Global Health Practice Example

IH Response to Emergencies and Natural Disasters

PURPOSE	This practice outlines the steps for providing focused, high value health-related support during emergency incidents that meets business unit expectations.
REQUIREMENTS	• Industrial Hygienists (IH's) are available, well prepared and appropriately connected to the business teams' Emergency Response (ER) processes, programs and procedures. • IH's participate in ER planning, training and drills for types of emergencies and natural disasters where IH response is expected. • Appropriate quantities of IH equipment are available, maintained and ready for use. • Health advice and information provided during ER is consistent with local regulatory and corporate requirements (e.g. exposure assessment, health and exposure control practice requirements). • Site safety plans are followed during field support. • IH participates in any required medical surveillance programs for their emergency response activities.
ACTIVITIES	1. Prepare • Liaise with local ER Coordinator and participate in local drills and training. • Identify the possible hazards that may occur from natural and industrial incidents in the local jurisdictions (See Table 1 for guidance). • Identify and procure minimum stock levels of equipment and consumables – Maintain instrumentation to ensure readiness – Have adequate supply of calibration gases/standards required for instrumentation. – Monitor expiry dates of consumables, especially colorimetric detector tubes. • Identify IH analytical labs that can provide an emergency service, how you will get samples to the lab and how you will preserve samples while on-site. • Identify any contractor support that can provide field services. • Verify with clinical team if any medical health surveillance and exams are required. • Maintain key training and competencies such as respirator fit-testing. • Retain important links and references for use during an emergency (see Resources).
	2. Gather and communicate incident information • Obtain information about incident by communicating directly with on-scene personnel if possible. Information you should obtain includes: – Type of event: natural disaster (e.g. storm, flood), fire, leak, spill, release, explosion, etc. – Location of event: country, province/state, region/county/, city, facility or address, unit/area, if in a facility type of equipment or structure involved. – Weather: temperature, wind speed & direction, precipitation. – Type of hazards: product/stream/chemicals involved, volume, physical state, SDS available, other information. – Key contacts (names/phone numbers): incident command, facility managers, responsible IH(s). – Type of response ongoing and/or expected - firefighting, clean up, damage assessment, inspection, etc. • Establish the response type of the incident: – Tier I – Facility-only response, small and under control; on company/customer property; Local media interest. – Tier II - Larger but still under control; extends beyond company /customer property; mutual-aid/co-ops activated national media interest. – Tier III - Very large and difficult to control; regional response involvement, global media interest. • Contact the key organizational supervision/managers as appropriate and communicate relevant information. • Initiate a personal chronological log of ER activities

3. Attend the Response
- If responding to an onsite incident, respond per site ER procedures. Do not put yourself or others in danger.
- If responding to an offsite incident, notify the relevant Managers and Supervisors, make appropriate travel arrangements.

4. Based on incident information, address the following requirements:
- Personal needs
  - Own PPE (e.g. correct sized boots, coveralls, prescription eye-wear)
  - Clothing, medicines, money, passport/visa, DVT socks, etc.
- Resources available
  - Communications (including phone lists) and computing.
  - Documentation/forms and health-related reference needs.
  - If traveling from home site, calibrate or functionally check direct-read meters and instruments prior to departure.
  - If traveling from home site pack all items and arrange prompt shipping for any equipment and supplies that cannot travel with you (e.g. calibration gases, instruments with internal gas cylinders).
  - If taking equipment internationally, consider using a courier service to avoid any customs delays.
  - Identify if site/area has access to equipment or other supplies. If not work with your supervisor or other IH colleagues to promptly obtain and ship any items or extra supplies that will be needed but are not immediately available
- Monitoring strategy
  - Obtain maps/diagrams/plans to identify monitoring needs/locations
  - Prepare a monitoring strategy (personal, area, fence line, community) to determine monitoring equipment & supply needs.
  - Verify with the local IH lab that the correct purchase orders are in place. Work with Procurement on establishing any revised order numbers relevant to the ER.

