timber rattlesnakes are rare but found in eastern and southern Iowa. The prairie rattlesnake and copperhead are even rarer in the state. Venomous snakes have distinguishing characteristics including: triangular shaped heads, elliptical or “catlike” pupils, and a facial pit or depression behind the nostrils used as a heat sensor to locate prey.

Several plants in Iowa may cause reactions after exposure. The most common are poison ivy, wild parsnip, and stinging nettles. Poison ivy and wild parsnip contain oils that many people are allergic to. Wash equipment that may have been exposed with soap and water as the oils can persist on surfaces. Plant hairs on stinging nettles can inject acid into the skin, however, the body’s reaction is mild and usually clears up in a few minutes. (See below for plant photos.)

Seek shelter in the event of severe weather. Thunderstorms carry the risk of lightning strikes, which are deadly. If you hear thunder and you are outside, seek shelter immediately in a sturdy enclosed building (avoid concrete which contains rebar) or hard top vehicle. Avoid open spaces, isolated objects (including trees), high ground, metallic objects, and bodies of water. Stay sheltered until 30 minutes after the last clap of thunder. If there is a tornado warning, go to the nearest building with a basement or windowless interior room for shelter. If there are no buildings nearby, go to a ditch or low area, lie down, and cover your head. Avoid areas prone to flooding. During hail, seek shelter immediately in a sturdy building or vehicle while protecting your head.

When you get home, wash your body and hair thoroughly with water, soap, and shampoo, and put on clean clothes. Wash your work clothes separately from your non-work clothing.

**Waste Disposal Procedures**

As per site protocol or procedure protocol. Dispose of trash in appropriate waste containers.

**First Aid Procedures**

**For heat stroke/heat exhaustion**: Move the person out of the heat and into a shady or air-conditioned place. Lay the person down and elevate the legs and feet slightly. Remove tight or heavy clothing. Have the person sip chilled water, a decaffeinated sports drink containing electrolytes or other nonalcoholic beverage without caffeine. Cool the person by spraying or sponging with cool water and fanning. Monitor the person carefully. Contact a health care provider if signs or symptoms worsen or if the person doesn't improve after taking first-aid measures. Call 911 or your local emergency number if the person's condition gets worse, especially if he or she experiences: Fainting, Agitation, Confusion, Seizures, or Inability to drink. (Source: Mayo Clinic)

**For hypothermia**: If you suspect someone has hypothermia, call 911 or your local emergency number. Then immediately take these steps: Gently move the person out of the cold. If going indoors isn't possible, protect the person from the wind, especially around the neck and head. Insulate the individual from the cold ground. Gently remove wet clothing. Replace wet things with warm, dry coats or blankets. If further warming is needed, do so gradually. For example, apply warm, dry compresses to the center of the body — neck, chest, and groin. The CDC says another option is using an electric blanket, if available. If you use hot water bottles or a chemical hot pack, first wrap it in a towel before applying. Offer the person warm, sweet, nonalcoholic drinks. Begin CPR if the person shows no signs of life, such as breathing, coughing or movement. Caution: Do not rewarm the person too quickly, such as with a heating lamp or hot bath. Don't attempt to warm the arms and legs. Heating or massaging the limbs of someone in this condition can stress the heart and lungs. Don't give the person alcohol or cigarettes. Alcohol hinders the rewarming process, and tobacco products interfere with circulation that is needed for rewarming. (Source: Mayo Clinic)

**For frostbite**: Protect your skin from further damage. Get out of the cold. Gently rewarm frostbitten areas: Soak frostbitten fingers, toes, or other extremities in warm water — 105 to 110 F (about 40 to 43 C). If a thermometer isn't available, test the water by placing an uninjured hand or elbow in it — it should feel very warm, not hot. Soak for 20 to 30 minutes or until the skin becomes its normal color or loses its numbness. For the face or ears, apply a warm, wet washcloth. Don't rewarm frostbitten skin with direct heat, such as a stove, heat lamp, fireplace, or heating pad. This can cause burns. (Source: Mayo Clinic)

**For chemical or pesticide exposure**: Some symptoms of pesticide poisoning can be mistaken for symptoms of other illnesses, such as the flu or heat stroke. If you suspect you have been poisoned by pesticides get immediate help from a local hospital or physician. You can also call the poison control center at 800-222-1222. When you suspect a pesticide poisoning, try to get as much information about the pesticide(s) as possible, including: the name of the pesticide used, the EPA pesticide registration number, and the pesticide label and/or the Material Safety Data Sheet (MSDS) for the pesticide(s). Try to talk directly to the farm manager, safety coordinator or the pesticide applicator to get this information although this information should also be at the central location. Under EPA’s Worker Protection Standard (40 CFR 170), agricultural employers are required to make the name of the pesticide and the label available to healthcare providers and workers if it is requested. (Source: epa.gov)

**For insect stings:** Stings from bees, yellow jackets, wasps, and hornets might cause a severe allergic reaction (anaphylaxis). Remove the stinger and wash the site with soap and water. Applying ice or hydrocortisone cream can provide some relief from redness, itching and swelling. Seek immediate medical help in the case of an allergic reaction. An antihistamine may help. Use epinephrine if it has been prescribed to you.

