

GENERAL FIELD SAFETY FOR ALL EMPLOYEES

Purpose This RRES Environmental Services (ES) business line document provides information to all environmental group employees who will be working outdoors regularly. Periodic retraining to this document may be required by the group leader or a project leader, especially when information is added or updated. Certain procedures require periodic refresher review of this document.


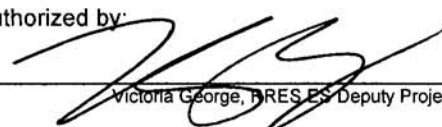
Scope This document applies to members of the four environmental groups (SWRC, WQH, MAQ, ECO) in the Environmental Services business line of RRES Division doing work that meets the definition of field work. This procedure describes the general hazards associated with field work that does not require an IWD (no hands-on work) and can be referenced from appropriate IWDs and procedures for hands-on work. This procedure does not apply to those being escorted on field trips provided the escort is trained.

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Hazard Control Plan The hazard evaluation associated with this work is documented in Attachment 1: Initial risk = **medium**. Residual risk = **low**. Work permits required: none. First authorization review date is one year from manager signature below.

Signatures

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General information about this document

Attachments This document has the following attachments:

Number	Attachment Title	No. of pages
1	Hazard Control Plan for Field Work	3

History of revision This table lists the revision history and effective dates of this document.

Revision	Date	Description Of Changes
0	8/04	New document to address common field hazards and procedures in all four environmental groups.

Who requires training to this document? The following personnel require training to this document:

- All ES business line members who perform work outdoors (see definition of field work)

Annual retraining is required.

Training method The training method for this document is “**self-study**” (reading) and is documented in accordance with employee’s group’s training procedure.

Prerequisites In addition to training to this document, the following training is also required:

- First Aid
- Cardiopulmonary Resuscitation (CPR) (if two or more people in a field team, required of at least one field team member)
- Fire extinguisher and fire watch training (recommended; supervisor’s discretion)

Definition Field Work (AR 15-1): The performance of Laboratory-related activities in areas that are removed or isolated from an established base of operations (that is, where emergency support and medical assistance are not readily available).

Field work notification requirements

General working alone policy

The Division prefers two people to travel together to perform any field work (e.g., collecting field samples). However, it is acceptable for one person to perform such field work unless required by the specific procedure (see the specific procedure for that work). In either case, ensure you have a **cellular phone** or **radio and pager** with you. (Remember that Lab-owned phones must have the batteries removed in security areas – thus the requirement for a pager also.) See [AR 1-8](#), Working Alone, for other specific requirements about working alone.

WQH-specific requirement

Two people are required for field work in canyon bottoms during inclement weather conditions or due to any other conditions that may pose increased risk of incident as determined by the team leader. It is acceptable for one person to perform the listed field work below, provided that the enhanced radio communication protocol is followed (refer to RRES-WQH-SOP-004, Radio and Cellular Phone Use).

- Data retrieval from certain gaging stations as specified in RRES-WQH-SOP-009, Operation of Stream Gaging Stations and Collection of Storm Water Runoff Samples.
 - Transducer data retrieval.
 - Spill response or other EM&R required response by RRES-WQH trained responders (refer to RRES-WQH-SOP-007, Spill Investigations).
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ECO-specific requirement

Two people are required for all field work unless the field work is closer than 150 feet to the vehicle on an established road.

SWRC-specific requirement

SWRC personnel will not work alone in the field. Personnel may travel to a site alone but work will be performed with another person from the facility.

Leaving LA County

When leaving Los Alamos County (except for the highway that is west and south of the “Y”), you are considered to be on travel and you must notify your group office.

Work in areas outside LA County

Field work in areas outside LANL must have any required research or access permits from the appropriate outside land owner (e.g. US Forest Service). Ensure you have the required communication type for the land owner (e.g., Forest Service radios in the Jemez mountains). This ensures communication in areas where cell phones may not work.

Field work notification requirements, continued

- Logging out** It is required that someone in the group know where personnel are working. When departing for field work (even with more than one person), do the following:
- Check out radios or cell phones from the group, as needed.
 - Notify the group or a responsible individual (point of contact) in the group who will a) be at work past your planned return time and b) will follow up when you are past your planned return time.
 - If your group uses a group or team sign-out board, include all communication forms and numbers, point of contact person name, time expected back, and locations you will be working.

Indicate the general area you will be in and ensure the point of contact and/or group office has your correct cell phone numbers and pager numbers.

- Logging in** After returning, notify your point-of-contact (POC) that you have returned to the office and sign in on the appropriate sign in/out board or log. If for some reason you cannot reach your point-of-contact, notify your team leader or supervisor or the group office and leave a written note for your point-of-contact.

WARNING: Failure to notify your contact could result in an unnecessary search.

