

Safety Guidelines for Field Researchers

Office of Environment, Health & Safety
University of California, Berkeley

Safety Guidelines for Field Researchers

Table of Contents

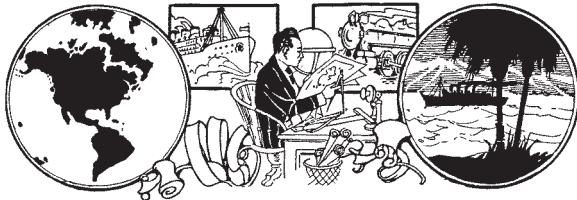
| | |
|---|-------------------|
| I. General Field Safety Guidelines. | 1 |
| II. Physical and Environmental Hazards | 5 |
| Table 1 Physical and Environmental Hazards Found Worldwide. | 5 |
| Table 2 Physical and Environmental Hazards Found in North America | 8 |
| Table 3 Physical and Environmental Hazards Found Internationally | 8 |
| III. Animals and Pests | 9 |
| Table 4 Animals and Pests Found Worldwide | 10 |
| Table 5 Animals and Pests Found in North America | 12 |
| Table 6 Animals and Pests Found Internationally | 15 |
| IV. Diseases | 18 |
| Table 7 Diseases Found Worldwide | 18 |
| Table 8 Diseases Found in North America. | 22 |
| Rodents. | 24 |
| Table 9 Diseases Found Internationally | 25 |
| V. Resources. | 28 |
| On Campus. | 28 |
| O Campus. | 29 |
| North America | 30 |
| International | 30 |
| Field Research Safety Plan | Center attachment |

I. General Field Safety Guidelines

Fieldwork is an important part of teaching and research at the University. This booklet is intended to help you prepare for health and safety problems you might encounter when fieldwork takes you off campus. For more specific information on fieldwork hazards and precautions, talk to your supervisor or contact the campus Office of Environment, Health & Safety (EH&S) at 642-3073 or the Occupational Health Clinic (OHC) at 642-6891.

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 *written plan* of your trip to leave with a responsible party at your group office.* Include the following:

Activities: General nature of your activities

Your itinerary: Locations; arrival and departure dates; names, addresses, and phone numbers of all fieldwork participants

Local contacts: Names of people at or near your fieldwork site who can reach you if necessary and who are familiar with your check-in and check-out arrangements. The local contact should also be informed of any allergies or other medical conditions of the field team members. If possible, each day fieldworkers should also inform someone (i.e., police, sheriff, motel employee, or local search and rescue personnel) about the daily fieldwork location and the approximate time of return. After each day's work, fieldworkers should notify the contact when they return. The local contact should be provided with the telephone numbers of people to call (group

* A blank form in the center of this booklet can assist you with your safety plan.

office, University contact) if the workers do not return or report in within a predetermined interval of the scheduled return time.

Home contact: The office contact should also have the name and phone number of family to contact in case the researcher is injured or taken ill. Field-workers should check in with their group office regularly and should advise the group office of any changes in schedule or points of contact.

Learn about potentially hazardous plants, animals, terrain, and weather conditions in the areas where you plan to work and complete a Field Research Risk Assessment Record. (Available in the back of this booklet or from the Office of Environment, Health & Safety web site, <http://www.ehs.berkeley.edu>. In addition, your supervisor/sponsor, other field-workers, or local residents and authorities, such as state and national park services personnel, may be able to provide you with helpful information.

If your trip involves travelling outside the country, you should contact the University Health Services International Travel Care Clinic to learn about the

required and recommended vaccinations for your location. Some countries require proof of vaccinations prior to entry. To allow enough time, please schedule your visit six to eight weeks prior to departure. For more information, please call the UHS International Travel Care Clinic (643-7177) or visit their web site at <http://www.uhs.berkeley.edu/students/medical/travel.shtml>.

Take a Cardiopulmonary Resuscitation (CPR) or First Aid class. Contact Cal Adventures (642-4000) 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). EH&S can recommend protective equipment depending on your activities.

Whenver possible, fieldwork activities should be performed in teams of at least two people. The “buddy” system is the safest way to work.

* Include an extra bottle in case you lose one.

