UN environment

UN Environment / OCHA Joint Unit

Prepare. Respond. Protect.

OCHA

Using simplified tools for estimation of negative effects of industrial accidents

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Presentation outline

- UN Environment / OCHA Joint Unit (JEU)
  - Where we started
  - Vision and mission
  - Areas of work
- Technological hazards in disaster response – why it matters
- Flash Environmental Assessment Tool – a simplified tool for emergency response
  - Methodology
  - Use in the field
  - E-learning course

Where JEU started

- Founded in 1994 at request of UN Member States
- Mechanism to respond to environmental dimension of emergencies
- Combines OCHA's humanitarian coordination mandate with the environmental expertise of UN Environment

JEU vision and mission

Our **vision** is for countries and partners to be better prepared, more resilient and able to effectively respond to the environmental dimensions of disasters and conflicts.

Our **mission** is to mobilise and coordinate a comprehensive response to the environmental dimension of disasters and conflicts to protect lives, livelihoods, ecosystems, and future generations

JEU priorities

Response

Preparedness

Environment and humanitarian action

Why technological hazards matter

URBANIZATION

Damaged zone after the explosion: 22 September 2011

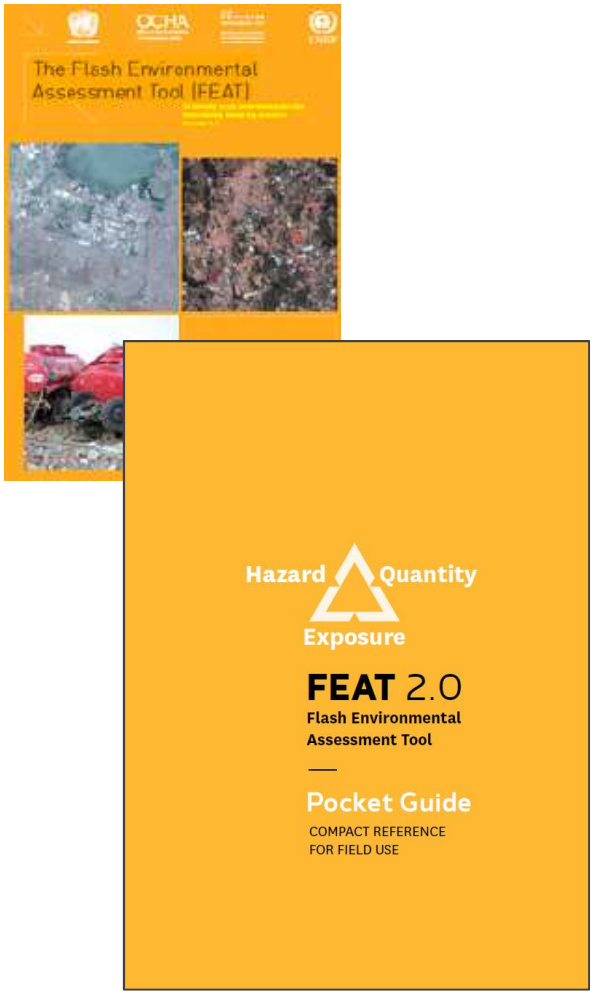
CLIMATE CHANGE

INDUSTRIALIZATION

ENVIRONMENTAL DEGRADATION

Natural-hazard triggered technological accidents

Flash Environmental Assessment Tool



- Based on lessons stemming from the 2004 Indian Ocean earthquake and tsunami
- Quick and simplified tool
- Focus on “big and obvious” – life-threatening and needs in the field
- Targets non-experts who can then call for additional support
- Standardized, scientific assessment methodology, prioritizing impacts
- Used as a standard tool in UNDAC emergency missions and included into trainings and exercises