Field work notification requirements, continued

Work outside normal operation hours and after dark If field work is performed outside normal operation hours (7:30 am to 5:00 pm), notify PTLA and/or the facility land owners. Three forms of communication must be available (radio, cell phone, and pager). PTLA can operate as the point of contact. Remember to properly log in and out with them (see previous page).

If work continues after dark, use lights (area lights, flashlights, or headlamps) to illuminate the area and walking paths. Use extra care to avoid tripping because depth perception is greatly reduced in dark conditions.

Missing or late field workers If a field team member is more than one hour late or after 4:30, the following steps shall be taken:

- The POC should check the sign out log to see if contact has been made with another individual.
- If not, then the POC should contact the Team Leader.
- The POC, Team Leader, or other responsible party will attempt to contact the field worker by radio or cellular phone.
- If unsuccessful, verify that the field worker is not at home; verify, insofar as possible, the known circumstances and conditions of the employee's absence; or conduct a search of the destination by at least two appropriately trained and prepared people.

If the above steps are unsuccessful, notify the Group Leader or team leader and the Laboratory's Emergency Management Office (EMO) at 667-6211, and make a recommendation of the action to be taken. The EMO will handle the situation from that point.

Emergency notification list In case of an emergency requiring immediate assistance, notify people in the following order:

- EM & R (phone 667-6211 or by radio)
- Team Leader
- Group Leader

Field work notification requirements, continued

- Injury in the field** In case of injury to yourself or a co-worker while in the field, perform the following steps:
- Safety First. Make sure the area is safe.
 - Notify EM&R (667-6211), Group Leader, Team Leader, and your Facility Manager contact as appropriate.
 - Administer first aid if trained and equipped with first aid kit.
 - If injuries allow safe transport, aid in transport of injured person to nearest hospital (NOTE: Occupational Medicine Group (HSR-2) is not a hospital and cannot provide urgent care).

To reach emergency facilities directly, use the following phone numbers:

Emergency Facility	Phone Number
Laboratory EM&R	667-6211
Los Alamos Fire Department/Central Alarm Station	667-7080
Los Alamos Police Department	662-8222
HSR-2 Nurses (for non-emergency advice)	667-7839

NOTE: When dialing 911 on a cellular phone, remember that the call **will not** reach the Los Alamos Police Department or Los Alamos Fire Department dispatch. Have the 911 dispatch relay necessary information to any of the above facilities.

Medical examination of Laboratory or contract employees by the Occupational Medicine Group (HSR-2) is mandatory for any work-related injuries. If you are out of work for four or more consecutive days, then you must report to HSR-2 to obtain a fitness of duty approval.

Field work general hazards

Don't do work you consider unsafe

DO NOT perform work under conditions you consider unsafe. Before beginning any work, review safety needs and requirements, identify hazards, and develop hazard mitigation measures. Be aware that facility configurations and hazards may change between visits.

Tripping hazards, uneven ground

Be aware of uneven ground and natural trip hazards while walking. Be prepared for unstable ground around gopher and other rodent holes. Wear appropriate footwear (provided by the lab when needed) for the field. Many fieldwork activities require steel-toed shoes – consult the procedure and/or hazard control plan. Perform preassessment safety survey and tailgate meeting(s). When possible, mark or remove tripping hazards from work areas.

Floods

After the Cerro Grande fire, the watershed upstream of Lab property will not retain much precipitation. The potential for flash floods is great. Check meteorological data (on the web and by looking outside) for current and projected conditions and, when headed for low areas, watch and listen for signs of rain in the area and even several miles upstream. If there are rain indications, stay out of low areas. During rainy season, try to conduct field work in low areas in early morning hours.

In case of flood: Run to high ground. Abandon vehicle if necessary. DO NOT attempt to drive across running water – less than a foot of rushing water may be sufficient to push a vehicle.

Falls from cliff edges

Lab policy requires fall protection when work must be performed within six feet of a drop of more than six feet. If doing field work near cliff edges, prevent injuries and mishaps by using the following prudent fall protection measures.

- Maintain a safe distance from the edge of flat or low slopes (six feet).
- Use co-workers as safety monitors.
- Use fall protection equipment (safety harness, lanyard) on steep slopes as specified in the activity-specific IWD or HCP.

Field work general hazards, continued

Rock slides Rock slides can present a hazard to field workers and will be more prevalent in burned areas. Do not work in areas with the known potential for rock slides such as talus slopes and canyon edges. When ascending or descending a slope, do not follow directly behind one another but spread across the slope or leave adequate space between coworkers to eliminate the risk of injury from dislodged rocks.

Work near burned, dead, or dying trees Extra caution must be taken when working in areas burned by the Cerro Grande fire and areas with drought- or insect-killed trees. While working under the forest canopy pay attention to your surroundings, “look up, look down, look around”. A hazard tree is one with an obvious defect that makes it a hazard. However, any dead or even live tree can be an unidentified hazard.

