Preparedness... Ready, Set, Go!

- **Familiarity** – How well do you know your environment? (Boat Ramps, Nesting Seasons, Aids to Navigation, Daily Commerce entering/exiting the Port)

- **Pre-Assessment** – Baseline Data / Historical Data

- **Plans, Procedures, & SOP’s** – Are they current?

- **Your Network** – Contacts/phone numbers/emails...
The Incident Command Structure

Communication, Communication, Communication
Scientific Tools

- Technological Applications

- Florida Marine Spill Analysis System (FMSAS)
- Area Contingency Plan (ACP)
- Environmental Sensitivity Indexes (ESI)
- Environmental Response Management Application (ERMA)
Technological Applications continued

- Geographic Response Plan Map Index (GRP)
- NOAA’s Response Guides and Job Aids
- General NOAA Operational Modeling Environment (GNOME)
- Chemical Aquatic Fate and Effects Database (CAFE)
- CAMEO Chemicals
FMSAS

Layers of GIS data

Ability to analyze Resources at Risk

A decision making tool

https://myfwc.com/research/gis/oil-spill/fmsas/
A multitude of resources embedded within one application.
Coastal Shoreline Sensitivity

Biological Resources

Human Resources

ERMA

A mapping tool that integrates static and real-time data.

A series of maps with site specific response locations, identifying priority protection areas.

http://ocean.floridamarine.org/acp/stpACP/Maps/GRP_Maps/GRP_Index.pdf
GNOME

A Modeling tool that helps predict the fate and transport of oil & pollutants.

Helps Responders with their assessment of environmental impacts from oil & chemicals in the aquatic environment.

A database of hazardous chemical datasheets used to assist with response recommendations and hazard prediction.

• Mapping and visual assessment of the impacted area & spill footprint.

• Identification of pollutant characteristics and their fate in the water.

• Selection of the correct level of Personal Protection Equipment (PPE).

• Utilization of the proper air monitoring equipment, specific to the pollutant(s) released.

• Development of boom deployment/collection/deflection strategies.

• Insertion of real-time weather, tides, & currents in the response.
Fate & trajectory of the spill and its impacts to the surrounding environments, i.e., mangroves, marshes, bays, open waters.

Collection of information for the Natural Resource Damage Assessment (NRDA).

Determining post-spill restoration activities, encompassing both Ecological and Recreational Projects associated with the NRDA.

Collaboration and cooperation between a myriad of Agencies/Entities.
An example of science-based decision making relating to Air Monitoring & PPE selection.

### Table 10 -- Oil (Spill, Release, or Fire)

<table>
<thead>
<tr>
<th>Target Compound</th>
<th>Instruments</th>
<th>Detection Levels</th>
<th>Intrinsically Safe (Y/N)</th>
<th>IP</th>
<th>IP &amp; PID CF (ISO)</th>
<th>Occupational Action Levels</th>
<th>AEGL-1</th>
<th>PPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOCs and Gases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzenpe</td>
<td>UltraRAE PID</td>
<td>0.1 – 2,000 ppm</td>
<td>Yes</td>
<td>8.24</td>
<td>0.53 (10.6 ppm)</td>
<td>PEL = 1 ppm, REL = 0.1 ppm, TLV = 10 ppm</td>
<td>500 ppm</td>
<td>18 ppm</td>
</tr>
<tr>
<td></td>
<td>Drager Tube</td>
<td>0.5 – 10 ppm or higher</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drager Clip</td>
<td>0.1 – 10 ppm or higher</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MIRAN Saphire</td>
<td>50 – 200 ppm</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MITRA/Gasalert PID</td>
<td>50 – 200 ppm</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TVA 1008**</td>
<td>0.9 – 2,000 ppm (PID)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1 – 200 ppm (PID)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>MultiRAE/AeraMax CO sensor</td>
<td>0 – 500 ppm</td>
<td>Yes</td>
<td>0.016</td>
<td>NA</td>
<td>PEL = 50 ppm, REL = 30 ppm, TLV = 25 ppm</td>
<td>1,200 ppm</td>
<td>33 ppm</td>
</tr>
<tr>
<td></td>
<td>Drager Tube</td>
<td>2 – 300 ppm or higher</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Drager Clip</td>
<td>2 – 150 ppm</td>
<td>No (Yes with option)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Hydrogen Sulfide</td>
<td>MultiRAE/AeraMax HI, S sensor</td>
<td>0 – 100 ppm</td>
<td>Yes</td>
<td>0.046</td>
<td>NA</td>
<td>PEL = 30 ppm, REL = 10 ppm, TLV = 25 ppm</td>
<td>10 ppm</td>
<td>0.36 ppm</td>
</tr>
<tr>
<td></td>
<td>MultiRAE/AeraMax HI, S sensor</td>
<td>10 – 100 ppm or higher</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Drager Tube</td>
<td>2 – 10 ppm or higher</td>
<td>Yes</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Drager Clip</td>
<td>2 – 150 ppm or higher</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Sulfur Dioxide</td>
<td>Sulfur Oxidizer</td>
<td>0 – 250 ppm</td>
<td>Yes</td>
<td>0.23</td>
<td>NA</td>
<td>PEL = 5 ppm, REL = 2 ppm, TLV = 2 ppm</td>
<td>100 ppm</td>
<td>0.2 ppm</td>
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<td></td>
<td>Drager Pac III</td>
<td>8 – 100 ppm</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Drager Tube</td>
<td>0.13 ppm or higher</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Drager Clip</td>
<td>0.13 ppm or higher</td>
<td>Yes</td>
<td></td>
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<tr>
<td>PAHs (as particulate)</td>
<td>Personal DataRam</td>
<td>0.01 – 400 mg/m³</td>
<td>No</td>
<td>0.01</td>
<td>NA</td>
<td>PEL = 0, 0.3 mg/m³, REL = 0.1 mg/m³, TLV = 0.2 mg/m³</td>
<td>750 mg/m³</td>
<td>NA</td>
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<tr>
<td></td>
<td>DataRAM 4</td>
<td>0.01 – 400 mg/m³</td>
<td>No</td>
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<tr>
<td>Radiation</td>
<td>Ludlum 192</td>
<td>0.6 – 50,000 micro-Rad/h</td>
<td>No</td>
<td>0.01</td>
<td>NA</td>
<td>PEL = 10 micro-Rad/h</td>
<td>10 micro-Rad/h</td>
<td>NA</td>
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<tr>
<td></td>
<td>Ludlum 2241-2 with Pancake Probe</td>
<td>0.5999 – 999,000 micro-Rad/h</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reference

- [www.cdc.gov/niosh/npg/npgd0048.html](http://www.cdc.gov/niosh/npg/npgd0048.html)
- [www.cdc.gov/niosh/npg/npgd0105.html](http://www.cdc.gov/niosh/npg/npgd0105.html)
- [www.cdc.gov/niosh/npg/npgd0337.html](http://www.cdc.gov/niosh/npg/npgd0337.html)
- [www.cdc.gov/niosh/npg/npgd0575.html](http://www.cdc.gov/niosh/npg/npgd0575.html)
- [www.cdc.gov/niosh/npg/npgd0376.html](http://www.cdc.gov/niosh/npg/npgd0376.html)
PPE recommendations per NIOSH for the Deepwater Horizon spill.
The most important asset guiding Responders is the collective and collaborate effort among all involved. Embracing the resources and knowledge that each individual brings to the table for the good of the common goal.
Office of Emergency Response
(813) 470-5954
https://floridadep.gov/