Recommended Personal Protective Equipment (PPE) and Exposure Follow-Up Procedures for Field Research Activities (Southern California / Wildland Environments)

- Field research activities conducted in Southern California and wildland environments may involve exposure to biological, environmental, physical, and terrain-related hazards. Appropriate PPE should be selected based on the hazards identified during the field risk assessment, environmental conditions, type of activity being performed, and anticipated exposure potential.
- Personnel should inspect PPE before use, ensure proper fit, and receive appropriate training on the use, limitations, cleaning, storage, and replacement of PPE when applicable.
- In the event of an exposure, injury, bite, sting, rash, illness, or other field-related concern, personnel should promptly notify their supervisor and follow applicable emergency response, Occupational Health, Workers' Compensation, and incident reporting procedures.

Tetanus Review: *Field personnel should ensure their tetanus vaccination is current before participating in field work. Any puncture wound, animal bite/scratch, or wound contaminated with soil, dust, or saliva should trigger a tetanus vaccination review through Occupational Health or the treating medical provider.*

Hazard Area	Potential Risk	Recommended Prevention / Controls	Recommended PPE	Follow-Up if Exposure Occurs or Incident Occurs
Ticks	Tick bites; possible tick-borne illness	Stay on paths; avoid sitting in grass/brush; perform tick and buddy checks; shower/change clothes after field work	Long sleeves, long pants, light-colored clothing, pants tucked into socks/boots/gaiters, EPA-registered repellent, tick removal tool	Report tick bite; remove tick promptly; seek medical advice if rash, fever, fatigue, joint pain, or flu-like symptoms occur. Lyme Disease Prophylaxis After Tick Bite **Post-exposure antibiotics** In certain circumstances, a single dose of doxycycline after a tick bite in an area where Lyme disease is common may lower risk of Lyme disease. This must be done within a 72 hrs. window. Ask your healthcare provider if antibiotics after a tick bite are appropriate for you. ▪ Protect Yourself from Ticks Where You Work: ▪ CDPH- Vector -borne disease section: Ticks ▪ Prevent Tick Bites ▪ California Endemic Tick-Borne Diseases At-a-Glance ▪ Interactive Maps of Lyme Disease and Tick Surveillance in California
Snakes/ Rattlesnakes	Snake bite, venom exposure, tissue injury, swelling, medical emergency	Southern California field sites may contain rattlesnakes, especially in rocky areas, brush, tall grass, wood piles, and warm shaded areas. Personnel should remain alert when walking, climbing, kneeling, or handling	Snake gaiters, high-ankle boots, long pants, long sleeves, leather/work gloves when handling brush or debris,	If bitten: Move away from the snake immediately. Call 911 as soon as possible. Keep the person calm and limit movement. Keep the bitten extremity still and in a neutral or slightly lowered position. Remove rings, watches, jewelry, or tight clothing before swelling develops. Wash the wound gently with soap and water if available and cover with a clean dressing. Do **not** cut the wound, apply ice, apply suction, use a

		vegetation or debris. Avoid placing hands or feet where visibility is limited. Never reach blindly into brush, holes, rock crevices, logs, or under equipment/materials. Stay on established trails when possible. Step on top of logs or rocks first, then look before stepping down. Avoid tall grass, leaf piles, and dense brush where visibility is limited. Never touch, capture, harass, or attempt to kill snakes, including injured or apparently dead snakes. Snakes may still bite reflexively after death. Maintain a safe distance and allow snakes to move away naturally. Avoid wearing earbuds/headphones that reduce situational awareness. Field teams should identify the nearest emergency medical facility before beginning work and establish communication/check-in procedures for remote locations. Training should include rattlesnake awareness, habitat recognition, seasonal activity, and emergency response procedures. CDC and California agencies recommend wearing boots and long pants in snake habitat and using caution around rocks, wood piles, and brush.	communication device, first aid kit	tourniquet, apply electric shock, consume alcohol/caffeine, or attempt to suck out venom. Do not attempt to capture or transport the snake. A photo from a safe distance may help with identification, but treatment should not be delayed
				California Poison Control
				California Poison Control can help hospitals and the public with snake bite management 24/7:
				1-800-222-1222
				Their toxicologists often assist emergency physicians in determining:
				• whether antivenom is needed,
				• dosing,
				• monitoring,
				• and transfer recommendations.
				Antivenom is expensive, requires medical oversight, refrigeration/storage controls, monitoring for allergic reactions, and IV administration in a clinical setting.
				
