

IOWA

IIHR—Hydroscience and Engineering

Fieldwork Safety Guidelines

These guidelines focus on establishing a climate in which the safety of University of Iowa (UI) personnel has primacy, and where faculty, staff, and students know the policies, procedures, and guidelines to help ensure safe practices. Principal investigators (PIs) have the ultimate responsibility for ensuring the safe field activities of their staff and students. PIs may elect to manage the risks involved with their fieldwork in a manner different from these guidelines, but alternative practices must provide an equivalent or greater level of safety.

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Fieldwork consists of off-campus research or teaching activities. Fieldwork may occur in remote locations and/or expose field crew members to extreme weather, hazardous terrain, or other adverse conditions.

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The PI has ultimate responsibility for the safety of their field crew.

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Reasonable care includes considering all aspects of the excursion, including who is eligible to participate, transportation, equipment, first aid supplies, proper training and use of equipment and vehicles, communications, delegation of duties, and an emergency plan.

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1.0 APPLICATION AND SCOPE

“Fieldwork” consists of activities authorized by the university, conducted for the purpose of study, research, or teaching, and undertaken by faculty, staff, students, and authorized volunteers for the university at a location outside the geographical boundaries of the campus.

Fieldwork activities, such as those involving isolated or remote locations, extreme weather conditions, or hazardous terrain, can expose participants to significant risks to their health, safety, or well-being at locations outside the direct supervisory control of the university. The intent of these guidelines is to ensure that prior to undertaking fieldwork:

- All parties concerned are aware of their responsibilities.
- A risk assessment is carried out to identify potential hazards associated with fieldwork and to establish appropriate controls to eliminate or minimize such hazards; and
- All participants have an informed understanding of the associated risks and consent to the means for dealing with such risks.

These guidelines are not generally intended for organized off-campus activities such as:

- Supervised study or work placements at external institutions affiliated with the University or that the university department has designated as an approved placement center; or
- Travel for conferences, seminars, meetings, or visits to other institutions.

For all off-campus activities conducted on the premises of or under the control of another organization or institution, principal investigators (PIs) must ensure that the local safety procedures of that organization or institution are appropriate and reasonable for the type of activities being conducted, are in compliance with local laws and regulations, and are consistent with the safety standards and practices of the University of Iowa.

2.0 RESPONSIBILITIES

The responsibilities of the following:

- Deans, directors, and department chairs;
- Departmental safety coordinators;
- Principal investigators/supervisors;
- Employees and students; and
- Environmental health and safety

should be consistent with the responsibilities set forth in the University of Iowa Departmental Health and Safety Guide.

For the purpose of fieldwork, additional responsibilities are listed below.

Team Leader

The team leader may be the principal investigator (PI) or may, in the absence of the PI, be another member of the team who has been designated as such by the PI. The team leader has the duties of a supervisor. Specifically, the team leader is responsible for:

- Ensuring implementation of the controls established by the PI, including the use of appropriate safety equipment, safety procedures, and medical precautions by team members during fieldwork;
- Conducting ongoing risk assessments during fieldwork and reporting any new hazards to the PI;
- Resolving any safety concerns that arise in the field;
- Maintaining regular contact with the PI and/or departmental contact;
- Informing the PI and/or departmental contact of all accidents, illnesses, or emergencies that occur in the field; and
- Ensuring that team members receive adequate health and safety training as applicable.

Team Members

Each member of the fieldwork is responsible for:

- Acknowledging the risks of the particular field project;
- Using the appropriate protective equipment provided and following the procedures established by the PI;
- Working safely and in a manner to prevent harm to themselves and others;
- Understanding the Requirements for Reasonable Care outlined in Section 3;
- Reporting any identified hazards to the team leader or PI; and
- Reporting all accidents, illnesses, or emergencies to the team leader.