FEAT: Typical substances

Checklist Priority Hazardous Substances				Entry point Exposure (FEAT-R) [default choice by expert opinion]			
				First Priority Response		Second Priority Response	
Hazardous Substance	CAS Number	Hazard Classification	Physical State (gas, liquid, solid)	GHS Hazard Label	Hazard Classification	GHS Hazard Label	Hazard Classification
Acetylene	74-86-2	Flam. Gas 1	**Gas**	Flammable	Flam. Gas 1		
1,1-Dimethylhydrazine [Hydrazine, 1,1-dimethyl-]	57-14-7	Aquatic Chronic 2, Acute Tox. 3, Carc. 1B, Muta. 2, Skin Corr. 1B, Flam. Liq. 2,	**Liquid**	Flammable	Flam. Liq. 1	Aquatic Chronic	Aquatic Chronic 2
Acrolein [2-Propenal]	107-02-8	Aquatic Acute 1, Aquatic Chronic 1, Acute Tox. 1, Acute Tox. 2, Acute Tox. 3, Carc. 2, Skin Corr. 1B, Flam. Liq. 2,	**Liquid**	Toxic liquid	Acute Tox. 1	Aquatic Chronic	Aquatic Chronic 1
Acrylonitrile [2-Propenenitrile]	107-13-1	Aquatic Chronic 2, Acute Tox. 2, Acute Tox. 3, Carc. 1B, Carc. 2, Eye Dam. 1, Repr. 2, Skin Irrit. 2, Skin Sens. 1, STOT SE 3, Flam. Liq. 2,	**Liquid**	Health hazard	Carc. 1B	Aquatic Chronic	Aquatic Chronic 2
Acrylyl chloride [2-Propenoyl chloride]	814-68-6	Acute Tox. 1, Skin Corr. 1A, Skin Corr. 1B, Flam. Liq. 2, Met. Corr. 1,	**Liquid**	Toxic liquid	Acute Tox. 1		
Allyl alcohol [2-Propen-1-ol]	107-18-6	Aquatic Acute 1, Acute Tox. 1, Acute Tox. 2, Acute Tox. 3, Eye Irrit. 2, Eye Irrit. 2A, Skin Irrit. 2, STOT RE 1, STOT SE 3, Flam. Liq. 2, Flam. Liq. 3,	**Liquid**	Toxic liquid	Acute Tox. 1	Aquatic Acute	Aquatic Acute 1
Allylamine [2-Propen-1-amine]	107-11-9	Aquatic Chronic 2, Acute Tox. 1, Acute Tox. 2, Acute Tox. 3, Skin Corr. 1A, Flam. Liq. 2,	**Liquid**	Toxic liquid	Acute Tox. 1	Aquatic Chronic	Aquatic Chronic 2
Ammonia (anhydrous)	7664-41-7	Aquatic Acute 1, Aquatic Chronic 2, Acute Tox. 2, Acute Tox. 3, Asp. Tox. 1, Skin Corr. 1B, Flam. Gas 1, Flam. Gas 2, Flam. Liq. 3, Liq. Gas,	**Gas**	Toxic gas	Acute Tox. 2	-	
Ammonia (conc 20% or greater)	7664-41-7	Aquatic Acute 1, Aquatic Chronic 2, Acute Tox. 2, Acute Tox. 3, Asp. Tox. 1, Skin Corr. 1B, Flam. Gas 1, Flam. Gas 2, Flam. Liq. 3, Liq. Gas,	**Liquid**	Toxic liquid	Acute Tox. 2	Aquatic Chronic	Aquatic Chronic 2
Ammonium nitrate	6484-52-2	STOT SE 1, Ox. Liq. 1, Ox. Liq. 3, Ox. Sol. 1, Ox. Sol. 2, Ox. Sol. 3,	**Solid**	Explosive	Ox. Sol. 1	-	

