

Safety Guidelines for Field Researchers



The Office of Environmental Health and Safety
The Ohio State University





Table of Contents

Section	Content
I.	General Field Safety Guidelines
II.	Physical and Environmental Hazards
	Table 1: Physical & Environmental Hazards Found Worldwide
	Table 2: Physical & Environmental Hazards in North America
	Table 3: Physical & Environmental Hazards Internationally
III.	Animals and Pests
	Rodent Precautions
	Table 4: Animals & Pests Found Worldwide
	Table 5: Animals & Pests Found in North America
	Table 6: Animal & Pests Found Internationally
IV.	Diseases
	Table 7: Diseases Found Worldwide
	Table 8: Diseases Found in North and South America
	Table 9: Diseases Found Internationally
	Figure 1. Worldwide Distribution of Major Arboviral Encephalitides
V.	Resources

I. General Field Safety Guidelines

Field research is an important aspect of research at The Ohio State University. These safety guidelines are intended to help researchers prepare for health and safety concerns that may be encountered while conducting research off campus. For specific information about fieldwork hazards and precautions, consult your PI/ supervisor and/or the resources listed in § V.

Before You Leave

Planning and preparing prior to leaving campus is one of the most important phases of fieldwork. Prepare a written plan of the field research trip and leave a copy with the PI or another responsible party in the department. The written plan should include:

- ✓ **Activities:** General nature of research activities
- ✓ **Itinerary:** Locations, arrival and departure dates, names, addresses, and phone numbers of all fieldwork participants
- ✓ **Local contacts:** Names of people at or near fieldwork site that can reach fieldworkers (should be familiar with arrival and departure schedules). The local contact should be informed of medical conditions of the field team members. If possible, each day fieldworkers should inform someone (e.g., law enforcement, motel employee, or local search and rescue personnel) about the daily fieldwork location. After each work day, field workers should notify the contact when they return. The local contact should be provided with the telephone numbers of people to call if workers do not return or report within a predetermined interval of the scheduled return time.
- ✓ **Emergency contacts:** Names and phone numbers of family/emergency contacts for each field research worker should be included in case of injury or illness. Fieldworkers should check in with their department regularly and should report any changes in schedule or point of contact.

Learn about potentially hazardous plants, animals, pests, terrain, endemic diseases, and weather conditions in the area where you plan to work and complete a record of assessment of each risk (see Field Research Safety Plan in § V). In addition, the field supervisor, other field workers, or local residents and authorities, such as state and national park service personnel may be able to provide information.

If travelling outside the country, contact the Office of International Affairs (614-292-6101) or visit their website (<http://oia.osu.edu/>) to learn more about the health and security requirements while traveling abroad. To allow sufficient time, please contact the Office of International Affairs at least one quarter prior to travel.

Take a Cardiopulmonary Resuscitation (CPR) or First Aid class. To enroll, contact the Red Cross (614- 253-2740) or visit their website (<http://www.redcross.org/local/ohio/buckeye/classes>). OSU Medical Center employees can register for classes on OneSource using the CBL log-in.

Assemble safety provisions and check everything before you leave. Safety provisions should include a first aid kit, and may also include a first aid manual, medications regularly taken, allergy treatments, sunscreen and hat, water purification tablets/ filter devices, vehicle emergency kit, flashlight, flares, two-way radio or cell phone, and personal protective equipment (PPE) for fieldwork activities. First aid kits are recommended on-site at field workplace. Field first aid kits should contain adequate supplies that allow individuals to treat themselves for the potential hazards they may be exposed to while working in the field. Employee Health Services (614-293-8146) has generic pre-packed kits available and will make recommendation of items to include in the field first aid kit for a specific field research project. All items should be packaged with directions for use and the kit should be inventoried and updated every six months.

Make sure you are up to date on immunizations. Employee Health Services offers tetanus, Hepatitis B, Hepatitis A, and rabies immunizations for those traveling on university business. Contact Employee Health Services (614-293-8146) for details. The Thomas E. Rardin Family Practice Travel and Immunization Center offers immunizations such as Yellow Fever, malaria, and others. The Travel and Immunization Center also provides comprehensive counseling and medication that may be recommended or required for international travel. It is recommended that individuals seek immunization services at least 4 to 6 weeks prior to travel as some immunizations are given in series and require more time to provide adequate immunity or protection. Contact the Travel and Immunization Center at Rardin (614-293-2700) for details.

