

Safety Guidelines for Field Researchers



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I. Introduction

Fieldwork is an important part of teaching and research at Texas A&M Natural Resources Institute. This guide is intended to help you plan and prepare for health and safety problems you may encounter in the field.

“Safety Guidelines for Field Researchers” is organized into several distinct sections. The first section covers “general guidelines” to assist you before you leave, while you are doing fieldwork and with emergency medical care. Sections III, IV and V address specific hazards that you may encounter in the field. By looking at these hazards, you can assess the risk associated with your fieldwork and develop a brief, practical “Safety Plan”. Physical and environmental hazards are listed with the cause, symptoms and prevention measures. Animal-related hazards include a listing of “what to do if encountered” as well as preventive measures. Finally, specific diseases that present a hazard are listed with exposure routes, symptoms and preventive measures. The last section of this guide provides you with resources both on campus and outside the university.

II. General Field Safety Guidelines

The following safety guidelines are presented for any type of fieldwork in any location. Of course, each field trip is unique and the best way to address your specific hazards is to prepare your own “Safety Plan”.

For more specific information on fieldwork hazards and precautions, talk to your supervisor or contact Environmental Health & Safety (EHS). Also, before your trip contact the appropriate person at the Institute for information on travel authorization and reimbursements. Contact information for all these offices is presented in the Resources section of this Guide.

A. Before You Leave

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

Prepare a Safety Plan

Prepare a written *Safety Plan* of your trip. Provide a copy to each member of your team and leave a copy with a responsible party. Include the following:

1. **Your itinerary:** Locations, arrival and departure dates, names, addresses and phone numbers of all fieldwork participants.
2. **Contact person:** Name and phone number of a person to contact in case of emergency- a spouse, parent or friend, as well as a campus contact.
3. **Activities:** General nature of activities being conducted.
4. **Local contacts:** Names of people at or near your fieldwork site who can reach you if necessary, as well as your check-in/check-out arrangements.
5. **Possible Risks:** Potentially hazardous plants, animals, terrain and weather conditions where you plan to work.

Complete a “**Field Research Safety Plan**”. A simple template for a Safety Plan is presented below.

As you prepare your Plan, talk with other fieldworkers, local residents, and authorities, such as state and national park services’ personnel who may be able to provide you with helpful information.

A template for a Safety Plan is presented below and may be used by the Principal Investigator (PI), or Project Lead, to assist with the development of your specific Plan. **The completed Safety Plan should be shared with all the members of the field research team and kept on file.** Multiple trips to the same location can be covered by a single Safety Plan. The Safety Plan should be revised whenever a significant change

to the location, the team or scope of field work occurs. EHS is available to assist in completion or review of the Safety Plan.

Texas A&M NRI Field Research Safety Plan

Principal Investigator: _____

Department: _____

Phone Number: _____

E-mail Address: _____

Dates of Travel: *(List multiple dates if more than one trip is planned)*

Location of Field Research:

Country: _____

Nearest City: _____

(Name, Distance from Site)

Geographical Site (coordinates): _____

Nearest Hospital or Medical Clinic: _____

Field Research: (Please include a brief description of the field work).

University Contact:

Name

Phone

Local (Field) Contact: _____

Name

Phone

Emergency Procedures: (Please include detailed plans for field location including evacuation and emergency communication; *Include a separate sheet if necessary*).

First Aid Training: (Please list any team members who are first aid trained and the type of training they have).

Physical Demands: (Please list any physical demands required for this field research, e.g., Diving, Climbing, Temperature Extremes, High Altitude, etc.).

Risk Assessment: Please list identified risks associated with the activity or the physical environment (e.g., extreme heat or cold, wild animals, endemic diseases, firearms, explosives, violence, etc.). List appropriate measures to be taken to reduce the risks; *Include a separate sheet if necessary.*

| <i>Identified Risk</i> | <i>Control of Risk</i> |
|------------------------|------------------------|
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |
| 6. | |
| 7. | |
| 8. | |
| 9. | |
| 10. | |

Travel Immunizations: (Please list required immunizations/prophylaxis.)

Field Team Membership (Please list the names of all members of the field research team and identify the Field Team Leader.)

Get Your Vaccinations and Make Medical Preparation

If your trip involves travelling outside of the country, you should contact University Health Services, Travel Health or another travel health clinic to learn about the required and recommended vaccinations for your location. Some countries require proof of vaccinations prior to entry. A travel appointment should be scheduled as far in advance as possible since some vaccines are given as a series over a six-month period. Consider taking a CPR/First Aid class.

Texas A&M University System also provides a 24 hour medical response service through the use of multilingual Alarm Centers on duty 24 hours a day, 365 days a year through International SOS. International SOS responds to calls for help and advice on the simplest task of a doctor referral to the most complex medical emergency evacuation to ensure you receive medical treatment consistent with international standards of care. Membership is included for staff, faculty, and students when traveling abroad on official A&M business. Prior to your trip you can register with International SOS by visiting the A&M System portal (<https://nri.tamu.edu/people/research/james-peterson/>). Travelers must carry their International SOS emergency contact card.