Contact the Office of Risk Management (642-5141 or 643-9317) or visit them at <http://riskmanagement.berkeley.edu/> to obtain information about travel insurance and waivers.

Carry a photo identification with you at all times in case of accident or injury.

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

Medical Care and First Aid

Emergency Medical Care

The following guidelines apply to all off-campus activities that involve employees and students, including academic field trips, excursions, and field station operation.

1. A first aid kit must be maintained at all times during the activity or exercise (see information below).
2. At least one employee who is trained in first aid must be present when an infirmary, clinic, hospital, or

Emergency Medical Service response is more than five minutes from field activities.

3. At permanent University field stations, written arrangements must 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.
4. Each department has its own procedures for obtaining insurance coverage for emergency medical treatment. Field-workers should know what these are before they leave.

If a University employee suffers a job-related injury or illness, his or her supervisor must be notified within 24 hours and must fill out an Employer's Report of Occupational Injury or Illness form #5020 so that benefits can be determined. If the injury is "serious" (that is, any injury resulting in overnight hospitalization or any fatality), notify your campus contact immediately. The campus contact should call EH&S, who will report the serious injury to Cal/OSHA or the local equivalent agency.

First Aid Kits

First aid kits are required for all off-campus activities. Campus departments purchase and maintain first aid kits. Contact OHC for advice on the contents of a first aid kit. OHC can also give you advice if you need special equipment or medication. Kits and refills may be ordered from safety supply companies. EH&S can supply a list of vendors.



II. Physical and Environmental Hazards

Many general physical and environmental hazards exist in nearly every location worldwide. All field researchers, regardless of the work location, should read through table 1 to learn more about some general

physical and environmental hazards. If your research is in North America, please read table 2. If your research will take you out of North America, please read table 3 about international hazards.

Table 1 Physical and Environmental Hazards Found Worldwide

| Hazard | Location | Cause | Symptoms | First Aid | Prevention |
|--------------|-----------|---|--|--|--|
| Dehydration | Worldwide | Not enough 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 "natural" water sources | Gastrointestinal illness Flu-like symptoms | Drink clear liquids. Slowly introduce mild foods, such as 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 more than 3 minutes. |

Table 1 continued

| Hazard | Location | Cause | Symptoms | First Aid | Prevention |
|-----------------|--------------------------|--|--|--|---|
| 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 sunblock with sun protection factor (SPF) of 30. |
| Heat Exhaustion | Worldwide: hot climates | Prolonged physical exertion in a hot environment | 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. Take frequent rest breaks. |
| Heat Stroke | Worldwide: hot climates | Prolonged physical exertion in a hot environment | Exhaustion Light-headedness Bright red skin which is warm to the touch | 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 as soon as possible. | Dress in layers. Cover your extremities with warm hats, face mask, 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 to warm up. Drink warm liquids and seek medical attention as soon as possible. | Dress in layers. Wear appropriate clothing. Avoid getting damp from perspiration. |
| Carbon Monoxide | Worldwide | Running a vehicle or burning a fuel stove in an enclosed space | Severe headaches Disorientation Agitation Lethargy Stupor Coma | Remove the victim to fresh air immediately and perform CPR if needed. | 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. |
| High Altitude Illness | Worldwide: high altitudes | Decreased oxygen and increased breathing rate | Headache Nausea Weakness | Use supplemental oxygen and decrease altitude. | Allow your body to acclimatize by gaining elevation slowly. |

Table 2 Physical and 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 (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. Wash clothes and skin with soap and water after exposure. |

Table 3 Physical and Environmental Hazards Found Internationally

| Hazard | Location | Defensive 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 advisories (see Section V). |
| eft | 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 and Pests

Dangerous animals and other pests are present worldwide. General safety rules can help protect you from these hazards. All field researchers, regardless of the work location, should read through table 4 for some general guidelines to avoid unwanted animals and pests. If your research is in North America, please also read table 5. If your research will take you out of North America, please also read table 6 about international animals.