- Conduct a pre-assessment survey of the work area to identify specific hazard trees and communicate to all field personnel where these trees are located.
- Determine if you can safely conduct your work outside the fall perimeter of the hazard tree(s).
- If a hazard tree or trees are identified within your work perimeter, OR if you feel uncomfortable about your safety, STOP WORK. Leave the location and make arrangements with your Team Leader to have the trees removed before resuming work activities.
- If a hazard tree can be safely approached, flag the tree so that personnel are aware of the danger.
- Trees and branches can fall at any time, even with no wind.
- Wear a hard hat while working under the forest canopy.
- When winds exceed sustained 10 mph, cease activities in burned areas. Use a wind meter to check wind speed or call your Point of Contact and have them check on the RRES-MAQ web site for weather conditions.
- Downed logs may be hollow. Burned-out root holes may be obscured by grass and other vegetation.
- Steel-toed shoes may be required in some site-specific safety plans.
- Other specific personal protective clothing or equipment may be required at some sites and under certain field activities.

Excavation permits You are allowed to excavate with hand tools to 12 inches and to place wooden stakes, hubs, pin flags, and lath or grade markers (no metal stakes or rebar). When installing wells, stakes or posts, or when pounding other hard metal below the surface of the ground, obtain an Excavation Permit in accordance with [LIR 402-880-01](#), *Excavation/Soil Disturbance Permit Process*.

Field work general hazards, continued

Eye protection When walking in forested areas with branches at eye level, wear some type of glasses (sunglasses, eyeglasses, or safety glasses).

Sun exposure Use sunscreen. Locals know the sun at this elevation can quickly cause bad sunburns – in as little as ½ hour for sensitive individuals. Reapply sunscreen after heavy perspiration every four hours. Sleeved shirts and long pants are required. It is recommended to wear a hat as a sun screen to avoid exposure to the skin.

Treatment of sunburn: take two aspirin tablets every six hours and apply topical agents such as aloe vera gel to the burned area. Drink adequate fluids and rest.

Fire danger Due to the potential extreme wildland fire conditions during the spring, summer, and occasionally the fall, the Laboratory initiates a “Wildland Fire Work Danger Work Restriction Matrix” that identifies the fire danger rating and associated field work restrictions. Daily fire danger ratings are provided by EM&R and posted on the lab home page.

Follow all requirements set forth by the County and LANL Environmental Management Office regarding current fire conditions. Have an evacuation plan when working in remote areas (including evacuation routes and safe zones). In the event of a wildfire starting in your work area, move to a safe zone and contact emergency personnel immediately.

When working on other agency properties such as US Forest Service, permits may also be required. Follow all road restrictions in "extreme" conditions and know when a "Spark and Flame Permit" is required.

Smoking is not allowed in the field (see AM 626 on smoking).

Field work general hazards, continued

Heat

If an employee is routinely working in hot weather, contact an HSR-5 representative to perform an evaluation. The employee may need to be acclimated to the heat if the employee is new to working long durations in hot weather. Supervisors may require Thermal Stress Awareness training.

To avoid dehydration in the summer, drink at least one quart of fluid every two hours during periods of exertion in a hot environment. Be aware of the dangers of heat exhaustion. If heat exhaustion is allowed to progress, the individual may develop heat stroke.

- Heat cramps are caused by heavy sweating which can deplete the body of salt. They may be accompanied by hot, moist skin and a slightly elevated body temperature. The cramps in the arms, legs or stomach can occur while you are working, or when you are relaxing after your shift. Heat cramps are a danger signal of heat stress.
 - Treat heat cramps by moving into the shade and loosening clothing. Drink a lightly salted liquid. If cramps persist, seek medical help.
- Heat exhaustion may be characterized by heavy sweating, strong thirst, cool and moist skin, a quick pulse, rapid breathing, nausea, a feeling of fatigue and possibly fainting. Heat exhaustion indicates the body's mechanism for controlling heat is beginning to break down.
 - For heat exhaustion, cool the victim as fast as possible, fanning and pouring water on the victim if necessary. Have the victim drink water and call immediately for medical help.
- Heat stroke is a serious medical emergency that can quickly proceed to unconsciousness and death. It occurs when the body loses too much salt and water so that sweating stops. At that point, the body's temperature control mechanism fails and body temperature increases rapidly. Symptoms include hot, red, dry skin, a quick pulse, difficulty breathing, dizziness, confusion, strange behavior, weakness, and nausea. Heat stroke can quickly progress to convulsions, coma, loss of pulse and an extreme body temperature. Death can follow rapidly.
 - For heat stroke, immediately cool by wetting with water and fanning vigorously. If ice is available, place ice packs on both sides of the neck and in the armpits and groin. Seek immediate medical attention while continuing to cool the victim.