				For best results, antivenom treatment should be given as soon as possible after the bite. It is usually given within four hours of a bite. Snake antivenom (often called antivenin) is not something individuals or field teams typically carry themselves in California. It is usually stocked and administered through hospitals, especially emergency departments that treat venomous snake bites.
				For rattlesnake bites in California:
				• The main antivenom used is typically CroFab (Crotalidae Polyvalent Immune Fab).
				• Some hospitals may also use newer antivenom products such as Anavip
				• Not every rattlesnake bite requires antivenom. Some bites are “dry bites,” meaning little or no venom was injected.
				Important California considerations
				In Southern California and remote field locations:
				• The most important thing is rapid access to emergency medical care.
				• Field plans should identify:
				  ○ nearest emergency department,
				  ○ helicopter/EMS access if remote,
				  ○ communication methods,
				  ○ estimated transport time.
				Some smaller hospitals may stabilize the patient and transfer them to a larger medical center with more toxicology resources if needed.
				
				▪ CDC – Outdoor Workers

				▪ Rattlesnake Safety ▪ State of California Human – Wildlife conflicts: Snakes ▪ California Poison Control
Poison Oak / Vegetation	Skin irritation, rash, allergic reaction, scratches	Train personnel to identify poison oak; avoid dense vegetation; avoid touching face/eyes; clean tools/boots/gloves after field work	Long sleeves, long pants, gloves, protective outer layer/coveralls, safety glasses, barrier cream if appropriate	Wash exposed skin ASAP; use cleansing wipes/soap; launder clothing separately; report worsening rash ▪ UC IPM Poison Oak ▪ CDC- Protecting Yourself from Poisonous Plants
Rodents / Hantavirus	Exposure to rodent urine, droppings, saliva, nesting material	Avoid disturbing nests/droppings; do not sweep/vacuum dry droppings; wet contaminated material with disinfectant; store food securely; follow biosafety procedures	Nitrile/disposable gloves, work gloves, eye protection, protective clothing/coveralls, respirator only (N-95) if required with clearance/fit testing and medical clearance	Report rodent bites, scratches, or suspected exposure; seek Occupational Health or Workers Compensation medical guidance. ▪ CDC- Hantavirus Prevention ▪ CDC - Clinician Brief: Hantavirus Pulmonary Syndrome (HPS) ▪ CDPH - Hantavirus Infection ▪ UCR - Hantavirus ▪ UCR – Spotlight on safety Hantavirus
Mosquitoes / Other Vectors	Insect bites and potential exposure to vector-borne diseases, including West Nile virus, St. Louis encephalitis, and other mosquito-associated illnesses. For Southern California field environments, risk may be higher in canyons, riparian areas, wetlands, irrigation channels, drainage areas, and shaded brush habitats. Additional concerns include increased mosquito activity at dawn and dusk, standing water that may support mosquito breeding, flea exposure near rodents or animal nesting areas, and the	Avoid standing water and mosquito breeding areas when possible. Be aware of ponds, drainage channels, irrigation areas, containers, wetlands, shaded vegetation, and other areas where mosquitoes may accumulate. Plan field work to minimize exposure during peak mosquito activity periods (typically dawn and dusk) when feasible. Use EPA-registered insect repellent according to label instructions. Consider permethrin-treated clothing when appropriate. Conduct routine checks for insect exposure during and after field work. Maintain awareness of rodents or animal nesting areas that may contribute to flea or vector exposure. Follow field hygiene practices and promptly report unusual insect activity or large mosquito concentrations.	Long sleeves, long pants, light-colored clothing, EPA-registered insect repellent, mosquito netting if applicable, gaiters/boots when working in dense vegetation	Report symptoms such as fever, rash, severe headache, body aches, fatigue, neurologic symptoms, or unusual illness following field work. Seek medical evaluation if symptoms develop after mosquito or vector exposure. ▪ CDC-Mosquito-Borne Diseases in Workers ▪ CDC - Preventing West Nile ▪ CDC - Preventing Mosquito Bites ▪ CDPH – West Nile Virus Information ▪ CDPH- Vector-Borne Disease Section ▪ California Mosquito and Vector Control Association

