CREATIVE

USAID/OTI NIGERIA LAKE CHAD BASIN PROGRAM
HEALTH AND SAFETY PLAN (HASP)
TEMPLATE

HASP Table of Contents:

A. Purpose/Site Information/Contacts

Purpose

This Health and Safety Plan (HASP) was developed based on the requirements covered by the Occupational Safety and Health Administration (OSHA) Standards 1926 and 1910. In the event that OSHA changes a standard, that shall supersede the guidelines in this manual.

This HASP has been prepared to provide Creative Associates staff, contractors and subcontractors with the necessary information to ensure that:

- There is general awareness of risks within the workplace in order to better prevent injuries, illness and accidents resulting from these risks.
- Field work associated with projects is completed in a safe manner in accordance with standard safety practices and procedures.
- Information regarding site management, general work procedures, emergency procedures, incident and accident reporting is available regarding situations and events that may arise during construction that are related to health risks and accidental injuries at the work site.

This plan shall be updated if there are major changes to project conditions, situations, or exposures, and any revisions shall be noted in the document.

This plan shall be available at the work site during all construction and implementation activities.

Site Information

Project/Grant Title:
Project/Grant Number:
Name of Contractor:
Location:
Type of Construction: **Public Building (e.g., school)** ☐ **Commercial Building** ☐ **Industrial Facility** ☐ **Road Construction** ☐ **Water Supply or Irrigation** ☐ **Other (describe)**
Brief Description Type/Scope of Work:
Date Work Began:
Name/Position/Company of Person Who Completed HASP:
Signature:
Date HASP Prepared:

Map of Site Location

Sketch/Drawing of Site Layout

Project Contacts

Position	Company/ Contractor	Name	Phone Number	Responsibilities
Project Manager	Creative Associates			
Contractor Representative				
Site Engineer				
Construction Supervision Monitor				
Health and Safety Representative				
Environmental Manager/Contact				

B. EMERGENCIES

Emergency Contacts

Organization / Contact	Phone Number	Location
Fire Department		
Police		
Ambulance		
Hospital		
Health Unit		
Water Supply		
Wastewater/Sewage		
Telephone		
Natural Gas		
Electricity Supply		
Forestry		

Emergency Supplies

Item	Location (Can also show on a map)
On Site Telephone	
First Aid Supplies	
First Aid Manual	
Fire Extinguishing Equipment	
Fire / Emergency Alarm	
Stretcher	
Designated Evacuation Vehicle with Fuel	
Evacuation Route Map	
Drinking Water	
Gathering Location Identified	
Two or More Emergency Evacuation Routes Identified on Printed Maps	

Emergency Preparedness

Emergency preparedness measures are pro-active steps that can reduce safety hazards, and increase the ability to deal with them. These can include the following:

- List of emergency contacts is conspicuously posted.
- The designed Safety Officer and their phone number are clearly identified.
- Location of first aid equipment and supplies is clearly marked.
- Location of a gathering point for staff in case of a catastrophe is identified.
- Alternate evacuation routes are clearly marked on printed maps.
- Map(s) showing the route(s) to hospital(s) are clearly marked and printed.
- All workers shown are locations emergency contacts, first aid equipment, gathering point, alternate evacuation routes and locations of hospitals as part of their orientation training.
- This HASP is periodically reviewed and updated as necessary.

General Emergency Priorities

These general procedures should be modified and improved by addressing them to individual sites.

Purpose of Emergency Procedures:

To prevent fatalities and injuries
To reduce damage to personnel, buildings, equipment
To accelerate the resumption of normal operations

Emergency procedures generally address:

Accidents / injuries
Catastrophes (such as fire, landslide, flood)
Security

EMERGENCY PROCEDURES – ACCIDENTS / INJURIES.