Whenever possible, fieldwork activities should be performed in teams of at least two people. The “buddy” system is the safest way to work. Carry photo identification with you at all times in case of an accident or injury.

II. Physical and Environmental Hazards

Field researchers may encounter many physical and environmental hazards while working in the field. All field researchers should read through Table 1 to learn about some of the physical and environmental hazards that exist worldwide. Those who will be working in North America should also see Table 2; whereas, researchers who will be traveling outside of North America should also refer to Table 3.



Hazard	Location	Cause	Symptoms	First Aid	Prevention
Dehydration	Worldwide	Insufficient water intake	Dark urine, lethargy, constipation, light-headedness	Drink plenty of fluids, take frequent rest breaks, and minimize intake of beverages containing caffeine	Drink plenty of water (at least 2 quarts of water per day); drink 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	Drink clear liquids; slowly introduce mild foods, such as rice, toast, crackers, bananas, or applesauce; seek medical attention if symptoms persist	Carry your own water or treat water before use with tablets, purifiers and/ or by boiling for more than 3 minutes
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 hat, apply sun block with at least 30 SPF
Heat Exhaustion	Worldwide: hot climates	Prolonged exposure to high temperatures and inadequate/unbalanced replacement of fluids	Fatigue, excessive thirst, heavy sweating, cool and clammy skin	Cool the victim, treat for shock, and slowly give water or electrolyte replacer	Acclimate to heat gradually, drink plenty of liquids, and take frequent breaks
Heat Stroke	Worldwide	Prolonged exposure to high temperatures and inadequate/unbalanced replacement of fluids	Exhaustion, light-headedness, bright red skin which is warm to the touch	Cool the victim, replenish fluids, and seek medical attention immediately	Acclimate to heat gradually, drink plenty of liquids, and take frequent 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 as soon as possible	Dress in layers; cover extremities with warm hats, face mask, gloves, socks, and shoes
High Altitude Illness	Worldwide	Decreased oxygen and increased breathing rate	Headache, nausea, weakness	Use supplemental oxygen and decrease altitude	Allow your body to acclimate by gaining elevation slowly

Table 1 Physical and Environmental Hazards Found Worldwide (continued)

Hazard	Location	Cause	Symptoms	First Aid/ Action	Prevention
Hypothermia	Worldwide: cold climates	Prolonged exposures 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 to warm up; drink warm liquids and seek medical attention as soon as possible	Dress in layers; wear appropriate clothing; stay dry
Carbon Monoxide	Worldwide	Running a vehicle or burning fuel in an enclosed space	Severe headache, disorientation, agitation, lethargy, stupor, coma	Remove the victim to fresh air immediately and if needed, perform CPR	Keep areas adequately ventilated when burning fuel; ensure that vehicle tailpipe is not covered by snow
Extreme Weather	Worldwide	Snow squalls, blizzards, lightning, tornadoes, hurricanes, monsoon, rains, floods	Severe weather can result in physical injury and/ or death	Seek shelter immediately	Be aware of special weather concerns; bring appropriate equipment to deal with severe weather
Poisonous Plants	Worldwide	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 topical ointment; avoid scratching the rash	Avoid contact with poisonous plants; wash clothes and skin with soap and water after exposure
Crime and Theft	Worldwide	N/A	N/A	Report crime and theft immediately to local authorities	Keep wallet in front pocket; carry shoulder bag in front under your arm

Table 2 Physical & Environmental Hazards Found in 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

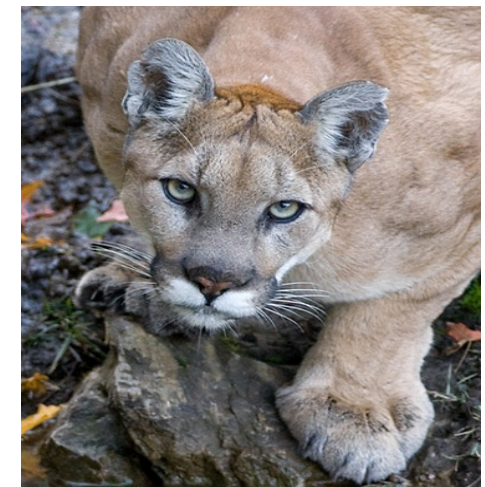
Table 3 Physical & Environmental Hazards Found Internationally