	need to report unusual vector activity or illness following field work.			
Heat / Sun Exposure	Exposure Heat illness, dehydration, heat exhaustion, heat stroke, sunburn, UV exposure, fatigue, dizziness, confusion, and impaired judgment during outdoor work activities. Risks may increase in Southern California field environments with high temperatures, direct sun exposure, limited shade, strenuous activity, heavy PPE use, or inadequate acclimatization	Monitor weather conditions, heat index, and forecasted temperatures before and during field activities. Schedule strenuous work during cooler parts of the day when feasible. Encourage frequent hydration and provide access to cool drinking water. Utilize shade structures, shaded rest areas, and cool-down breaks. Encourage personnel to report symptoms early and use a buddy system during high heat conditions. Allow time for acclimatization, especially during heat waves or when personnel are returning to outdoor work after time away. Avoid excessive exertion during peak heat conditions and monitor personnel for signs of heat illness. Follow Cal/OSHA Heat Illness Prevention requirements, including water, rest, shade, training, emergency communication procedures, and high-heat monitoring when applicable	Wide-brim hat, sunscreen, UV-protective sunglasses, breathable long sleeves, lightweight/light-colored clothing, cooling towels, hydration supplies	Stop work immediately if symptoms develop. Move the person to a cool or shaded area, loosen clothing, and provide cool water if the person is alert and able to drink safely. Cool the person using available methods such as shade, cool towels, or cooling packs. Seek emergency medical care immediately for confusion, fainting, altered mental status, severe weakness, vomiting, seizures, or suspected heat stroke. Personnel should promptly report symptoms such as dizziness, headache, nausea, excessive fatigue, muscle cramps, or confusion. ▪ CDPH – Extreme Heat safety ▪ §3395. Heat Illness Prevention in Outdoor Places of Employment.
Uneven Terrain / Falls	Slips, trips, falls, sprains, strains, fractures, head injuries, musculoskeletal injuries, fatigue-related incidents, and reduced mobility associated with uneven ground, loose rocks, steep slopes, wet surfaces, erosion areas, dense vegetation, poor visibility, or unstable footing commonly encountered in	Use established paths and designated access routes when feasible. Maintain situational awareness and visually assess terrain before walking, climbing, or descending slopes. Avoid rushing, running, or carrying loads that obstruct visibility. Use caution around loose rocks, wet surfaces, erosion areas, creek beds, unstable soil, or hidden holes obscured by vegetation. Implement a buddy system for difficult or remote terrain and maintain communication during field activities. Schedule work during daylight hours when possible and avoid high-risk terrain during adverse weather conditions. Ensure personnel are physically capable of assigned	High-ankle boots with appropriate traction, trekking poles, gloves, knee pads if kneeling, long pants, weather-appropriate clothing, headlamp/flashlight if low-light conditions may occur	Report injuries promptly and provide first aid as appropriate. Seek medical evaluation for head injury, loss of consciousness, severe pain, swelling, suspected fracture, inability to bear weight, dizziness, or persistent symptoms. Emergency medical services may be needed for remote or inaccessible locations. Personnel should also report near-miss incidents, unstable terrain conditions, or environmental hazards identified during field activities.