First aid provided
Injured person moved to medical facility if required
Designated safety officer or project manager notified
Accident/incident form filled out and reviewed

EMERGENCY PROCEDURES - CATASTROPHES

Designated safety officer or project manager notified
Alarms sounded as required
First aid provided
Injured person(s) moved to medical facility if required
Additional external aid requested as required
Staff alerted, work halted as required
Personnel moved to gathering point and accounted for
Evacuation routes assessed and selected
Personnel evacuated
Accident/incident form(s) filled out and reviewed

EMERGENCY PROCEDURES - SECURITY

The designated security officer will prepare a specific set of guidelines

C. Site Control and Procedure Checklists

Site Control

A site map should be developed and clearly posted that identifies the following, as a minimum:

- Perimeter of site, which only staff and guests wearing protective gear, can enter.
- Site entrance and exist locations.
- Location of communications equipment, including alarms (if there are any).
- Location of first aid equipment.
- Location of required documents, including this HASP, as well as the SWPPP, work permits, drawings and contracts, as required.
- Location of posted emergency contact numbers.
- Location of any emergency evacuation routes.
- Locations of sanitary facilities, as well as drinking water and shaded areas for staff.

Procedure Checklists

The following work procedure checklists and designed to reduce hazards associated with the site environment as well as specific work activities. Tools to help reduce hazards are also included. These checklists are guides. Specific conditions and requirements will vary by site.

Site Environment Related Hazards and Procedures

General Environment

- Work areas are clean, sanitary and orderly.
- Work surfaces are kept dry and appropriate means are taken to assure surfaces are
- slip-resistant.
- Spilled materials or liquids are cleaned up immediately.
- Appropriate waste disposal facilities are available.
- Combustible debris and wastes are stored safely, then promptly removed from the worksite.
- A minimum number of toilets and washing facilities are provided for both men
- and women on site.
- Toilets and washing facilities are clean and sanitary.
- All work areas are adequately illuminated.
- Pits and floor openings are covered or otherwise guarded.
- First aid equipment and a list of emergency numbers are clearly marked in a public area.

Walkways

- Aisles and passageways are kept clear.
- Holes in floors, sidewalks or other walking surfaces are repaired, or covered and marked for avoidance.
- Spilled materials are cleaned up immediately.
- Standard guardrails are provided wherever aisle or walkway surfaces are elevated.

Stairs and Stairways

- Standard stair rails or handrails are located along all stairways having four or more risers.
- All stairways are at least 22 inches (55.9 centimeters) wide.

Exits

- Emergency exits are marked with a clearly visible sign and illuminated and there are an adequate number to permit all personnel to exit promptly in case of an emergency.
- Directions to emergency exits, when not immediately apparent, are marked with visible signs.
- Exits are kept free of obstructions.
- At least two means of exit are provided from elevated platforms, pits or rooms where the lack of a second exit could increase the risk of injury from hot, poisonous, corrosive, suffocating, flammable, or explosive substances.
- Exits from each floor of a building and the number of exits from the building itself are

appropriate for the building occupancy load.
- Exit doors can be opened from the direction of exit travel without the use of a key or
- any special knowledge or effort when the building is occupied.
- Where exit doors open directly onto any street, alley or areas where vehicles pass, adequate barriers and warnings exist to prevent employees stepping into traffic.

Lighting
Work will be performed during daylight hours (15 minutes after sunrise until 15 minutes before sunset). If performed at other times, adequate artificial lighting must be provided.

Temperature
Methods will be implemented to mitigate heat/cold stress to workers on days with temperature extremes (providing cool or warm drinks, providing breaks in heated or shaded areas, for example).

Weather
- An easily accessible shelter from extreme weather will be identified before field site work begins.
- Avoid flash flood areas if heavy rains are forecast.

Housekeeping
- Work areas are patrolled to identify trash and reduce unnecessary debris.
- Waste containers on site are visible, easily accessible and readily emptied.

Utilities
Various types of underground/overhead utility lines or pipes should be identified before construction begins. Authorization for utility movement or clearance must be obtained in advance from relevant public utility departments. Work in the affected region will be suspended while this takes place. Truck drivers should be aware of overhead power lines and a distance of 10 feet (3 meters) should be maintained between the elevated portion of a drill rig and power lines.