Field work general hazards, continued

Dehydration Perspiration can be heavy but go unnoticed due to rapid evaporation in the low relative humidity of northern New Mexico. The breathing rate is increased at altitude and results in considerable loss of water vapor in the expired air. The end result is dehydration before thirst provides a warning. Symptoms include headache and fatigue. Treatment for dehydration is to administer fluids. Water alone is sufficient; salt supplements are unnecessary. Drink at least one quart of water every two hours during periods of exertion in a hot environment. If urination is infrequent or urine becomes dark in color, drink more liquids.

Cold In the winter, wear insulated dry clothing, warm boots, and gloves to avoid getting chilled when doing your work. Have sufficient supplies to allow you to wait for rescue, if necessary, in the cold in an inoperable vehicle. If air temperature is at or below 39.2 F (4 C), and an employee is not adequately dressed to prevent hypothermia or frostbite, work shall be modified or suspended until adequate clothing is used or until weather conditions improve. Know the warning signs of hypothermia and frostbite – get medical attention immediately:

- Hypothermia: shivering and chills, or unable to think or speak clearly. You may lose your coordination and quite possibly your consciousness.
- Frostbite: numbness and a white and waxy appearance to your skin.

Your supervisor is required to provide adequate cold-weather clothing, boots, or gloves. Request them when needed for your work.

Hunters If conducting field work in or near hunting areas during hunting season, wear bright colored clothing (e.g., hunting orange).

Field work general hazards, continued

Work near PTLA

All general field work occurring within 100 ft. of a Protected Area (PA) security fence requires prior notification to Protection Technology of Los Alamos (PTLA) at 667-4437. Failure to do so COULD result in a security infraction. There is no time requirement as long as notice is given in advance of the start of the project.

The four PA's at the Laboratory requiring notification are:

- TA-3, CMR Building Security Fence
- TA-18, Pajarito Laboratory Security Fence
- TA-55, Plutonium Facility Security Fence
- TA-64, Central Guard Facility

There are NO written procedures for work near security fences, just verbal notification requirements.

Work in construction areas

When performing field work in construction areas, personnel must:

- Obey all site postings for PPE requirements. Wear hard hat, safety glasses, and safety shoes as minimum PPE.
 - Notify the LANL site representative and construction contractor foreman of your presence in the area and request permission to work. Do not work in the area without permission. Ask if there are any site hazards that you should avoid. Notify LANL site representative and construction contractor foreman when you leave the site.
 - Be alert for warning signs and indications of typical construction site hazards such as moving equipment, vehicular traffic, rotating machinery, tripping and falling hazards, open ditches and holes, noise (wear ear protection), dust (avoid or wear appropriate dust mask), and flying debris.
 - Review and acknowledge understanding of construction-relevant HCPs.
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Shrapnel and other sharp objects

Follow all site- and project-specific protocols and procedures for working in areas of potential shrapnel. Wear boots and don't touch shrapnel.

Field work general hazards, continued

Unexploded ordnance

Unexploded ordnance (UXO) may be a hazard in some areas. At no time will any employee directly or indirectly touch identified or suspected UXO. Any employee that encounters an unexploded artillery or mortar shell or any unidentified item that is thought to be UXO should note the location and immediately leave. Once the area has been cleared, call 911. Do not use a radio or transmitting device within 100 feet of the UXO.

Training on unexploded ordnance training may be required as directed by supervisor.

PPE

Minimum field PPE

The minimum PPE for all field work:

- Long pants
 - Sturdy field boots. **NOTE:** To minimize risk of carrying contamination home, it is recommended that each person have a dedicated pair of field boots that remain at the work place.
 - Long or short sleeve shirt.
 - Eye protection as needed by type of work
 - Work gloves, as needed
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Care of PPE

It is a requirement that employees be provided with any needed personal protective equipment (PPE) for a job and that they are trained in its use. This includes eye protection, gloves, hardhats, hearing protection, and footwear.

- Keep all PPE in a place where it will not be degraded or damaged.
 - Maintain PPE in accordance with manufacturer's requirements.
 - Keep gloves and eyewear in a sanitary place.
 - Do not share your PPE with another employee.
 - Replace immediately any PPE that is damaged or degraded.
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Use of PPE

You must use PPE when required by a procedure, HCP, IWD, or postings.

If you do not understand the use of PPE or how to care for it, ask your supervisor.

Do not wear PPE home.

Inspect the PPE before each use. If damaged, replace it.

Hearing protection

Hearing protection will be provided at or above the action level of 82 dBA.

Protect your hearing: if you suspect the levels are high, ask your supervisor to request a noise level measurement.