	Southern California field environments, canyons, riparian areas, and wildland terrain	field activities and trained on field safety, situational awareness, and emergency response procedures. Take breaks as needed to reduce fatigue and loss of concentration.		
Dust / Airborne Particulates	Respiratory irritation, allergen exposure, eye irritation, contaminated dust exposure, asthma exacerbation, inhalation of biological or environmental particulates, reduced visibility, and potential exposure to soil, animal allergens, mold, dried vegetation, rodent-contaminated dust, or other airborne materials commonly encountered during outdoor field work, trail activities, excavation, vegetation disturbance, or dry/windy conditions	Avoid unnecessarily disturbing dust or dry debris when possible. Wet down dusty materials or surfaces when appropriate and safe to do so. Limit time spent in heavily dusty areas and avoid working directly downwind of airborne particulates when feasible. Monitor environmental conditions such as wind, dry soil, smoke, or wildfire-related air quality concerns. Maintain good housekeeping and proper handling procedures during field sampling or vegetation disturbance activities. Personnel with asthma, allergies, or respiratory conditions should notify Occupational Health or supervisors if accommodations or additional controls may be needed. Evaluate the need for Industrial Hygiene (IH) or Occupational Health (OH) review when work may involve significant airborne particulate exposure, allergen exposure, mold, rodent contamination, smoke, or other respiratory hazards. Respiratory protection should only be used when required under an approved respiratory protection program, including medical clearance, fit testing, and training as applicable.	Safety glasses or goggles, gloves, long sleeves, N95 or other approved respirator if required and medically cleared, protective clothing when appropriate	Report symptoms such as coughing, wheezing, shortness of breath, fever, chest tightness, dizziness, fatigue, eye irritation, allergic reactions, or breathing difficulty following exposure. Seek medical evaluation for persistent or worsening respiratory symptoms, asthma exacerbation, or suspected exposure to rodent-contaminated dust or biological material. Personnel should also report significant rodent activity, air quality concerns, or environmental conditions that may require additional controls or evaluation. Deer mice can carry hantavirus, and field work in areas with rodent droppings, urine, saliva, or nesting material may create a risk of exposure if contaminated dust becomes airborne and is inhaled. ▪ CDC- Hantavirus Prevention ▪ CDC- How to clean up after Rodents ▪ CDC - Clinician Brief: Hantavirus Pulmonary Syndrome (HPS) ▪ CDPH - Hantavirus Infection
Biological Sampling / Specimen Handling	Contact with biological material, animal tissue, blood, saliva, urine, feces, contaminated soil, environmental samples, or other potentially infectious	Follow approved field biosafety procedures, protocols, and any applicable risk assessment requirements. Avoid eating, drinking, applying cosmetics, or touching the face while handling biological materials. Use hand hygiene before and after sample handling and after removing gloves. Handle	Nitrile/disposable gloves, work gloves as needed, eye protection, protective clothing or lab coat/coveralls, face shield if splash risk exists, respiratory	Report any exposure, bite, scratch, splash, sharps injury, contamination, or breach in containment promptly. Wash affected skin with soap and water; flush eyes or mucous membranes with water if exposed. Seek Occupational Health guidance and medical evaluation as appropriate. Document the exposure and follow applicable incident reporting, Workers' Compensation, biosafety, and post-exposure procedures.

	materials. Potential risks include bites, scratches, splashes, skin or mucous membrane exposure, contamination of clothing/equipment, allergic reactions, zoonotic disease exposure, and improper sample transport or disposal.	specimens carefully to prevent spills, splashes, sharps injuries, bites, scratches, or contamination. Use leak-proof, labeled, and appropriate secondary containment for sample packaging and transport. Keep biological materials separate from food, personal items, and clean equipment. Decontaminate reusable tools, work surfaces, and equipment after use. Dispose of contaminated materials according to approved procedures. Ensure personnel are trained on specimen handling, exposure response, PPE use, and reporting requirements before field work begins.	protection only if required and medically cleared	
Chemical Use / Disinfectants	Skin or eye irritation, chemical burns, inhalation exposure, respiratory irritation, allergic reaction, improper chemical mixing, splash exposure, spill exposure, or exposure from mislabeled/unlabeled containers. Risk may increase when disinfectants, cleaners, preservatives, or field chemicals are used in enclosed areas, poorly ventilated locations, or under field conditions.	Review the Safety Data Sheet (SDS) before use and follow manufacturer instructions for dilution, application, contact time, storage, and disposal. Use only approved chemicals for the task. Do not mix incompatible chemicals, especially bleach with ammonia, acids, or other cleaners. Label all secondary containers. Use chemicals in well-ventilated areas when possible and avoid breathing vapors, mists, or aerosols. Keep chemicals away from food, drinking water, personal items, and biological samples unless required by protocol. Transport chemicals in secure, labeled, leak-resistant containers with secondary containment as appropriate. Ensure spill supplies are available when needed. Personnel should be trained on chemical hazards, SDS access, proper PPE, spill response, and exposure reporting.	Nitrile or chemical-resistant gloves appropriate for the chemical, safety glasses or goggles, protective clothing or lab coat/coveralls, closed-toe shoes, face shield if splash risk exists, respirator only if required and medically cleared	If skin or eye exposure occurs, immediately flush the affected area with water for the recommended duration based on SDS guidance. Remove contaminated clothing if needed. Report the exposure promptly. Seek medical evaluation for burns, persistent irritation, breathing difficulty, dizziness, nausea, allergic reaction, or other symptoms. For inhalation exposure, move the person to fresh air and seek medical attention if symptoms occur. Follow applicable incident reporting, Workers' Compensation, and Occupational Health procedures.
Cuts, punctures, animal bites/scratches,	Risk of tetanus infection, wound infection, cellulitis, bacterial	Use caution when handling tools, vegetation, wire, traps, rocks, debris, or animals. Avoid direct contact with sharp objects or contaminated materials when possible.	Gloves, long sleeves, long pants, sturdy boots, eye protection if debris/splash risk exists	Clean the wound with soap and water, report the injury, and seek medical evaluation. Tetanus vaccination status should be reviewed every 10 years, especially for dirty wounds, puncture wounds, animal bites, or wounds contaminated with soil, dust, or saliva.