Hazard	Location	Defense Action	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 warnings and alerts issued by the U.S. Department of State

III. Animals and Pests

General safety rules can help protect researchers from dangerous animals and pests. A number of animals and pests may be encountered while working in the field. Follow these general guidelines to prevent unnecessary close encounters:

- Keep garbage in rodent-proof containers and stored away from your campsite or work area. Food crumbs and debris may attract animals and pests.
- Thoroughly shake all clothing and bedding prior to use.
- Do not camp or sleep near obvious animal nests or burrows.
- Avoid contact with sick or dead animals.
- Wear clothes made of tightly woven materials and tuck pants into boots.
- Use insect repellent.
- Use netting to keep pests away from food and people.
- Minimize the amount of time you use lights after dark in your camp or work site because light may attract pests and animals.
- Be aware of the appearance and habitat of animals and pests that you are likely to encounter.
- Carefully look for pests before placing your hands, feet, or body in areas where pests live or hide (e.g. woodpiles or crevices).
- Carry first aid kit and manual with you on any excursion so you can treat bites, stings, or other injuries. If pest is poisonous or if the bite does not appear to heal properly, seek medical attention immediately.



All field researchers should read Table 4 for information on hazardous animals and pests present worldwide. If your field research will be in North America, you should also refer to Table 5. If your research will be outside North America, you should also read table 6.

Rodent Precautions

Steps can be taken to reduce the risk of rodent-borne diseases. Cover or repair holes in building that will permit rodents to enter. If camping, keep area clean of trash and food debris and store food in rodent proof containers to prevent attracting rodents. Don't camp near rodent burrows.

Before attempting to clean cabins, sheds, barns, or other outbuildings, open all doors and windows for 30 minutes. This will allow fresh air to enter the work area.

It is important that you do not stir up dust by sweeping or vacuuming rodent droppings, urine, or nesting materials. To clean these materials, follow the following precautions:

- Wear rubber, latex, or vinyl gloves.
- Spray the urine and droppings, nests, and dead rodents with a 10% bleach solution (1 part bleach: 10 parts water) and let soak at least 5 minutes.
- Use a disposable towel to pick up the urine, droppings, or nesting materials and dispose of the waste in the garbage.
- Mop floors or spray dirt floors with disinfectant or bleach solution, and clean affected areas with a disinfectant or 10% bleach solution.

Wash any bedding and clothing with laundry detergent in hot water if exposed to rodent urine or droppings. Lastly, remove gloves and thoroughly wash hands with soap and water (or use a waterless alcohol-based hand rub when soap is not available and hands are not visibly soiled).



Table 4 Animals & Pests found Worldwide

Type	Location	Most Dangerous Species	Defensive Action	First Aid	Prevention
Sharks	Shores of Oceans Worldwide	Great White, Bull, Tiger, Oceanic White tip	Call for help; swim towards safety; punch or kick the shark if necessary	Seek medical attention for serious injuries or wounds	Never swim alone; do not wear sparkling jewelry; do not enter the water when bleeding
Crocodiles and Alligators	Tropics and Sub- tropics Worldwide	<ul style="list-style-type: none"> • North America: American Alligator • Australia: Estuarine Crocodile • Africa: Nile Crocodile 	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
Rodents	Worldwide	<i>Refer to Section IV: Diseases</i>	Don't touch a rodent dead or alive	Clean wounds thoroughly if bitten or scratched	Keep areas clean to avoid attracting rodents; keep food stored in sealed containers
Water Dwellers	Worldwide, especially Australia	Blue Ringed Octopus, Box Jellyfish, and Irukandji Jellyfish	Never touch an unidentified octopus or jellyfish; avoid stepping on them	<ul style="list-style-type: none"> • Jellyfish sting: use sea water to remove nematocysts, pour vinegar on the wound, seek medical attention immediately • Stonefish sting: rinse in hot water and seek medical attention • Blue-ringed Octopus sting: Provide CPR and/or supportive care to the patient and seek medical attention immediately 	Avoid going in waters known to be inhabited by jellyfish and octopus; wear clothing in water; wear sandals in water to avoid stepping on a stonefish
Mosquitoes	Worldwide especially wet areas conducive to breeding	Refer to Section IV : Diseases		Use topical ointment to relieve itching	Use repellents; wear long pants and long sleeved shirts; reduce time outdoors in early evening hours; avoid areas with standing water where mosquitoes breed