Assemble Your Safety Gear

Assemble safety provisions and check everything *before* you leave. Safety provisions may include:

- First aid kit and first aid manual. These should be taken on *any* trip and are described in detail below.
- Medications you regularly take (if your medication involve syringes or liquid preparations, consider carrying a note from your physician documenting your need for such due to airline or country specific restrictions)
- Allergy treatments (if you have allergies)
- Sunscreen and hat
- Water purification tablets or filter devices
- Vehicle emergency kit
- Flashlight
- Flares (Do not take on plane)
- Two-way radio or satellite phone (if you will be working alone in an isolated or dangerous area)
- Personal protective equipment for fieldwork activities (safety glasses/goggles, gloves, hard hat, sturdy work boots, wetsuit, etc.). EHS can recommend protective equipment depending on your activities.
- Tool to remove fishhooks from skin if using hooks for fishing
- Seasickness tablets (be aware of drowsiness side effects)

Other Potential Actions

- Research involving animals, including wild animals, requires registration with and approval from the Institutional Animal Care and Use Committee (IACUC). Research involving microorganisms should be completed after researchers have enrolled in an appropriate Biosafety Occupational Health Program and requires registration with and approval from the Institutional Biosafety Committee (IBC). You may also need to consult with the Institutional Review Board or other committees depending on the nature of your research. Please see the resources section for more information.
- Contact the appropriate business offices with the Institute to communicate questions on travel expenses.
- Ask your health insurance provider about how your coverage applies to medical treatment in the fieldwork locale, should that become necessary.
- Be sure to evaluate the risks associated with driving. Consider taking a defensive driving course and working with a local guide or driver.

B. While You are Working

1. Fieldworkers should check in with their group office regularly and should advise the group office of any changes in schedule or points of contact.
2. Fieldworkers should also inform someone in their work locale (for example, local search and rescue personnel, police, sheriff, or motel employee) each day about the daily fieldwork location and the approximate time of return.
3. After each day's work, the fieldworkers should notify the contact when they return.
4. The local contact should be provided with the telephone numbers of people to call (group office, university contact, etc.) if the workers do not return or report in within a predetermined interval of the scheduled return time.
5. Whenever possible, fieldwork activities should be done in teams of at least two people. The "buddy" system is the safest way to work. Always make sure your supervisor knows where you will be and when you will return.

C. Medical Care and First Aid

The following guidelines apply to all off-campus operations including field stations, academic field trips, field research, excursions, etc. that involve employees and students:

1. A first aid kit should be maintained at all times during the operation or exercise. First aid kits are highly recommended for all off-campus operations. Departments

must purchase and maintain first aid kits including any special equipment or medication that is needed. Kits and refills may be ordered from safety supply companies. EHS can assist with identifying vendors.

2. At least one employee who is trained and certified in first aid and CPR should be present during operations.
3. At permanent university field stations, written arrangements should be made in advance with local facilities for emergency medical treatment. If you are working from a field station you should find out what the arrangements are for emergency care.

Job Related Injuries or Illnesses

If an employee suffers a job-related injury or illness, he/she must notify his/her supervisor within **24 hours**. The employee's department/supervisor must complete the Preliminary Summary Report. If the injury is "serious" (amputation, permanent disfigurement, overnight hospital stay, fatality) notify your supervisor **immediately**. International SOS can assist with emergency medical evacuation to the nearest hospital meeting international standards of care and repatriation of mortal remains.

III. Physical & Environmental Hazards

There are many general physical and environmental hazards that exist in nearly every location worldwide. All field researchers, regardless of the work location, should read through this section to learn more about some general physical and environmental hazards. If your research is in North America, please also read Section B: North America. If your research will take you out of North America, please also read Section C: International.

A. General

| Hazard | Location | Cause | Symptoms | Prevention |
|---------------------|-----------|--|---|---|
| Vehicle Accident | Worldwide | <ul style="list-style-type: none"> -Fatigue -Impaired driving -Driver error -Roadway factors -Vehicle factors | <ul style="list-style-type: none"> -Various trauma injuries | <ul style="list-style-type: none"> -Obey traffic laws -Wear your seatbelt -Don't drive impaired -Don't speed or drive recklessly -Don't use a 12 or 15 passenger van |
| Boating Accident | Worldwide | <ul style="list-style-type: none"> -Lack of proper training -Fatigue -Severe weather -Alcohol impairment - Dangerous/unfamiliar conditions | <ul style="list-style-type: none"> -Various injuries or death | <ul style="list-style-type: none"> -Proper training and certification by appropriate authority -Don't drive while impaired - Don't speed or drive recklessly |
| Slips, trips, falls | Worldwide | <ul style="list-style-type: none"> -Loose, irregular or slippery surface -Wrong footwear -Poor lighting -Obstruction -Improper (or lack of) use of ladders -Inattention or distraction | <ul style="list-style-type: none"> -Strains, fractures, bruises and contusions (head, wrist, elbow, shoulder, back, hip, knee, ankle) | <ul style="list-style-type: none"> -Proper "housekeeping" -Wear proper footwear -Adequate lighting -Don't carry oversized objects -Use ladders properly |
| Carbon Monoxide | Worldwide | <ul style="list-style-type: none"> Running a vehicle or burning a fuel stove in an enclosed space | <ul style="list-style-type: none"> -Severe headaches -Disorientation -Agitation -Lethargy -Stupor -Coma | <ul style="list-style-type: none"> -Keep areas adequately ventilated when burning fuel -Ensure that vehicle tailpipe is not covered by snow |

