

# **Safety Guidelines for Field Researchers**



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**Boston University**

# Safety Guidelines for Field Researchers

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Thanks to University of California, Berkeley, Office of Environment, Health & Safety and ASU for allowing Boston University to adapt their safety guidelines.

### 1. General Field Safety Guidelines

Fieldwork is an important part of teaching and research at Boston University. Since fieldwork activities take you off campus, this booklet is intended to help you plan and prepare for health and safety problems you might encounter in the field. For more specific information on fieldwork hazards and precautions, talk to your supervisor, or Environmental Health and Safety (EH&S) at 617-638-8830 or the Research Occupational Health Program (ROHP) 617-414-7647.

#### A. Before You Leave

One of the most important phases of your fieldwork experience is planning and preparation prior to leaving.

Here are some suggestions for a safe trip:

Prepare a written plan of your trip, and leave it with a responsible party and include the following:

- **Your itinerary:** Locations, arrival and departure dates, names addresses and phone numbers of all fieldwork participants.
- **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.
- **Activities:** General nature of activities being conducted.
- **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. Fieldworkers should check in with their group office regularly, and should advise the group office of any changes in schedule or points of contact. If possible, 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. After each day's work, the fieldworkers should notify the contact when they return. 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.

In addition to this manual and your supervisor/sponsor, other fieldworkers, local residents, and authorities, such as state and national park services, personnel, may be able to provide you with helpful information.

Research involving animals (including wild animals), requires registration with and approval from the Institutional Animal Care and Use Committee (IACUC) <http://www.bu.edu/orccommittees/iacuc/>.

Research involving microorganisms requires registration and approval from the Institutional Biosafety Committee (IBC). Please see the resources section for more information <http://www.bu.edu/orccommittees/ibc/>.

Environmental Health and Safety (EHS) provides a variety of services and support activities throughout the Boston University community. EHS consists of trained specialists that can provide a wide variety of assistance and expertise in the environmental health and safety field. Subject areas include fire and life safety, chemical safety, biological safety, radiation safety, industrial hygiene and environmental management <http://www.bu.edu/ehs/>.

If your trip involves traveling outside of the country, you should contact the Boston University Occupational Health Center (BUOHC) on the Charles River campus at (617) 353-6630 or the Research Occupational Health Program (ROHP) on the BUMC campus at (617) 414-7647 to learn about the required and recommended vaccinations for your location. Please schedule as far in advance as possible since some vaccines are given as a series over a six-month period. Employees may also contact the BMC travel clinic at (617) 414-4290 or visit the website at <http://www.bumc.bu.edu/id/hospitals-and-centers/travel-clinic/>.

Students should contact Student Health services at (617) 353-3575 for an appointment for their travel needs or visit the website <http://www.bu.edu/shs/medical/>.

Students and staff scheduling a travel visit will meet with a provider from the Travel Clinic to determine the appropriate vaccinations required for the trip; they will also provide information pamphlets about food and water safety, insect protection, travel and safety, and information pertaining to the country to be visited.

Take a CPR/First Aid class. Contact the FitRec at (617) 353-2748 or visit the website at <http://www.bu.edu/fitrec/programs/noncredit/ems.shtml> or the Red Cross to enroll.

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.
- Medications you regularly take
- Allergy treatments (if you have allergies)
- Sunscreen and hat
- Water purification tablets or filter devices
- Vehicle emergency kit
- Flashlight
- Flares
- Two-way radio (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, etc.). EH&S can recommend protective equipment depending on your activities.



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.

Ask your health insurance provider about how your coverage applies to medical treatment in the fieldwork locale, should that become necessary

## **B. Medical Care and First Aid**

### **Emergency Medical Care**

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 (see information below).
2. At least one employee who is trained in first aid 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.

If a University employee suffers a job-related injury or illness, he/she must notify his/her supervisor within 24 hours, call the **Research Occupational Health Program (ROHP)** to report the incident and fill out a Workers’ Compensation “Employer’s Report of Injury”. The supervisor must complete an Accident Report which can be found on the Risk Management website: <http://www.bu.edu/cfo/risk-management/risk-management-resources/workers-compensation/> and notify ROHP at (617) 414-7647 or [roh@bu.edu](mailto:roh@bu.edu). If the injury is “serious” (amputation, permanent disfigurement, overnight hospital stay, fatality) notify your supervisor immediately. The supervisor must immediately contact ROHP who will report the serious injury to OSHA.

