Field Safety Requirements and Best Practices for Research at the Mountain Research Station/Niwot Ridge during Covid19

This document provides a resource for field research on Niwot Ridge during the Covid19 pandemic. Many of these field safety requirements and best practices are relevant to field work at any time, while others are specifically designed to reduce transmission of Covid19 in order to protect higher risk individuals from contracting the disease, and decrease any additional burden on our Health Care Systems.

Please keep in mind that ultimately you are responsible for your own safety and the safety of others working at the MRS and on Niwot Ridge, and for following the protocols provided as part of your research application form. Proper planning, preparation and training are essential and will vary depending on the time of year and location of your specific study.

The Covid19 emergency is rapidly changing and plans and protocols may need to change in accordance with State and University responses, and as new information on Covid19 transmission and prevention becomes available. Researchers should assume that they and anyone else they encounter are asymptomatic carriers. If at any time an individual feels that any part of their work becomes unsafe, please immediately discontinue work, communicate the issue to a supervisor or other person who can help, and only continue said work if and after a safe solution is found.

Basic Requirements

All groups must have a safety plan in place and on-file with their MRS research permit that addresses relevant hazards they may come across during their research, how those hazards can be avoided and/or mitigated, and how to respond should an incident occur. A template safety plan is available on the MRS web site.

Prior to committing to a day of field work groups should first consider whether the conditions are suitable to achieve their minimum research goals for the day. Before going into the field the group should have a safety talk, and everyone should be familiar with their group’s safety plan.

A safety plan should include:

- communication plan
- travel plan
- supplies relevant to your field plan (what should be in your 1st Aid Kit, clothing, how much food/water to bring)
- review of the daily weather forecast and response to changing weather conditions
- considerations to prevent any potential Covid19 transmission including proper PPE, cleaning, and symptom checks
- plan for isolation and transport of an individual if Covid19 symptoms begin during working hours, and cleaning of any areas or vehicles that individual has been in contact with,
- reporting procedure if an incident occurs
• response plans for both emergencies in which self-evacuation is possible and when it is not

**Communication:**

Every group should carry one or more reliable communication devices, including one of the following: a satellite phone, RF Radio, or Personal Locater Beacon (not just a cell phone, as service is unreliable on Niwot Ridge). Additionally, all groups should have a designated contact, such as a reliable friend, colleague, partner, or other trusted person, who has been informed who is in your group, what time your group expects to return from the field, and what to do if your group has not returned by a designated time.

It is strongly recommended that no one conduct solo field work on Niwot Ridge. If it is determined that solo work must take place, and risks assumed are reasonable for a single researcher, a reliable communication device should be carried and the researcher should check-in with a contact when they finish their field work.

Teams with open and honest communication about risks and concerns are less likely to have an emergency situation occur. If you are the group leader it is your responsibility to ensure every group member feels safe to voice concerns. If a group member has a concern, you must address and talk through your risk management until everyone feels that the risk has been adequately considered and properly mitigated. In addition, as group leader it is your responsibility to ensure that everyone in your group is familiar with your emergency plan, response, and tools to facilitate a response.

**Training:**

At a minimum, one person in your group must be trained in Basic First Aid and CPR, and you must carry one 1st aid kit for every four persons in your group.

In addition, training must be provided to field teams to mitigate and respond to expected hazards on Niwot Ridge. These may include, but are not limited to; lightning, High Altitude Pulmonary Edema (HAPE), High Altitude Cerebral Edema (HACE), hypothermia, sprains/strains or other trauma, and dehydration.

Because expected hazards on Niwot Ridge are beyond those typically covered in a Basic 1st Aid Class, and because any injury above the MRS will necessitate a lengthy response time, a Wilderness First Aid Class is recommended for at least one person in each group. There is no adequate substitute for this training. Ideally, at least two persons in each group should have Wilderness First Aid training so that if one trained person becomes injured another group member can provide adequate care.

**Travel:**

Safe driving to the MRS and cable gate during the Covid19 pandemic will require individuals to follow current State and County guidance for mask wearing and social distancing. Vehicle travel to cable gate will be more restricted than in the past due to the lower number of people per vehicle, and our need to lower road wear, minimize the impacts on NOAA gas monitoring at C1, and the limited parking at cable gate. Researchers may need to walk from the MRS rather than driving. Gate key requests should be made to the Station Manager several days before your arrival. In some cases, gate keys will be issued for extended time periods.
Use of Field Shelters:

Entrance to Remote Shelters (including the Kiwi Van, T-Van, the Tundra Lab, Saddle Van, and D1) is for emergency only, or to access equipment or bathrooms. If access to equipment is needed, time spent in a field shelter must be limited to 15 minutes or less. Tundra Lab access is limited to a maximum of three persons at a time, and all other shelters limited to one person at a time due to existing distancing requirements (exception for emergencies only). Masks must be worn at all times when inside any of the field shelters, and all users must record access on the user logs posted inside the shelter entrances.