3.0 REQUIREMENTS FOR REASONABLE CARE

Requirements for reasonable care for those involved in fieldwork, to ensure safety, include, but are not restricted to, the following:

- Only staff, students, and approved volunteers authorized by the PI may assist with fieldwork. Friends, pets, and children are prohibited from accompanying field teams. Employees of county, state and federal agencies on official business connected with the project may accompany people working in the field as appropriate.
- Always consult with your PI if you are uncertain regarding someone's eligibility to accompany you in the field. In general, researchers or other colleagues from other institutions who not authorized by the PI are not allowed to accompany field teams.
- availability of appropriate first-aid supplies and expertise; and accessibility to emergency medical treatment;
- availability of appropriate personal protective equipment (PPE) and field equipment to support the research;
- availability of appropriate food and accommodations, and during travel to and from the site;
- arrangements of appropriate transportation to, at, and returning from the location of the fieldwork; vehicles must be operated in a manner consistent with Standard Operating Procedures (SOPs) for university

vehicles. Personnel should ask the PI for a briefing on the procedures before operating an unfamiliar vehicle for the first time;

- the tasks and responsibilities assigned to each participant must be clearly communicated prior to and during each field excursion;
 - knowledge of all health and safety standards and requirements applicable to the jurisdiction in which the fieldwork is being conducted;
 - provision of appropriate information and training regarding the risks associated with fieldwork activities, materials, equipment and environment, and appropriate control measures for dealing with them;
 - provision of appropriate information and training for responding to and reporting of accidents involving injuries, damage to property and equipment, and spills, leaks or release of hazardous materials;
 - recognition of the right and responsibility of an individual to exercise personal judgment in acting to avoid harm in situations of apparent danger; in this regard, students should be informed of the general nature, requirements and location of their fieldwork; and
 - availability of procedures for contacting the University to obtain assistance in an emergency.
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4.0 REFUSAL OF UNSAFE WORK

Any member of a fieldwork team may refuse at any time to participate in any activity that they may feel endanger their health and safety or that of another person.

5.0 SOLITARY FIELDWORK

Working alone is strongly discouraged, particularly when remote or hazardous locations, high-risk activities or other unusual conditions are involved.

In situations where solitary work is deemed necessary and unavoidable, a stringent code of practice must be established to address worker competency, procedures for regular reporting, emergency procedures, and other precautions and procedures appropriate to the type of activities involved. The field member must ensure that someone knows where they are and when they are expected to return.

6.0 GENERAL GUIDELINES

Before fieldwork is conducted, the PI should develop standard operating procedures (SOPs) specific to their fieldwork. The SOPs should include at a minimum information provided in sections 6.1, 6.2, and 8.0.

6.1 Preparation – Before Individual(s) Leave

One of the most important phases of a fieldwork experience is planning and preparation before you leave. Here are some suggestions:

- Complete and submit a Fieldwork Plan (required!).
- Learn about potentially hazardous plants, animals, terrain, and weather conditions in the area where fieldwork is being conducted.
- Take a CPR/first aid class.
- Assemble safety equipment and other provisions and check everything before you leave. These include:
 - First aid kit and first aid manual
 - Medications taken on a regular basis
 - Allergy treatments as needed
 - Sunscreen and hats
 - Personal protective equipment (PPE) such as safety glasses/goggles, gloves, hard hat, work boots, etc.
 - Vehicle emergency kit
 - Flashlight
 - Flares
 - Two-way radio (if you will be working in an isolated or dangerous area) and/or cellular phone as appropriate
- Whenever possible, fieldwork activities should be done in teams of at least two people.
- Ask your health insurance provider about how your coverage applies to medical treatment in the fieldwork locale, should that become necessary. Find out where to go for emergency care.
- Obtain authorization for access to state, federal, and/or private lands.
- Obtain permits for any sample collection from respective agencies (i.e., Department of Land and Natural Resources, U.S. Fish and Wildlife Service, etc.)

6.2 Medical Care and First Aid

IIHR maintains a first aid kit in each of its cars and trucks. A kit may also be checked out from the shop when using other vehicles for fieldwork. When not working near the vehicle, a field crew member should carry a first aid kit.

When conducting fieldwork in remote areas, around particularly dangerous or extreme landforms, or under other special circumstances, the PI may require one or more field crew members to receive first aid certification. The PI may also work with IIHR shop personnel to prepare an appropriate survival kit to meet the circumstances of the situation.