Dust and Odor Control
Controls should be put in place to prevent dust generation. In the event of an incoming dust storm, or the generation of dust by activities on site, control measures (such as spraying water, covering soil, working at a slower pace, or changing work activities) will be deployed. These corrective measures should be documented in the daily report.

If an odor complaint is received, the contractor, together with a site engineer and/or project manager will assess site conditions to determine the probable cause. Appropriate odor mitigation measures will be deployed if required. Corrective measures will be documented in the daily report.

Traffic Control
- Traffic control will be established as required, as well as vehicular access and exit points to the work site, and a designated space for parking.

- Employees operating vehicles must have valid operator or driver licenses.
- Each vehicle needs an adequate number of seats for the number of people it is intended to transport.
- Vehicles are in sound running condition and maintained regularly.
- Vehicles are equipped with a first aid kits, fire extinguisher and hazard triangles.

Third Party Encroachment

- Create designated and safe entry and exit points to the work zone.
- Configure the work zone to prevent the entrance of third parties.

Work Related Hazards and Procedures

Slips, Trips, Falls, and Protruding Objects

Slips and trips often occur due to wet and slippery or uneven walking surfaces. To help avoid:

- Keep work areas clean.
- Keep walkways free of objects and debris.
- Report and clean up liquid spills immediately.
- Staff should wear footwear with slip resistant soles.
- Pathways should be created that are unobstructed and avoid puddles.
- Personnel should on pathways walk around, not over, debris piles.
- Sand and aggregate can be used to help keep work surfaces non-slippery.
- Keep materials, tools and equipment out of walkways.
- Remove and secure items and materials not needed to perform work taking place.
- Protruding objects extending into pathways should be removed, or flagged with red tape as dangerous.
- Personnel should not walk backwards.
- Uneven work surfaces should be leveled with clean fill, or roped off to keep personnel away.

Structural Instabilities, Unsecured Hazards and Debris

- Before work begins, an engineering survey of the framing, floors, walls and ceilings of structures should be conducted, and dangerous locations recorded and clearly identified.
- Walls can be braced during demolition activities.
- Avoid having debris, materials or equipment temporarily placed on any floor exceed the carrying capacity of that flood.
- Remove objects that may fall into the work area.
- Use netting, canopies, or platforms to reduce hazards from falling objects, as required.
- Provide safe and clearly identified walkways to reach all points of the work site.
- Material chutes at greater than a 45 degree angle should be enclosed; chute openings should be 1.2 meters in diameter or less with gates that close when out of operation.
- Barricade and mark all debris-dropping areas; ensure debris is not removed until debris-handling from above ceases.

Ladders and Scaffolding

- Inspect ladders for cracked, broken, or defective parts before use. Joints between steps and side rails must be tight and all moving parts should operate freely. Rungs should be free of grease and oil.
- Do not exceed the load rating of ladders or scaffolds—load ratings include people, tools and equipment.
- Set up ladders and scaffolds on stable surfaces.
- Set extension or straight ladders at a 75 degree angle from the ground (1 meter back for every 4 meters of height) and provide 1 meter above an upper landing surface to ease getting on and off the ladder.
- Consider using barricades to keep others away from ladders being used, to avoid accidental displacement.

- Scaffolding needs to be inspected, and erected, by a person with experience.
- Ensure that scaffolding is plumb, braced and guyed to prevent it from swaying.
- Scaffolding should be erected over base plates or on other firm foundations. Footings should be able to support the scaffold without settling or moving.
- All working levels of scaffolding should be planked with wood of appropriate strength.
- Guardrails or fall protection systems should be used on platforms 2 meters or higher; fall protection systems may include a sliding rail or a grab rope.
- Personnel must use both hands to ascend and descend scaffolding, and carry no materials in their hands when doing so.

Fall Protection

Fall protection must be provided whenever personnel are working within 2 meters of the edge of an elevated work platform or fall exposure.

Fall protection for open-sided floors, platforms and runways in the form of standard guardrails must be utilized at 1.2 meters height. Fall protection for sites and activities covered by the construction standard is required on working surfaces 2 meters or higher above adjacent working levels. All open-sided floors, platforms and runways above or adjacent to equipment or processes must be guarded by standard guardrails and toe-boards.