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|-----------------------|----------------------------|--|---|--|
| Dehydration | Worldwide | Not enough water intake | -Increased thirst -Dry mouth -Flushed face -Dizziness -Headache -Weakness -Muscle cramps -Dark urine | -Drink plenty of water (at least 2 quarts per day), more if working strenuously or in a warm climate |
| Impure Water | Worldwide | Harmful organisms and pathogens living in water sources | -Gastrointestinal illness -Flu-like symptoms | -Carry your own water -Treat water before use with tablets, purifiers, or by boiling for > 3 minutes |
| Sunburn | Worldwide | Excessive exposure to the sun | -Irritated skin, pink or red in color | -Wear long sleeved clothing and a hat -Apply SPF ≥ 30 sun block |
| Heat Exhaustion | Worldwide – hot climates | Prolonged physical exertion in a hot environment | -Fatigue -Excessive thirst -Heavy sweating -Cool, clammy skin | -Acclimate to heat gradually -Drink plenty of liquids -Take frequent rest breaks |
| Heat Stroke | Worldwide – hot climates | Prolonged physical exertion in a hot environment | -Exhaustion -Light-headedness -Bright red warm skin | -Acclimate to heat gradually -Drink plenty of liquids -Take frequent rest breaks |
| Frostbite | Worldwide – cold climates | Exposure to cold temperatures | -Waxy, whitish numb skin -Swelling, itching, burning, and deep pain as the skin warms | -Dress in layers -Cover your extremities with warm clothing, e.g., hats, facemask, gloves, socks, and shoes |
| Hypothermia | Worldwide – cold climates | Prolonged exposure to cold temperatures | -Shivering -Numbness -Slurred speech -Excessive fatigue | -Dress in layers -Wear appropriate clothing -Avoid getting damp from perspiration |
| Extreme Weather | Worldwide | Snow squalls, blizzards, heavy rains, lightning, tornadoes, hurricanes, flash floods | Severe weather can result in physical injury and/or death | -Be aware of special weather concerns -Bring appropriate equipment to deal with severe weather |
| High Altitude Illness | Worldwide – high altitudes | Decreased oxygen intake and increased breathing rate | -Headache -Nausea -Weakness | -Allow your body to acclimatize by gaining elevation slowly |
| Water | Worldwide | -Currents, waves, turbulent, fast moving water -Drop-offs | -Drowning or near drowning -Injuries | -Familiarize yourself with water safety practices and techniques |

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|-----------------|---|--------------|--|--|
| | | | | <ul style="list-style-type: none"> -Use proper gear including flotation devices -Protective footwear for wading, marsh, reef, or rocky bottom research |
| Red/Brown tides | Red tides occur on both sides of the Atlantic, off Florida, and along the Pacific coast to Alaska | Algal blooms | <ul style="list-style-type: none"> -Respiratory distress -Dead fish -Discolored water | <ul style="list-style-type: none"> -Avoid areas where tides are in bloom |

B. North America

| Hazard | Location | Cause | Symptoms | Prevention |
|------------------|---------------|--|---|---|
| Hunting Season | United States | Local hunting seasons and regulations vary | -A hunting accident may result in serious injury or death | <ul style="list-style-type: none"> -Wear appropriately colored safety clothing -Avoid animal like behavior (e.g. hiding in thickets) |
| Poisonous Plants | North America | Exposure to poison ivy, poison oak, or poison sumac plants | <ul style="list-style-type: none"> -Itchy rash -Red, swollen skin | <ul style="list-style-type: none"> -Avoid contact with poisonous plants -Use pre-exposure lotion -Wash clothes and skin with soap and water after exposure |

C. International

| Hazard | Location | What to do if encountered | Prevention |
|--|---------------|---|---|
| Violence caused by political unrest or military conflict | International | Leave the area as soon as it is safe to do so | -Be aware of current travel advisories (Security travel advisories are available from International SOS- See Section II, First Aid for access information) |
| Theft | International | Report theft immediately to local authorities | <ul style="list-style-type: none"> -Keep wallet in front pocket -Carry shoulder bag diagonally and keep bag in front under your arm |

IV. Animals & Other Indigenous Creatures

There are many general safety hazards pertaining to animals and other indigenous creatures that exist in nearly every location worldwide. All field researchers, regardless of the work location, should read through this section to learn more about some general guidelines to prevent unwanted animals and “pests”. If your research is in North America, please also read Section B. If your research will take you out of North America, please also read Section C: International.

General Safety Guidelines

A number of animals and pests may be encountered in fieldwork. Follow these general guidelines to prevent close encounters of the painful kind:

- Wear insect repellent. **Mosquito-borne illnesses are responsible for more than a million deaths each year.**
- Use netting to keep pests away from food and people.
- Keep garbage in rodent-proof containers and stored away from your campsite or work area. Food crumbs and debris may attract insects and animals.
- 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 (wood piles, crevices, etc.).
- Avoid contact with sick or dead animals.
- Wear clothes made of tightly woven materials, and tuck pants into boots.
- Minimize the amount of time you use lights after dark as they may attract pests and animals.
- Carry a first aid kit with you on any excursion so you can treat bites or stings. If the pest is venomous or if the bite does not appear to heal properly, seek medical attention immediately.
- Be aware of the appearance and habitat of pests likely to be found, such as those described in the following pages.

A. Proper Rodent Handling

Steps can be taken to reduce the risk of rodent-borne diseases:

1. Most importantly, make the area unattractive to rodents.
2. Cover or repair holes into a building to prevent unwanted rodents.
3. If camping, keep the area clean of trash and store food carefully to prevent attracting rodents.
4. Don't camp near rodent burrows.
5. If rodent feces or dead rodents are discovered, some precautions will help reduce the risk of exposure to rodent-borne diseases when cleaning the area:

Indoors: **Do not stir up dust.** Ventilate the area by opening the doors and windows for at least 30 minutes to diffuse potentially infectious aerosolized material. Use cross-ventilation and leave the area during the airing-out period.

Dead Rodent: Using gloves, soak the rodent, droppings and nest with a solution of 1-part bleach to 9 parts water, let soak for at least 5 minutes before picking it up with a plastic bag. Place bag in a second plastic bag.