or soil-contaminated wounds	contamination, soft tissue injury, or zoonotic disease exposure	Maintain good hand hygiene and promptly clean all cuts or abrasions. Ensure field first aid supplies are available. Personnel should review and maintain current tetanus vaccination status prior to field work. Report all bites, scratches, punctures, or contaminated wounds promptly.		A booster may be recommended depending on vaccination history and wound type. ▪ CDC – Tetanus ▪ Clinical Guidance for Wound Management to Prevent Tetanus
Mountain Lions / Wildlife Encounters	Potential wildlife encounter, scratches, bites, traumatic injury, panic-related falls, or defensive/aggressive animal behavior during field activities in remote, canyon, riparian, brushy, or wildland environments. Risk may increase during dawn/dusk hours, in areas with dense vegetation, near deer activity, or in remote locations with limited visibility or limited human activity.	Maintain situational awareness and avoid working alone in remote wildlife habitat when possible. Use a buddy system and maintain communication during field activities. Avoid hiking or conducting field work alone during dawn, dusk, or nighttime hours when wildlife activity may increase. Stay on established trails when feasible and avoid dense brush, animal carcasses, or areas with fresh wildlife tracks/scat. Do not approach, feed, corner, or attempt to interact with wildlife. Keep children and pets close when applicable. If a mountain lion is observed, remain calm, do not run, maintain eye contact, make yourself appear larger, make noise, slowly back away, and provide the animal an opportunity to leave. If attacked, fight back aggressively and protect the head and neck area. Field teams should identify emergency communication methods, nearest emergency medical facilities, and check-in/check-out procedures before beginning work in remote areas. California Department of Fish and Wildlife (CDFW) guidance recommends maintaining awareness in mountain lion habitat and avoiding isolated activities in high-risk areas.	High-ankle boots, long pants, gloves when handling vegetation or debris, communication device, first aid kit, flashlight/headlamp if low-light conditions may occur.	Report wildlife encounters, aggressive behavior, bites, scratches, or near-miss incidents promptly. Seek emergency medical evaluation for any bite, scratch, traumatic injury, or suspected wildlife attack. Notify supervisors and follow applicable emergency response, Occupational Health, Workers' Compensation, and incident reporting procedures. In remote locations, activate emergency communication procedures and contact 911 as appropriate. ▪ CDC – Outdoor Workers ▪ California Department of Fish and Wildlife – Mountain Lion Safety ▪ National Park Service – Mountain Lion Safety ▪ California Poison Control
Bees / Wasps / Stinging Insects	Bee or wasp stings, allergic reactions, localized swelling, pain, anaphylaxis, distraction-related injuries, falls, or multiple stings during outdoor field activities.	Maintain situational awareness when working near vegetation, flowering plants, trees, wood piles, structures, or areas with visible insect activity. Avoid disturbing nests, hives, burrows, or swarms. Inspect work areas, equipment, and vehicles before use when feasible. Avoid wearing heavily scented lotions, perfumes, or strongly scented	Long sleeves, long pants, gloves when handling vegetation or debris, closed-toe boots, light-colored clothing when feasible, communication device, personal emergency medication	Remove stinger promptly if present by scraping the area with a firm edge when feasible. Wash the area and apply cold compresses as appropriate. Monitor for allergic reaction symptoms such as difficulty breathing, facial/throat swelling, widespread hives, dizziness, vomiting, or loss of consciousness. Call 911 immediately for signs of anaphylaxis or severe reaction. Personnel with prescribed epinephrine auto-injectors should use them according to medical guidance. Report stings, allergic reactions, nests/swarm activity, or significant insect hazards through applicable reporting procedures.