## **First Aid Kits**

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. EH&S can assist with identifying vendors.

## II. 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	First Aid	Prevention
Vehicle Accident	Worldwide	<ul style="list-style-type: none"> <li>-Fatigue</li> <li>-Impaired driving</li> <li>-Driver error</li> <li>-Roadway factors</li> <li>-Vehicle factors</li> </ul>	-Various trauma injuries	<ul style="list-style-type: none"> <li>-Call 911</li> <li>-Secure the scene</li> <li>-Do not move victim</li> <li>-Check airways, breathing and circulation</li> <li>-Treat specific injury</li> </ul>	<ul style="list-style-type: none"> <li>-Obey traffic laws</li> <li>-Wear your seatbelt</li> <li>-Don't drive impaired</li> <li>-Don't speed or drive recklessly</li> <li>-Don't use a 12 or 15 passenger van</li> </ul>
Slips, trips falls	Worldwide  	<ul style="list-style-type: none"> <li>-Loose, irregular or slippery surface</li> <li>-Wrong footwear</li> <li>-Poor lighting</li> <li>-Obstruction</li> <li>-Improper (or lack of) use of ladders</li> <li>-Inattention or distraction</li> </ul>	-Strains, fractures, bruises and contusions (head, wrist, elbow, shoulder, back, hip, knee, ankle)		<ul style="list-style-type: none"> <li>-Proper "housekeeping"</li> <li>-Wear proper footwear</li> <li>-Adequate lighting</li> <li>-Don't carry oversized objects</li> <li>-Use ladders properly</li> </ul>
Dehydration	Worldwide	Not enough water intake	<ul style="list-style-type: none"> <li>-Increased thirst</li> <li>-Dry mouth</li> <li>-Flushed face</li> <li>-Dizziness</li> <li>-Headache</li> <li>-Weakness</li> </ul>	<ul style="list-style-type: none"> <li>-Drink plenty of fluids</li> <li>-Take frequent rest breaks</li> <li>-Minimize caffeinated beverage intake</li> </ul>	-Drink plenty of water (at least 2 quarts per day), more if working strenuously or in a warm climate

Hazard	Location	Cause	Symptoms	First Aid	Prevention
			-Muscle cramps -Dark urine		
Impure Water	Worldwide	Harmful organisms and pathogens living in water sources	-Gastrointestinal illness -Flu-like symptoms	-Drink clear liquids (uncontaminated) -Slowly introduce mild foods, e.g., rice, toast, crackers, bananas, or applesauce -See a doctor if there is no improvement	-Carry your own water -Treat water before use with tablets, purifiers, or by boiling for > 3 minutes -Use
Sunburn	Worldwide 	Excessive exposure to the sun	-Irritated skin, pink or red in color	Apply cool water, aloe or other cooling lotion to affected area	-Wear long sleeved clothing and a hat -Apply SPF ≥30 sunblock
Heat Exhaustion	Worldwide – hot climates	Prolonged physical exertion in a hot environment	-Fatigue -Excessive thirst -Heavy sweating -Cool, clammy skin	Cool the victim, treat for shock, and slowly give water or electrolyte replacer	-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	Cool the victim at once, replenish fluids, and seek medical attention immediately	-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	Slowly warm the affected areas (do NOT rub area) and seek medical attention immediately	-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	Remove cold wet clothes, put on dry clothes or use a blanket or skin-to-skin contact, drink warm liquids,	-Dress in layers -Wear appropriate clothing -Avoid getting damp from perspiration