(Table continued on next page)

Type	Location	Most Dangerous Species	Defensive Action	First Aid	Prevention
Snakes	Worldwide	<ul style="list-style-type: none"> India: Russel's Viper, Indian Cobra Australia: Tiger, Black, Brown and Sea Snakes Africa: Saw Scaled Viper, Egyptian Cobra, Puff Adder, Central/ South America: Ferdelance North America: Coral Snakes, Rattlesnakes, Cottonmouths, Moccasins, and Copperheads 	Do not pick up, disturb, or corner a snake; move away from the snake	Let the wound bleed freely for 30 seconds; keep area immobilized at heart level; seek medical attention immediately (alert ahead if possible)	Walk in open areas; wear heavy boots; use a stick to disturb the brush in front of you
Spiders	Worldwide	<ul style="list-style-type: none"> Australia: Funnel Web and Redback Spiders South America: Brazilian wandering Spider' Brown Recluse, and Tarantula North America: Black Widow, Brown Recluse 	Do not pick up or disturb a spider	Clean wound and put a cool pack on the area; keep area immobilized at heart level; seek immediate medical attention (alert ahead if possible); kill spider for positive ID (if possible)	Use care around rock piles, logs, bark, outdoor privies, and old buildings; shake out clothing and bedding before use
Scorpions	Worldwide	Avoid contact with scorpions whenever possible	Avoid contact with scorpions whenever possible.	Clean wound and put a cool pack on area. Keep area immobilized at heart level. If desired, use painkiller antihistamine. Seek medical attention if victim shows no signs of improvement	Always shake out clothing and bedding before use; avoid lumber piles and old tree stumps
Fleas & Ticks	Worldwide	Refer to Section IV: Diseases	Avoid contact with animals or areas where fleas and ticks might be found	Remove flea or tick with tissue or tweezers and clean wound with antiseptic; pay attention for signs of illness and seek medical attention if needed	Wear clothing of tightly woven material; tuck pants into boots; stay on widest part of path; search your entire body and clothing for fleas and ticks. To remove a tick, gently grasp tick with tweezers and slowly pull upward to allow the tick to release its bite. Then wash the bite area with alcohol or soap and water.
Bees, Wasps	Worldwide	Bees, wasps, hornets, and yellow jackets	Avoid contact with these insects whenever possible	Remove the stinger quickly; place an ice pack and elevate to heart level; use an antihistamine if needed	Bring medication if you have an allergy (the sting may be fatal); keep scented foods and meats covered

Table 5 Animals & Pests found in North America

Type	Location	Most Dangerous Species	Defensive Action	First Aid	Prevention
Bears	North America	Black Bear, Grizzly, Polar Bear	Never run; move slowly and speak in a low soft voice; if attacked, lie in the fetal position and protect head, play dead	Seek medical attention for serious injuries or wounds	Keep food out of sleeping areas; never approach a bear or cub; Wear a bell or other noisemaker; stay away from the bear's food supply
Mountain Lions	North America: Western Canada, South Wyoming, California, parts of Texas, Florida Everglades	All	Do NOT run; fight back; protect your neck and head; play dead	Seek medical attention for serious injuries or wounds	Do not corner it; make yourself look larger (arms overhead); use loud voice; throw sticks or rocks; carry pepper spray

Table 6 Animals & Pests found Internationally

Type	Location	Most Dangerous Species	Defensive Action	First Aid	Prevention
Bears	Arctic, South America, Asia	<ul style="list-style-type: none"> Greenland and NE Russia: Polar Bears Northern and Southern South America: Spectacled Bears Southern and eastern Asia: Asiatic Black Bears 	Never run; move slowly and speak in a low soft voice; if attacked, lie in the fetal position and protect head; play dead	Seek medical attention for serious injuries or wounds	Keep your camp area free of garbage and food and waste; never feed or approach a bear, especially a cub; stay away from the bear's food
Lions	Africa, Asia	All	Do not provoke a lion	Seek medical attention for serious injuries or wounds	Stay inside the vehicle if traveling near lions; do not camp near areas frequented by lions
Other Large Land Dwellers	Africa, Asia	Hippos, African Elephant, Rhinos, and Buffalo, Tigers	Do not provoke these large animals	Seek medical attention for serious injuries or wounds	Stay inside the vehicle when near large animals; do not camp near areas frequented by large animals; keep a lookout in open spaces
Conenose Bugs	North America, South America	May cause allergies in some people; see section IV Diseases	n/a	Use topical ointments to sooth itching	Use caution when working near nests and wood rat dens

IV. Diseases

Many vector-borne diseases caused by viruses, bacteria, parasites and other microorganisms are carried or transmitted by animals, insects, and other arthropods throughout the world. Please note that this guide is not intended to cover all health risks that you may encounter while working in the field. However, it does provide information about some of the more common diseases.

