

Appendix A - Health and Safety Guidelines for Investigators

Blacksmith Institute Health and Safety Guidelines for investigators

Introduction

Investigations must be conducted in a safe manner. This document provides an overview of the health and safety guidelines investigators should follow before, during and after the “initial site screening” (ISS) visits.

Before each site screening, investigators must:

- evaluate potential health and safety hazards; and
- identify appropriate controls and precautions to eliminate or reduce risks
- brief other parties coming to the site on general and any specific health and safety requirements

See “Before the site screening visit” below for more information

Responsibilities:

Investigators are responsible for their own safety. Investigators must avoid situations where their lives and well-being are endangered.

Regional and country coordinators, with the support of the Blacksmith Regional Directors, should ensure that investigators have been informed of general health and safety requirements and will support investigators in obtaining any data or measurements needed to address risks posed by specific site investigations.

Before the site screening visit:

1. Perform a risk screening

Before conducting a site screening, investigators must identify the potential hazards that they may encounter at the site, including:

Type of hazard	Examples	Notes
Chemical hazard	- Chemical pollutants present in the area	Review previous studies or publications related the area, identify potential sources, etc.
Physical hazard	- Radiation - Noise - Excessive cold or hot weather - Slips, trips, falls	Take into account the layout and state of the site, particularly any shafts, excavations, buildings etc. Attention should be paid to expected local weather and of other factors such as quality of the access.

		For radiation hazards see “Radiation safety” below
Biological hazard	<ul style="list-style-type: none"> - Bacteria, viruses, parasites - Animal bites 	If blood or urine tests will be conducted see “Bio-safety” below (note that Blacksmith staff do not carry out such tests themselves)

Once hazards have been identified, the investigator must estimate the likelihood that the expected extent of exposure to the identified hazards will put the investigation team at significant risk. The principal pathways of exposure at contaminated sites are normally ingestion, inhalation, and direct contact but other possible exposures should be considered. Estimating the potential risk should take into account the activities the investigator will carry on during the site investigation and the amount of time that the investigator is planning on staying at the site.

Next, the investigator must determine what measures he/she must take to reduce the probability that the exposure to these hazards will cause injury or endanger his/her wellbeing (such as wearing personal protective equipment, etc.). The investigator must communicate these conclusions to all those invited to the visit including government officials.

Particular attention should be paid to planning for sites where there is a possibility of radiation exposures. In such cases, a detailed safety plan must be prepared, including the use of appropriate radiation monitoring devices. No investigator should plan to enter a site with possible radiation hazards without specific advice and approval from the Coordinator or Program Director, who will obtain specialist advice as needed.

Additionally, the investigator should evaluate any security concerns (such as risks posed by violence, crime, etc.) and take appropriate measurements to address those as well.

Reproductive hazards:

Women who are pregnant or who are planning on becoming pregnant should evaluate potential contaminants that could be found at a site to specifically determine potential reproductive hazards. If there are potential reproductive hazards, they should discuss with their physician about the potential risks of performing these site evaluations and appropriate ways to address them.

2. Get personal protective equipment (PPE) ready

The investigator must have access to essential personal protective equipment and must identify and use the appropriate PPE the during site visits. Basic equipment includes:

- Boots (closed shoes – open toes shoes must not be worn)

- Protective clothing such as long sleeve pants and shirt
- N-95 Respirator (i.e. basic dusk mask): Dusk mask must be worn whenever there is potential exposure to hazardous dust. However, masks may not be necessary if there is no reason to believe significant dust exposure risks are present. These respirators should only be used once (they should NOT be cleaned or washed and/or reused)
- Goggles or safety glasses: must be worn whenever there is the presence of particles in the air that may damage the eyes (for example, flying debris or significant amounts of dust) or when there is the risk of splash or splatter of contaminated substances.
- Gloves: if touching or picking up any material that may be contaminated

Other PPE may be identified as relevant to a specific site. If the investigator believes that such PPE is required and is not easily available or is expensive, then, she/he should contact the appropriate Coordinator.

PPE should be inspected before every site visit and it should be cleaned, repaired or replaced if needed.

The site screening visit:

1. Traveling to and from the site:

- Vehicles used to travel to and from the site must comply with local regulations (up to date inspections if required, etc.)
- The number of occupants must not exceed the number of people that can be seated.
- Seat belts, if available, must be used by those riding in the front of the vehicle or in all seats if required by local regulations
- Drivers must adhere to speed limits, signs and all other traffic norms
- Vehicles must never be driven by anyone under the influence of alcohol.

2. During the site screening:

During the site screening, the investigator must:

- Wear appropriate PPE (see above).
- Wash hands before eating anything (even if gloves are worn during the screening).
- Must NOT - under ANY circumstance - enter confined areas. These are areas large enough for a person to enter but with limited ventilation and/or limited or restricted means of entry or exit (for example wells, tanks, pits, vessels, sewer systems, pipelines, etc.)
- Be cautious in areas that may be slippery due to water, mud, steep slopes, etc.
- Be cautious if using ladders or stairways that may be unsafe

- Be cautious in exposed elevated areas
- Be aware that hazardous material and toxic contamination may look innocuous –take precautions anyway. Do not assume that because people (e.g. local community members) are living in the area without any protection or without presenting any obvious adverse health symptoms that there is no hazard.

Bio-safety

Biological agents such as bacteria, viruses, parasites can be present in human and animal fluids and waste such as blood, feces and urine. Touching or any contact with human and animal fluids and waste, or dead animals, should be avoided during investigations.

Collection of human fluid samples, such as urine or blood samples, should only be done by persons with specific responsibility and training for such sample collection, and must be done following protective protocols. Blacksmith investigators do NOT take human samples but may be present when authorized persons (normally local medical staff) do so. Good practice in such situations includes:

- Wearing disposable gloves and safety glasses at all times
- Good handling and disposal practices for needles, vials, tubes or other materials used in the sampling process
- Protective clothes, such as a lab coat or uniform must be worn during sample collection, and should be removed before entering in contact with other people, especially children and pregnant women.

Radiation Safety

Ionizing radiation is composed of particles with enough energy to produce tissue damage. These can be found in wastes from uranium and other similar processing facilities, and in defunct nuclear weapons production or storage facilities, among others. If investigations are going to be carried out in or near sources where radiation may be present, a detailed safety plan must be designed by the investigator with the support and approval of the country and regional coordinators and the program director.

After the site screening

After the site visit the investigator must:

- Wash hands and face before eating anything
- Change from working clothes and shoes. Take showers before entering into close contact with other people, particularly pregnant women and/or children.
- Clean shoes to remove any mud or soil on them, wearing gloves during the cleaning and making sure that the removed soil is collected and

disposed of properly or is left at the site. Soiled material or scraping from shoes must not be left on floors, in cars or around door entrances or other places where people gather.

- Wash clothing before wearing again.
- If any safety related incidents occurred during the visit, these must be communicated to the Country and Regional Coordinators and Program Director.
- If there are any lessons learned during the visit that can be shared with other investigators to prevent future incidents, these also should be communicated to the program director for the region so that they can be shared with other investigators.

Further health and safety information can be found at:

- US Center for Disease Control and Prevention – workplace safety and health topics

<http://www.cdc.gov/niosh/topics/chemical.html>

- US OSHA administration – Health and safety topics

<http://www.osha.gov/SLTC/>

Further information on toxic pollutants can be found at:

- Agency for toxic substances and disease registry – case studies in environmental medicine:

<http://www.atsdr.cdc.gov/csem/csem.html>