FEAT: Typical operations

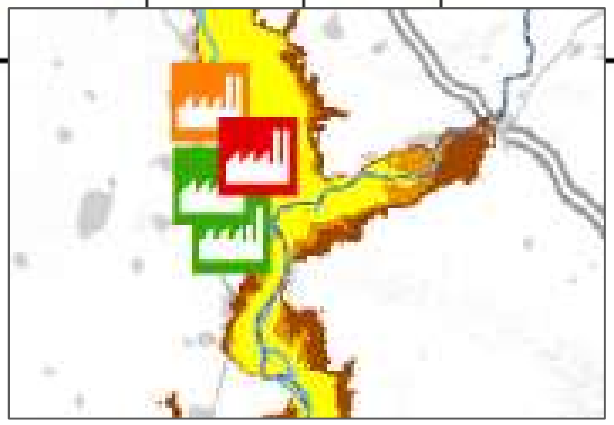
Hazardous Operation		Hazard				Entry Point Exposure Distance Table (FEAT-R) [*default choice by expert opinion*]			
		Hazardous Substance			Hazard Classification	First Priority Response		Second Priority Response	
Facility type	**Operation type**	**Examples of most common hazardous substances at facility**	**Most common substance**	**Physical State** (gas, liquid, solid)	**Abbreviation according to GHS**	**GHS hazard label**	**Hazard classification**	**GHS hazard label**	**Hazard classification**
Agriculture and food production	**Aquaculture**	Disease control, oil, fertilizers, aquatoxic chemicals, antifoulants	antibiotics (veterinary drugs)	solid	Carc. 1A, Carc. 1B, Carc. 2, Lact., Muta. 1B, Muta. 2, Repr. 1B, Repr. 2, Resp. Sens. 1, STOT RE 1, STOT RE 2, STOT SE 1,	Health hazard	Muta 1B		
	Beer production (brewery)	ammonia, solvents, acid, alkalis, neutral detergents, disinfectants, (chlorine compounds), hydrogen peroxide, formaldehyde	ammonia	gas	Aquatic Acute 1, Aquatic Chronic 2, Acute Tox. 2, Acute Tox. 3, Asp. Tox. 1, Skin Corr. 1B, Flam. Gas 1, Flam. Gas 2, Flam. Liq. 3, Liq. Gas,	Toxic gas	Acute Tox. 2		
	Food processing (poultry, meat, fish and dairy)	ammonia, solvents, acid, alkalis, neutral detergents, disinfectants, (chlorine compounds), hydrogen peroxide, formaldehyde, hydrogen	ammonia	gas	Aquatic Acute 1, Aquatic Chronic 2, Acute Tox. 2, Acute Tox. 3, Asp. Tox. 1, Skin Corr. 1B, Flam. Gas 1, Flam. Gas 2, Flam. Liq. 3, Liq. Gas,	Toxic gas	Acute Tox. 2		
	Livestock and poultry	disinfecting agents, antibiotic and hormonal products, pesticides	carbamate pesticide	solid	Aquatic Acute 1, Aquatic Acute 4, Acute Tox. 4, Carc. 2,	Aquatic Acute	Aquatic Acute 1		
	Plantation and annual crop production	pesticides	organo-phosphate: pesticide	liquid	Acute Tox. 1, Acute Tox. 2, Eye Irrit. 2A, Muta. 2, Repr. 1B, Repr. 2, Skin Corr. 1B, STOT RE 1,	Toxic liquid	Acute Tox. 1		
	Sugar manufacturing	ethanol, organic chemicals	ethanol	liquid	Muta. 1B, Repr. 1A, Repr. 2, Skin Corr. 1B, STOT RE 1, STOT SE 1, Flam. Liq. 2, Met. Corr. 1,	Flammable	Flam. Liq. 2		
	Vegetable oil processing	acids, alkalis, solvents, hydrogen, (n-)hexane	(n-)hexane	liquid	Aquatic Chronic 2, Asp. Tox.1, Repr. 2, Skin Irrit. 2, STOT RE 1, STOT RE 2, STOT SE 2, STOT SE 3, Flam. Liq. 2	Flammable	Flam. Liq. 2	Aquatic chronic	Aquatic chronic 2
	Coal processing	ammonia, synthetic gas, liquid hydrocarbons, methanol, coal, gasoline	ammonia	gas	Aquatic Acute 1, Aquatic Chronic 2, Acute Tox. 2, Acute Tox. 3, Asp. Tox. 1, Skin Corr. 1B, Flam. Gas 1, Flam. Gas 2, Flam. Liq. 3, Liq. Gas,	Toxic gas	Acute Tox. 2		
	Fireworks manufacturing and warehousing	ammonium nitrate, ammonia, oxidizing agents and metal salts	ammonium nitrate	solid	STOT SE 1, Ox. Liq. 1, Ox. Liq. 3, Ox. Sol. 1, Ox. Sol. 2, Ox. Sol. 3,	Explosive	Ox. Sol. 1		