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

- 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 (e.g., woodpiles or crevices).
- Avoid contact with sick or dead animals.
- Wear clothes made of tightly woven materials and tuck pants into boots.
- Wear insect repellent.
- Minimize the amount of time you use lights after dark in your camp or work site because they may attract pests and animals.
- Use netting to keep pests away from food and people.
- Carry a first aid manual and kit with you on any excursion so you can treat bites or stings. If the pest is poisonous or if the bite does not appear to heal properly, seek medical attention immediately.
- Be aware of the appearance and habitat of likely pests, such as those described in the following pages.

Table 4**Animals and Pests Found Worldwide**

| Type | Location | Most Dangerous Species | Defensive Action | First Aid | Prevention |
|---------------------------|--|--|---|--|--|
| Sharks | Worldwide: Shores of oceans, including the U.S., Africa, Central and South America, Australia, and the 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. |
| Crocodiles and Alligators | Worldwide: Tropics and sub-tropics of North America, Australia, eastern China, and Africa | 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. |
| Rodents | Worldwide | Refer to Section IV: Diseases | 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. |

| | | | | | |
|---------------|---|--|--|---|--|
| Conenose Bugs | North and South America | May cause allergies in some people. Refer to Section IV: Diseases | | Use topical ointments to sooth itching. Take victim to the hospital in case of anaphylactic shock. | Use caution when working near nests and wood rat dens. Use extra caution when working near rock shelters. |
| Mosquitoes | Worldwide, especially wet areas conducive to breeding | Refer to Section IV: Diseases | | Use topical ointment to relieve itching. | Use insect repellent to deter mosquitoes. Don't leave standing pools of water. |

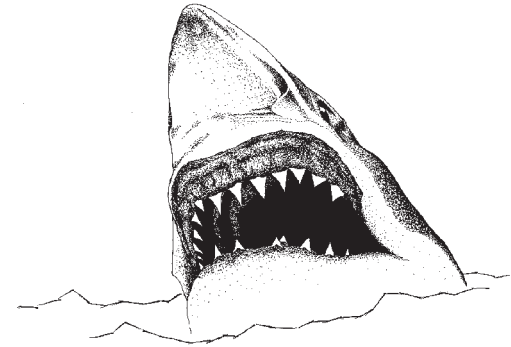
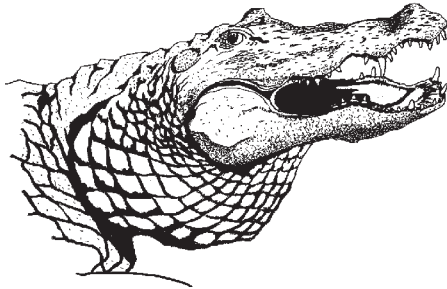


Table 5**Animals and Pests Found in North America**

| Type | Location | Most Dangerous Species | Defensive Action | First Aid | Prevention |
|----------------|---|---|--|--|--|
| Bears | North America | Black Bear (North America), Grizzly Bear (Alaska, western Canada, Pacific Northwest), Polar Bear (Arctic) | 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 bear cub. Wear a bell or other noisemaker. Stay away from the bear's food supply. |
| Mountain Lions | North America: western Canada, south into Wyoming, California, parts of Texas, Florida Everglades (few) | All | Do NOT run. Fight back. Protect your neck and head. Don't play dead. | Seek medical attention for serious injuries or wounds. | Do not corner it. Make yourself look larger (arms overhead). Use loud voice. row sticks or rocks. Carry pepper spray. |
| Snakes | North America | Rattlesnakes, Cottonmouths, Coral Snakes, 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. Apply a cold pack. Keep area immobilized at heart level. Take 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. |

| | | | | | |
|-------------|--|---|---|--|--|
| Spiders | North America | Black Widow and 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. Take victim to hospital (alert ahead if possible). | Use care around rock piles, logs, bark, outdoor privies, and old buildings. Shake out clothing and bedding before use. |
| Scorpions | North America, especially Mexico, Arizona, southeastern California, and Utah | All | Avoid contact with scorpions whenever possible. | Clean wound and put a cool pack on the area. Keep area immobilized at heart level. Use painkiller or antihistamine if desired. Take victim to hospital if he or she shows no signs of improvement. | Always shake out clothing and bedding before use. Avoid lumber piles and old tree stumps. |
| Bees, Wasps | North America | Bees, wasps, hornets, and yellow jackets, Africanized Killer Bees (southeastern U.S.) | 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 continued

| Type | Location | Most Dangerous Species | Defensive Action | First Aid | Prevention |
|-----------------|---------------|-------------------------------|---|---|---|
| Fleas and Ticks | North America | Refer to Section IV: Diseases | Avoid contact with animals or areas where fleas and ticks might be found. | Remove the flea or tick with tissue or tweezers and clean wound with antiseptic. Pay attention for signs of illness (see Section IV: Diseases) and seek medical attention if needed. | Wear clothing of tightly woven material. Tuck pants into boots. Stay on widest part of path. Drag cloth across campsite to check for fleas or ticks. |