6.3 Travel on Foot

- Wear proper safety gear.
- Always carry a first aid kit, radio, and water.
- Be sure that equipment and supplies are carried in a manner consistent with safe travel over rough terrain. Backpacks should be in good repair and fit properly; do not overestimate your load capacity.
- Always be aware of what's around you (on the ground and overhead).
- Be conscious of surroundings — when disoriented, familiar objects can set you on track. Carry a compass and an area (field) map showing locations of pertinent transect, roads and trails, and other landmarks, especially in unfamiliar surroundings and when fog, rain, or darkness can set in.
- Always be sure someone at IIHR knows where you are and when you are expected to return.
- Never overextend your capabilities.
- Be sure permission is granted before entering private property.
- Report accidents immediately to your supervisor.
- Use common sense.
- If you do get lost or become disoriented, stay where you are. You may be overcome by panic. Sit down and quietly organize your thoughts about where you are. A few moments of recollection may clarify your

situation. If not, find a comfortable place to rest. Use your whistle or other means to attract the attention of anyone around you. Do not try to leave the area if there are no signs of where to go. Do not travel at night. You can sometimes assist a helicopter search by starting a smoky fire but be extremely careful not to set the surrounding vegetation on fire.

6.4 Other Transportation

6.4.1 Use of Vehicles

Only licensed and appropriately trained drivers can be in charge of field vehicles. Personnel can only drive fieldwork vehicles if they have been cleared to drive a UI vehicle (see Lesley Green at IIHR). Using private vehicles for fieldwork is highly discouraged, and the vehicle will not be covered by UI insurance; vehicle owners should check with their private insurance provider.

Vehicles used for fieldwork should be well-maintained according to the manufacturer's service specifications and equipped with adequate spare parts and tools, based on the area and length of trip. Care must be taken when loading vehicles to maintain as low a center of gravity as possible and to secure items adequately in the cabin. Vehicles must be driven with caution and attention to prevailing road and weather conditions.

The vehicle should be selected for the type of terrain likely to be encountered, and drivers should be familiar with the vehicle before departure. Drivers intending to use four-wheel drive (4WD) vehicles should be able to demonstrate experience driving such vehicles. Drivers should be familiar with routine maintenance procedures such as checking oil, water, tire pressure, coolant, and battery, as well as changing tires. Drivers should also be aware of the fuel capacity and range of the vehicle.

Prior to setting out on the trip, the driver should check the vehicle to ensure it has been adequately maintained and has all the necessary tools, spare parts, and special equipment for the trip. Check to make sure that luggage and other equipment are secure.

Rest stops and fuel stops should be used to check the vehicle and that luggage and equipment remain secure.

Driving times and distances should be planned to prevent fatigue. Drivers should take periodic breaks after driving for a few hours. During the break, some light physical activity such as walking should be incorporated. Night driving is more hazardous because of reduced visibility, and fatigue and should be minimized.

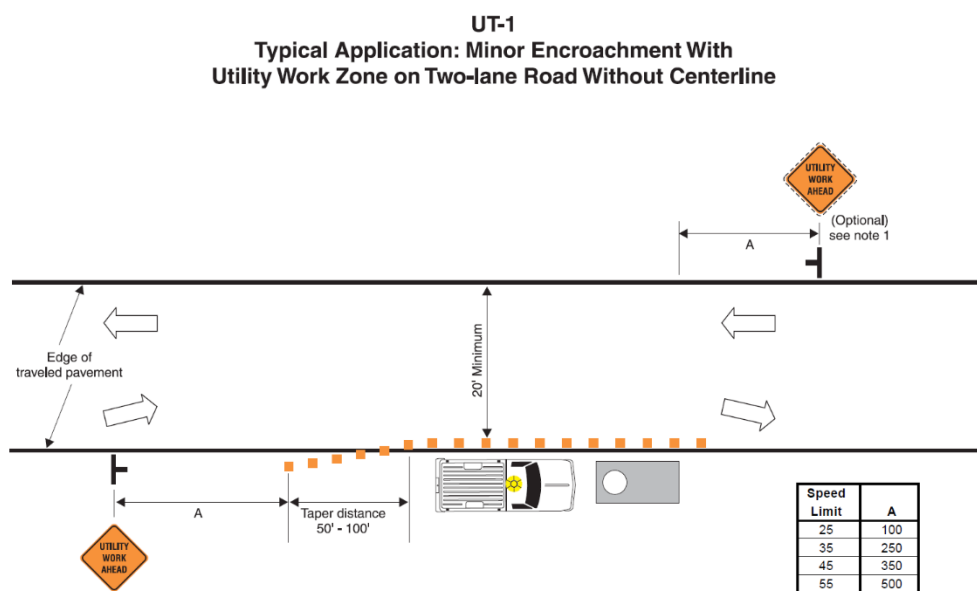
Drivers should always obey speed limits and road rules, including those pertaining to consumption of alcohol. Safe speeds depend upon the road and weather conditions, experience of the driver, time of day, alertness of the driver, and the vehicle itself. Unfamiliarity with the road or conditions and the presence of nocturnal animals contribute to driving hazards.