All workers subject to fall hazards which have not been engineered safely with systems such as guardrails will wear approved body harness and lanyard, comprising the Personal Fall Protection System (PFPS). Ropes and straps used in lanyards, lifelines and strength components of body belts and body harnesses shall be made from synthetic fibers. Properly sized and locking snaphooks will be authorized.

Lanyards must be shortened or height of anchorages must be increased to compensate so the individual will not strike the next level or hazard due to the system's elasticity. Anchorage points are to be as high overhead as possible overhead to avoid swinging during a fall arrest and possibly striking walls or objects nearby.

Fall protection devices and systems are not to be used for any purpose other than employee safeguarding.

Equipment such as scaffolds, aerial lift platforms and other approved personnel lifting devices must be utilized to provide safe working platforms in all cases possible. These devices must be equipped with standard guardrails.

Guardrails for permanent structures must be designed and constructed in compliance with applicable general industry standards or local building codes, if more stringent. Floor holes (defined as any opening with at least a dimension of 50 millimeters) must be guarded with either standard railing or by floor cover.

Excavations (Including Shafts)

Each worker at the edge of an excavation 2 meters or more in depth shall be protected from falling by guardrail systems, fences or barricades when the excavation is not readily seen because of a visual barrier.

Roofing Work
Every employee working on low-slope roofs, with unprotected sides and edges 2 meters or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of these.

Electrical Hazards
Only qualified licensed electricians will provide electrical installation/service/servicing. Injuries associated with electrical and power equipment include electric shock, cuts/lacerations, eye damage (from flying debris), and burns. To reduce the potential of injury:

- Use ground fault circuit interrupters (GFCIs) when using electrical powered tools/equipment. These prevent electrical shock by detecting the loss of electricity from a power cord and/or electrical device.
- Ensure generators are properly grounded, including the use of a grounding rod, driven to a depth of 3-feet.
- Wear safety glasses and work gloves, as appropriate.

Manual Lifting
To avoid back injury, muscle strain, and hernia, whenever possible use mechanical assistance to lift or move materials, and if done manually, two people can lift, or roll/lift, with their arms as close to their bodies as possible.

Drilling Operations

- Before drilling, confirm locations of underground and overhead utilities.
- Wear appropriate PPE and avoid loose clothing or jewelry.
- Stay clear of moving parts.
- Operating personnel should know the locations of emergency shut-off switches.

Hand and Power Tools

- Make certain grinders, saws and similar equipment are provided with appropriate safety guards.
- Power tools must be used with proper shields, guards, or attachments as recommended by the manufacturer.
- Check circular saw guards to ensure that they are not wedged up, which can leave the lower portion of the blade unguarded.
- Ensure that cord-connected, electrically operated tools and equipment are effectively grounded or of an approved double insulated type.
- Ensure that all tools and equipment used at the work site are in good condition.

Mechanized Equipment

- Employees must be properly trained in using the type of mechanized equipment they operate.
- Only trained and/or licensed (if required) personnel can operate mechanized equipment.

- If mechanized equipment has a warning horn or whistle, ensure that this functions and is audible over background noise.
- Any mechanized equipment needing repair should be taken out of service immediately.

'Hot Work'

- Only authorized and trained personnel can operate welding, cutting, or brazing equipment.
- Warning signs reading 'DANGER, NO SMOKING, MATCHES, OR OPEN LIGHTS' or similar wording are required to be posted in such work sites.
- Approved safety glasses must be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns.
- Eye protection, helmets, hand shields and goggles must function well and meet appropriate standards.
- Adequate ventilation must exist in and around locations where welding or cutting is performed.

Working On or Near Water

- When there is the possibility of falling into water, two persons should operate as a single unit in order to monitor and assist each other.
- Workers can wear life vests.
- A throwable rescue device and other equipment (such as ladders, lifting gear, or a rescue boat) shall be immediately available to recover an individual from the water.
- Waders should not be worn when working along, over, or in moving waters or waters influenced by tides or acted upon by waves when the water depth exceeds knee height.
- Waders should never be worn aboard a watercraft of any kind.
- If workers have the potential to get stuck in mud or fluidized sediment, a safety line should be available to be deployed from safe ground.
- Workers should not access areas where slip/fall hazards exist.