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### A. General

Hazard	Location	Cause	Symptoms	First Aid	Prevention
Vehicle Accident	Worldwide	<ul style="list-style-type: none"> <li>-Fatigue</li> <li>-Impaired driving</li> <li>-Driver error</li> <li>-Roadway factors</li> <li>-Vehicle factors</li> </ul>	<ul style="list-style-type: none"> <li>-Various trauma injuries</li> </ul>	<ul style="list-style-type: none"> <li>-Call 911</li> <li>-Secure the scene</li> <li>-Do not move victim</li> <li>-Check airways, breathing and circulation</li> <li>-Treat specific injury</li> </ul>	<ul style="list-style-type: none"> <li>-Obey traffic laws</li> <li>-Wear your seatbelt</li> <li>-Don't drive impaired</li> <li>-Don't speed or drive recklessly</li> <li>-Don't use a 12 or 15 passenger van</li> </ul>
Slips, trips falls	Worldwide	<ul style="list-style-type: none"> <li>-Loose, irregular or slippery surface</li> <li>-Wrong footwear</li> <li>-Poor lighting</li> <li>-Obstruction</li> <li>-Improper (or lack of) use of ladders</li> <li>-Inattention or distraction</li> </ul>	<ul style="list-style-type: none"> <li>-Strains, fractures, bruises and contusions (head, wrist, elbow, shoulder, back, hip, knee, ankle)</li> </ul>		<ul style="list-style-type: none"> <li>-Proper "housekeeping"</li> <li>-Wear proper footwear</li> <li>-Adequate lighting</li> <li>-Don't carry oversized objects</li> <li>-Use ladders properly</li> </ul>
Dehydration	Worldwide	<ul style="list-style-type: none"> <li>-Not enough water intake</li> </ul>	<ul style="list-style-type: none"> <li>-Increased thirst</li> <li>-Dry mouth</li> <li>-Flushed face</li> <li>-Dizziness</li> <li>-Headache</li> <li>-Weakness</li> </ul>	<ul style="list-style-type: none"> <li>-Drink plenty of fluids</li> <li>-Take frequent rest breaks</li> <li>-Minimize caffeinated beverage intake</li> </ul>	<ul style="list-style-type: none"> <li>-Drink plenty of water (at least 2 quarts per day), more if working strenuously or in a warm climate</li> </ul>

### B. North America

Hazard	Location	Cause	Symptoms	First Aid	Prevention
Hunting Season	United States	Local hunting seasons and regulations vary	-A hunting accident may result in serious injury or death	Seek medical attention for serious injuries or wounds	-Wear appropriately colored safety clothing -Avoid animal like behavior (e.g. hiding in thickets)
Poison Plants	North America 	Exposure to poison ivy, poison oak, or poison sumac plants	-Itchy rash -Red, swollen skin	Apply a wet compress with baking soda or vinegar, or use a topical ointment. Avoid scratching the rash.	-Avoid contact with poison 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 (see Section V)
Theft	International	Report theft immediately to local authorities	-Keep wallet in front pocket -Carry shoulder bag diagonally and keep bag in front under your arm

### III. Animals & Pests

There are many general safety hazards pertaining to animals and pests 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**.

A number of animals and pests may be encountered in the field. Follow these 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 poisonous 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.



#### Proper Rodent Handling



Steps can be taken to reduce the risk of rodent-borne diseases. Most importantly, make the area unattractive to rodents. Cover or repair holes into a building to prevent unwanted rodents. If camping, keep the area clean of trash and store food carefully to prevent attracting rodents. Don't camp near rodent burrows. 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, and then wipe up the droppings. If possible, wet mop the area with the bleach solution.

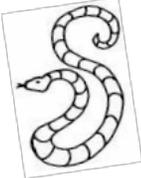
**A. General**

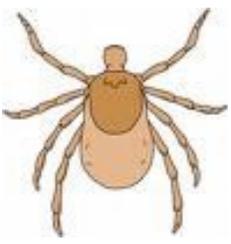
Type	Location	Most Dangerous Species	What to do if encountered	First Aid	Prevention
Mosquitoes	Worldwide – especially wet areas conducive to breeding	Refer to Section IV: Diseases		Use topical ointment to relieve itching	-Use insect repellent -Don't leave standing pools of water -Use bed nets
Rodents	Worldwide		Don't touch a rodent, dead or alive	Clean wounds thoroughly if bitten or scratched	-Keep areas clean to avoid attracting rodents -Store food in sealed containers
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		Use topical ointments to soothe itching. Seek medical attention immediately in case of anaphylactic shock.	-Use caution when working near nests and wood rat dens -Use extra caution when working near rock shelters
	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	Seek medical attention for serious injuries or wounds	-Never swim alone -Don't wear sparkling jewelry -Don't enter the water when bleeding

Type	Location	Most Dangerous Species	What to do if encountered	First Aid	Prevention
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 	Seek medical attention for serious injuries or wounds	-Avoid waters known to be home to crocodiles or alligators -Keep at least 30 feet away from any crocodile or alligator