An arbovirus is a viral infection transmitted by an arthropod, such as through the bite of an infected mosquito or tick. Refer to figure 1 for the worldwide distribution of major arboviral encephalitides. It is important to note that there are many Vector-borne diseases that may pose problems while working in the field, examples include:

- African Sleeping Sickness is carried by the tsetse fly in Africa
- Chagas Disease is transmitted by the Conenose bug in South America
- Encephalitis is carried by mosquitoes worldwide. There are five main virus agents of encephalitis in the United States: Eastern Equine, Western Equine, St. Louis, La Crosse, and West Nile.
- Leishamianiasis is transmitted by sand flies in the tropics and sub-tropics
- Filariasis is carried by mosquitoes in the tropics
- Onchocerciasis, which causes “river blindness”, is carried by black flies in Africa, Arabia, and Central South America.

All field researchers should read Table 7 to learn more about diseases that exist worldwide. For field research in North America, also read Table 8. International field researchers should also read Table 9. While this guide presents information about numerous diseases including some food and water borne diseases, there are many other diseases (e.g., tuberculosis, SARS, viral hemorrhagic fevers, etc.) that travelers need to be aware of, particularly when travelling outside the United States. While risk of infection is generally low, it is important to be aware of these diseases and take appropriate precautions for prevention. Remember, it is advisable to check with a health care provider before travelling out of the country to learn about specific health risks for the region where you will be conducting your field research.



Table 7 Diseases found Worldwide

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Food-borne Diseases: Campylobacter	Worldwide	Poultry Products	Diarrhea, gastrointestinal symptoms	Drink plenty of fluids; medical attention may be necessary in more severe case	Always cook food thoroughly
Food-borne Diseases: Cholera	Africa, Asia, Latin America	Contaminated food and water	Diarrhea, gastrointestinal symptoms	Drink plenty of fluids; medical attention may be necessary in more severe case	Always cook food thoroughly; never drink water from an impure source
Food-borne Diseases: E. Coli	Worldwide	Beef, unpasteurized milk, unwashed raw vegetables, contaminated water	Diarrhea, gastrointestinal symptoms	Drink plenty of fluids; medical attention may be necessary in more severe case	Always cook food thoroughly; wash vegetables before eating; never drink water from an impure source
Food-borne Diseases: Hepatitis A (vaccine available)	Worldwide (underdeveloped countries)	Contaminated water, shellfish, unwashed raw vegetables	Diarrhea, gastrointestinal symptoms	Drink plenty of fluids; medical attention may be necessary in more severe case	Obtain a vaccine; consult with doctor 1 month prior to departure; always cook food thoroughly; wash vegetables before eating; never drink water from an impure source

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Food-borne Diseases: Salmonella	Worldwide	Beef, poultry, milk, eggs., unwashed raw vegetables	Diarrhea, gastrointestinal symptoms	Drink plenty of fluids; medical attention may be necessary in more severe case	Always cook food thoroughly; wash vegetables before consuming
Food-borne Diseases: Typhoid Fever (vaccine available)	Worldwide	Contaminated food and water	Diarrhea, gastrointestinal symptoms	Drink plenty of fluids; medical attention may be necessary in more severe case	Obtain a vaccine; consult with your doctor at least 1 month prior to departure; always cook food thoroughly; never drink water from impure source.
Histoplasmosis	Worldwide (especially Mississippi and Ohio River Valleys)	Inhalation of fungus from soil contaminated with bat or bird droppings	Mild flu-like symptoms. occasionally can turn into acute pulmonary histoplasmosis	Seek medical attention if you suspect histoplasmosis	Use caution when disturbing dry soils or working near bat or bird droppings; keep surfaces wet to reduce dust
Leptospirosis	Worldwide	Ingestion, swimming, or other activities in contaminated water	Flu-like symptoms; occasionally more serious symptoms	Seek medical attention if you suspect leptospirosis	Use care when working in the water, especially after a flooding event; avoid entering the water with open wounds
Plague	Worldwide	Infection from flea bite (Fleas are infected by rodents)	Flu-like symptoms; nonspecific symptoms; swollen and painful lymph nodes (bubonic)	Seek medical attention if you suspect the plague	Use care when working in areas where the plague is found; use caution when working with wild rodents; wear gloves and wash hand frequently
Rabies (vaccine available)	Worldwide	Infection from bite of infected animals	Spasms; paralysis; fatal, without immediate treatment	Seek medical attention IMMEDIATELY if bitten by rabies carrying species (e.g., bats, carnivores)	Obtain the vaccine series if you will be working with bats or carnivores; use extreme caution handling these animals
Tetanus (vaccine available)	Worldwide	Infection occurs after a wound	Painful muscle contractions	See medical attention if you suspect tetanus	Obtain a tetanus shot every 10 years