Spill Prevention

Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. The following procedures can help prevent or contain spills:

- All hazardous material should be stored in appropriate, labeled containers
- Tops/lids should be secured back on containers immediately after their use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.
- At least one spill response kit should be made available on a work site. This can include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.

Noise Exposure Monitoring.

When heavy equipment is in operation and where hazardous noise levels are present (85 dBA or greater), all personnel inside that zone should wear hearing protection during the operation of that equipment.

Tools for Reducing Hazards

Personal Protective Equipment (PPE)

Adequate work procedures, protective clothing and equipment should be provided to work personnel as needed, and staff should be trained on PPE use, storage and procedures. PPE that may be needed for site work are listed below:

- Hard hat for overhead impact.
- Eye protection with side shields.
- High visibility safety apparel.
- Heavy-duty gloves for handling debris with sharp edges.
- Reinforced toed protective footwear.
- Respiratory protection as necessary: filtering face pieces may be used for nuisance dusts (e.g., dried mud, dirt and silt). Filters with a charcoal layer may be used for odors.
- Fall arrest systems can be used on platforms without guardrails.
- Protection against the effects of occupational noise exposure should be provided.
- If clothing will be contaminated, appropriate procedures should be put into place for its safe disposal.

Training

Workers should be trained as to the location of first aid equipment, emergency phone numbers, waste disposal receptacles and sanitary facilities and to recognize and avoid hazards to which they may be exposed while performing work. This training may be composed of the following elements:

- Training about general hazards, conditions and work expected to be performed. Training should be conducted before workers are deployed.
- Job-specific training necessary for workers to develop the skills needed to perform their assigned task/operation.
- Task- or operation-specific training on how to perform the job safely, including any training mandated by specific standards. This may include training/information related to waste cleanup, emergency response, selection and use of PPE and tools, and working safely at elevations.
- Site-specific training that covers any hazardous conditions workers may be exposed to at a particular location. Identify specific controls such as specialized equipment, work practices, and PPE required for the particular job site.
- Daily job briefings should take place that cover the day's work plan, anticipated hazards, and required controls.
- Maintain records of worker training and make certain these are available for inspection. Training records should include dates, curricula, location, training certificates and attendance rosters.

Sign Posting

A copy of the list of emergency telephone numbers from this HASP manual should be posted conspicuously in a public area of the work site, or in a room that is unlocked, well lit and has access to a telephone, and personnel should be informed where this list is. In case of an

emergency, signs identifying exits from buildings should be posted as appropriate.

Record Keeping

All occupational injuries or illnesses, except minor injuries requiring only first aid should be recorded, and an incident/accident form (provided in the appendix) should be filled out.
Additional forms that may be required to be filled out, as related to engineering progress, environmental compliance, materials delivery and utilization, and a visitors' log will be maintained on site at a location that can be locked, and will be accessible for retrieval and use by those authorized to inspect them while on site.

Safety and Health Program

- A person responsible for ensuring health and safety measures for each site should be identified.
- A regular review of safety issues and lessons learned should take place for individual site, as well as collectively for the program, and procedures can be modified accordingly to improve procedures.
- A procedure should be established for personnel to make complaints or to report safety concerns (and for these complaints to be recorded) that ensures that these issues are effectively discussed and addressed.

First Aid and Medical Services

- First aid equipment must be clearly and conspicuously marked and located in a public area at the work site, and personnel must be told where it is. Packaging must be intact and the interior contents marked.
- The list of phone numbers of emergency services (from this HASP) must be copied and posted conspicuously. A printed map showing directions to the nearest hospital / health care facility(ies) should be kept on site.
- The facilities and water for drenching or flushing of the body or eyes with water should be available in areas where corrosive materials are stored or handled.

