

## **Hazard Identification Tool**

### **Floods – Honduras – 22 October 2008**

#### **FL-2008-000191-HND**

Disclaimer

*This profile is not a conclusive list. Other hazards may not be readily identifiable. The information sources used are public websites. All efforts are made to screen the websites for accuracy.*

➤ **Objective**

The objective of the Hazard Identification Tool (HIT) is to alert the UN Country Team and emergency responders to potential secondary risks after a natural disaster posed by large infrastructure and industrial facilities containing hazardous materials located in the affected area. This information can be shared with competent local and national authorities as appropriate. Any actual secondary risk should be addressed at the earliest possible stage.

➤ **Methodology**

The HIT provides the user with the (expected) location of hazards in the affected area. In addition, the substances that are expected to be present in these facilities are listed, as also the hazard type for the whole of the substances. The last column gives the estimated impact type of the hazard. The methodology of the HIT is based on the Flash Environmental Assessment Tool (FEAT), a scientific assessment methodology to detect the most acute hazards to human health and the environment after natural disasters.

➤ **Event**

A stationary low pressure area over the North Western Caribbean Sea has been producing disorganized showers and thunderstorms. In Honduras, heavy rains have caused landslides and flooding, killing 14 people and affecting 200,000, of which 4,000 have been placed in temporary shelters. The government has declared a state of yellow alert in the departments of Choluteca and Valle.

➤ **The Joint UNEP/OCHA Environment Unit**

The Joint UNEP/OCHA Environment Unit is the United Nations mechanism to mobilize and coordinate the international response to environmental emergencies caused by natural disaster, technological accidents and complex emergencies.

## List of Hazards

2

Location	Actual Hazard			Estimated Impact Type
	Facility	Substances	Hazard Type	
El Cajon - on river Comayagua, near San Pedro Sula	<b>Hydrodams (Large)</b>	-	-	Dam stability might be affected, dammed water, high voltage electricity
El Coyolar - on river San Jose near Comayagua				
Yure – on the river Yure, near San Pedro Sula				
El Pescadero – On river Pescadero, near San Pedro Sula				
Enea – on river Enea, near San Pedro Sula				
La Pita – on river Tepemechin, near San Pedro Sula				
Los Laureles – on river Guacerique near San Pedro Sula				
Varsovia – on river Varsovia, near San Pedro Sula				
Pavana (250 MW, uses heavy fuel oil)	<b>Thermal power station</b>	natural gas, propane, butane, ammonia	Flammable Gas, Gas Toxic to the Environment, Gas Toxic to Humans	Direct impact on Human Health
Choloma III power plant (230 MW, uses diesel)				
<i>Additional facilities are expected to be present in the affected area, but an exact location could not be specified</i>				
<i>These facilities are expected to be present in the affected area, but an exact location could not be specified</i>	<b>Mining (gold, copper, nickel)</b>	arsenic/mercury/cyanide	Toxic/persistent, Carcinogenic, Mutagenic, Solid Toxic after contact with water, Liquid Toxic to the Environment, Liquid Toxic to humans, Liquid Toxic after contact with water, Gas Toxic to the Environment	Long-term impact (Direct impact on Human Health, Direct impact on life-support functions and nature)  Loss of life, injuries etc related to flooding of mines, instability of mines etc.
<i>These facilities are expected to be present in the affected area, but an exact location could not be specified</i>	<b>Textile industry (dyes)</b>	naphtalene, benzene, bromine, chlorine, alkali, sodium nitrate, sodium sulfide	Toxic/persistent, Solid toxic after contact with water, Carcinogenic, Mutagenic, Liquid Toxic to the Environment, Liquid Toxic to humans, Gas Toxic to the Environment, Gas Toxic to Humans	Direct impact on Human Health
	<b>Agricultural services (incl small storage)</b>	mixed chemicals (fire)	Gas Toxic to Humans (toxic smoke)	Direct impact on Human Health