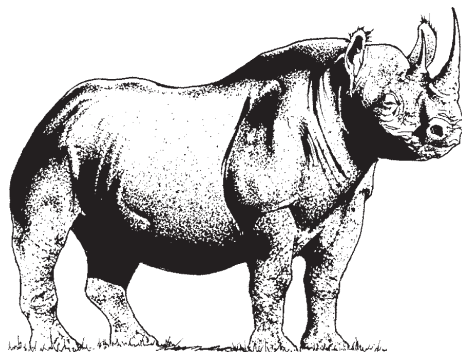
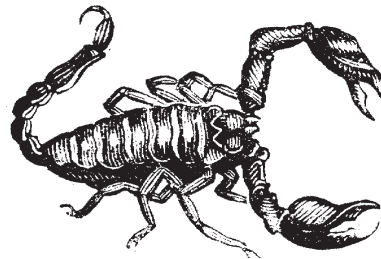


Table 6 **Animals and Pests Found Internationally**

| Type | Location | Most Dangerous Species | Defensive Action | First Aid | Prevention |
|---------------------------|---|---|--|--|--|
| Bears | Worldwide: Arctic, South America, Asia | Polar Bears (Greenland and northern Russia), Spectacled Bears (northern and western South America), Asiatic Black Bears (southern and eastern Asia) | 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 waste. Never feed or approach a bear, especially a cub. Stay away from the bear's food. |
| Lions | Africa and Asia | All | Do not provoke a lion. | Seek medical attention for serious injuries or wounds. | Stay inside the vehicle if travelling near lions. Do not camp near areas frequented by lions. |
| Other Large Land Dwellers | Africa, Asia | Hippos, African Elephant, Rhinos, and Buffalo (Africa); Asian Elephants and Bengal Tigers (Southeast Asia); Siberian Tigers (northern and eastern Asia) | Do not provoke these large animals. | Seek medical attention 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 lookout in open spaces. |

Table 6 continued

| Type | Location | Most Dangerous Species | Defensive Action | First Aid | Prevention |
|----------------|---------------------------------|--|---|--|---|
| Water Dwellers | Worldwide, especially Australia | Blue Ringed Octopus, Box Jellyfish, and Irukandji Jellyfish (Australia); Stonefish (worldwide) | Never touch an unidentified octopus or jellyfish. Avoid stepping on them. | Jellyfish sting: Use seawater to remove nematocysts. Pour vinegar on the wound. Seek medical attention immediately. Stonefish sting: Rinse in hot water (45°C or 113°F) 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 sandals in the water to avoid stepping on a stonefish. |



| | | | | | |
|-----------|---|--|--|---|---|
| Snakes | Worldwide | Russel's Viper and Indian Cobra (India); Tiger, Black, Brown and Sea Snakes (Australia); Egyptian Cobra, Pu Adder, and Saw Scaled Viper (Africa); Ferdelance (Central and South America) | 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 sparingly. Do NOT tourniquet. Keep area immobilized at heart level. Take 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. |
| Spiders | Worldwide | Funnel Web and Redback Spiders (Australia); Brazilian Wandering Spider, Brown Recluse, and Tarantula (South America) | Do not pick up or disturb a spider. | Clean wound and put a cool pack on the area. Keep area immobilized at heart level. Take victim to hospital (alert them first). 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, especially North Africa, the Middle East, South America, and India | All | Avoid contact with scorpions whenever possible. | Clean wound and put a cool pack on the area. Keep area immobilized at heart level. Use painkiller or antihistamine if desired. Take victim to hospital if he or she shows no signs of improvement. | Always shake out clothing and bedding before use. Avoid lumber piles and old tree stumps. |

IV. Diseases

Viruses, bacteria, fungi, and parasites cause diseases in nearly every location worldwide. Some diseases, which are carried or transmitted by an animal, are known as “vector-borne” diseases. Where appropriate, the scientific name of the disease organism, or vector, is included in italics in tables 7 and 8.