Electrical and mechanical safety

Working alone near machinery

Certain types of work require two people, one of whom must understand the tasks, not be exposed to the risk, and can render assistance if needed. Do not work in the vicinity of exposed conductors or if guards are not in place on operating equipment. See LIR 402-150-01 for other specific requirements about working alone. Some of the types of work that require two people are:

- working with any type of powered machinery that could potentially cause a massive injury
- working on certain types of hazardous electrical energized equipment
- entry into enclosed spaces or limited egress spaces
- when a worker could fall to a lower level and become trapped or locked in
- when hazardous, toxic, or narcotic materials are used
- when fire could develop or spread rapidly.
-

Energized electrical equipment

You are not allowed to work on any equipment containing exposed hazardous voltages and amperages unless it can be unplugged or de-energized. Energized electrical work requires special training and task evaluations (see LIR402-600-01, Electrical Safety).

Radiological hazards

Some work may be performed around or in areas that are radiologically controlled. Be sure to comply with all facility-specific PPE and training requirements as given in the work-specific IWD when entering controlled areas. Wear external dosimetry if required.

Suspected contamination

If radiation contamination is suspected, perform the following steps:

- Remain in the immediate area.
- Notify an RCT and facility manager, if applicable.
- Follow all RCT instructions.
- Minimize cross-contamination.

For further guidance, reference LIR 402-700-01, Chapter 2, Occupational Radiation Protection Requirements.

Electrical and mechanical safety, continued

Work on roofs and scaffolding

Work for some projects will take place on roofs and/or scaffolding. **Fall protection equipment must be used if the performance of the work requires personnel to be within 6 feet of the edge of a 6 foot or greater drop.** Additional safety precautions and equipment must be considered, and when appropriate, used to minimize the risks of injury resulting from falling equipment, lightning strikes, exposure, and other potential hazards. Safety precautions to be considered related to working at heights include:

- Use of hard-hats
- Observing safe ladder practices
- Delaying work because of dangerous weather conditions

DO NOT work on roofs and/or outdoor scaffolding during lightning storms or when lightning storms are in the area.

Working in a facility

Under the Lab's Facility Management Model, work control is the responsibility of the Facility Manager. Obtain approval from facility management before beginning work within a facility. Follow all facility sign-in procedures. Ensure you have completed all facility-specific training requirements, and, if required, develop a Hazard Control Plan or other FMU-specified document for work within the facility.

Power lines

Avoid working or parking under power lines. If necessary to do so, review any HCPs and procedures specific to performing work that may be near overhead power lines. If you are not an electrically qualified person,

- do not perform work on the ground or in an elevated position near or beneath uninsulated overhead (transmission or distribution) power lines, unless you and the longest conductive object you might contact cannot come closer than
 - 10 ft for 13.8-kV distribution lines or
 - 12 ft 2 in. for 115-kV transmission lines.
- For assistance in evaluating overhead power line hazards, contact KSL Line Department at 667-4310 or 667-4058 or the office of the Chief Electrical Safety Officer (665-7377).
- Avoid parking vehicles under power lines.

Lightning Hazards

Background	<p>The weather before a thunderstorm is often hot and humid. In the mid-afternoon or sometimes earlier, huge anvil-shaped clouds of cumulonimbus develop rapidly and the sky darkens to threatening blue-black color.</p> <p>The time of formation will vary between one and four hours depending on how vigorous is the convectonal uplift. Thunder can often be heard and lightning seen well before the storm arrives, and increases in frequency and intensity as the storm approaches. HOWEVER, be aware that a storm might be developing directly overhead and there may be no warning from nearby lightning.</p> <p>Storms will move horizontally at speeds between 12 and 30 miles per hour and consequently will be impossible to outdistance on foot.</p>
How far away is the lightning?	<p>When in the field and a storm is approaching, time the interval between lightning and the thunder by counting the seconds.</p> <p>To obtain the distance in miles, divide by five; to obtain the distance in kilometers, divide by three.</p>
When lightning is close	<p>Follow the “30-30 rule”: When lightning is determined to be less than 30 seconds (six miles) away, seek shelter, for at least 30 minutes after the last thunder is heard, in one of the following locations, given in order of preference:</p> <ul style="list-style-type: none">• steel-framed building• enclosed vehicle with a steel roof• low ground away from solitary trees and below and away from high points. <p>Individuals should disperse to reduce the possibility of multiple casualties.</p> <p>Place any metal objects away from your position.</p> <p>On open ground, adopt a crouched position with the hands off the ground and the feet close together on some dry insulation such as sleeping pad, rope, or pack (not metal-framed).</p> <p>Stay away from streams and fences. Don’t use a wired telephone during a lightning storm.</p>

Biohazards

Known allergic reactions

As stated earlier, if you have known allergic reactions to animal bites and stings or wild plants, notify your supervisor and project or team leader before entering the field. Personnel with known allergies to known agents must carry required medication in the field.