	Risk may increase in flowering vegetation, brushy areas, near nests/hives, tree cavities, equipment storage areas, rock crevices, or during warm weather conditions commonly encountered in Southern California field environments.	products that may attract insects. Use caution when eating or drinking outdoors, especially with open beverage containers. Personnel with known sting allergies should notify supervisors before field work and discuss emergency planning as appropriate. Field teams should establish communication procedures and know the location of the nearest emergency medical facility. If bees or wasps become aggressive, calmly and quickly leave the area without swatting aggressively or disturbing the insects further.	(e.g., epinephrine auto-injector) if prescribed	▪ UC Bee and Wasp Stings ▪ CDC – Outdoor Workers
Spiders / Spider Bites	Spider bites, localized pain or swelling, allergic reaction, skin irritation, secondary infection, or anxiety-related injury during field work activities. Risk may increase in areas with wood piles, rock crevices, debris, storage areas, equipment, dense vegetation, abandoned structures, or undisturbed materials where spiders may shelter. Certain spiders found in California, including black widow spiders, may cause more significant symptoms requiring medical evaluation.	Maintain situational awareness when working around rocks, vegetation, equipment, wood piles, stored materials, crawl spaces, sheds, or enclosed areas. Avoid placing hands into areas that cannot be clearly seen. Use caution when moving rocks, debris, boxes, tarps, traps, or stored equipment. Shake out gloves, boots, clothing, sleeping bags, and field gear before use when appropriate. Maintain good housekeeping and reduce clutter or debris accumulation in work and storage areas when feasible. Avoid direct handling of spiders. Personnel should be trained to report unusual bites, significant swelling, or systemic symptoms following field work.	Gloves, long sleeves, long pants, high-ankle boots, protective clothing as appropriate, flashlight/headlamp for low-light areas	Clean the affected area with soap and water and monitor for pain, swelling, redness, muscle cramping, fever, dizziness, or worsening symptoms. Apply a cold compress if appropriate. Seek medical evaluation for severe pain, spreading redness, allergic reactions, muscle cramps, difficulty breathing, or suspected black widow spider bites. Report bites, infestations, or significant spider activity through applicable reporting procedures. ▪ CDC - Venomous Spiders at Work ▪ California Poison Control – Spider Bites

Field Research Safety Controls – Southern California / Wildland Areas

1. Pre-Field Planning

Field Safety Plan

Should include:

- Site location/maps/GPS
- Expected hazards
- Emergency procedures
- Nearest hospital/urgent care
- Communication plan
- Weather review
- Evacuation procedures
- Vehicle information
- Participant roster
- Check-in/check-out procedures

Risk Assessment / JSA

Evaluate:

- Biological hazards
- Terrain
- Heat stress
- Wildlife
- Allergens
- Chemical use
- Water hazards
- Vehicle/travel risks
- Remote work concerns

Supervisor/PI Review

- Review hazards before field deployment
- Verify training completion
- Confirm PPE availability
- Confirm emergency equipment availability

2. Environmental & Biological Hazards Tick Prevention

- Long sleeves/pants
- Light-colored clothing
- Pants tucked into socks/gaiters
- Tick repellent (EPA-approved)
- Tick checks after field work
- Buddy checks

- Education on Lyme/tick-borne diseases

Snake Safety

- Snake gaiters
- High ankle boots
- Avoid placing hands/feet blindly
- Maintain visual awareness
- No reaching into brush/rock crevices
- Maintain distance from snakes
- Training on rattlesnake behavior
- Emergency response plan for bites

Poison Oak / Vegetation

- Identification training
- Protective clothing
- Wash stations/wipes
- Decontamination procedures

Rodent / Hantavirus Concerns

- Avoid aerosolizing rodent droppings
- Respiratory protection if disturbing contaminated material
- Hand hygiene
- Proper specimen handling

Mosquito / Vector-Borne Disease Prevention

- Insect repellent
- Standing water awareness
- Long sleeves
- Mosquito netting if applicable

3. Heat Illness Prevention

Southern California field work can create major heat hazards.