This guide is not intended to cover every health risk in every location, but it provides information about some common diseases. Always check with your health care

provider 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 table 7 to learn more about some general diseases that exist worldwide. If your research is in North America, please also read table 8. If your research will take you out of North America, please also read table 9.

Table 7 Diseases Found Worldwide

| Type | Location | Exposure Route | Symptoms | First Aid | Prevention |
|---|-----------------------------|-----------------------------|---------------------------------------|---|--|
| Food-borne Diseases: <i>Campylobacter</i> | Worldwide | Poultry Products | Diarrhea Gastrointestinal symptoms | Drink plenty of fluids. Seek medical attention if symptoms persist for longer than 3 days. | Always cook food thoroughly. |
| Food-borne Diseases: Cholera | Africa, Asia, Latin America | Contaminated food and water | Diarrhea Gastrointestinal symptoms | Drink plenty of fluids. Seek medical attention if symptoms persist for longer than 3 days. | 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. Seek medical attention if symptoms persist for longer than 3 days. | Always cook food thoroughly. Wash vegetables before consuming. 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. Seek medical attention if symptoms persist for longer than 3 days. | Obtain a vaccine. Consult with your doctor at least 1 month prior to departure. Always cook food thoroughly. Wash vegetables before consuming. Never drink water from an impure source. |
| Food-borne Diseases: Salmonella | Worldwide | Beef, poultry, milk, eggs, unwashed raw vegetables | Diarrhea Gastrointestinal symptoms | Drink plenty of fluids. Seek medical attention if symptoms persist for longer than 3 days. | 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. Seek medical attention if symptoms persist for longer than 3 days. | Obtain a vaccine. Consult with your doctor at least 1 month prior to departure. Always cook food thoroughly. Never drink water from an impure source. |

Table 7 continued

| Type | Location | Exposure Route | Symptoms | First Aid | Prevention |
|----------------|---|--|--|---|--|
| Histoplasmosis | Worldwide (especially Mississippi and Ohio River Valleys) | Inhalation of fungus from soil contaminated with bat or bird droppings <i>Histoplasma capsulatum</i> | Mild flu-like symptoms Occasionally can turn into 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. Keep surfaces wet to reduce dust. |
| Leptospirosis | Worldwide | Ingestion, swimming, or other activities in water that is contaminated with the <i>Leptospira</i> bacteria | Flu-like symptoms 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. |
| Plague | Worldwide | Infection from flea bite (Fleas are infected by rodents.) <i>Yersinia pestis</i> | Flu-like symptoms; nonspecific symptoms; 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. Wear gloves and wash hands frequently. |

| | | | | | |
|--------------------------------|-----------|---|---|---|--|
| Rabies (vaccine available) | Worldwide | Infection from bite of animal infected with <i>Lyssavirus</i> | Spasms Paralysis Fatal, without immediate treatment | See a doctor <i>IMMEDIATELY</i> if bitten by a rabies-carrying species (e.g. , bats, carnivores). | Obtain the vaccine series if you will be working with bats or other carnivores. Use extreme caution handling these animals. |
| Tetanus (vaccine available) | Worldwide | Infection occurs after a wound. <i>Tetanus bacillus</i> | Painful muscle contractions | See a doctor if you suspect tetanus. | Obtain a tetanus shot every 10 years. |
| Typhus Fever | Worldwide | Infection from bite of lice, fleas, ticks, or mites <i>Rickettsiae</i> species | Headache Fever Rash | See a doctor if you suspect typhus fever. Treatable with antibiotics | Wear repellents. Wear long sleeved shirts. Tuck pants into boots. |