Insect bites

Bee stings and other insect bites can turn deadly if there is an allergic reaction or if the bite becomes infected. Take all bites seriously and have them checked immediately if swelling occurs.

Treatment of insect bites

If you believe you have been bitten by an insect and have a known allergic reaction, see a doctor immediately. Before you do, follow these guidelines:

- If you have an anaphylactic kit, give an injection of epinephrine immediately. (It's best to give the shot in the fat layer of the outer part of the upper thigh.) Even if you aren't sure the reaction is anaphylaxis, give the shot -- it could save your life.
 - If you don't have an anaphylactic kit but you do have Benadryl or other antihistamine, give it to the person. This helps slow the runaway immune reaction.
 - Seek emergency medical assistance.
 - Give the health care provider as accurate a description of the persons condition. Report all bites to the Occupational Medicine group (HSR-2)
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Sewage pathogens

Follow site-specific training. Many canyon streams contain sewage effluent. Recommended training for personnel entering areas of potential presence of human-contracted diseases is Blood-borne Pathogens training.

Rocky Mountain Spotted Tick Fever

If the following symptoms of tick fever appear, seek medical attention:

- Fever, bone and muscle pain, headache, or rash.

Biohazards, continued

West Nile Virus

Most people bitten by an infected mosquito do not develop any symptoms. In 2003, 35% of the 201 patients who were diagnosed with West Nile Virus in New Mexico had encephalitis or meningitis. The other 131 cases had milder forms of the virus, which usually do not require hospitalization. When symptoms do occur, they usually appear about 3 to 14 days after being bitten. The disease may be mild or serious. Mild illness includes fever, headache, rash, and body aches. In a small number of cases, particularly among the elderly, the disease can affect the central nervous system causing high fever, stiff neck, muscle weakness, disorientation, brain inflammation (encephalitis), coma, and rarely, death.

For the longest lasting protection from mosquito bites, use insect repellent products with no more than 20-30 percent DEET for adults and less than 10 percent for children aged 2 years to 12 years. If you choose not to use DEET, products containing soybean oil or eucalyptus oil have been found to be effective, but must be applied more often because they do not repel mosquitoes for as long as DEET. In a recent study, products containing citronella or Skin-So- Soft were NOT shown to be as effective, lasting on average only about 20 minutes or less.

Venomous Snakes and Poisonous Spiders

Snakes background

There are four kinds of venomous snakes found in the United States: rattlesnakes, copperheads, water moccasins, and coral snakes.

Rattlesnakes, copperheads, and water moccasins belong to the family of pit vipers (Crotinae).

Only rattlesnakes and coral snakes are found in New Mexico and only rattlesnakes are found in Los Alamos County.

Symptoms of pit viper bites

Pit viper bites are characterized by:

- extreme pain
 - rapid swelling
 - one or more puncture wounds created by the fangs
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Avoiding snakebites

Snakebites usually occur to the hands and feet. Wear field boots and avoid placing hands and feet where you cannot see. Rattlesnakes may be found anywhere we work, even around the offices in White Rock. It is best to avoid the snake and let it go on its way. However, in a populated area where others may be endangered if they encounter a venomous snake, call the ecology group (667-8961) and ask for someone to come relocate the snake.

Treatment of snakebites

If you believe you have been bitten by a venomous snake, see your doctor immediately. Before you do, follow these guidelines:

- Keep the victim from moving around (reduce the circulation of blood through the bite area and victim's body)
- Keep the victim as calm as possible and preferably in a prone position.
- Immobilize the bitten extremity and keep it at or below heart level.
- Transport the victim to a hospital as soon as safely possible (preferably within two hours). Report all bites to the Occupational Medicine group.

Venomous Snakes and Poisonous Spiders, continued

Spider bites The bites of some spiders, such as the black widow and the brown recluse, are particularly dangerous because they affect your whole body. Bites from both of these spiders can cause fever, nausea, and pain in addition to the skin reactions at the site of the bite.

Look for spider webs and other signs of spider activity before reaching into dark corners.

Treatment of spider bites If you believe you have been bitten by one of these dangerous spiders, see your doctor immediately. Before you do, follow these guidelines:

- Immobilize the bitten arm or leg to limit movement.
- Apply a cloth dampened with cold water or lined with ice to the bite.
- Keep the arm or leg dangling down.
- Seek emergency medical assistance.
- Give the health care provider as accurate a description of the spider as possible. Report bites to HSR-2 (Occupational Medicine Group)

Large Animals

Overview of large animals in New Mexico

Large predators (animals that eat other animals), including mountain lions, black bears, bobcats, and coyotes, are found throughout most of New Mexico. These large, powerful predators have always lived here, feeding on plentiful prey species and playing an important role in the ecosystem. Large animals such as deer and elk can also pose a significant risk if confronted.