6.4.2 Use of Boats

See IIHR's Boat Safety plan [available here](#).

6.5 Roadside Parking and Roadside Fieldwork

It is often necessary to park on the side of the road or work along or near the side of the road when conducting fieldwork. All field crew members must wear reflective safety vests at all times when parking or conducting fieldwork on the roadside. You may also place traffic cones behind the vehicle and a strobe light on the vehicle. Vests, cones, and strobe lights can be checked out from the IIHR shop. Work vehicles in or near traffic areas should be equipped with flashing lights, such as a yellow rotating beacon or strobe light. The basic layout of a roadside work area is shown in figure UT-1, below.



6.6 SCUBA Diving

Before diving, the PI must consider appropriate training and safety procedures, such as those used by the UI Scuba Club (<http://www.diversalertnetwork.org/training/online seminars>).

6.7 Use of Pesticides/Herbicides/Other Chemicals

- If your fieldwork requires you to use pesticides, you must either work under the supervision of a person who has a certificate for pesticide application or have a current certificate yourself. You must abide by the instructions on the pesticide label.
- You must wear the appropriate safety equipment and clothing at all times and are responsible for maintaining your equipment and clothing.
- You must know the requirements of the University's Chemical Hygiene Plan (<http://ehs.research.uiowa.edu/chemical-hygiene-plan>) and/or Hazard Communication Program (<http://ehs.research.uiowa.edu/hazard-communication>) as it applies to your work; contact UI Environmental Health and Safety Chemical Hygiene Officer (Rick Byrum at 335-9379) or Industrial Hygienist (Justin Newnum at 335-9554) for these requirements.
- In case of exposure to harmful chemicals, flush the area with water or follow other appropriate action(s) to minimize harmful reactions, seek medical attention, and notify your supervisor immediately.

6.8.1 Coastal and Estuarine Work

When planning coastal and estuarine work, information about tides, currents, weather, and other factors affecting safety must be considered. Work on rock platforms can be particularly hazardous, and adequate precautions must

be taken to prevent anyone from being swept from the rocks or injured by unexpected waves. Ensure that appropriate clothing, including footwear, is worn by all personnel.

6.8.2 Streams

When working in streams, always be aware of the weather conditions, especially when heavy rains are forecast. Other precautions to consider are:

- Wear footwear appropriate for the tasks, e.g., rubber boots or tabs designed for wading. Do not jump from rock to rock. Always ensure that your footing is safe.
- If, after working in a stream or in some way associated with water, you come down with flu-like symptoms that persist, consult your physician and inform him/her that you may have been exposed to leptospirosis. If you have a break in your skin that could be exposed to water let your supervisor know so that protective measures can be taken, or you can be assigned to other duties.
- Never drink untreated water from streams or any source other than a municipal supply. If you suffer from diarrhea and have a hydrogen sulfide taste in your mouth after belching consult your doctor and inform him/her that you may have Giardiasis or amoebic dysentery or other waterborne diseases.
- If your doctor confirms that you are suffering from any such disease, you must notify your supervisor immediately. You may not work in the field until your doctor has confirmed that you are free of the disease.