5. On-scene
- Upon arrival at the emergency scene, check in and identify the relevant chain of command. Locate the IH Coordinator / Manager or if not at your site, the Safety Officer, Lead Industrial Hygienist or Incident Commander to review the incident scope and status, and to identify any critical IH support needs.
  - Review any initial area chemical/physical monitoring data.
  - Review current Site Safety & Health Plan (SSHP), including current PPE requirements for responders
  - Set up and calibrate instruments and equipment (or verify this has been completed).
  - Review shift rosters and identify IH's currently available to provide support to manage fatigue
  - Review the situation with the Safety Officer or designated site personnel. Refer to the situation boards located in the Command Center.
  - Attend to any critical, high priority IH needs identified by site management and/or the Incident Commander (e.g. liaise with regulatory public responders).
  - Establish method of communication with site personnel, emergency response team, and offsite MOH management.

6. Based on the initial situation review and overall incident size-up, estimate the IH staffing and supplies, and promptly notify the IH Supervisor/Manager. Issues to consider:
- Is there potential community impact (i.e., need for evacuation, or shelter in place recommendations)?
- Is the area to be monitored too large for one individual to cover?
- Will the onsite incident require additional monitoring or IH support?
- If known, will the length of the event require additional support?
- Will sample method/preparation require additional time?
- Will monitoring require additional equipment (type or number of instruments)?
- Inform the local IH lab of the anticipated increased work load
- Order additional consumables from local suppliers
- Establish or locate suitable working location for managing IH equipment

	7. Perform initial and ongoing health hazard assessments (chemical-physical-biological agents, public health issues including infectious diseases, food & water sanitation) in areas where responders are/will be working, and in affected communities, as appropriate. • Provide advice consistent with local regulations and company health practices • Follow established site emergency response procedures, programs, etc., as appropriate. • Ensure that response personnel are protected against the hazards. • Communicate assessment results and IH recommendations to IH Coordinator/Manager, Incident Command, as appropriate. • Provide advice to municipal emergency responders or officials, as needed, to support protection of the public (only when directed by the Public Information Officer or the Regulatory Liaison Office) • If asked to perform industrial hygiene assessments inside private homes and/or businesses, before doing so discuss this with your IH Coordinator /Manager, Incident Command, Government & Public Affairs as appropriate. • Maintain personal log book of daily activities • Document all assessment results according to company practices
	8. Based on initial assessments, provide IH input for the Site Safety and Health Plan (SSHP), or equivalent form, if applicable. • Revise SSHP IH information as required based on updated findings. • Provide input regarding health regulatory compliance requirements.
	9. Where directed, attend meetings with public or government officials and interface with them as needed. • Review potential public/regulatory concerns with site management prior to meeting with outside agencies. • Maintain written documentation of all meetings and interfaces. Inform site or response team legal counsel and provide material for review if needed. • Notify site management and/or the Incident Commander of any critical issues or regulatory concerns that may develop.
	10. Ensure there is adequate handover and transition with other rotating company industrial hygienists coming onsite. Supervise and provide work direction for IH contractors (as required).
	11. Keep IH Coordinator /Manager and Incident Command informed regarding any critical developments or additional support needs during the response operations.
	12. Demobilize • Prepare IH equipment, instruments, supplies, PPE for shipping back to the office. • Ensure documentation is secure and take back to office for report writing. • Prepare remaining samples for shipping to the lab. • Check out with Lead IH/IH Coordinator/IH Manager, Safety Officer, and Incident Commander, as appropriate.

Table 1: Recommended types equipment and consumables for emergency response

Information below only provides summary of types of equipment recommended for emergency response. Each scenario needs to be assessed by the site IH to identify the correct amount of equipment, consumables and resources required. It also assumes that the site IH team can safely respond to these incidents without risk to their health.