Please do not include the extended use of field shelters in your daily research plan. However, if you determine your field work requires shelter access for longer than 15 minutes in duration, it may be possible to schedule limited access in advance (so that we may limit the number of users per day). Contact Jennifer.F.Morse@colorado.edu to schedule longer duration access. We will try to accommodate requests as we are able, within state and county Covid19 guidance.

You are responsible for carrying your own first aid supplies. However, in the event of a life or limb emergency some life-saving equipment not typically carried in a first aid kit is available in the Tundra Lab including an AED, Supplemental Oxygen, an Epi-Pen, and extra face masks. All shelters may be accessed as needed in an emergency. Face masks must be worn, and try to limit your time and numbers as much as safety will allow. Please note that the tundra lab has no ventilation and the potential to spread Covid19 vs the benefit of accessing emergency equipment and shelter must be heavily weighed. Any Tundra Lab access that is not less than 15 min or pre-approved must be logged on the Tundra lab sign in sheet and reported to MRS personnel (Jennifer.F.Morse@colorado.edu and MRS@colorado.edu).

Supplies/What to bring during Covid19 Pandemic:

The list below includes considerations for Covid19 Safety. A list of typical 1st aid and other supplies is found in the resources section.

**Hand Sanitizer**

Regular handwashing has been shown to help prevent Covid19 transmission, it is strongly recommended individuals carry and regularly use hand sanitizer in the field before and after using any shared tools or equipment.

**Face Mask or Covering**

Face masks are important to lowering the direct person-to-person spread of the virus. Follow current State and County requirements for mask wearing. Assume those around you are not vaccinated and wear a mask.

**Additional 1st Aid Kit items during Covid19 Pandemic**

Your first aid kit should include additional supplies to prevent exposure to Covid19 to an injured patient as well as yourself, including; face masks, eye protection, disposable gloves.
Additional Covid19 Considerations

Red Cross Guidelines for providing First Aid Care during Covid19

If possible, have the injured person place a face mask over their nose and mouth, if they have not done so already, and limit contact by staying back at least 6 feet, if possible, until that person has done so.

- Try to limit the number of individuals in contact with the injured person. Those who provide direct care for someone should wear respiratory protection (mask), eye protection, disposable gloves and a disposable isolation gown, as supplies are available.
- Following care, first aid providers should wash hands as they would normally do and discard personal protective equipment (PPE) following usual procedures.

While wearing PPE, clean and disinfect items which have touched the patient. After cleaning, dispose of PPE and perform hand hygiene.

Rescue during a pandemic puts others at risk

An accident is something we want to avoid in all times, but it is especially concerning during Covid19. Researchers need to carefully consider if your field work is worth taking on added risk during these times. The more remote your field sites are, and/or the riskier your field activity is, the more likely that first responders may be called for a traumatic or medical injury, and the longer contact times those people will be exposed to if anyone in the group has Covid19. Consider how many responders (such as local Search and Rescue and Fire Department teams) will be pulled away from other work if you require rescue, that distancing between rescuers during a response is often impossible, and/or how many masks, isolation gowns, plastic gloves will be used in response by medical teams with very limited supplies to care for your injury.

Additional Resources to Assist in Developing your Safety Plan

Communications

- Emergency Phones are currently located at the MRS, C1, and the Tundra Lab; dial 911 for life or limb emergencies.
- There is a WiFi signal around the Tundra Lab as long as there is power.
- MRS phone numbers are 303-492-8842 (Station Manager), 303-492-8841 (LTER office) and, MRS land line (Station Manager) 303-258-3017
- Boulder County Sheriff non-emergency phone; 303-441-4444
- Reliable and popular brands of Personal Locator Beacons include Garmin inReach, Spot, Acr Resqlink. Prices and services vary. These are often less expensive than a satellite phone.
Typical Hazards Encountered on Niwot Ridge

Fire:
Wildland Fires – Fire danger can be very high during the dry summer months. Open fires (fire pits, fire pans, charcoal grills, propane camp stoves) are prohibited at MRS and on Niwot Ridge. Report any smoke at or nearby the station to staff or call 911.

Lightning:
Thunderstorms in Colorado can build between 12:00 p.m. and 3:00 p.m. If thunderstorms are in the forecast, never be above timberline after 1:00 p.m. If above tree line when a storm rolls in, rapidly descend to shelter. If above tree line and far from shelter in a thunderstorm:
• Take shelter in a grounded building.
• Get inside a vehicle if you can. Do not touch metal inside.
• Otherwise, find the lowest possible area. It is always better to seek shelter in a thick forest versus an isolated stand of trees. Crouch down with your feet together and hug your legs. Sit on your backpack if needed while in this position, but do not sit on the ground. Never sit or lie down on the ground. If lightning is imminent and you are in a group, spread out as much as possible within sight of one another.