## List of Hazards

Location	Actual Hazard			Estimated Impact Type
	Facility	Substances	Hazard Type	
<i>These facilities are expected to be present in the affected area, but an exact location could not be specified</i>	<b>Agriculture (animals, crop, forestry, fruit, etc)</b>	Organotin pesticide, Organochlorine pesticide, Phenoxyacetic acid derivative pesticide, Carbamate pesticide, Substituted nitrophenol pesticide, Organophosphorus pesticide, Pyrethroid pesticide, Triazine pesticide, Mercury based pesticide, Dithiocarbamate pesticide, mixed chemicals (fire)	Toxic/persistent, Carcinogenic, Mutagenic, Liquid Toxic to the Environment, Liquid Toxic to humans, Flammable liquid, Gas Toxic to Humans, (toxic smoke)	Long-term impact, Direct impact on life-support functions and nature (Direct impact on Human Health)
	<b>Airports (air-side)</b>	kerosine	Liquid Toxic to the Environment, Toxic/persistent	Long term impact, Direct impact on life-support functions and nature
	<b>Breeding and keeping animals</b>	mixed chemicals (fire)	Gas Toxic to Humans (toxic smoke)	Direct impact on Human Health
	<b>Bus-, tram- en metro, taxi, touringcar stations</b>	solvents, cleaning agents	Liquid Toxic to the Environment, Liquid Toxic after contact with water, Carcinogenic, Mutagenic, Flammable liquid, Toxic/persistent	Direct impact on Human Health, Long Term impact
	<b>Car scrapyard</b>	cleaning agents, solvents	Liquid Toxic to the Environment, Flammable liquid, Toxic/persistent, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long term impact, Direct impact on life-support functions and nature
	<b>Electricity distribution</b>	ammonia	Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on Human Health, Direct impact on life-support functions and nature
	<b>Environmental services</b>	mixed chemicals (fire)	Gas Toxic to Humans,(toxic smoke)	Direct impact on Human Health
	<b>Fishfarming</b>	mixed chemicals (fire)	Gas Toxic to Humans (toxic smoke)	Direct impact on Human Health
	<b>Forestry and - services (incl small storage)</b>	mixed chemicals (fire)	Gas Toxic to Humans (toxic smoke)	Direct impact on Human Health
	<b>Gas distribution</b>	natural gas	Flammable Gas, Gas Toxic to the Environment	Direct impact on Human Health
<b>Gas servicestations (with LPG)</b>	LPG	Flammable Gas, Gas Toxic to the Environment	Direct impact on Human Health	

## List of Hazards

4

Location	Actual Hazard			Estimated Impact Type
	Facility	Substances	Hazard Type	

<i>These facilities are expected to be present in the affected area, but an exact location could not be specified</i>	<b>Laundry, carpet clean, hairdr., undertaker, fitness, etc.</b>	dibenzoylperoxide, chlorosilane, hydrogen peroxide	Liquid Toxic to the Environment, Liquid Toxic to humans, Toxic/persistent, Gas Toxic to the Environment	Direct impact on life-support functions and nature (Direct impact on Human Health)
	<b>Loading and storage ships (oil and solvents, hazardous, etc)</b>	oil and solvents, fire	Liquid Toxic to the Environment, Toxic/persistent, Combustible	Direct impact on Human Health
	<b>Manufacturing synthetic fibres</b>	acrylic acid	Liquid Toxic to the Environment, Flammable liquid	Direct impact on life-support functions and nature
	<b>Photo and film development</b>	solvents	Liquid Toxic to the Environment, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long-term impact
	<b>Production accumulators and batteries</b>	mixed chemicals (fire)	Gas Toxic to Humans, Toxic/persistent (toxic smoke)	Direct impact on Human Health
	<b>Production anorganic chemical base materials</b>	ammoniumnitrate	Explosive, Solid Toxic after contact with water	Direct impact on Human Health
	<b>Production cardboard and paper</b>	chlorine bleaching	Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on life-support functions and nature
	<b>Production chemicals - other</b>	dimethylsulfate, chloride salts	Liquid Toxic to the Environment, Liquid Toxic to humans	Direct impact on Human Health, Direct impact on life-support functions and nature
	<b>Production clothing (incl. painting and printing)</b>	solvents	Liquid Toxic to the Environment, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long-term impact
	<b>Production fertilizer</b>	ammoniumnitrate, ammonia	Liquid Toxic to the Environment, Liquid Toxic to humans, Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on Human Health
	<b>Production leather</b>	galvano, zinc bath	Liquid Toxic to the Environment, Liquid Toxic to humans, Toxic/persistent	Direct impact on Human Health, Long term impact, Direct impact on life-support functions and nature
	<b>Production of agricultural chemicals</b>	chlorine, carbon disulfide	Gas Toxic to Humans, Gas Toxic to the Environment, Liquid Toxic to the Environment	Direct impact on Human Health
	<b>Production of rubber</b>	chloroprene	Carcinogenic, Mutagenic, Liquid Toxic to the	Long term impact