**For other insect bites**: Most insect bites are mild and can be treated with first aid. They might cause itching, swelling and stinging that go away in a day or two. Some bites or stings can transmit disease-causing bacteria, viruses or parasites. Gently wash the area with soap and water. Raise the injury, if possible and treat with ice for 10-20 min to reduce swelling. Apply calamine lotions, baking soda paste, or hydrocortisone cream to location as needed. Take an anti-itch medicine (antihistamine) to reduce itching. Seek medical care if the swelling gets worse, the site shows signs of infection, or you don’t feel well. (Source: Mayo Clinic)

**For animal bites/scratches**: Wash the wound thoroughly with soap and water. Apply an antibiotic cream or ointment and cover the bite with a clean bandage. Seek prompt medical care if: The wound is a deep puncture or you're not sure how serious it is. The skin is badly torn, crushed or bleeding significantly; first apply pressure with a bandage or clean cloth to stop the bleeding. You notice increasing swelling, redness, pain, or oozing, which are warning signs of infection. You have questions about your risk of rabies or about rabies prevention. You haven't had a tetanus shot in the past 10 years – or five years if the wound is deep or dirty; you may need a booster shot.

**For venomous snake bite**: Venomous snakes do not always inject venom when they bite (about 25% of bites). Effects from rattlesnake bites occur at the site of envenomation (rapid onset of pain, bruising, swelling, tingling, numbness, tissue damage and bleeding), can be systemic (nausea, vomiting, blurred vision, low blood pressure, rapid pulse, and weakness), and may also affect the coagulation system. The initial management of a snake bite includes immobilization of bitten area just below heart level; removal of bracelets, rings, and other constricting items near the site of the bite; rapid transport to a health care facility; monitoring vital signs; washing the bite site and ensuring tetanus immunization is up to date. (Adapted from Iowa Poison Control Center)

**For poison ivy or wild parsnip exposure**: Thoroughly wash your skin with soap and water as soon as possible. Leave shoes outside and wash clothes separately, as the oil can remain on surfaces and cause new flare-ups when you come in contact with it again (but the rash itself is not contagious). (Source: Iowa DNR)

**Spill/Release Containment, Decontamination, and Clean Up Procedures**

N/A or as per protocol

**Using Substances Requiring Special Procedures?** No  Yes

(If Yes; identify authorized personnel, designate a use area and specify specialized safety precautions here. Refer to Section B in the ISU Laboratory Safety Manual for details.)

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| **Written By** | Lorien Radmer |  | **Date** | 1/16/24 |
|  |  |  |  |  |
| **Approved By** |  |  | **Date** |  |

(PI or Lab Supervisor)

1. **HAZARD ASSESSMENT**

Use the hierarchy of controls to document the hazards and the corresponding control measure(s) involved in each step of the procedure.

Consider *elimination or substitution* of hazards, if possible.

***Engineering Control(s):*** items used to isolate the hazard from the user (i.e. fume hood, biosafety cabinet).

***Administrative Control(s****):* policies/programs to limit the exposure to the hazard (i.e. authorizations, designated areas, time restrictions, training).

***Required PPE***: indicate PPE including specific material requirements if applicable (i.e. flame-resistant lab coat, type of respirator or cartridge).

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| **Task** | **Hazard** | **Engineering Control(s)** | **Administrative Control(s)** | **Required PPE** |
| Working in hot weather | Heat exhaustion, heat stroke, burns from sun exposure | Nearby shelter with shade or air conditioning | Frequent water breaks, training | Wide brimmed hat, appropriate clothing, sunscreen |
| Working in cold weather | Hypothermia, Frostbite | Nearby shelter with warmth, personal warming device | training | Warm, layered clothing |
| Working in field with chemical or pesticide residues | Exposure to chemicals or pesticides – poisoning | Handwashing sinks, restricted entry signs | WPS training and procedures, central location | Wear long-sleeved shirts, long pants, shoes, socks, and a hat or scarf |
| Working in wildlife habitats | Stings, bites, or scratches from animals or insects | Animal or insect repellant | Training | Closed toed shoes, long-sleeved shirt, long pants |
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1. **TRAINING RECORD**

Use the following table to record the training associated with this Standard Operating Procedure.

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| --- | --- | --- | --- |
| **Print Name** | **Signature** | **Trained By** | **Date** |
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**Supplementary info:**

Phots from Iowa DNR

A close-up of a plant

Description automatically generated Poison ivy

A close-up of a plant

Description automatically generated Wild Parsnip

A close-up of a plant

Description automatically generated Stinging Nettles