High Altitude:
The MRS is at 9,500 feet, and research sites range up to 12,000 feet in elevation. Symptoms of altitude sickness include dizziness, nausea, difficulty sleeping, headache, shortness of breath, and a general feeling of being ill.
• Drink plenty of water and avoid caffeine, alcohol, or tobacco,
• Pace yourself when hiking and working and eat plenty of calories so your body has energy.
• If symptoms persist, the best remedy is to descend to a lower altitude.

Sun/Temperature/Weather:
• Sun at elevation is brutal. Wear sun screen, sunglasses, and wide hat. Stay hydrated and take extra water! Summer temperatures on Niwot Ridge range from the mid-30’s F to 80 F during the day.
• Hypothermia: Hypothermia is the lowering of core temperature, and can happen at temperatures as high as 45 degrees Fahrenheit. Hypothermia can happen in the summer or the winter. Bring plenty of layers including a rain jacket, extra fleece jacket, rain pants, and hat. Try to avoid cotton, instead layer with wool or synthetics.

Drinking Water in the Field:
It is best to carry your drinking water into the field. Do not drink water from mountain streams or lakes, it can often harbor bacteria which can make you extremely ill. Any water you drink from mountain streams or lakes must be purified with proper equipment to remove these harmful bacteria.

Wildlife:
Treat all wildlife with respect and view at a distance. Never feed wildlife including chipmunks and squirrels.
• Moose
  o Very common around MRS. Typically not aggressive, moose can be extremely dangerous when startled; especially a female moose with young. They are extremely fast and have poor vision, their defense is by trampling – they commonly weigh 800 pounds plus!
  o Give it space and take a wide path around the moose being careful to not get between two
moose. In the case that you are threatened by a moose stay calm, do not run away, slowly back away in the direction you came. If it charges you take shelter behind a large tree or rock.

• **Bears**
  o Very common around MRS. Make noise, especially if you are hiking alone to avoid surprising a bear. Never run. Make noise with confident yell “go away bear” and clapping your hands loudly. Keep your distance and back slowly away facing the bear, avoiding direct eye contact. Throw rocks at the bear if it is aggressively approaching you.
  o A fed bear is a dead bear! Trash and food left outdoors or in your car will attract bears to the MRS campus. Dispose of trash properly, and do not leave coolers with food or trash outside.

• **Mountain Lions**
  o Common around MRS. You are most likely to come in contact with a mountain lion in the early mornings, late evenings or if you are out at night. Travel in groups and make plenty of noise to reduce the chances of surprising a mountain lion.
  o Stay calm, and back away slowly while facing the mountain lion and making yourself appear as large as possible. If the lion is aggressive throw sticks or rocks, fight back!

### Training Options during Covid19

**Wilderness First Aid**

For class offerings in Colorado see:


**Basic First Aid and CPR**

Basic 1st Aid/CPR/AED certification can be taken through Red Cross. Classes are offered in on-line, on-line+classroom, or classroom formats.

A list of their classes can be found at;


### Supplies

Below is a list of items to consider bringing with you in the field. This list is not meant to be all-inclusive and each groups daily safety plan/hazard assessment will determine what should be carried in the field each day.

A popular way to cover your bases when preparing to travel in the back country is to think in terms of **The Ten Essentials**.

1. Navigation (map and compass, GPS) and knowledge of how to use them
2. Sun protection (sunglasses/goggles and sunscreen)
3. Insulation (extra clothing, no cotton)*
4. Illumination (headlamp/flashlight with spare batteries)
5. First-aid supplies
6. Fire (waterproof matches/lighter/candles)
7. Repair kit and tools (knife, Leatherman or other multi-tool)
8. Nutrition (extra food)
9. Hydration (extra water -at least two liters per field day per person)
10. Emergency Shelter* (emergency blanket for summer, emergency bivy and extra down clothing in winter)
11. Reliable Communication device and check in plan
12. *Carry enough clothing/shelter to wait a number of hours for help to arise should you be immobilized (i.e. a broken leg) in the backcountry. What you carry should be appropriate for the time of year and distance from the main road or help at which you are working.

*List of Minimum Items for a First Aid Kit

- Ace bandage to support sprains or construct splints
- Duct tape/athletic tape, strong string, or rope to secure splints
- Iodine ointment for cleaning wounds
- Band-Aids
- Sterile gauze dressing for large wounds
- Adhesive tape to attach dressing
- Antibiotic cream, like Neosporin
- Pain killer/anti-inflammatory (i.e. Ibuprofen)
- Antihistamine (i.e. Benadryl)
- Signal mirror or whistle in case you get hurt or lost
- Candy or Sugar packets for quick energy
- Clean syringe to flush small wounds