## B. North America

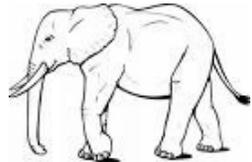
Type	Location	Most Dangerous Species	What to do if encountered	First Aid	Prevention
Bears	North America	Black Bear (North America), Grizzly Bear (Alaska, Western Canada, Pacific Northwest), Polar Bear (Arctic)	-Do not run -Move slowly and speak in a low soft voice -If attacked, lay in the fetal position and protect head -Play dead	Seek medical attention immediately for serious injuries or wounds	-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
Mountain Lions	North, Central, and South America	All 	-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	Seek medical attention immediately for serious injuries or wounds	-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,

Type	Location	Most Dangerous Species	What to do if encountered	First Aid	Prevention
			<ul style="list-style-type: none"> <li>-Fight back, poke it in the eye with your thumb</li> <li>-Protect your neck and head</li> </ul>		<ul style="list-style-type: none"> <li>ledges</li> <li>-Always look up and behind you</li> <li>-Carry pepper spray</li> </ul>
Snakes 	North America, Mexico	Rattlesnakes, Cottonmouths, Coral Snakes, Moccasins, and Copperheads	<ul style="list-style-type: none"> <li>-Do not pick up, disturb, or corner it</li> <li>-Move away from the snake</li> <li>-Avoid locations where snakes may be</li> </ul>	<ul style="list-style-type: none"> <li>-Let the wound bleed freely for 30 seconds</li> <li>-Apply a cold pack</li> <li>-Keep area immobilized at heart level</li> <li>-Seek medical attention immediately (alert ahead if possible)</li> </ul>	<ul style="list-style-type: none"> <li>-Walk in open areas</li> <li>-Wear heavy boots</li> <li>-Use a stick to disturb the brush in front of you</li> </ul>
Spiders	North America	Black Widow and Brown Recluse 	<ul style="list-style-type: none"> <li>-Do not pick up or disturb a spider</li> <li>-Avoid locations where spiders may be such as dark places</li> </ul>	<ul style="list-style-type: none"> <li>-Clean wound</li> <li>-Apply a cold pack</li> <li>-Keep area immobilized at heart level</li> <li>-Seek medical attention immediately (alert ahead if possible)</li> </ul>	<ul style="list-style-type: none"> <li>-Use care around rock piles, logs, bark, gardens, outdoor privies, old buildings</li> <li>-Wear gloves when working outside</li> <li>-Shake out clothing and bedding before use</li> </ul>
Scorpions 	North America – especially Arizona, Southeast California, Utah and Mexico	All	<ul style="list-style-type: none"> <li>-Do not pick up or disturb a scorpion</li> <li>-Avoid locations where scorpions may be</li> </ul>	<ul style="list-style-type: none"> <li>-Clean wound</li> <li>-Apply a cold pack</li> <li>-Keep area immobilized at heart level</li> <li>- If needed use painkiller or antihistamine</li> <li>-Seek medical attention if no signs of improvement</li> </ul>	<ul style="list-style-type: none"> <li>-Shake out clothing and bedding before use</li> <li>-Avoid lumber piles and old tree stumps</li> <li>-Wear gloves when working outside</li> </ul>

Type	Location	Most Dangerous Species	What to do if encountered	First Aid	Prevention
Bees, Wasps, etc	North America	Bees, wasps, hornets, and yellow jackets, Africanized Killer Bees (Southeast United States)	-Avoid wearing bright colors, flower prints and perfume -Move slowly or stand still (don't swat at insects)	-Remove the stinger -Apply a cold pack -Keep area immobilized at heart level - If needed use painkiller or antihistamine 	-Bring medication if you have an allergy (the sting may be fatal) -Keep scented foods, drinks and meats covered -Wear shoes outside
Fleas & Ticks	North America 	Refer to Section IV: Diseases	-Avoid shrubbery -Stay on widest part of path	-Remove the flea or tick with tissue or tweezers -Clean wound with antiseptic -Pay attention for signs of illness (see Section IV: Diseases) and seek medical attention if needed	-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