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Typhus Fever	Worldwide	Infection from bite of infected lice, fleas, ticks, or mites	Headache, fever, rash	Seek medical attention if you suspect typhus fever	Wear repellents; wear long sleeved shirts; tuck pants into boots
West Nile encephalitis (see distribution map on page 19)	Worldwide	Infection from a bite of an infected mosquito	<ul style="list-style-type: none"> ○ Mild: fever and headache; ○ Severe: high fever, headache, neck stiffness, coma, disorientation, tremors, muscle weakness, convulsions, paralysis, and very occasionally death. 	Seek medical attention immediately if you suspect encephalitis	Use repellents; wear long pants and long sleeved shirts; reduce time outdoors in early evening hours; avoid areas of standing water where mosquitoes breed

Table 8 Diseases found in North and South America

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Coccidioido Mycosis "Valley Fever"	North and South America: arid regions, Central Valley of California	Fungus is inhaled when infected soil is disturbed	Flu-like symptoms, occasionally becomes severe lung disease	Seek medical attention if you suspect Valley Fever	Use caution when in close contact with soil or dust and keep surfaces wet to reduce dust; note: African Americans, Filipinos, and immunocompromised are at greater risk
Encephalitis (see distribution map on page 19)	North and South America St. Louis, Eastern equine, and Western equine encephalitis	Infection from bite of an infected mosquito	Mild: fever and headache Severe: Headache, high fever, stupor, neck stiffness, coma, tremors, disorientation, muscle weakness, paralysis, convulsions, and very occasionally death	Seek medical attention immediately if you suspect encephalitis	Use repellents. Wear long pants and long sleeved shirts; reduce time outdoors in early evening hours; avoid areas of standing water where mosquitoes breed
LaCrosse Encephalitis	North America	Infection from bite of an infected mosquito	Mild: fever and headache Severe: headache, high fever, neck stiffness, stupor, coma, disorientation, tremors, muscle weakness, paralysis, convulsions, and very occasionally death	Seek medical attention immediately if you suspect LaCrosse encephalitis	Use repellents. Wear long pants and long sleeved shirts; reduce time outdoors in early evening hours; avoid areas of standing water where mosquitoes breed
Venezuelan Equine encephalitis	Central and South America	Infection from bite of an infected mosquito	Mild: fever and headache Severe: headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, muscle weakness, paralysis, convulsions, and very occasionally death	Seek medical attention immediately if you suspect Venezuelan Equine encephalitis	Use repellents. Wear long pants and long sleeved shirts. Avoid being bit my mosquitoes. Reduce time outdoors in early evening hours. Avoid areas of standing water where mosquitoes breed.
Powassan Encephalitis	North America and Canada	Infection through a bite of an infected tick.	Mild: fever and headache Severe: Headache, high fever, stupor, neck stiffness, coma, tremors, disorientation, muscle weakness, paralysis, convulsions, and very occasionally death	Seek medical attention immediately if you suspect Powassan encephalitis	Avoid tick-infested areas; wear long pants and long sleeved shirts; use repellent; check clothing and hair for ticks and gently remove ticks (see Table 4)

(Table continued on next page)

Table 8 Diseases found in North and South America (continued)