TYPE OF	ANTICIPATED AGENTS	EQUIPMENT	CONSUMABLES	NOTES
General response	• Hydrocarbons • Combustion products (e.g. CO) • Noise	• Gas detectors- standard 4-way/PID • High flow pumps • Low flow pumps • Sample heads/tubing for tubes • Sample heads/tubing for inhalable and respirable dusts • Bellows / piston pumps /chip readers for colorimetric tubes • Sound meters / calibrators • Primary flow rate meters • Radiation wipe test kits • Sound level meters	• OVMs • Sorbent charcoal tubes • Filter media (MCE, PVC) • Batteries • Calibration gases • Benzene Separation Tubes • Colorimetric detector tubes / chips	• Obtain spare equipment and consumables in anticipation of breakages and repairs • Take into account expected delivery times of spare equipment and consumables especially across international borders • Tubes / chips should be ordered relevant to the site hazards • Monitor expiration dates of consumables • Establish suitable work stations at the staging area for setting up and charging equipment
EXAMPLES				
Crude oil /Fuel / Produced water spill cleanup	• Benzene • H_2S • Total hydrocarbons • Mercury	• Gas detectors - PID sensors • Gas detectors- CO/ H_2S sensors • Low flow pumps for hydrocarbon • Mercury analyzer	• See General Response	• Most facilities will have access to standard 4-way gas detectors. • Know what types of lamps are used in PID instruments and follow manufacturer's instructions for adjusting correction factors.
Hydrocarbon / chemical fire in facility	• Benzene • H_2S / SO_2 • Total hydrocarbons • Carbon monoxide	• Gas detectors – CO/H_2S/SO_2 sensors	• See General Response	• Depending on the facility, specific monitoring would be required targeting combustion products ranging from PCAs, aldehydes and cyanides
Facility cleanup post fire	• Asbestos • Radiation • Hydrocarbons /oils/ residues • Noise	• Radiation monitors • High flow pumps for asbestos • Sound level meters	• See General Response • MCE filters	• Radiation equipment needed if gauges or other fixes sources may have been damaged
Flood / water damage (from storms, hurricanes etc.)	• Mold • Bacteria - Open sewerage • Chemical hazards (i.e. CO, H2S, etc.)	• Indoor air monitoring equipment • Gas detectors – H_2S sensors	• See General Response	• Verify drinking water available meets potable water standard (e.g. WHO) • Consider heat/cold stress, dehydration and fatigue • Be aware of potential chemical (i.e. CO, H_2S, etc.) or other hazards (asbestos, mold, etc.) hazards that could have contaminated the area • Musculoskeletal injury-avoid overexertion and practice good lifting techniques • Insects, biting pests, cuts and abrasions

TYPE OF	ANTICIPATED AGENTS	EQUIPMENT	CONSUMABLES	NOTES
Volcano eruption	• Silica in ash	• High flow pump for silica dust • Cyclone	• See General Response • PVC filters	• Applicable to regions where there are active volcanoes
Forest fire / wildfire	• Carbon monoxide • Smoke (carbon) particulates	• Gas detectors - CO sensors • Real-time dust monitor	• See General Response	• Air sampling protocols need to be shared and communicated immediately with the Emergency Management Team, including contractors • Air quality should be assessed at the work location and in camps (if applicable). Lower thresholds should be applied to the camp settings (i.e. non-occupational setting) • Consider impact of fires to disrupt delivering of services such as potable water, fuel, and food for remote locations • Criteria used to establish the scale of the emergency and appropriate level of response should include thresholds for air quality.
Severe weather – Snowstorms / heat waves	• Thermal stress	• Local weather station (temperature and wind) • Heat stress monitors	• Distilled water for wet bulb	• Refer to ACGIH for guidance on managing cold stress.
Damaged/ lost radiation source	• Ionizing radiation	• Radiation monitor – Beta / gamma probes, Check sources		• Liaise with radiation safety officer to determine potential damage to radiation sources. Engage radiation clean-up specialists as required. • Loss of radiation source should be immediately reported to IH Supervisor and radiation safety officer.

RESOURCES

NIOSH Pocket Guide to Chemical Hazards

http://www.cdc.gov/niosh/npg/

Agency for Toxic Substances and Disease Registry

www.atsdr.cdc.gov

Fatigue management

http://www.cdc.gov/niosh/topics/oilspillresponse/pdfs/NRT-Fatigue-for-Emergency-Workers.pdf