### C. International

Type	Location	Most Dangerous Species	What to do if Encountered	First Aid	Prevention
Bears	Worldwide (Arctic, South America, Asia)	Polar Bears (Greenland and North Russia), Spectacled Bears (North and West South America), Asiatic Black Bears	-Do not run -Move slowly and speak in a low soft voice -If attacked, lay in the fetal position and	Seek medical attention immediately for serious injuries or wounds	-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

Type	Location	Most Dangerous Species	What to do if Encountered	First Aid	Prevention
		(South & East Asia)	Protect head -Play dead		
Lions	Africa and Asia 	All	-Do not startle -Do not run -Do not look it in the eye -Make yourself look larger	Seek medical attention immediately for serious injuries or wounds	-Stay inside the vehicle if travelling near lions -Do not camp in areas frequented by lions -Do not sleep outside -Do not provoke
Other Large Land Dwellers	Africa, Asia	Hippos, African Elephant, Rhinos, and Buffalo (Africa); Asian Elephants and Bengal Tigers (Southeast Asia); Siberian Tigers (North and East Asia)	-Do not startle 	Seek medical attention immediately for serious injuries or wounds	-Stay inside the vehicle if travelling near large animals -Do not camp near areas frequented by large animals -Keep a look out in open spaces -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	-Jellyfish/ Octopus sting use vinegar on wound -Stonefish sting rinse with warm water -Seek medical attention	-Avoid going in waters known to be inhabited by jellyfish and octopus -Wear sandal 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	-Do not pick up, disturb, or corner a snake -Move away from the snake	-Let the wound bleed freely for 30 seconds -Apply a cold pack -Keep area immobilized at heart level -Bring victim to hospital (alert ahead if possible)	-Walk in open areas -Wear heavy boots -Use a stick to disturb the brush in front of you

Type	Location	Most Dangerous Species	What to do if encountered	First Aid	Prevention
		South America)			
Spiders	Worldwide	Funnel Web and Redback Spiders (Australia); Brazilian Wandering Spider, Brown Recluse, and Tarantula (South America)	<ul style="list-style-type: none"> <li>-Do not pick up or disturb a spider</li> <li>-Avoid locations where spiders might be such as dark places</li> </ul>	<ul style="list-style-type: none"> <li>-Clean wound</li> <li>-Apply a cold pack</li> <li>-Keep area immobilized at heart level</li> <li>-Bring victim to hospital (alert ahead if possible)</li> <li>-Kill spider for positive ID</li> </ul>	<ul style="list-style-type: none"> <li>-Use care around rock piles, logs, bark, outdoor privies, and old buildings</li> <li>-Shake out clothing and bedding before use</li> <li>-Wear shoes outside</li> <li>-Wear gloves when working outside</li> </ul>
Scorpions	Worldwide (especially North Africa, The Middle East, South America, and India)	All	<ul style="list-style-type: none"> <li>-Do not pick up or disturb a scorpion</li> <li>-Avoid locations where scorpions may be</li> </ul>	<ul style="list-style-type: none"> <li>-Clean wound</li> <li>-Apply a cold pack</li> <li>-Keep area immobilized at heart level</li> <li>-Use painkiller or antihistamine if desired</li> <li>-Seek medical attention if no improvement</li> </ul>	<ul style="list-style-type: none"> <li>-Shake out clothing and bedding before use</li> <li>-Avoid lumber piles and old tree stumps</li> <li>-Wear gloves when working outside</li> </ul>

#### IV. 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 or Campus Health Service 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	First Aid	Prevention
Campylobacteriosis	Worldwide	Foodborne – poultry products, unpasteurized milk or water contaminated with Campylobacter	-Diarrhea -Gastrointestinal symptoms -Fever	-Drink plenty of fluids -Seek medical attention if symptoms persist	-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 Vibrio cholerae	-Diarrhea -Gastrointestinal symptoms	-Drink plenty of fluids -Seek medical attention if symptoms persist	-Always cook food thoroughly -Never drink water from an impure source -Wash hands with soap and water frequently
E. coli O157:H7 and Shiga toxin-producing E. coli Gastroenteritis	Worldwide	Foodborne – beef, unpasteurized milk, unwashed raw vegetables, water contaminated with Escherichia coli	-Diarrhea -Gastrointestinal symptoms	-Drink plenty of fluids -Seek medical attention if symptoms persist	-Always cook food thoroughly -Wash vegetables before consuming -Never drink water from an impure source -Wash hands with soap