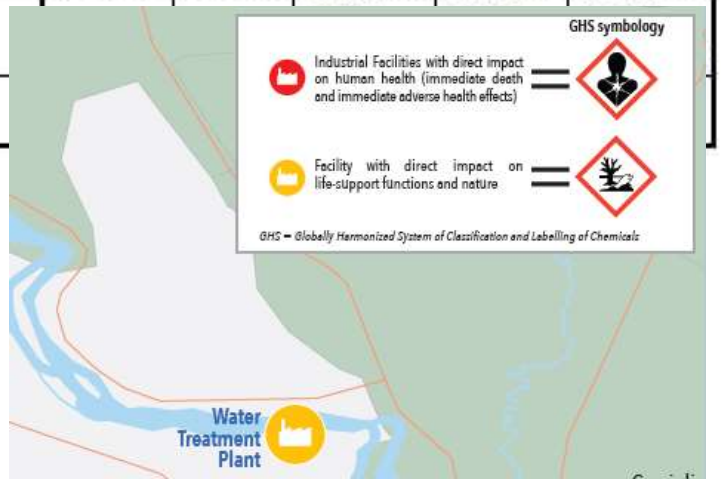
FEAT outputs

- Expected impacts, priority locations, maps → response actions

FEAT Impact Table
Area/Location: Farland Earthquake
Date/Time: dd-mm-yyyy / xxxx

Hazard Entry Point operation and/or substance		Hazard Classification - priority response	Physical State (gas, liquid, solid)	Quantity [kg]	Receptor/s	Impact Zone [km]				
						Human		Environment		
Operation Type (and location)	Substance (and CAS #)					Lethal	Health	Soil	Lake	River
Polymer Foam Facility (Lat / Long)	Hydrazine (302-01-2)	Carc. 1A	Liquid	5,000	Humans by river/groundwater, Aquatic Life by river	> 5 km	> 5 km	> 10 km	> 4,5 km	> 10 km
		Aquatic Acute 1	Liquid	5,000	Aquatic Life by River					





FEAT for response

Typhoon Haiyan, the Philippines, 2013

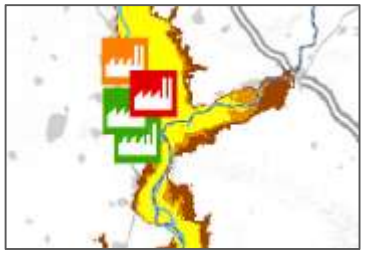
UNDAC Environmental Expert
- Impacted infrastructure
- Major issues
- Initial assessment of impacts of oil spill

Ecuador earthquake, 2016

UNDAC Environmental Expert
- Impacted infrastructure
- Waste management

FEAT for preparedness

- FEAT used for assessing hazards in Iraq and Ukraine



- FEAT included in European Commission exercises (LatMODEX and RoMODEX, 2016 – 2017)

- FEAT work continues in Armenia and Georgia, after first FEAT training workshop in 2015

FEAT e-learning course

UNEP OCHA Environmental Emergencies Centre
Supporting preparedness for environmental emergencies

learning.eecentre.org

- Three-hour course
- Equips environmental experts and international first responders with the knowledge to rapidly identify, prioritize, and mitigate the impacts of industrial chemical releases to human health and the environment
- Available in English
- FEAT 2.0 Pocket Guide available in English and Russian; Spanish and French under development