## List of Hazards

5

Location	Actual Hazard			Estimated Impact Type
	Facility	Substances	Hazard Type	

<p><i>These facilities are expected to be present in the affected area, but an exact location could not be specified</i></p>	<b>Production organic chemical base materials</b>	Organotin compound - liquid, n.o.s., Dibromomethane, Tetrabromoethane, Pentachloroethane, Chromic fluoride - solution, Arsenic compound - liquid, n.o.s., Arsenic chloride, Hexachlorobenzene, Butadienes - inhibited, Pentachloropheno, acrylonitrile, monovinylchloride, organic peroxide, bromine, chlorine, dimethylsulfate, Fluorosulfonic acid, Acrolein - inhibited, Mercury compound - liquid, n.o.s., Vinyl bromide -inhibited, Fluorine, butane, Trichlorobenzenes-liquid, Hydrazine, anhydrous, Bromomethylpropanes , Chlorobenzene, Hexachlorocyclopenta diene, Formaldehyde - solution, Vinyl chloride - inhibited	Environment Toxic/persistent, Carcinogenic, Mutagenic, Liquid Toxic to the Environment, Liquid Toxic to humans, Flammable Gas, Gas Toxic to the Environment, Gas Toxic to Humans, Explosive	Direct impact on Human Health, Long Term impact, Direct impact on life-support functions and nature
	<b>Production soap and detergents</b>	chloride salts	Liquid Toxic to humans, Liquid Toxic to the Environment	Direct impact on Human Health
	<b>Production sugar</b>	sulfur dioxide	Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on Human Health, Direct impact on life-support functions and nature
	<b>Production textile</b>	solvents	Liquid Toxic to the Environment, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long-term impact
	<b>Production wood</b>	solvents	Liquid Toxic to the Environment, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long-term impact
	<b>Scrap yards (collection)</b>	cleaning agents, solvents	Liquid Toxic to the Environment, Flammable liquid, Toxic/persistent, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long term impact, Direct impact on life-support functions and nature
	<b>Swimming facilities</b>	chlorine bleaching	Gas Toxic to Humans,	Direct impact on life-