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
					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	-Drink plenty of fluids (bottled or purified water – not local water) -Seek medical attention if symptoms persist	-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. & Ohio River Valleys)	Inhalation of fungus <i>Histoplasma capsulatum</i> from soil contaminated with bat or bird droppings	-Mild flu-like -Rarely can be acute pulmonary histoplasmosis	-See a doctor if you suspect histoplasmosis -Typically clears up in 3 weeks	-Use caution when disturbing dry soils or working near bat or bird droppings -Personal protective equipment may be needed
Human Immunodeficiency 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	-None -Blood test for diagnosis -Treatment with antiretroviral drugs for long term maintenance	-Follow Bloodborne Pathogen training when handling any unfixed human blood or tissue -Do not engaging in risky activities
Influenza (seasonal)	Worldwide  Note: As of 2008 Pandemic Strains of Influenza (not	-Inhalation of influenza virus -Contact with birds infected with influenza	-Fever (usually high) -Headache -Extreme tiredness -Dry cough -Sore throat -Runny or stuffy nose -Muscle aches	-Flu antiviral drugs can treat the flu or prevent infection -Your health care professional will decide whether you should take antiviral drugs -Antiviral drugs should	-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,

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
	seasonal) have been reported in Africa, Asia, Europe, Near East and occur primarily in birds		-Stomach symptoms (nausea, vomiting, diarrhea) more commonly in children	be started within 48 hours of getting sick -Antiviral drugs are 70% to 90% effective in preventing infection	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 Leptospira	-Flu-like -Occasionally more serious symptoms	-See a doctor if you suspect leptospirosis	-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	Stay hydrated	-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
Plague	Worldwide	Flea-borne - from rodents infected with Yersinia pestis to humans -Direct contact with infected tissues or fluids from sick or dead	-Flu-like -Non-specific -Swollen and painful lymph nodes (bubonic)	See a doctor if you suspect plague	-Use care when working in areas where plague is found -Use caution when working with wild rodents

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
		animals			
Rabies (Vaccine Available)	Worldwide	-Infection from bite of an animal (e.g., raccoons, skunks, bats, foxes, coyotes, dogs, cats) infected with Lyssavirus -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.	-Fatal (within days of the onset of symptoms) without immediate treatment -Early symptoms: fever, headache, malaise -Later symptoms: insomnia, anxiety, confusion, paralysis, hallucinations, hypersalivation, difficulty swallowing, fear of water	Disinfect and wash the wound. See a doctor IMMEDIATELY if potentially exposed to a rabies-carrying species (e.g., bat, carnivore)	-Obtain a vaccine if you will be working with bats or carnivores -Use extreme caution handling these animals -Vaccinate pets
Salmonellosis	Worldwide	Foodborne – beef, poultry, milk, eggs, unwashed raw vegetables contaminated with salmonella bacteria	-Diarrhea -Gastrointestinal symptoms	-Drink plenty of fluids -Seek medical attention if symptoms persist	-Always cook food thoroughly -Wash vegetables before consuming -Wash hands with soap and water frequently
Typhoid Fever (Vaccine Available)	Worldwide	Foodborne – food and water contaminated with Salmonella typhi	-Diarrhea -Gastrointestinal symptoms	-Drink plenty of fluids -Seek medical attention if symptoms persist	-Obtain a vaccine -Always cook food thoroughly -Never drink water from an impure source -Wash hands with soap and water frequently
Tetanus (Vaccine Available)	Worldwide	A wound that is infected with Clostridium tetani; tetanus toxin is produced by the bacteria and attacks	-Early symptoms: lockjaw, stiffness in the neck and abdomen, difficulty swallowing	-See a doctor for any wound contaminated with dirt, feces, soil, or saliva; for puncture wounds; and for	-Obtain a vaccine for tetanus every 10 years or immediately following a suspect wound or injury -Once the disease starts it

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
		nerves	-Later symptoms: muscle spasms, seizures, nervous system disorders	wounds resulting from crushing, burns, and frostbite	must run its course
Typhus Fever	Worldwide	Infection from bite of lice, fleas, ticks, or mites infected with Rickettsiae. species	-Headache -Fever -Rash	-See a doctor if you suspect Typhus Fever -Treatable with antibiotics	-Use insect repellent -Wear long sleeve shirts -Tuck pants into boots