Rodent Feces: Don't sweep or vacuum rodent droppings. Spray the droppings with 1-part bleach to 9 parts water, let soak for at least 5 minutes then wipe up the droppings. If possible, wet mop the area with the bleach solution.

B. General

| Type | Location | Most Dangerous Species | What to do if encountered | Prevention |
|-------------------------|----------------------------------|---|---|--|
| Mosquitoes | Worldwide – especially wet areas | Refer to Section IV: Diseases | | -Use insect repellent -Don't leave standing pools of water -Use bed nets |
| Rodents | Worldwide | | -Don't touch a rodent, dead or alive | -Keep areas clean to avoid attracting rodents -Store food in sealed containers |
| Flies | Worldwide | Flies can serve as vectors for many diseases including: conjunctivitis, poliomyelitis, typhoid fever, tuberculosis, anthrax, leprosy, cholera, diarrhea and dysentery | -Remove insects from the area if possible -Avoid areas with heavy fly infestations | |
| Conenose "Kissing" Bugs | North and South America | May cause allergies in some people. In Latin America they sometimes carry a protozoan, <i>Trypanosoma cruzi</i> , which causes Chagas' disease Refer to Section IV: Diseases | -Remove the bug from the premises | -Use caution when working near nests and wood rat dens -Use extra caution when working near rock shelters |

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| Sharks | Worldwide Oceans – U.S., Africa, Central & South America, Australia, Pacific Islands | Great White, Bull, Tiger, Oceanic Whitetip | Call for help, swim towards safety, punch or kick the shark if necessary | -Never swim alone -Don't wear sparkling jewelry -Don't enter the water when bleeding |
| Crocodiles & Alligators | Worldwide – tropics & subtropics – North America, Australia, Africa, Eastern China | American Alligator (North America), Estuarine Crocodile (Australia), Nile Crocodile (Africa) | Do not provoke an alligator or crocodile | -Avoid waters known to be home to crocodiles or alligators -Keep at least 30 feet away from any crocodile or alligator |
| Sting-rays | Worldwide- freshwater and marine habitats | All | - Do not provoke or feed -Shuffle feet to let stingrays know you are there -Move to another area if possible | -Stingray encounters usually happen when walking in shallow water -Shuffle feet while wading -Wear proper footwear |
| Fish | Worldwide- freshwater and marine habitats | Barracuda, piranha, moray eel, stonefish, scorpionfish | -Do not provoke or feed -Work somewhere else if possible | -Be aware of which fish you might encounter in their habitats -Use fish handling gloves |
| Oysters, Shells, Corals | Worldwide- freshwater and marine habitats | -Danger in the bacteria (Vibrio, staph) which can cause potentially life- threatening infection. Some corals can sting. | -Avoid the area -Seek medical treatment immediately | -Immediate cleansing and treatment for any wounds -Wear clothing to avoid getting scratched/stung -Avoid touching or handling |

C. North America

| Type | Location | Most Dangerous Species | What to do if encountered | Prevention |
|----------------|-----------------------------------|---|---|--|
| Bears | North America | Black Bear (North America), Grizzly Bear (Alaska, Western Canada, Pacific Northwest), Polar Bear (Arctic) | <ul style="list-style-type: none"> -Do not run -Move slowly and speak in a low soft voice -If attacked, lay in the fetal position and protect head -Play dead | <ul style="list-style-type: none"> -Keep food out of sleeping areas -Never approach a bear (or bear cub) -Wear a bell or other noisemaker -Stay away from the bear's food supply -Carry bear spray |
| Mountain Lions | North, Central, and South America | All | <ul style="list-style-type: none"> -Do not run, back away slowly, do not corner it - Do not play dead, look it in the eyes -Make yourself look larger (arms overhead), do not bend down -Use a loud voice -Throw sticks or rocks -Fight back, poke it in the eye with your thumb -Protect your neck and head | <ul style="list-style-type: none"> -Do not leave children or pets unattended -Do not feed deer -Avoid hiking, biking, jogging alone or other outdoor activities when mountain lions are most active, dawn, dusk, and at night -Avoid walking near dense growth, rock outcroppings, ledges -Always look up and behind you -Carry pepper spray |
| Snakes | North America, Mexico | Rattlesnakes, Cottonmouths, Coral Snakes, Moccasins, and Copperheads | <ul style="list-style-type: none"> -Back away slowly while keeping an eye on the snake -Do not make fast movements | <ul style="list-style-type: none"> -Walk in open areas -Wear heavy boots -Use a stick to disturb the brush in front of you - Do not pick up, disturb, or corner a snake -Back away from a snake -Avoid locations where snakes may be |
| Spiders | North America | Black Widow and Brown Recluse | <ul style="list-style-type: none"> -If you cannot leave/avoid the area, remove the spider from the area without using hands directly | <ul style="list-style-type: none"> -Use care around rock piles, logs, bark, gardens, outdoor privies, old buildings -Wear gloves when working outside -Shake out clothing and bedding before use -Do not pick up or disturb a spider -Avoid locations where spiders may be such as dark places |