6.10 Working on State or Federal Lands

If you are working in a national park, wildlife refuge, or state forest reserve and there is an emergency, (e.g., volcanic eruption, wildfire, injury, etc.) you may be requested to participate in emergency operations. Obey the incident commander or other responsible official. Participation in such emergencies is optional, but you are encouraged to support the emergency operation. During the period of the emergency, you will be covered under the emergency regulations.

6.11 Working with or Around Animals

Fieldwork crews should avoid working with live or near-dead animals such as rodents (rats and mice), cats, and other animals are known to carry a variety of diseases. If you must handle live animals, use protective bite-proof gloves with disposable gloves underneath and take precautions to prevent animal fluids from hitting your eyes, nose, and mouth. Any contact with fluids on skin should be washed off with antibacterial soap. Seek medical treatment immediately if there is a possibility of exposure to an animal- or parasite-borne disease (e.g. rabies, Lyme disease, etc.).

Check with the University Environmental Health and Safety Office, Biological Safety Office, and the Institutional Animal Care Use Committee for additional approval and guidance when anticipating working with or around animals.

6.12 Pests

Several pests may be encountered in fieldwork. Follow these general guidelines to prevent injury and illness:

- Keep garbage in rodent-proof containers, stored away from your campsite or work area.
- Thoroughly shake all clothing and bedding before use.
- Do not camp or sleep near obvious animal nests or burrows.
- Carefully look for pests before placing your hands, feet, or body in areas where pests live or hide (e.g., wood piles, crevices, etc.).

- Avoid contact with sick or dead animals.
- Wear clothes made of tightly woven materials and tuck pants into boots.
- Wear insect repellent.
- Minimize the amount of time you use lights after dark at your camp or work site, as they may attract pests and animals.
- Use netting to keep pests away from food and people.
- Carry a first aid manual and kit with you on any excursion so you can treat bites or stings. If the pest is poisonous or if the bite does not appear to heal properly, seek medical attention immediately.
- Familiarize yourself with common pests and symptoms of animal- or parasite-borne diseases in the area.
- Be aware of the appearance and habitat of pests likely to be found.

If you are bitten by a deer tick, watch for symptoms of Lyme disease, which may appear days or weeks after infection, or other signs of illness. Seek medical attention.

6.13 Other Environmental Hazards

In addition to pests, other fieldwork exposures can be hazardous:

- Poisonous plants — Plants such as poison ivy may contain a potent allergen that can cause a reaction lasting anywhere from several hours to two weeks after exposure. To prevent exposure, learn to recognize and avoid the plant and wear clothing such as long pants and long-sleeved shirts. If you come in contact with these plants, wash clothes and skin with soap and water as soon as possible. Learn more about [noxious and poisonous plants](#).
- Impure water — A variety of potentially harmful organisms and pathogens can live in “natural” water sources such as streams, lakes, and rivers. Never drink straight from a natural source. If you must use these sources, treat the water first by using water purification tablets, boiling it for three minutes, or using a special purification filter (available from sporting goods stores).
- Exposure to the elements — Sunburn is a common and easily preventable hazard. To prevent sunburn, cover exposed skin and liberally apply sunblock creams. Wearing a long-sleeved shirt and hat will also provide protection from the sun.
- Heat exhaustion and heat stroke — To prevent heat exhaustion, drink plenty of liquids (electrolyte replacers) and take frequent rest breaks. Heat exhaustion symptoms include fatigue, excessive thirst, heavy sweating, and cool and clammy skin, similar to shock symptoms. Cool the victim, treat them for shock, and give water or electrolyte replacement slowly but steadily if the victim can drink. If left untreated, the victim can suffer heat stroke, which is very serious and possibly fatal. Cool the victim at once, replenish fluids, and seek medical attention immediately.
- Excessive cold — On any trip, even a one-day excursion, sudden changes in weather can occur. Adequate clothing must be worn or carried. Prolonged exposure to excessive cold can lead to hypothermia: symptoms include shivering, numbness, slurred speech, and excessive fatigue. Wear several layers of clothing to allow adjustments to differing levels of physical activity. Avoid getting damp from perspiration.

7.0 EQUIPMENT AND COMMUNICATIONS

7.1 Equipment

Safety equipment used in the field should be inspected and tested prior to the trip to ensure that it is in good

operating condition, with fully charged batteries, sufficient fuel, and all appropriate parts.