Fire Protection

- The phone number of the nearest fire department must be posted conspicuously on site on a list that includes other emergency numbers.
- Any fire alarm system on site should be inspected, and certified as required.
- An adequate number of fire extinguishers should be available on site, and all should be within their expiration/inspection date.
- Protective equipment or elements, such as fire blankets and fire extinguishers, should be routinely maintained, and their locations shown to personnel.
- Personnel should be instructed in the use of fire extinguishers.

D. Appendices

Incident/Injury Report Form and Procedure

General Information
Date of Report:
Name of Person Reporting:
Title of Person Reporting:
Title of Project / Site of Incident:
Type of Event: Incident ☐ Injury ☐ Incident and Injury ☐ Other (describe) ☐
Incident / Injury Information
Date of Event:
Time (approximate) of Event:
Name and Title of Injured Person(s)
Describe Event / Injury:
Actions Taken: First Aid Provided ☐ Transport to Medical Facility ☐ Authorities Contacted ☐ Other comments:
Name and Location of Medical Facility and Attending Doctor:
Witness Names:
Causes / Compliance
Causes: Wearing PPE? ☐ Hazards Present:
Assessment / Recommendations
Property Damage? ☐ If so, describe.
Recommendations to prevent in the future?
Review and Further Actions
Reviewed By (Name and Position):
Date of Review:
Recommendations for Future Action:

Training

General Recommended Training.

Project specific training will vary, depending on the tasks to be performed onsite. The contractor should carry out training that identifies the elements of the site map, including:

- Location of first aid equipment
- Location of emergency numbers
- Location of waste disposal containers
- Location of sanitary facilities
- Location of shelter, in case of extreme or adverse weather

Additionally, training can cover:

- Use, storage and maintenance of Personal Protective Equipment (PPE)
- Overview of recommendations from procedure checklists in this HASP
- Identification of designated Safety Officer
- Identification of location of hazardous materials onsite
- Identification of individuals with first aid / CPR training
- Environmental and storm water requirements at site

Designing a Training Program

The objective of training is to educate personnel about health and safety practices on work sites and to raise awareness and skill levels to an acceptable standard. Training should be given to managers, trainers, and workers in general and should be conducted by qualified persons.

Training can be given briefly during daily meetings of staff, or can be scheduled in advance and last for hours. Trainers should have a clear curriculum, specific goals and should not waste the time of workers.

Training should take place during the orientation of staff and the introduction of new equipment or procedures. Participants can be provided with practical, participatory scenarios to evaluate and comment on . In addition to the topics listed above, training can include:

- Risk awareness on site
- General hygiene and ‘housekeeping’ on site
- Fire protection

Training Records

Records of training meetings, including dates, curriculae and a list of attendees, should be kept on site.

Waste Management

Solid wastes generated during any phase of a project shall be disposed of in accordance with applicable national and/or provincial regulations. The company/organization responsible for overall solid waste disposal must be identified for each project, and the ultimate disposal site should be one that is approved and sanitary.

Contractors and subcontractors are responsible to provide clearly identified waste receptacles on site, and to demarcate other waste sites for waste too large to fit into a container. These sites should be cordoned off from workers and the public, when possible.

Additionally, the means to recycle any materials on site should be identified and implemented as part of routine workday procedures.

Personal Protection Equipment (PPE)

Contractors and subcontractors are responsible for providing PPE to staff. They must:

- Identify specific PPE to be used for personnel on specific tasks
- Procure the correct PPE based on site hazards to be encountered
- Train personnel in how to fit and wear PPE, the limitations of PPE, maintenance, cleaning and storage of PPE

Personal protection equipment (PPE) may include the following:

PPE Item	Comments
Safety vest	
Work uniform	
Protective coveralls	
Leather boots	
Safety glasses / goggles	
Welding / hood shield	
Hard hats	
Ear plugs	
Ear muffs	
Respiratory protection	
Personal flotation device	
Insect repellant	
Barriers/guard rails	
Personal Fall Arrest System (PFAS)	

Biological Hazards

Personnel may encounter biological hazards that include: animals, insects, molds/fungi, poisonous plants and microbes. An integral part of protection against these types of hazards is an understanding the local flora and fauna. As animals, insects, molds/fungi, poisonous plants and microbes vary from site to site, so does their likelihood of causing a harmful or hazardous condition.