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Lyme Disease	United States, Europe, and Asia	Infection through the bite of an infected tick	<ul style="list-style-type: none"> Early: Spreading rash, flu-like symptoms Later: arthritis and neurological problems 	See a medical attention if you suspect Lyme Disease	Avoid tick infested areas; wear long pants and long sleeved shirts; use repellent; check clothing and hair for ticks and gently remove ticks (see Table 4)
Rocky Mountain Spotted Fever	United States, southern Canada, Mexico, and Central America	Infection through the bite of an infected tick	Sudden onset of fever, headache, muscle pain, spotty rash.	See medical attention if you suspect Rocky Mountain Spotted Fever	Avoid tick infested areas; wear long pants and long sleeved shirts; use repellent; check clothing and hair for ticks and gently remove ticks (see Table 4)
Hantavirus Pulmonary Syndrome (HPS) Sin Nombre Virus	North America	Inhalation of dusts or aerosols from infected rodent's feces, urine, or saliva; vector: deer mouse	Early: fever, fatigue, muscle aches; sometimes headaches, dizziness, chills, and abdominal problems. Late (4 to 10 days): coughing, shortness of breath	Seek medical attention immediately if you suspect HPS; likelihood of survival is greatly increased with early diagnosis and treatment	Avoid contact with rodents, especially their feces; see § III for details on precautions to take in a rodent infected area
Arenavirus (White Water Arroyo-WWA)	North America	Inhalation of dusts or aerosols from infected rodent's feces, urine, or saliva; carried by woodrats	Fever; headache; muscle aches; (occasionally) severe respiratory distress	Seek medical attention immediately if you suspect WWA; likelihood of survival is greatly increased with early diagnosis and treatment	Avoid contact with rodents, especially their feces; see § III for precautions in rodent infected areas

Table 9 International Diseases

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Dengue Fever	Africa, Southeast Asia and China, India, Middle East, South and Central America, Australia and Pacific Islands	Infection from the bite of an infected mosquito	Flu-like symptoms; rash; takes up to 1 month to recover	Seek medical attention if you suspect Dengue Fever	Wear long sleeved shirts and long pants; use repellents and a mosquito net
Malaria (preventable with drugs)	Central and South America, Hispaniola, Africa, India, Southeast Asia, the Middle East and Oceania	Infection from the bite of an infected mosquito	May take 10 to 30 days for symptoms to appear; flu-like symptoms; anemia; jaundice; can be fatal	Seek medical attention if you suspect Malaria	Visit doctor 4 to 6 weeks before travel for anti-malarial drugs; wear long pants and long sleeved shirts; use repellents and a mosquito net
Yellow Fever (Vaccine Available)	South America and Africa	Infection from the bite of an infected mosquito	Flu-like symptoms; jaundice; can be fatal	Seek medical attention if you suspect Yellow Fever	Visit doctor at least 10 days before travel for vaccine; wear long pants and long sleeved shirts; use repellents and mosquito net
Hantavirus and Arenavirus	Central and South America and Asia	Inhalation of dusts or aerosols from the infected rodent's feces, urine, or saliva. Vector: Rodents	Fever, headache, muscle aches, severe respiratory distress (occasionally)	Seek medical attention immediately if you suspect hantavirus or arenavirus	Avoid contact with rodents, especially with their feces; see § II for precautions in rodent infected areas
Schistomiasis	Brazil, Egypt, southern China, sub-Saharan Africa, Philippines, and Southeast Asia	Transmitted by swimming in contaminated fresh water	<ul style="list-style-type: none"> ○ Can be asymptomatic ○ Acute: (2 to 3 weeks) Fever, lack of appetite, weight loss, abdominal pain, weakness, headaches, joint and muscle pain, diarrhea, nausea, and cough ○ Chronic: Disease in the lungs, liver, intestines, or bladder 	See a doctor if you suspect schistomiasis	Avoid freshwater wading or swimming in endemic regions; heat bath water over 50° C for at least 5 minutes before use

(Table continued on next page)

Table 9 International Diseases (continued)