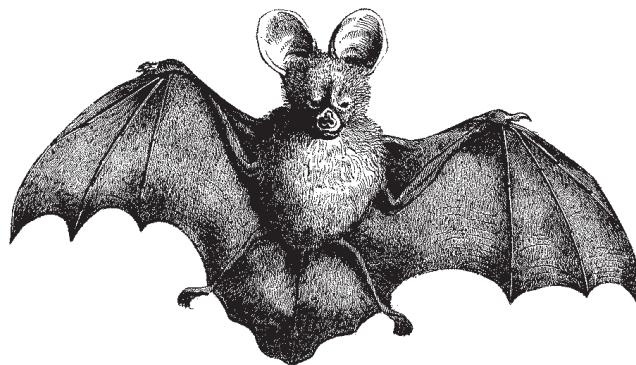


Table 8**Diseases Found in North America**

| Type | Location | Exposure Route | Symptoms | First Aid | Prevention |
|--------------------------------------|---|---|---|---|---|
| Coccidioidomycosis “Valley Fever” | North and South America: arid regions, Central Valley of California | Fungus is inhaled when soil is disturbed. <i>Coccidioides</i> | Flu-like symptoms Occasionally becomes severe lung disease | See a doctor if you suspect Valley Fever. | Use caution when in close contact with soil or dust and keep surfaces wet to reduce dust. African Americans, Filipinos, and immunocompromised are at greater risk than others. |
| Encephalitis | North and South America (St. Louis Encephalitis) and the U.S. (West Nile Virus) | Infection from bite of an infected mosquito | Mild: Fever and headache Severe: Headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, very occasionally, death | Seek medical attention immediately if you suspect encephalitis. | Use repellents. Wear long pants and long sleeved shirts. Avoid being bit by mosquitoes. Avoid areas of standing water where mosquitoes breed. |
| Lyme Disease | United States, Europe, and Asia | Infection through the bite of an infected tick <i>Borrelia burgdorferi</i> | Spreading rash Early: Flu-like symptoms Later: Arthritis and neurologic problems | See a doctor if you suspect Lyme Disease. | Avoid tick-infested areas. Wear long pants and long sleeved shirts. Use a 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 and long sleeved 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 to 5 weeks): Fatigue, fever, muscle aches, and sometimes headaches, dizziness, chills, and abdominal problems Late (4 to 10 days after early symptoms): 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 below for details on how to clean and dispose of 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 (<i>Neotoma fuscipes</i>) and other <i>Neotoma</i> species | Fever Headache Muscle aches Severe respiratory distress (occasionally) | Seek medical attention IMMEDIATELY if you suspect WWA. The likelihood of survival is greatly increased with early diagnosis and treatment. | Avoid contact with rodents, especially their feces. See next page for details on how to clean and dispose of a rodent-infected area. |

Proper Rodent Handling

Steps can be taken to reduce the risk of rodent-borne diseases. Most important: 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. Please refer to "Animals and Pests: General" for further tips on how to prevent rodent infestations.

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:

Dead Rodent: Using gloves, spray the dead rodent with a solution of 1.5 cups bleach to 1 gallon of water.

Rodent Feces: Don't sweep or vacuum rodent droppings. Spray the droppings first with a bleach solution (1.5 cups bleach to 1 gallon of water). Then wipe up the droppings. If possible, wet mop the area with the bleach solution.



Table 9**International Diseases**

| Type | Location | Exposure Route | Symptoms | First Aid | Prevention |
|----------------------------------|--|---|--|---|--|
| Dengue Fever | Africa, Southeast Asia and China, India, the Middle East, South and Central America, Australia and the Pacific Islands | Infection from the bite of an infected mosquito | Flu-like symptoms Rash Takes up to 1 month to recover. | See a doctor if you suspect Dengue Fever. | Wear long sleeved shirts and long pants. Use repellents. Use 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. | See a doctor 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. Use 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. | See a doctor if you suspect Yellow Fever. | Visit doctor at least 10 days before travel for vaccine. Wear long pants and long sleeved shirts. Use repellents Use a mosquito net. |

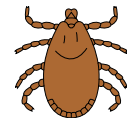
Table 9 continued

| Type | Location | Exposure Route | Symptoms | First Aid | Prevention |
|---------------------------|--|--|---|--|---|
| 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; especially <i>Neotoma</i> and <i>Peromyscus</i> 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 with their feces. See above for details on how to clean and dispose of a rodent infected area. |
| Schistomiasis | Brazil, Egypt, sub-Saharan Africa, southern China, the Philippines, and Southeast Asia | Transmitted by swimming in contaminated fresh water | 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. |