## List of Hazards

6

Location	Actual Hazard			Estimated Impact Type
	Facility	Substances	Hazard Type	

			Gas Toxic to the Environment	support functions and nature
<i>These facilities are expected to be present in the affected area, but an exact location could not be specified</i>	<b>Trading and repair cars, motorcycles, service stations</b>	cleaning agents, solvents	Liquid Toxic to the Environment, Flammable liquid, Toxic/persistent, Liquid Toxic after contact with water, Carcinogenic, Mutagenic	Long term impact, Direct impact on life-support functions and nature
	<b>Truck and (rail) lorry repair shops</b>	cleaning agents, solvents	Liquid Toxic to the Environment, Flammable liquid, Toxic/persistent	Long term impact, Direct impact on life-support functions and nature
	<b>Wholesale chemical products</b>	mixed chemicals (fire)	Gas Toxic to Humans (toxic smoke)	Direct impact on Human Health
	<b>Wholesale fertilizers</b>	ammonium nitrate	Explosive, Solid Toxic after contact with water	Direct impact on Human Health
	<b>Wholesale liquid and gas fuels</b>	oil and solvents, natural gas	Liquid Toxic to the Environment, Toxic/persistent, Flammable Gas, Gas Toxic to the Environment	Long term impact, Direct impact on life-support functions and nature (Direct impact on Human Health)
	<b>Wholesale mineral oil and solvent product (excl. fuels)</b>	oil and solvents	Liquid Toxic to the Environment, Toxic/persistent	Long term impact
<i>These facilities may be present in the affected area  (Standard facilities in HIT)</i>	<b>Hospital /sterilizing industry</b>	ethylene oxide	Gas Toxic to Humans, Carcinogenic, Mutagenic	Direct impact on human health
	<b>Winning, preparing and distribution drinking water (with chemicals)</b>	chlorine	Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on human health
	<b>Electricity distribution</b>	ammonia	Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on human health, Life support and nature direct
	<b>Production of food and drink, incl. slaughterhouse</b>	ammonia	Gas Toxic to Humans, Gas Toxic to the Environment	Direct impact on human health, Life support and nature direct

### Explanation of the impact types

	<b>Direct impact on human health</b> - immediate death and adverse health effects
	<b>Long-term impact on life-support functions, nature and humans</b> - toxic persistent substances entering the food chain and natural ecosystems and effects of carcinogenic substances.
	<b>Direct impact on life-support functions and nature</b> - crops, fish resources, agricultural land, water supply - biodiversity and certain species or ecosystems

### **Indication of priority**

The colors in the 'Impact column' indicate the priority to be given to this specific hazard.  
 (Red = Priority nr. 1, Orange = Priority nr. 2, Blue = Priority nr. 3)

### Information sources

- **World Energy Council: Survey of Energy Resources 2007**  
[http://www.worldenergy.org/publications/survey\\_of\\_energy\\_resources\\_2007/default.asp](http://www.worldenergy.org/publications/survey_of_energy_resources_2007/default.asp)
- **UNEP/GRID Arendal – Maps and Graphics Library**  
<http://maps.grida.no/>
- **Official Energy Statistics**  
<http://www.eia.doe.gov/emeu/cabs/index.html>
- **IAEA Country profiles and databases on Nuclear Power Plants and Research Reactors**  
[http://www-pub.iaea.org/MTCD/publications/PDF/cnpp2003/CNPP\\_Webpage/pages/countryprofiles.htm](http://www-pub.iaea.org/MTCD/publications/PDF/cnpp2003/CNPP_Webpage/pages/countryprofiles.htm)  
<http://www.iaea.org/programmes/a2/index.html>  
<http://www.iaea.org/worldatom/rrdb/>
- **ICOLD World Register of Large Dams**  
<http://www.icold-cigb.net/recherchedidentification.aspx?typech=rg>
- **Stockholm Convention on Persistent Organic Pollutants (POPs) - National Implementation Plans**  
<http://www.pops.int/documents/implementation/nips/submissions/default.htm>
- **UNEP PCDD/PCDF Inventories**  
[http://www.chem.unep.ch/pops/pcdd\\_activities/inventories/default.htm](http://www.chem.unep.ch/pops/pcdd_activities/inventories/default.htm)
- **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal**  
<http://www.basel.int/natreporting/compilations.html>
- **Maps of Oil and Gas infrastructure**  
[http://www.lib.utexas.edu/maps/map\\_sites/oil\\_and\\_gas\\_sites.html](http://www.lib.utexas.edu/maps/map_sites/oil_and_gas_sites.html)
- **International Minerals Statistics and Information**  
<http://minerals.usgs.gov/minerals/pubs/country/>
- **MineSite – Information on World Mining Operations**  
<http://www.infomine.com/minesite/>