What to do if you meet a large animal

There are no definite rules about what to do if you meet a large predator or other large animal, although relatively effective guidelines are available. In most cases, the animal will detect you first and will leave the area. Attacks are rare compared to the number of encounters. However, if you do run into one before it has had time to leave an area, here are some recommendations. Remember that every situation is different with respect to the animal, the terrain, the people, and their activity.

- **STAY CALM.** If you see a predator that hasn't seen you, calmly leave the area. As you move away, talk aloud to let the animal discover your presence.
- **STOP.** Back away slowly while facing the predator if you can do so safely, while avoiding direct eye contact. Don't run as this might stimulate its instinct to chase and attack. Give it plenty of room to escape.
- **DO ALL YOU CAN TO APPEAR LARGER.** If an encounter is probable, raise your arms and open your jacket if you are wearing one.
- **NEVER APPROACH.** Wild animals are unpredictable; however, they will usually avoid a confrontation unless pushed into one.
- **WATCH FOR YOUNG.** Coming between a female and her young can be dangerous. If a young animal is nearby, try to move away from it, being alert for others that might be around.
- **CONVINCE IT YOU'RE NOT PREY.** If the animal approaches closer or behaves aggressively, arm yourself with a large stick, throw rocks or sticks at it, speak louder and more firmly to it. Convince the predator that you are dominant and a danger to it.
- **DO NOT BEND OVER OR CROUCH TO PICK SOMETHING UP.** This can appear as a prelude to an attack on the animal.
- **FIGHT BACK.** If the predator does attack, fight back. Use any possible objects (rocks, sticks, backpacks, caps, jackets and even your bare hands) as a weapon.

Prevention of Plague and Hantavirus Infection

Background Plague is a wild rodent disease in the western states, although domestic rats may be rarely involved. A complex rodent/flea cycle enables the plague bacteria to exist in certain resistant species of rodents, only to erupt periodically in other susceptible species. Field mice serve as reservoirs for the disease and are relatively resistant to its effects. Plague-infected fleas spread the bacteria to less-resistant species such as rock squirrels, chipmunks, and prairie dogs. These animals usually die from the disease in a few days and thus release their own plague-infected fleas to seek new hosts.

Hantavirus can cause a potentially fatal respiratory disease. The virus is carried in the urine, saliva, and feces of rodents, particularly deer mice. The greatest risk of exposure is from breathing an aerosol containing the virus.

Preventing and avoiding exposure When in the field, avoid fleas by leaving sick or dead animals and their feces alone. When not part of the actual field work, avoid animal burrows, rock outcrops, and rock walls where infected rodent fleas may be hiding.

Repellent may be used on the legs to reduce the chance of being bitten by fleas.

Prevent exposure to hantavirus by observing the following precautions:

- Avoid areas where rodents frequent, especially nests.
- Do not disturb such areas by brushing, sweeping, or vacuuming.

Employees are strongly encouraged to avoid contact with rodents and rodent materials. Employees should call the building manager for proper disinfection, clean-up, and rodent-proofing of infested areas. If absolutely necessary,

- Spray the area with disinfectant (Lysol or 10% Chlorox/water solution).
- Wear rubber gloves when handling any rodent materials.
- Wash reusable gloves with disinfectant and then with soap and water.
- Disinfect any utensils that were used.

Prevention of Plague and Hantavirus Infection, continued

Symptoms of plague If the following symptoms of plague appear, seek medical attention:

- a high fever, general malaise, vomiting, diarrhea, and sometimes a headache.

Muscles in the arm, legs, or back may become sore. A swollen lymph gland, or bubo, may or may not appear nearest the site of infection after a couple of days.

Very few people die from plague infections; in most deaths, delay in seeking medical attention contributed.

Symptoms of hantavirus If the following symptoms of hantavirus infection appear and you think you were exposed to hantavirus within the past 5 weeks, seek medical attention right away:

- cold-like symptoms (runny nose and muscle ache) that are accompanied by a high fever.
- respiratory difficulties.

[Click here to record “self-study” training to this procedure.](#)

HAZARD CONTROL PLAN

1. The work to be performed is described in this document.

“General Field Safety For All Employees”

2. Describe potential hazards associated with the work (use continuation page if needed).

The various facilities within the Laboratory can contain unique hazards not readily identifiable except by the controlling entities of that facility.

Falls from cliff edges: Falls can result in severe injuries.

Sun exposure: The ultraviolet radiation levels are greater at high elevation, easily causing sunburn.

Cold and heat: Exposure to temperature extremes can cause frostbite, hypothermia, hyperthermia, heat stroke, or dehydration.

Lightning during thunderstorms.

Falling trees or limbs that have been burned, due to sudden high winds when personnel are in the field.

Walking and tripping hazards from downed logs and burned out stumps. Logs may not be solid; stumps may have burned away underground, leaving a void; the ground may be more slippery.