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| Scorpions | North America – especially Arizona, Southeast California, Utah and Mexico | All | <ul style="list-style-type: none"> -If you cannot leave/avoid the area, remove the scorpion from the area without using hands directly | <ul style="list-style-type: none"> -Shake out clothing and bedding before use -Avoid lumber piles and old tree stumps -Wear gloves when working outside -Do not pick up or disturb a scorpion -Avoid locations where scorpions may be |
| Bees, Wasps, etc. | North America | Bees, wasps, hornets, and yellow jackets, Africanized Killer Bees (Southeast United States) | <ul style="list-style-type: none"> - Do not swat or kill, as this may elicit an attack response from other bees/wasps -Leave the area immediately and quickly -If being chased move into a closed area if possible -Cover face | <ul style="list-style-type: none"> -Bring medication if you have an allergy (the sting may be fatal) -Keep scented foods, drinks and meats covered -Wear shoes outside - Avoid wearing bright colors, flower prints and perfume -Move slowly or stand still (don't swat at insects) |
| Fleas & Ticks | North America | Refer to Section IV: Diseases | <ul style="list-style-type: none"> -Brush away if not attached -If attached remove quickly -Remove from premises | <ul style="list-style-type: none"> -Wear long clothing with tightly woven material -Wear insect repellent -Tuck pants into boots -Drag cloth across campsite to check for fleas/ticks -Protect pets -Avoid shrubbery -Stay on widest part of path |

D. International

| Type | Location | Most Dangerous Species | What to do if encountered | Prevention |
|----------------|---|--|---|--|
| Bears | Worldwide (Arctic, South America, Asia) | Polar Bears (Greenland and North Russia), Spectacled Bears (North and West South America), Asiatic Black Bears (South & East Asia) | -Do not run -Move slowly and speak in a low soft voice -If attacked, lay in the fetal position and protect head -Play dead | -Keep your camp area free of garbage and food waste -Never feed or approach a bear (especially a cub) -Stay away from the bear's food -Carry bear spray |
| Lions | Africa and Asia | All | -Do not startle -Do not run -Do not look it in the eye -Make yourself look larger | -Stay inside the vehicle if travelling near lions -Do not camp in areas frequented by lions -Do not sleep outside -Do not provoke |
| Water Dwellers | Worldwide (especially Australia) | Blue Ringed Octopus, Box Jellyfish, and Irukandji Jellyfish (Australia); Stonefish (worldwide) | Never touch an unidentified octopus or jellyfish | -Avoid going in waters known to be inhabited by jellyfish and octopus -Wear sandals in the water to avoid stepping on a stonefish |
| Snakes | Worldwide | Russel's Viper, Indian Cobra (India); Tiger, Black, Brown, Sea Snakes (Australia); Egyptian Cobra, Puff Adder, Saw Scaled Viper (Africa); Fer-de-lance (Central and South America) | -Do not pick up, disturb, or corner a snake -Move away from the snake | -Walk in open areas -Wear heavy boots -Use a stick to disturb the brush in front of you |
| Spiders | Worldwide | Funnel Web and Redback Spiders (Australia); Brazilian | -If you cannot leave/avoid the area, remove the spider from the | -Use care around rock piles, logs, bark, outdoor privies, and old buildings -Shake out clothing and bedding before use |

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|-----------|--|---|---|--|
| | | Wandering Spider, Brown Recluse, Black Widow, and Tarantula (South America) | area without using hands directly | -Wear shoes outside Wear gloves when working outside |
| Scorpions | Worldwide (especially North Africa, The Middle East, South America, and India) | All | -If you cannot leave/avoid the area, remove the scorpion from the area without using hands directly | -Shake out clothing and bedding before use -Avoid lumber piles and old tree stumps -Wear gloves when working outside |

V. Diseases

There are diseases caused by viruses, bacteria, fungi, and parasites in nearly every location worldwide. This guide is not intended to cover every health risk in every location, but it provides information about some more common diseases. *Always check with your health care provider, University Health Services or another travel health clinic before travelling out of the country to learn about specific health risks for the region in which you will conduct your research.* All field researchers, regardless of the work location, should read through this section to learn more about some general diseases that exist worldwide. If your research is in North America, please also read Section B: North America. If your research will take you out of North America, please also read Section C: International.

A. General

| Type | Location | Exposure Route | Symptoms | Prevention |
|---|---------------------------------------|--|---|--|
| Campylobacteriosis | Worldwide | Foodborne – poultry products, unpasteurized milk or water contaminated with <i>Campylobacter</i> | -Diarrhea -Gastrointestinal symptoms - Fever | -Always cook food thoroughly -Never drink water from an impure source -Do not drink unpasteurized milk - Wash hands with soap and water frequently |
| Cholera | Africa, Asia, Latin America | Foodborne – food and water contaminated with <i>Vibrio cholerae</i> | -Diarrhea -Gastrointestinal symptoms | -Always cook food thoroughly -Never drink water from an impure source -Wash hands with soap and water frequently |
| <i>E. coli</i> O157:H7 and Shiga toxin-producing <i>E. coli</i> Gastroenteritis | Worldwide | Foodborne – beef, unpasteurized milk, unwashed raw vegetables, water contaminated with <i>Escherichia coli</i> | -Diarrhea -Gastrointestinal symptoms | -Always cook food thoroughly -Wash vegetables before consuming -Never drink water from an impure source -Wash hands with soap and water frequently |
| Hepatitis A (Vaccine Available) | Worldwide (under-developed countries) | Foodborne – water, shellfish, unwashed raw vegetables contaminated with Hepatitis A virus | -Diarrhea -Gastrointestinal symptoms | -Obtain a vaccine -Always cook food thoroughly -Wash vegetables before consuming -Never drink water from an impure source -Wash hands with soap and water frequently |
| Histoplasmosis | Worldwide (especially Miss. &) | Inhalation of fungus <i>Histoplasma capsulatum</i> from soil | -Mild flu-like -Rarely can be acute pulmonary histoplasmosis | -Use caution when disturbing dry soils or working near bat or bird droppings |