7.2 Special Safety Equipment

Depending on the type of work, the area, and the likely weather conditions, special safety equipment may be required. This will include personal protective equipment (PPE) such as coveralls, proper footwear or boots, sunglasses, safety goggles, insect repellent, sunscreen, hats, wetsuit, gloves, respirators, or personal flotation devices. Other suggested items include water canteen, matches, whistles, and flashlights.

Ensure that the needed equipment and materials that have been carefully considered, are available to the field crew, and that everyone involved knows how to use them. If anyone in the group has specific medical conditions requiring medication or has allergies to anything that they may occur during the work, make sure someone else knows about it and is familiar with appropriate treatment for the condition.

7.3 Communications Equipment

Training and licensing are required for use of certain types of radios. When these are the main forms of communication, all members of the fieldwork group must be trained and licensed in their use.

If cellular phones are used, everyone must know how to use them properly and must have access to the relevant contact numbers. Battery power for communication equipment should be sufficient to last beyond the expected duration of the fieldwork.

7.4 Contacts and Continuity of Contact

No trip should take place without the establishment of properly informed and competent designated contacts, both within the fieldwork team and at the university base, as appropriate. Before setting out on fieldwork, the schedules and methods for maintaining contact with the university and/or other contacts must be established and understood by everyone involved. Contacts at the university and elsewhere must be informed about the location of the fieldwork, the expected duration of work, how to contact field personnel, the planned time of return, and at what time subsequent to this an alarm will be raised.

For longer fieldwork trips, arrangements must be made to make contact on a regular basis, such as daily, or some other regular interval if daily contact is impractical. The frequency of regular contacts will depend on the length and location of the trip, how many personnel are involved, and the available forms of communication.

Before any trip, contacts and members of the field team must agree on how an alarm will be raised in the worst-case scenario (e.g., the boat sinks, a vehicle catches fire) when the planned means of communication are no longer feasible.

If a scheduled contact is missed, the project PI or other designated contact person should have an alternative means of communicating with the field team and/or contact information for appropriate emergency personnel in the fieldwork area.

The University Campus Security telephone number (319-335-5022), which is monitored 24 hours a day, should be displayed in all vehicles and can be used as a last resort should other university-based contacts fail.

8.0 EMERGENCY PLAN

As appropriate, contacts at the university, at home, and/or at a location near the fieldwork should be notified of the intended route(s), timing, and number of people involved in the work so that they can provide the information and help to direct search and rescue attempts.

Anyone designated as the contact person for a particular fieldwork project must be organized and know exactly what is required. Schedules for contact, the timing and method of raising alarms if contact is not made, the circumstances of the work (e.g., the registration numbers of vehicles or boats, the place where boats are to be launched) should be documented so that the contact can find them quickly if required.

No designated contact may pass on their responsibility simply by leaving a message for someone else to take over; a new contact must be told personally and all the relevant information provided so that there is no break in the continuity of contact. The fieldwork team leader must also be informed of the change of contact person.

Example Emergency SOP:

- Contact person initiates the emergency alert if the fieldwork team fails to return as scheduled. The response may involve the following steps:
 1. Call 911, give your name, location of emergency, type of emergency, and type of help required.
 2. Notify supervisory personnel and provide them with the same information. If you are working in a national park or wildlife refuge, notify the local manager.
 - Thirty (30) minutes from call-in time, an alert is issued. Contact person or another person should stay near the phone at the fieldworker's office or lab.
 - One hour from call-in time, search procedures should begin.
 - One person should remain near the phone, and one person familiar with the field area should begin tracking the scheduled route.
 - Tracking person should call back to the lab/office every 20 minutes to see if field worker has made contact. Tracking continues until the person is found or word is received that they are safe.
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ACKNOWLEDGEMENT OF RESPONSIBILITIES

Please detach and return to supervisor/PI (to be filed and retained):

I have read and fully understand the standard operating procedures for working in the field. I agree to comply with these procedures at all times. Furthermore, I understand that if I endanger my own or a colleague's safety, I will be subject to disciplinary action, including the possibility of termination of employment.

Employee's Signature

Date