Animals

Animals represent hazards because of their poisons or venoms, size and aggressiveness, diseases transmitted, and/or the insects (vectors) that they may carry.

Moving containers, reaching into holes, or walking through high grass, swampy areas or rocks, may cause encounters with poisonous snakes. Key factors to working safely in this regard include being alert, using care when reaching into or moving containers, and being familiar with the habits and habitats of snakes in the vicinity of an incident or site. A snakebite warrants medical attention after administration of proper first aid procedures.

Landfills and abandoned buildings often attract stray dogs and rats. These animals, particularly dogs, often become pack oriented, very aggressive, and represent serious risk of harm to workers. Workers entering such abandoned buildings should be alert for such animals and avoid approaching them since this may provoke aggressive behavior. Avoidance and protection protocols include looking for animal dens, using good housekeeping and using repellents.

Rabies is a viral infection most often transmitted by bites of animals infected with the virus.

These animals include dogs, bats, skunks, foxes and raccoons, but any warm blooded animal can become infected. Domestic dogs and cats can become infected if not immunized. Signs of rabies infection are not always clear. Any sign of over aggressiveness, passivity or unusual behavior can be a rabid sign. Examples include observing a raccoon during the daylight hours or a live bat on the ground. The best precaution is to observe these types of animals, even if injured, from a safe distance and notify the local health department and/or police department to arrange to capture the animal and have it tested. In general, also avoid dogs and cats not known to you.

If bitten by a suspect rabid animal, wash the bite area with soap and water, then disinfect with 70% alcohol and immediately seek medical attention. Obtaining prompt medical attention and confirming the rabies infection of an animal are very important. Even after being bitten, rabies is preventable, if treatment is begun soon enough, for rabies is not curable once symptoms appear. There are vaccines available that should be considered if a work assignment involves trapping animals likely to carry rabies. Medical consultants must be involved in decisions to immunize workers against rabies.

Birds also invade old or abandoned buildings and leave behind droppings which when inhaled cause a serious lung disease known as histoplasmosis. Workers in field areas where areas of rodent population are known or suspected should be aware of the transmission of the Hantavirus. Hantavirus is associated primarily with the deer mouse (*Peromyscus maniculanis*)

as a primary host. This virus can be transmitted by infected rodents through their saliva, urine and feces. Human infection may occur when infected wastes are inhaled as a result of aerosols produced directly from the animals, or from dried materials introduced into broken skin or mucous membranes.

Infections in humans occur mostly in adults and are associated with activities that provide contact with infected rodents in rural or semi-rural areas.

Hantavirus symptoms often begin as flu-like symptoms such as fever, muscle aches, headache and/or cough and progress rapidly to severe lung disease. Early diagnosis and treatment are vital. Personnel involved in work areas where the presence of rodents is known or suspected must take personal protective measures such as half-face air purifying respirators, eye protection, tyvek coveralls, chemical resistant gloves and disposable boot covers. These individuals must comply with the following risk-reduction strategies:

- Eliminate rodents and reduce availability of food sources and nesting sites used by rodents;
- Store trash/garbage in rodent-proof metal or thick plastic containers with tight lids;
- Cut all grass and/or underbrush in proximity to buildings;
- Prevent rodents from entering buildings by use of such materials as screens to eliminate openings.

<u>Insects</u>

Diseases that are spread by insects include the following: Leishmaniasis, Bubonic Plague, Malaria, Encephalitis and West Nile Disease. In general, one of the most dangerous and acute effects of insect bites or stings is a sensitivity reaction, which is the most common cause of fatalities from bites and stings, particularly from bees, wasps and spiders. Anaphylactic shock due to stings can lead to severe reactions in the circulatory, respiratory and central nervous system, and possibly death. It is for this reason that all personnel must be questioned in regard to any possible allergic reaction to bites or stings. Any individual being observed having an allergic reaction after an insect bite or sting must be administered first aid and brought to a medical facility.