## B. North America

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Coccidioidomycosis "Valley Fever"	North and South America semiarid regions	Coccidioides 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 (skin lesions, central nervous system infection, and bone and joint infection)	-See a doctor if you suspect Valley Fever	-Wet soil before digging - If you are immunocompromised, wear a mask when digging -Stay inside during dust storms in areas where Coccidioides 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	Seek medical attention immediately if you suspect encephalitis	-Use insect repellent -Many mosquitoes are most active at dusk and dawn, consider staying indoors during these hours -Wear long sleeves and

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
			weakness, paralysis, and rarely death		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	See a doctor if you suspect Lyme Disease	-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	See a doctor if you suspect Rocky Mountain Spotted Fever	-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 Nombre Virus	North America	Inhalation of dusts or aerosols from the infected rodent’s feces, urine, or saliva -Vector: Deer mouse ( <i>peromyscus maniculatus</i> )	-(Early, 1-5 weeks) fatigue, fever, muscle aches, chills, headaches, dizziness, sometimes abdominal problems -(Late, 4-10 days after early) coughing, shortness of breath	Seek medical attention IMMEDIATELY if you suspect HPS. The likelihood of survival is greatly increased with early diagnosis and treatment	-Avoid contact with rodents, especially their feces -See section on dealing with rodent infested areas
Arenavirus (White Water Arroyo)	North America	Inhalation of dusts or aerosols from the infected	-Fever -Headache -Muscle aches	Seek medical attention IMMEDIATELY if you suspect WWA. The	-Avoid contact with rodents, especially their feces

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
		rodent's feces, urine, or saliva -Vector: Woodrats (Neotoma fuscipes) and other Neotoma species	-Severe respiratory distress (occasionally)	likelihood of survival is greatly increased with early diagnosis and treatment	-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	See a doctor if you suspect that severe symptoms are due to West Nile Virus	-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	First Aid	Prevention
Dengue Fever	Africa, Southeast Asia, China, India, Middle East, South and Central America, Australia	-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	-See a doctor if you suspect Dengue Fever -Takes up to 1 month to recover	-Wear long sleeves and pants -Use insect repellent -Use a mosquito net

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
	and the Pacific Islands		-Rash		
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 Anopheles 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	-See a doctor IMMEDIATELY if you have traveled in a malaria-risk area and suspect malaria	-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 (no evidence that direct contact with civets has led to cases of SARS, similar viruses have been found in these animals)

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
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	See a doctor if you suspect Yellow Fever	-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 Neotoma and Peromyscus species	-Fever -Headache -Muscle aches -Severe respiratory distress (occasionally)	Seek medical attention IMMEDIATELY if you suspect hanta or arenavirus. The likelihood of survival is greatly increased with early diagnosis and treatment	-Avoid contact with rodents, especially their feces -See section on proper rodent handling for cleaning a rodent infested area
Schistoso-miasis, (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	See a doctor if you suspect schistomiasis	-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 physician to learn the specific threats to your location of study. Some other vector-borne diseases include:

- African Sleeping Sickness - carried by the tsetsefly 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.

## V. 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 in this booklet.

### A. General

#### On Campus

The following resources are available at Boston University for questions related to health, wellness and immunizations. :

- **Boston University Occupational Health Services (BUOHC)**: located on the **Charles River Campus** at 930 Commonwealth Avenue, West (Pleasant Street entrance), 1<sup>st</sup> floor. BUOHC can be reached at (617) 353-6630 or at [buohc@bu.edu](mailto:buohc@bu.edu).
- **Research Occupational Health Program (ROHP)**: located on the **Boston University Medical Campus** at 72 E. Concord Street, Evans, 825. ROHP can be reached at (617)414-7647or [rohpbu@bu.edu](mailto:rohpbu@bu.edu)
- **Student Health Services**: located on the Charles River Campus at 881 Commonwealth Avenue (W) has a travel clinic services for students. They can be contacted at (617) 353-3575 or [shshelp@bu.edu](mailto:shshelp@bu.edu)
- The **Travel Clinic**: located on the Boston University Medical Campus can be reached on their Hotline at (617) 414-VACC (8222) for appointments or you can visit their website for more information at <http://www.bmc.org/travelclinic.htm>.
- **Environmental Health & Safety (EH&S)** is available for various hazard information and other hazard evaluations. They can be reached at (617) 638-8830 or at: <http://www.bu.edu/ehs/>.
- **Institutional Animal Care and Use Committee (IACUC)**: Research with animals, including wild animals, must be reviewed and approved by the committee prior to beginning research. Information and forms are available at the Office of Research Compliance and they can be reached at (617) 638-4533 or online at: <http://www.bu.edu/orccommittees/iacuc/>.
- **Institutional Biosafety Committee (IBC)**: Research with microorganisms (including isolating, concentrating, culturing or growing field samples) or recombinant DNA must be reviewed and approved by the committee prior to beginning research. Information and forms are available at the Office of Research Compliance and they can be reached at (617) 638-4263 or online at: <http://www.bu.edu/orccommittees/ibc/>.
- **For Travel Services**: Contact BU Travel Manager at (617)353-5836 or [butravel@bu.edu](mailto:butravel@bu.edu). You may also visit [www.bu.edu/travel](http://www.bu.edu/travel).