Working near machinery: moving large equipment and moving parts on stationary equipment.

(See continuation page.)

3. For each hazard, list the likelihood and severity, and the resulting initial risk level (before any work controls are applied, as determined according to LIR300-00-01, section 7.2)

Unique facility hazards: improbable/ catastrophic = medium.

Falls from cliff edges: improbable / catastrophic = medium.

Sun exposure: frequent / negligible = low.

Heat and cold: occasional / moderate = low.

Lightning: remote / catastrophic = low.

Falling trees or limbs that have been burned: improbable / catastrophic = medium.

Walking and tripping hazards from downed logs and similar hazards: occasional / moderate = low.

Working near machinery: remote / catastrophic = low.

Fire damaged sites around the Lab may present unexpected hazards: improbable / moderate = low.

Animals may act differently: improbable / critical = low.

Floods: improbable / catastrophic = medium.

Unexploded ordnance: improbable / critical = low.

Biohazards, diseases: occasional / moderate = low.

Overall initial risk: Minimal Low Medium High

4. Applicable Laboratory, facility, or activity operational requirements directly related to the work:

None List:

Work Permits required? No List:

HAZARD CONTROL PLAN, continued

5. Describe how the hazards listed above will be mitigated (e.g., safety equipment, administrative controls, etc.):

Unique facility hazards: personnel will comply with access control and work requirements of all the Laboratory's facilities.

Falls from cliff edges: Do not work within 6 feet of edges with greater than 6 foot drop. (Some stations have previously been relocated away from edges.)

Sun exposure: Use sunscreen, wear hat and long-leg pants.

Heat and cold: Know the signs of heat stress, hypothermia, and dehydration.

(See continuation page.)

6. Knowledge, skills, abilities, and training necessary to safely perform this work (check one or both):

Group-level orientation and training to this procedure.

Other → See training prerequisites on procedure page 3. Any additional describe here:

7. Any wastes and/or residual materials? (check one) None List:

8. Considering the administrative and engineering controls to be used, the *residual* risk level (as determined according to LIR300-00-01, section 7.3.3) is (check one):

Minimal Low Medium (requires approval by Division Director)

9. Emergency actions to take in event of control failures or abnormal operation (check one):

None List:

For all injuries, provide first aid and see that injured person is taken to Occupation Medicine (only if immediate medical attention is not required) or the hospital. For any exposed, energized electrical wires, contact KSL or the appropriate authority to turn off the power. Follow all site specific emergency plans for any radiation or explosives emergencies.

Signature of preparer of this HCP: This HCP was prepared by a knowledgeable individual and reviewed in accordance with requirements in LIR 300-00-01 and LIR 300-00-02.

Preparer(s) signature(s) _____ Name(s) (print) _____ /Position _____ Date _____

Signature by group leader on procedure title page signifies authorization to perform work for personnel properly trained to this procedure. This authorization will be renewed annually and documented in MAQ records.

Controlled copies are considered authorized. Work will be performed to controlled copies only. This plan and procedure will be revised and distributed according to ES Business line procedures.

HAZARD CONTROL PLAN, continued

Hazard Control Plan continuation page. Give item number being continued.

#2. Describe potential hazards:

Allergic reactions to stings.

Biohazards such as sewage pathogens and insect-borne diseases such as hantavirus, plague, West Nile Virus.

Fire damaged sites around the Lab may present unexpected hazards.

Large animals may be encountered.

Flooding: Reduced water retention in watershed areas creates potential for flash floods.

Unexploded ordnance is possible in most areas of the lab.

#5. Mitigation of hazards:

Lightning: The lightning threat must be continually monitored by the worker. Developing cumulonimbus clouds in the area are a definite indicator that it is time to monitor the threat more closely.

Falling trees or limbs that have been burned. Be alert, especially when the wind kicks up, which can happen very suddenly. Request KSL to cut down hazardous trees and limbs.

Downed logs may be hollow and unseen holes may exist from burned-out stumps and roots. Be careful when walking in burned areas.

Damaged sites around the Lab may present unexpected hazards. Be alert for these hazards and follow all facility-specific access control and work requirements.

Working near machinery: Be aware of your surroundings. Keep clothing away from unguarded moving parts.

Animal encounters: Be aware of your surroundings. Visually scan your surroundings frequently.

Flooding: After the Cerro Grande fire, the watershed upstream of Lab property will not retain much precipitation. There is a potential for flash floods. Check meteorological data (on the web and by observing the clouds) for projected and current conditions and, when headed for low areas, watch and listen for signs of rain in the area and even several miles upstream. If there are rain indications, stay out of low areas. During rainy season, try to conduct field work required in low areas in early morning hours.

In case of flood: Get to high ground. Abandon vehicle if necessary. DO NOT attempt to drive across running water – less than a foot of rushing water may be sufficient to push a vehicle.