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| | Ohio River Valleys) | contaminated with bat or bird droppings | | -Personal protective equipment may be needed |
| Human Immuno-deficiency virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS) | Worldwide | -Being exposed to blood or body fluids infected with HIV -Having sex or sharing needles with someone infected with HIV | -May have flu-like symptoms 14-60 days post infection -Attacks the immune system, may eventually result in opportunistic infections or cancers | -Follow Blood borne Pathogen training when handling any unfixed human blood or tissue -Do not engage in risky activities |
| Influenza (seasonal) | Worldwide | -Inhalation of influenza virus -Contact with birds or other animals infected with influenza | -Fever (usually high) -Headache -Extreme tiredness -Dry cough -Sore throat -Runny or stuffy nose Muscle aches -Stomach symptoms (nausea, vomiting, diarrhea) more commonly in children | -Annual flu vaccination -Cover your nose and mouth with a tissue or your elbow when you cough or sneeze -Wash hands with soap and water frequently -If you are not near water, use an alcohol based hand cleaner -Try not to touch your eyes, nose, or mouth. -Stay away from people who are sick -If you get the flu, stay home from work or school |
| Leptospirosis | Worldwide | Ingestion, swimming, or other activities in water contaminated with <i>Leptospira</i> | -Flu-like -Occasionally more serious symptoms | -Use care when working in the water, especially after a flooding event -Avoid entering the water with open wounds |
| Norovirus "Norwalk-like viruses" (NLV) Gastroenteritis | Worldwide | Foodborne - food, water, surfaces or objects contaminated with Norovirus -Direct contact with another person who is infected | Nausea, vomiting, diarrhea, stomach cramping -Some people also have a low-grade fever, chills, headache, muscle aches, malaise | -Wash hands with soap and water frequently -Wash fruits/vegetables, and steam oysters -Clean and disinfect contaminated surfaces immediately after illness using a bleach-based cleaner -Remove and wash contaminated clothing or linens |

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| Plague | Worldwide | <p>Flea-borne - from rodents infected with <i>Yersinia pestis</i> to humans</p> <p>-Direct contact with infected tissues or fluids from sick or dead animals</p> | <p>-Flu-like</p> <p>-Non-specific</p> <p>-Swollen and painful lymph nodes (bubonic)</p> | <p>-Use care when working in areas where plague is found</p> <p>-Use caution when working with wild rodents</p> |
| Rabies (Vaccine Available) | Worldwide | <p>-Infection from bite of an animal (e.g., raccoons, skunks, bats, foxes, coyotes, dogs, cats) infected with the rabies virus</p> <p>-Bat bites are difficult to see and may not be felt. Exposure is also possible when a bat is found in living or sleeping quarters</p> | <p>-Fatal (within days of the onset of symptoms) without immediate treatment</p> <p>-Early symptoms: fever, headache, malaise</p> <p>-Later symptoms: insomnia, anxiety, confusion, paralysis, hallucinations, hypersalivation, difficulty swallowing, fear of water</p> | <p>-Obtain a vaccine if you will be working with high rabies risk species</p> <p>-Use extreme caution handling these animals</p> <p>-Vaccinate pets</p> <p>-Do not handle or feed stray animals or wild mammals</p> |
| Salmonellosis | Worldwide | <p>Foodborne – beef, poultry, milk, eggs, unwashed raw vegetables contaminated with salmonella bacteria</p> | <p>-Diarrhea</p> <p>-Gastrointestinal symptoms</p> | <p>-Always cook food thoroughly</p> <p>-Wash vegetables before consuming</p> <p>-Wash hands with soap and water frequently</p> |
| Typhoid Fever (Vaccine Available) | Worldwide | <p>Foodborne – food and water contaminated with <i>Salmonella typhi</i></p> | <p>-Diarrhea</p> <p>-Gastrointestinal symptoms</p> | <p>-Obtain a vaccine</p> <p>-Always cook food thoroughly</p> <p>-Never drink water from an impure source</p> <p>-Wash hands with soap and water frequently</p> |

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| Tetanus (Vaccine Available) | Worldwide | A wound that is infected with <i>Clostridium tetani</i> ; tetanus toxin is produced by the bacteria and attacks nerves | <ul style="list-style-type: none"> -Early symptoms: lockjaw, stiffness in the neck and abdomen, difficulty swallowing -Later symptoms: Muscle spasms, seizures, nervous system disorders | <ul style="list-style-type: none"> -Obtain a vaccine for tetanus every 10 years or immediately following a suspect wound or injury -Once the disease starts it must run its course |
| Typhus Fever | Worldwide | Infection from bite of lice, fleas, ticks, or mites infected with <i>Rickettsiae</i> species | <ul style="list-style-type: none"> -Headache -Fever -Rash | <ul style="list-style-type: none"> -Insect repellent -Wear long sleeve shirts -Tuck pants into boots |

B. North America

| Type | Location | Exposure Route | Symptoms | Prevention |
|---|---|--|--|--|
| Coccidioidomycosis "Valley Fever" | North and South America America semiarid regions | <i>Coccidioides</i> species fungus is inhaled when soil is disturbed | -None in most people ~60% -Flu-like (fever, cough, rash, headache, muscle aches) -Occasionally, chronic pulmonary infection or widespread disseminated infection | -Wet soil before digging - If you are immunocompromised, wear a mask when digging -Stay inside during dust storms in areas where <i>Coccidioides</i> fungus is present -Keep doors and windows tightly closed |
| St. Louis Encephalitis | North and South America | -Mosquito-borne - infection from bite of a mosquito infected with St. Louis Encephalitis virus | -Mild - fever and headache -Severe - headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and rarely death | -Use insect repellent -Many mosquitoes are most active at dusk and dawn, consider staying indoors during these hours -Wear long sleeves and pants -Avoid areas of standing water where mosquitoes breed |
| Lyme Disease | United States, Europe and Asia | Infection through the bite of a tick infected with <i>Borrelia burgdorferi</i> (U.S.) <i>Borrelia afzelii</i> or <i>Borrelia garinii</i> (Europe) | -Spreading rash ("bullseye") -Early symptoms: flu-like -Later symptoms: arthritis and neurologic problems | -Avoid tick infested areas -Wear long sleeves and pants -Use insect repellent -Check clothing and hair for ticks and remove any ticks |
| Rocky Mountain Spotted Fever | United States, southern Canada, Mexico, and Central America | Infection through the bite of an infected tick - <i>Rickettsia rickettsii</i> | -Sudden onset of fever -Headache -Muscle pain -Spotty rash | -Avoid tick infested areas -Wear long pants, shirts -Use a repellent -Check clothing and hair for ticks and remove any ticks |
| Hantavirus Pulmonary Syndrome (HPS) – Sin | North America | Inhalation of dusts or aerosols from the infected rodent's | -(Early, 1-5 weeks) fatigue, fever, muscle aches, chills, headaches, dizziness, | -Avoid contact with rodents, especially their feces -See section on dealing with rodent infested areas |

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|---------------------------------|---------------|--|---|---|
| Nombre Virus | | feces, urine, or saliva -Vector: Deer mouse (<i>peromyscus maniculatus</i>) | sometimes abdominal problems -(Late, 4-10 days after early) coughing, shortness of breath | |
| Arenavirus (White Water Arroyo) | North America | Inhalation of dusts or aerosols from the infected rodent's feces, urine, or saliva -Vector: Woodrats (<i>Neotoma fuscipes</i>) and other <i>Neotoma</i> species | -Fever -Headache -Muscle aches -Severe respiratory distress (occasionally) | -Avoid contact with rodents, especially their feces -See section on dealing with rodent infested areas |
| West Nile Virus | North America | -Mosquito-borne - Infection from the bite of a mosquito infected with West Nile Virus -Handling infected birds | -None in most people ~80% -Mild - fever, headache, body aches, nausea, vomiting, and sometimes swollen glands or a rash on the chest, stomach and back; -Severe - high fever, neck stiffness, stupor, muscle weakness, disorientation, coma, tremors, convulsions, vision loss, numbness, paralysis | -Use insect repellent -Many mosquitoes are most active at dusk and dawn, consider staying indoors during these hours -Wear long sleeves and pants -Avoid areas of standing water where mosquitoes breed -Don't handle dead birds with your bare hands |

C. International

| Type | Location | Exposure Route | Symptoms | Prevention |
|--|--|---|---|---|
| Dengue Fever | Africa, Southeast Asia, China, India, Middle East, South and Central America, Australia and the Pacific Islands | -Mosquito-borne-Infection from the bite of a mosquito infected with 1 of 4 dengue viruses | -Flu-like -Sudden, high fever -Severe headache -Pain behind eyes -Nausea/vomiting -Rash | -Wear long sleeves and pants -Use insect repellent -Use a mosquito net |
| Malaria (Preventable with Drugs) | Central and South America, Hispaniola, Africa, India, South Asia, Southeast Asia, the Middle East, and Oceania | -Mosquito-borne -Infection from the bite of an infective female <i>Anopheles</i> mosquito -Blood transfusion -Contaminated needles/syringes | -May take 10 days to 1 year for symptoms to appear -Flu-like, fever, sweats, chills, headache, malaise, muscle aches, nausea, vomiting, jaundice -Untreated may cause severe complications including death | -Use a mosquito net - Use insect repellent -Take Antimalarial drugs (visit your health care provider 4-6 weeks before travel) -Wear long sleeves and pants |
| Severe Acute Respiratory Syndrome (SARS) | Occurred in 2003 in North America, South America, Europe, and Asia | -Close person-to-person contact -Inhalation of respiratory droplets produced when an infected person coughs or sneezes -Touching surface or object contaminated with infectious droplets and then touch mouth, nose, or eye(s) | -Begins with a high fever (>100.4°F [38.0°C]) -Headache -Malaise -Some have mild respiratory symptoms at the outset -10- 20% have diarrhea -After 2 to 7 days may develop a dry cough -Most develop pneumonia | -Wash your hands with soap and water frequently or an alcohol-based hand rub -Travelers to China should avoid live food markets and contact with civets and other wildlife |

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| Yellow Fever (Vaccine Available) | South America and Africa | -Mosquito-borne -Infection from the bite of a mosquito infected with Yellow fever virus | -Flu-like -Jaundice -Can be fatal | -Visit doctor at least 10 days before travel for vaccine -Wear long sleeve shirts and pants -Use insect repellent -Use a mosquito net |
| Hantavirus (Sin Nombre Virus) and Arenavirus (White Water Arroyo) | Central and South America and Asia | -Inhalation of dusts or aerosols from the infected rodent's feces, urine, or saliva -Vector: Rodents; especially <i>Neotoma</i> and <i>Peromyscus</i> species | -Fever -Headache -Muscle aches -Severe respiratory distress (occasionally) | -Avoid contact with rodents, especially their feces -See section on proper rodent handling for cleaning a rodent infested area |
| Schistosomiasis (or bilharzias) | Brazil, Egypt, sub-Saharan Africa, southern China, the Philippines, and Southeast Asia | Transmitted by swimming in contaminated fresh water | -Can be asymptomatic -(Acute: 2-3 weeks) Fever, weight loss, weakness, cough, headaches, abdominal, joint and muscle pain, diarrhea, nausea -(Chronic) disease in lungs, liver, intestines, bladder | -Avoid fresh-water wading or swimming in endemic regions -Heat bath water over 50°C for at least 5 minutes before use |

Other Diseases (Vector-borne) – There are many other vector-borne diseases that may pose a problem when travelling out of the country. Always check with a healthcare professional to learn the specific threats to your location of study. Some other vector-borne diseases include:

- African Sleeping Sickness - carried by the tsetse fly in Africa
- Chagas Disease - transmitted by the triatomine bugs (a.k.a., conenose or “kissing” bug) in Mexico and Central and South America
- Encephalitis - carried by mosquitoes in Asia and Eastern Russia
- Leishmaniasis - transmitted by sand flies in the tropics and subtropics
- Filariasis - carried by mosquitoes in the tropics

- Onchocerciasis - causes 'river blindness' and is carried by black flies in Africa, Arabia, and Central and South America.

Other Diseases (General) – There are other diseases to be aware of when travelling outside of the United States. While risk of infection is generally low, it is important to be aware of and take appropriate precautions to guard against diseases such as Tuberculosis, Viral Hemorrhagic Fevers, etc. Always check with your health care provider to learn more about specific diseases that exist in the region you will be conducting your research.

VI. Resources

There are many resources available that may provide more in-depth information regarding your research environment. Please use the references in this section for further information on many of the topics discussed.

Environmental Health & Safety: EHS is available for various hazard information and hazard evaluations.

(979) 845-2132

<https://ehs.tamu.edu/>

Division Resources: List of resources for research interests at A&M

<https://vpr.tamu.edu/division-resources>

Business Division of NRI: People here will readily assist with managing travel expenses, purchasing and other expense issues.

<https://nri.tamu.edu/people/#business>

Office of Research Compliance for the Texas A&M University System:

<https://www.tamus.edu/research/research-compliance/>

Risk Management: Directions on communicating with a Risk Management team concerning insurance policies.

<https://www.tamus.edu/business/risk-management/risk-analysis-and-control/>

Travel Information and Services:

<https://www.tamus.edu/business/budgets-and-accounting/accounting/travel/>

Research Compliance and Biosafety: is responsible for providing training and support to faculty, students, and staff in regulatory requirements for scientific research at Texas A&M.

<https://vpr.tamu.edu/directory/research-compliance-1>

Workers Compensation: Human Resources is available for questions about workers' compensation coverage and injury reports. <https://www.tamus.edu/business/risk-management/workers-compensation/>

First Aid/CPR Training: First Aid and CPR training are available from a number of locations.

<https://www.tamu.edu/emergency/procedures/firstAid.html>

General: The Centers for Disease Control and Prevention (CDC) offers a website that describes many topics related to travel, both domestic and international:

<http://wwwn.cdc.gov/travel/default.aspx>

Medical: Information about a variety of diseases and illnesses, including dehydration, carbon monoxide poisoning, sunburn, excessive heat, hypothermia, and high altitude sicknesses, can be found online at: <https://www.webmd.com/>

Diseases: The CDC offers more detailed information about many diseases related to travel on their website: <http://wwwn.cdc.gov/travel/contentDiseases.aspx>

The Texas Department of State Health Services Infectious: Disease Control Unit offers information about infectious diseases.

(512) 458-7676

<https://www.dshs.state.tx.us/IDCU/Test/Infectious-Disease-Control-Unit.aspx?terms=infectious%20disease%20control%20unit>

Weather: More information on extreme weather and how to protect yourself can be found from the National Weather Service. <https://www.weather.gov/safety/>

Impure Water: The CDC provides information waterborne diseases.

<http://www.cdc.gov/healthywater/>

Research Vessel Safety: Addresses field operations aboard research vessels or larger watercraft. <https://www.unols.org/document/research-vessel-safety-standards-rvss>

Driving Safety: Addresses safe driving practices.

https://claims.nationalgeneral.com/Forms/Safe_Driving_Practices.pdf

Hunting Season: To get more information concerning hunting seasons and regulations, contact the U.S Forest Service. (800)832-1355

<http://www.fs.fed.us/>

General Outdoor Safety: For more information on outdoor and recreational safety.

800-832-1355

<http://www.fs.fed.us/safety/outdoor/>

Poisonous Plants: More information about poisonous plants, including photos.

<http://poisonivy.aesir.com/>

Hantavirus: The CDC has detailed information about hantavirus.

<http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/generalinfoindex.htm>

Lyme Disease: The American Lyme Disease Foundation provides information about the disease. <http://www.aldf.com/>

Travel Health & Outbreaks: Updated information about disease outbreaks and international travel health can be found from the World Health Organization (WHO).
<http://www.who.int/ith/en/>

Advisories: Travel advisories are announced through the U.S. Department of State. Current travel warnings, public announcements, and consular information sheets can be obtained online at: <http://travel.state.gov/>

Trip Safety Checklist

For the Principal Investigator or Project Leader

- Complete** Field Research Safety Plan
- Provide** a copy of the Plan to all members of the team and your supervisor
 - Get** your vaccinations early and register with International SOS
 - Assemble** your safety gear including first aid kits
 - Obtain** any required approvals from research committees
 - Obtain** travel insurance information
 - Be sure** health insurance will cover everyone in your team
 - Develop** a check-in or buddy system while you are in the field