- ***The Boston University Global Operations Toolkit*** is a resource to support the many international activities of Boston University's faculty, staff, and students. The Toolkit contains best management practices, key guidelines, policies, planning tools, and templates in one central location, and provides links to offices and individuals who can help work through issues that may arise with respect to a global activity. Please take a minute to familiarize yourself with this extraordinarily helpful website <http://www.bu.edu/globalprograms/global-toolkit/>.
- ***For International Travel Insurance***, please visit the Office of Risk Management at <http://www.bu.edu/cfo/risk-management/> for information regarding International Travel Insurance coverage or visit <http://www.bu.edu/globalprograms/global-toolkit/>
- ***Workers Compensation***: Human Resources is available for questions about workers' compensation coverage and accident reporting. They can be reached at (617) 353-3020 or online at: <http://www.bu.edu/cfo/risk-management/risk-management-resources/workers-compensation/>
- ***First Aid/CPR Training***: First Aid and CPR training are available Physical Education, Recreation & Dance (PERD). They can be reached at (617) 353-2748, front desk (617) 358-3740 or online at: <http://fitness.asu.edu/programs/cpr-and-first-aid-training>.

### Off-Campus

- Centers for Disease Control and Prevention Traveler's Health web page <http://www.cdc.gov/travel/>
- WHO travel health page <http://www.who.int/topics/travel/en/>
- State Department security alerts [http://travel.state.gov/travel/cis\\_pa\\_tw/pa/pa\\_1766.html](http://travel.state.gov/travel/cis_pa_tw/pa/pa_1766.html)
- State Department visa information [http://travel.state.gov/travel/requirements/requirements\\_1233.html](http://travel.state.gov/travel/requirements/requirements_1233.html)
- CIA World Factbook <https://www.cia.gov/library/publications/the-world-factbook/>
- [www.fitfortravel.nhs.uk/home.aspx](http://www.fitfortravel.nhs.uk/home.aspx)
- Federal Aviation Administration <http://www.faa.gov/>
- Homeland Security <http://www.dhs.gov/>
- General: The Centers for Disease Control and Prevention (CDC) offers a website that describes many topics related to travel, both domestic and international: <http://wwwnc.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: <http://my.webmd.com>.
- Diseases: The CDC offers more detailed information about many diseases related to travel on their website: <http://wwwnc.cdc.gov/travel/page/diseases.htm>
- The Boston Public Health Commission offers information about infectious diseases online at: <http://www.bphc.org/programs/infectiousdisease/infectiousdiseasesatoz/Pages/Home.aspx>.
- Weather: More information on extreme weather and how to protect yourself can be found from the National Weather Service at: <http://weather.gov/safety.html>
- Impure Water: For more information about waterborne diseases, the CDC provides information online at: <http://www.cdc.gov/healthywater/>.

## **B. North America**

- Hunting Season: To get more information concerning hunting seasons and regulations, contact the U.S Forest Service by phone at (800) 832-1355 or online at: <http://www.fs.fed.us/> .
- Poison Plants: More information about poison plants, including photos, can be found at: <http://poisonivy.aesir.com/>
- Hantavirus: The CDC has detailed information about hantavirus available at: <http://www.cdc.gov/hantavirus/>.
- Lyme Disease: The American Lyme Disease Foundation provides information about the disease at: <http://www.aldf.com/>

## **C. International**

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