Sometimes animals may serve as hosts for insects which may spread disease. Other insect hazards include mosquitoes and scorpions. Scorpions are highly venomous and mosquitoes spread encephalitis, malaria, and West Nile Disease.

<u>Molds/Fungi</u>

Molds/fungi are found in every ecological niche. They can have an impact on human health depending on the nature of the species involved, the metabolic products being produced by these species, the amount and duration of individual's exposure and the specific susceptibility of those exposed. Health effects generally fall into four categories: allergy, infection, irritation and toxicity.

The most common response is allergy. Some individuals may develop an allergic type of response and sensitization. All molds/fungi are capable of inducing an allergic response in

individuals. Allergic fungal sinusitis is a common illness among susceptible individuals residing or working in moldy environments.

Infection from fungi/molds that grow in indoor environments is not common except insusceptible individuals. Various *Aspergillus* species are known to be pathogens. There are other fungal species that cause systemic infections, such as *Coccidioides, Histoplasma* and *Blastomyces.* These fungi can grow in soil or may be carried by birds or bats.

Another group of possible health effects from fungal exposure is derived from the volatile organic compounds (VOCs) produced through fungal metabolism and released in indoor air. Some of these volatile compounds can irritate the mucous membranes of the eyes and respiratory system.

Poisonous Plants

Personnel should know how to identify and avoid direct contact with poisonous plants. The usual effect is dermatitis or skin inflammation. When working in wooded areas or other areas that are suspect for poisonous plants, risk can be reduced by wearing long pants with the pant legs tucked into the shoes and limiting access to areas that are not overgrown, to avoid incidental contact with such plants. If any individuals come into contact with such plants or suspect that they have, risk can be reduced by cleaning the skin thoroughly with soap and water.

Microbial Agents

Microbial hazards can occur when the materials handled by workers contain biological contamination. Another source of infection is poor sanitation. Waterborne and food borne diseases can be a problem if adequate precautions are not taken. Waterborne diseases include cholera, typhoid fever, viral hepatitis, salmonellosis, bacillary dysentery and amoebic dysentery.

In any environmental emergency, water supplies may be affected. The source of water for a long-term remedial action is also important; in some locations, water may have to be transported to the site, along with food. The food and water must be handled properly and come from an uncontaminated source.

Tetanus

Tetanus (lockjaw) is another form of biological hazard encountered on job sites. Tetanus is different from other vaccine-preventable diseases because it does not spread from person to person. The bacteria are usually found in soil, dust and manure and enter the body through breaks in the skin - usually cuts or puncture wounds caused by contaminated objects. Workers must be careful to avoid puncture hazards, wear protective clothing and have current tetanus vaccines.

Tetanus is a serious disease that causes painful tightening of the muscles, usually all over the body. It can lead to "locking" of the jaw so the victim cannot open his mouth or swallow. Tetanus leads to death in about 1 in 10 cases. Several vaccines are used to prevent tetanus among children, adolescents, and adults.

Tetanus requires hospitalization, treatment with human tetanus immune globulin (TIG), a tetanus toxoid booster, agents to control muscle spasm, and aggressive wound care and antibiotics. Metronidazole is the most appropriate antibiotic. The wound should be debrided widely and excised if possible.

Acronyms

AIDS	Acquired Immunodeficiency Syndrome
dBA	Decibels
CPR	Cardiopulmonary Resuscitation
EMMP	Environmental Monitoring and Mitigation Plan
EPA	United States Environmental Protection Agency
GFCI	Ground Faule Circuit Interrupter
HASP	Health and Safety Plan
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
MSDS	Material Safety Data Sheets
OSHA	Occupational Safety and Health Administration
OTI	Office of Transition Initiatives
PFPS	Personal Fall Protection System
PPE	Personal Protection Equipment
SEO	Safety and Environmental Officer
USAID	United States Agency for International Development

HASP Log Of Revisions and Updates

Name of Who Made Revisions	Position of Who Made Revisions	Date of Revisions	Revision Approved by: