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

CLIMATE CHANGE

INDUSTRIALIZATION

ENVIRONMENTAL DEGRADATION
Natural-hazard triggered technological accidents

Philippines

Solomon Islands

Serbia
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

<table>
<thead>
<tr>
<th>Checklist Priority Hazardous Substances</th>
<th>Entry point Exposure (FEAT-R) [default choice by expert opinion]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazardous Substance</strong></td>
<td><strong>First Priority Response</strong></td>
</tr>
<tr>
<td></td>
<td><strong>GHS Hazard Label</strong></td>
</tr>
<tr>
<td>Acetylene</td>
<td></td>
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<tr>
<td>1,1-Dimethylhydrazine</td>
<td></td>
</tr>
<tr>
<td>Acrolein</td>
<td></td>
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<tr>
<td>Acrylonitrile</td>
<td></td>
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<tr>
<td>Acrylonitrile (2-Propenenitrile)</td>
<td></td>
</tr>
<tr>
<td>Acrylonitrile (2-Propenal)</td>
<td></td>
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<tr>
<td>Allyl alcohol</td>
<td></td>
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<tr>
<td>Allylamine</td>
<td></td>
</tr>
<tr>
<td>Ammonia (anhydrous)</td>
<td></td>
</tr>
<tr>
<td>Ammonia (conc 20% or greater)</td>
<td></td>
</tr>
<tr>
<td>Ammonium nitrate</td>
<td></td>
</tr>
</tbody>
</table>
### FEAT: Typical operations

<table>
<thead>
<tr>
<th>Hazardous Operation</th>
<th>Hazard</th>
<th>Physical State</th>
<th>Hazard Classification</th>
<th>First Priority Response</th>
<th>Second Priority Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facility type</strong></td>
<td><strong>Operation type</strong></td>
<td><strong>Examples of most common hazardous substances at facility</strong></td>
<td><strong>Most common substance</strong></td>
<td><strong>Abbreviation according to GHS</strong></td>
<td><strong>GHS hazard label</strong></td>
</tr>
<tr>
<td>Aquaculture</td>
<td>Disease control, oil, fertilizers, aquatoxic chemicals, antifoulants</td>
<td>antibiotics (veterinary drugs)</td>
<td>solid</td>
<td>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,</td>
<td>Health hazard</td>
</tr>
<tr>
<td>Beer production (brewery)</td>
<td>ammonia, solvents, acid, alkalis, neutral detergents, disinfectants, (chlorine compounds), hydrogen peroxide, formaldehyde</td>
<td>ammonia</td>
<td>gas</td>
<td>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. Lq. 3, Lq. Gas,</td>
<td>Toxic gas</td>
</tr>
<tr>
<td>Food processing (poultry, meat, fish and dairy)</td>
<td>ammonia, solvents, acid, alkalis, neutral detergents, disinfectants, (chlorine compounds), hydrogen peroxide, formaldehyde, hydrogen</td>
<td>ammonia</td>
<td>gas</td>
<td>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. Lq. 3, Lq. Gas,</td>
<td>Toxic gas</td>
</tr>
<tr>
<td>Livestock and poultry</td>
<td>disinfecting agents, antibiotic and hormonal products, pesticides</td>
<td>carbamate pesticide</td>
<td>solid</td>
<td>Aquatic Acute 1, Aquatic Acute 4, Acute Tox. 4, Carc. 2,</td>
<td>Aquatic Acute</td>
</tr>
<tr>
<td>Plantation and annual crop production</td>
<td>pesticides</td>
<td>organophosphate pesticide</td>
<td>liquid</td>
<td>Acute Tox. 1, Acute Tox. 2, Eye Irrit. 1A, Muta. 2, Repr. 1B, Repr. 2, Skin Corr. 1B, STOT RE 1,</td>
<td>Toxic liquid</td>
</tr>
<tr>
<td>Sugar manufacturing</td>
<td>ethanol, organic chemicals</td>
<td>ethanol</td>
<td>liquid</td>
<td>Muta. 1B, Repr. 1A, Repr. 2, Skin Corr. 1B, STOT RE 1, STOT SE 1, Flam. Lq. 2, Met. Corr. 1,</td>
<td>Flammable</td>
</tr>
<tr>
<td>Vegetable oil processing</td>
<td>acids, alkalis, solvents, hydrogen, (n-hexane)</td>
<td>(n-hexane)</td>
<td>liquid</td>
<td>Aquatic Chronic 2, Asp. Tox. 1, Repr. 2, Skin Irrit. 2, STOT RE 1, STOT RE 2, STOT SE 1, STOT SE 2, STOT SE 3, Flam. Lq. 2,</td>
<td>Flammable</td>
</tr>
<tr>
<td>Coal processing</td>
<td>ammonia, synthetic gas, liquid hydrocarbons, methanol, coal, gasoline</td>
<td>ammonia</td>
<td>gas</td>
<td>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. Lq. 3, Lq. Gas,</td>
<td>Toxic gas</td>
</tr>
<tr>
<td>Fireworks manufacturing and warehousing</td>
<td>ammonium nitrate, ammonia, oxidizing agents and metal salts</td>
<td>ammonium nitrate</td>
<td>solid</td>
<td>STOT SE 1, Ox. Lq. 1, Ox. Lq. 3, Ox. Sol. 1, Ox. Sol. 2, Ox. Sol. 3,</td>
<td>Explosive</td>
</tr>
</tbody>
</table>
FEAT outputs

- Expected impacts, priority locations, maps → response actions
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

- 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

learning.eecentre.org
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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