Other Diseases (Vector-Borne)

Many other vector-borne diseases may pose a problem when travelling out of the country. Always check with a physician to learn the specific threats in your location of study. Some other vector-borne diseases include:

- A. African Sleeping Sickness: carried by the tsetse fly in Africa
- B. Chagas Disease: transmitted by the Conenose bug in South America
- C. Encephalitis: carried by mosquitoes in Asia and eastern Russia
- D. Leishmaniasis: transmitted by sand flies in the tropics and subtropics
- E. Filariasis: carried by mosquitoes in the tropics
- F. 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 the United States. While risk of infection is generally low, it is important to be aware of them and take appropriate precautions to guard against diseases such as tuberculosis, HIV/AIDS, SARS, and viral hemorrhagic fevers. Always check with your health care provider to learn more about specific diseases that exist in the region where you will be conducting your research.



V.

Resources

Many available resources may provide more in-depth information regarding your research environment. Please use the references in this section for further information on topics discussed in this booklet.

On Campus

Office of Environment, Health & Safety: EH&S is available for hazard information and hazard evaluations. They can be reached at 642-3073 or on-line at <http://www.ehs.berkeley.edu>.

Occupational Health Clinic: The University Health Services (UHS) Occupational Health Clinic is available for medical exams and other health-related information. They can be reached at 642-6891 or on-line at <http://www.uhs.berkeley.edu/Facstaff/OccHealth>

Office of Risk Management: The Office of Risk Management is available to answer questions and assist with waivers and travel insurance. They can be reached at 642-5141 or 643-9317 or on-line at <http://fbs.berkeley.edu/RISK/>.

UHS International Travel Care Clinic: The travel clinic is available for immunizations and travel care advice. Please schedule your visit six to eight weeks prior to departure, if possible. The clinic can be reached at 643-7177, or visit their web site at <http://www.uhs.berkeley.edu/Students/medical/travel.shtml>.

Workers Compensation & Vocational Rehabilitation Office: The Worker's Compensation Office is available for questions about workers' compensation coverage and injury reports. They can be reached at 643-9316 or on-line at <http://www.uhs.berkeley.edu/Facstaff/WorkersComp/>.

O Campus

First Aid/CPR Training: First Aid and CPR training are available from a number of organizations,* including Fast Response, located in Berkeley. They can be reached at (510) 849-4009 or on-line at <http://www.fastresponse.org/>.

General: The Centers for Disease Control and Prevention (CDC) offers a web site that describes many topics related to travel, both domestic and international: <http://www.cdc.gov/travel/>.

Medical: Information about a variety of illnesses, including dehydration, carbon monoxide poisoning, sunburn, excessive heat, hypothermia, and high altitude sicknesses, can be found on-line at <http://my.webmd.com>.

Diseases: The CDC offers more detailed information about many diseases on their web site: <http://www.cdc.gov/travel/diseases.htm>.

The California Department of Health Services

offers information about infectious diseases and immunizations. Call (916) 445-4171 or go on-line at <http://www.dhs.ca.gov/ps/dc/dc/disb/disbindex.htm>.

The Alameda County** Public Health Department offers information on infectious diseases and immunizations. Call (510) 874-6192 or go on-line at <http://www.acphd.org/default.asp>.

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 water-borne diseases, the CDC provides information on-line at http://www.cdc.gov/ncidod/diseases/list_waterborne.htm.

*Many other companies offer CPR and First Aid training. Please look in the local yellow pages.

** Phone numbers of other county health departments can be found in local yellow page directories.

North America

Hunting Season: To get more information concerning hunting seasons and regulations, contact the U.S. Forest Service by phone at (202) 205-8333 or on-line 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/ncidod/diseases/hanta/hps/noframes/generalinfoindex.htm>.

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



Trip Safety Checklist

Obtain first aid kit and manual.

Check to make sure immunizations are current.

Check emergency medical care and health insurance.

Write fieldwork plan and file it at UC Berkeley home department and with local agency.

Assemble and check safety provisions.