Heat Illness Controls

- Water availability
- Electrolyte replacement
- Shade/rest periods
- Acclimatization procedures
- Work/rest schedules
- Heat index monitoring
- Buddy system
- Heat illness training

Symptoms Training

Workers should recognize:

- Dizziness
- Confusion
- Weakness
- Headache
- Nausea
- Lack of sweating
- Heat cramps

4. Terrain & Physical Hazards

Hiking/Remote Terrain

- Proper footwear
- Trekking poles if needed
- Route planning
- Avoid solo work
- Fall hazard awareness
- Slip/trip prevention

Vehicle Safety

- Off-road vehicle procedures
- Defensive driving
- Emergency roadside supplies
- Fuel planning
- Tire inspection
- GPS/navigation tools

5. Communication & Emergency Response Communication Systems

Depending on remoteness:

- Cell phones
- Satellite phones
- Garmin inReach/SPOT devices
- Radios
- Emergency beacons

Check-In Procedures

- Scheduled check-ins
- Estimated return times
- Emergency escalation procedures

Emergency Information

Field personnel should know:

- Closest emergency care location
- GPS coordinates
- Emergency contacts
- Evacuation route

6. Medical & Occupational Health

Occupational Health Review

Consider:

- Respirator clearance
- Allergies/asthma history
- Immunization review
- Physical limitations
- Travel medicine needs

Vaccinations (depending on activity)

Possible review:

- Tetanus
- Rabies
- Hepatitis A/B
- Travel vaccines
- Other regional concerns

Medical Supplies

Field kits may include:

- First aid kit
- Tick removal tools
- Snake bite response guidance
- Epinephrine (if prescribed)
- Emergency medications
- Cooling supplies

7. Training Requirements Recommended Training Topics

- Field safety awareness
- Heat illness prevention
- Wildlife awareness
- Tick/snake identification
- Defensive driving
- First aid/CPR
- Bloodborne pathogens (if applicable)
- Communication procedures
- Emergency response

- Working alone procedures

8. Administrative Controls Field Work Restrictions

Possible controls:

- No solo field work
- Daylight-only work
- Weather restrictions
- Fire weather restrictions
- Minimum staffing requirements

Documentation

Maintain:

- Training records
- Field rosters
- Vehicle logs
- Incident reporting procedures
- Exposure documentation

9. PPE Recommendations Common Field PPE

☐ High ankle boots
☐ Snake gaiters
☐ Long sleeves/pants
☐ Sun protection hat
☐ Safety glasses
☐ Gloves
☐ Respiratory protection (if applicable)
☐ High visibility vest
☐ Sunscreen
☐ Insect repellent

10. Wildfire & Air Quality Considerations

Southern California field sites often require:

- Fire weather monitoring
- AQI review
- Smoke exposure procedures
- Evacuation readiness
- Red Flag warning awareness

Additional Items You Could Add to a Field Safety Plan or Investigation Form

Field Safety Controls Checklist

☐ Field Safety Plan completed
☐ Emergency contacts reviewed
☐ GPS/location shared
☐ Communication device available
☐ Tick prevention measures reviewed
☐ Heat illness prevention reviewed
☐ Wildlife hazards discussed
☐ First aid kit available
☐ Vehicle inspected
☐ PPE provided
☐ Buddy system implemented
☐ Check-in/check-out established
☐ Fire weather conditions reviewed
☐ Air quality conditions reviewed
☐ Nearest medical facility identified

For university research programs, these controls often intersect with:

- Occupational Health,
- EH&S,
- IACUC/animal research oversight,
- travel programs,
- and Cal/OSHA obligations for outdoor work and hazard assessment.

Environmental & Biological Hazards for Field Research

Field research in Southern California areas such as Weir Canyon may involve exposure to ticks, snakes, poison oak, rodents, insects, vegetation, uneven terrain, and other outdoor hazards. Personnel should review these hazards before field work begins and use appropriate prevention measures.

Tick Prevention

Ticks may be present in grassy, brushy, or wooded areas. Tick bites can transmit diseases, so prevention and early removal are important.

Recommended controls include:

- Wear long sleeves and long pants when working in grass, brush, or vegetation.
- Wear light-colored clothing so ticks are easier to see.
- Tuck pants into socks, boots, or gaiters to reduce skin access.
- Use an EPA-registered insect repellent according to the product label.
- Avoid sitting directly on grass, leaf litter, logs, or brush.
- Stay on established paths when possible.
- Perform tick checks during breaks and after leaving the field.
- Check common attachment areas, including ankles, waistline, underarms, behind knees, scalp, and behind ears.
- Use a buddy check when appropriate, especially after work in dense vegetation.

- Shower and change clothes after field work when possible.
- Place field clothing in a dryer on high heat when feasible to help kill ticks.
- Report tick bites promptly through the appropriate incident reporting process.
- Seek medical advice if a rash, fever, fatigue, joint pain, or flu-like symptoms develop after a tick bite.

Snake Safety

Southern California field sites may contain rattlesnakes or other snakes. Most bites occur when snakes are stepped on, handled, or surprised.