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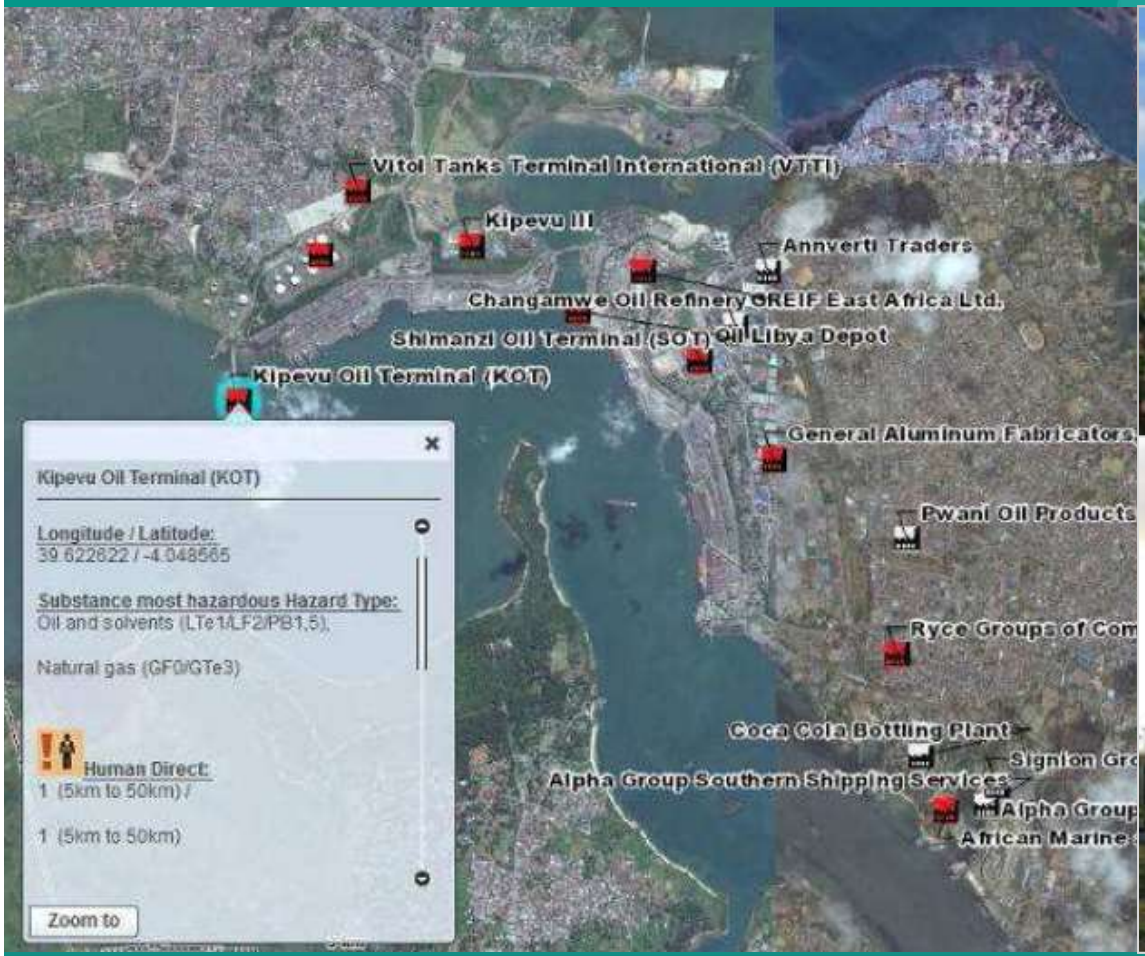

Contact the JEU to find out more about the services you can request to be better prepared for and rapidly respond to environmental emergencies.

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