Type	Location	Exposure Route	Symptoms	First Aid	Prevention
Japanese Encephalitis (vaccine available)	Asia and the Pacific	Infection from the bite of an infected mosquito	Headache, high fever, neck rigidity, disorientation, tremors, convulsions, coma, paralysis	Seek medical attention if you suspect Japanese Encephalitis	Use repellents, wear long pants and long sleeved shirts, reduce time outdoors in early evening hours, avoid areas of standing water where mosquitoes breed
Murray Valley Encephalitis	New Guinea, parts of Australia	Infection from the bite of an infected mosquito	Headache, high fever, neck rigidity, disorientation, nausea, vomiting, diarrhea, tremors, convulsions, coma, paralysis	Seek medical attention if you suspect Murray Valley Encephalitis	Use repellents, wear long pants and long sleeved shirts, reduce time outdoors in early evening hours, avoid areas of standing water where mosquitoes breed
Chikungunya	Africa, Asia, and Europe	Infection from the bite of an infected mosquito	Fever, headache, fatigue, nausea, vomiting, muscle pain, rash, and joint pain	Seek medical attention if you suspect Chikungunya	Use repellents, wear long pants and long sleeved shirts, reduce time outdoors in early evening hours, avoid areas of standing water where mosquitoes breed
Tick-Borne Encephalitis (Vaccine available in Europe and Russia)	Europe and Russia: Russian Spring-Summer Encephalitis (RSSE) and Central European Encephalitis (CEE)	Infection through the bite of an infected tick or ingestion of infected goats or cow milk.	Mild influenza type illness, fever, severe headache, neck rigidity, transient paralysis of the limbs, aseptic meningitis, but may result in fatal meningoencephalitis	Seek medical attention immediately if you suspect tick-borne encephalitis	Avoid tick infested areas, wear long pants and long sleeved shirts, use repellent, check clothing and hair for ticks and remove any ticks

Figure 1 Worldwide Distribution of Major Arboviral Encephalitides

Worldwide Distribution of Major Arboviral Encephalitides



EEE: Eastern equine encephalitis
JE: Japanese encephalitis
LAC: LaCrosse encephalitis
MVE: Murray Valley encephalitis
POW: Powassan encephalitis

SLE: St. Louis encephalitis
TBE: Tick-borne encephalitis
WEE: Western equine encephalitis
WN: West Nile encephalitis
VEE: Venezuelan equine encephalitis

CDC
Centers for Disease Control
and Prevention

V. Resources



Many available resources may provide more in-depth information regarding potential health and safety concerns that may be associated with your field research. Please use the references in this section for further information on topics discussed in this guide.

On Campus Resources:

- Office of Environmental Health and Safety provide safety information and assists with hazard evaluations. For more information visit www.ehs.osu.edu or phone (614) 292-1284.
- Employee Health Services provides medical surveillance for OSU employees, and will answer occupational health-related questions. Employee Health can be reached at (614) 293-8146
- Office of International Affairs provides information about health and security requirements while traveling abroad. The Office of International Affairs can be reached at (614) 292-6101 or <http://oia.osu.edu/>
- OSU Rardin Family Practice Center offers OSU faculty and staff a travel/ immunization clinic. OSU Rardin Family Practice Center is located in the Northwood-High Building, 2231 North High Street. Appointments are necessary (614-239-2700).

Off Campus Resources:

- First Aid and CPR Training are available from a number of organizations, including The American Red Cross of Greater Columbus, located at 995 East Broad Street (614-253-2740) or <http://www.redcross.org/>
- Centers for Disease Control and Prevention (CDC) offers information to assist travelers and health care providers in selecting appropriate vaccines, medications and other measures necessary to prevent illness and injury during international travel: <http://www.cdc.gov/travel/>
 - Waterborne Diseases and Prevention: More information about water-borne diseases is available online from the CDC at <https://www.cdc.gov/healthywater/disease/az.html>
 - Hantavirus: The CDC has detailed information about Hantavirus available at <http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/generalinfoindex.htm>
- Medical: information about a variety of illnesses, including dehydration, carbon monoxide poisoning, sunburn, excessive heat, hypothermia, and high altitude sickness, can be found online at <http://my.webmd.com>
- Weather: More information on extreme weather and how to protect yourself, can be found from the National Weather Service at <https://www.weather.gov/>
- Hunting Seasons in U.S.: To get more information concerning hunting seasons and regulations, contact the U.S. Forest Service at (202) 205-8333 or <http://www.fs.fed.us/>.
- Poison Plants: More information, including photos, can be found at: <http://poisonivy.aesir.com/>
- Lyme disease: The American Lyme Disease Foundation provides information about the disease at <http://www.aldf.com/>

Tables courtesy of University of California, Berkeley