Recommended controls include:

- Wear snake gaiters when working in brushy, rocky, grassy, or known snake habitat.
- Wear sturdy high-ankle boots.
- Stay alert and visually scan the ground before stepping.
- Avoid placing hands or feet where visibility is limited.
- Do not reach blindly into brush, holes, rock piles, wood piles, or under equipment.
- Step on top of logs or rocks first, then look before stepping down on the other side.
- Do not attempt to touch, move, capture, or kill snakes.
- Maintain a safe distance if a snake is observed.
- Back away slowly and give the snake room to leave.
- Avoid wearing earbuds or headphones that reduce awareness of warning sounds.
- Ensure field personnel know what to do in the event of a snake bite.
- Identify the nearest emergency medical facility before field work begins.

If a snake bite occurs:

- Move the person away from the snake.
- Call 911 immediately.
- Keep the person calm and still.
- Remove rings, watches, or tight clothing near the bite area.
- Do not cut the wound.
- Do not apply ice.
- Do not use a tourniquet.
- Do not attempt to suck out venom.
- Do not delay medical care.

Poison Oak / Vegetation Hazards

Poison oak and other irritating plants are common in many Southern California field areas. Contact can cause skin irritation, rash, itching, and secondary infection if scratched.

Recommended controls include:

- Train field personnel to identify poison oak in different seasons.
- Avoid walking through dense vegetation when possible.
- Wear long pants, long sleeves, gloves, and protective outer layers.
- Avoid touching the face, eyes, or exposed skin with contaminated gloves or clothing.
- Use barrier creams when appropriate.
- Wash exposed skin as soon as possible after potential contact.

- Use poison oak cleansing wipes or soap designed to remove plant oils.
- Launder contaminated clothing separately.
- Clean tools, boots, gloves, and equipment after field work.
- Do not burn poison oak or suspected contaminated vegetation.
- Report significant skin reactions or worsening rash.

Rodent / Hantavirus Concerns

Rodents and their droppings may be present in field sites, abandoned structures, storage areas, sheds, cabins, or research areas. Hantavirus and other diseases may be associated with rodent urine, droppings, saliva, or nesting material.

Recommended controls include:

- Avoid disturbing rodent nests, droppings, or contaminated materials.
- Do not sweep or vacuum dry rodent droppings, as this may aerosolize contaminated particles.
- Wet contaminated material with an appropriate disinfectant before cleanup.
- Use gloves when handling potentially contaminated materials.
- Wash hands thoroughly after field work or specimen handling.
- Avoid eating, drinking, or touching the face in contaminated areas.
- Store food securely to avoid attracting rodents.
- Use respiratory protection only when required and after
- proper medical clearance, training, and fit testing.
- Follow established biosafety or field safety procedures for specimen collection.
- Report rodent bites, scratches, or suspected exposure.

Mosquito / Vector-Borne Disease Prevention

Mosquitoes and other biting insects may be present near water, vegetation, shaded areas, or during certain seasons. Bites can cause irritation and may transmit disease.

Recommended controls include:

- Use EPA-registered insect repellent according to label directions.
- Wear long sleeves and long pants.
- Avoid standing water when possible.
- Be aware of ponds, drainage areas, buckets, containers, or other water sources that may support mosquito breeding.
- Use mosquito netting when working in high-exposure
- areas or during overnight field work.
- Plan work during lower mosquito activity periods when feasible.
- Report unusual symptoms after field work, including fever, rash, headache, body aches, or severe fatigue.

General Field Hygiene and Decontamination

- Wash hands before eating, drinking, or leaving the field.
- Keep food and drinks away from contaminated areas.
- Do not share PPE without cleaning or disinfecting when appropriate.
- Inspect clothing, boots, and gear before leaving the field site.
- Clean reusable equipment after use.
- Remove contaminated clothing carefully to avoid spreading allergens, insects, or biological material.

- Report exposures, bites, rashes, or symptoms promptly.

Recommended Field PPE

Depending on the site and task, field personnel may need:

☐ Long pants
☐ Long-sleeved shirt
☐ High-ankle boots
☐ Snake gaiters
☐ Gloves
☐ Safety glasses or sunglasses
☐ Hat/sun protection
☐ Insect repellent
☐ Sunscreen
☐ Tick removal tool
☐ First aid kit
☐ Communication device
☐ Respiratory protection, if required and cleared