

Environmental Releases of Oils and Fuels – SHC 3.62

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Problem Summary & Decision Context

Which management, response & remediation approaches minimize impacts to the environment and communities from oil releases?

SHC Charter 3.62 is dedicated to:

- Developing approaches to achieve more efficient and effective management of oil / fuel releases.
- Producing research products to help establish protocols and guidelines for improved regulations and response efforts.
- Protecting communities from exposures to environmental releases of oils and fuels.

Utility to Agency?

Despite the nation's best efforts...

...there are ~14,000 oil spills in the U.S. each year and ~78,000 LUST sites require cleanup.

Atypical oil spills have heightened awareness by emergency responders and scientists on the capabilities and limitations of spill response methods available for use today.

For impacted communities, ecological and human health impacts associated with spilled oil and mitigation technologies (dispersants, surface washing agents) are of concern.

EPA regulates ~600,000 underground storage tanks, where 1/3 are sites located near population centers, putting indoor air and drinking water resources at potential risk.

Accomplishments

National Contingency Plan Subpart J Proposed Decision Rule (2015) references two papers from Charter 3.62:
 Venosa et al., 2002
 -BFT dispersant effectiveness protocol
 Conmy et al., 2014
 -Dispersant use field monitoring



Published New Approach to Evaluate Intrusion of Petroleum Vapors (PVI) into Buildings and Developed PVIScreen model :

- EPA/600/R-14/318
- Wilson, Weaver et al., 2014



EPA - DOI Interagency Agreements:

1. Oil Dispersion Plume Simulations with Canadian Government.
2. Oil Simulant Development.

Tasks

Addresses Regional & Program Office Needs

FY15 Products

NCP Product Schedule Protocol Development

- Develop efficacy test protocols for spill countermeasure products.
- Characterize efficacy test w/r/t 2 new EPA reference oils.

Surface Washing Agent effectiveness protocol for the NCP Product Schedule.

The Behavior, Fate & Effects of Oil and Spill Agents

- Determine fate and aquatic toxicity of oils and spill agents.
- Determine toxicity, fate, transport and characterization of chronic impacts of diluted bitumen discharged to the aquatic ecosystem in support of Region 5 Enbridge oil spill.

Anaerobic biodegradation of flaxseed biodiesel and diesel blends under methanogenic conditions.

Research to Support LUST Program Planning and Backlog Reduction

- Increase understanding of geographic and temporal changes in fuel composition for more effective and efficient cleanup.
- Develop strategies for efficiently and effectively cleaning up and reducing backlogged sites.
- Development and testing of ORD's PVI Screen model and subsequent training for States and Regions.

Mapping private wells and site densities of leaking underground storage.

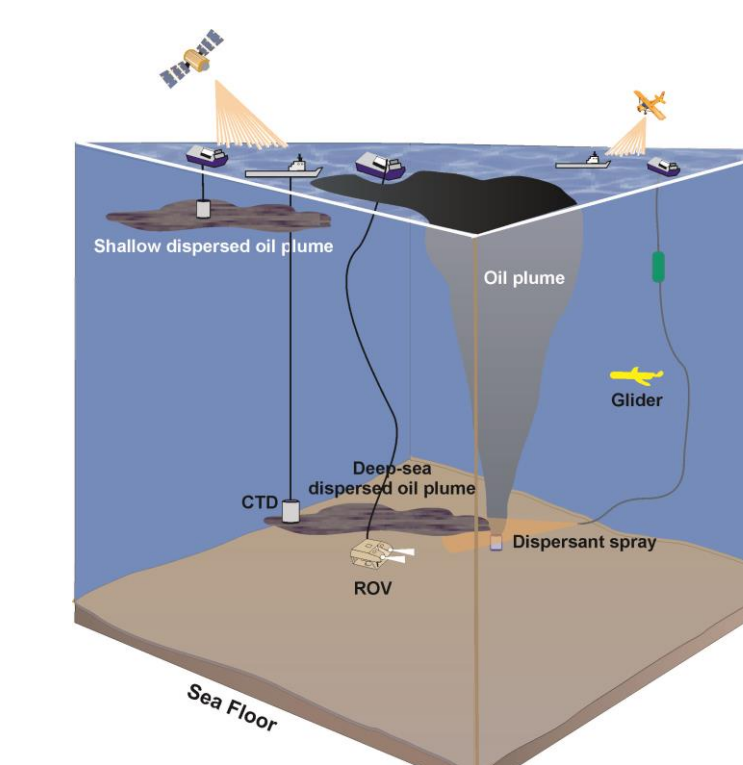


Future Directions

Oil Spills Focus Area

Future Program Office Deliverables

- Solidifier effectiveness protocol.
- Evaluating dispersant effectiveness protocols for 2 new NCP reference oils.
- Crude oil fluorescence library for discerning dispersant effectiveness during spills.
- Characterizing dispersant effectiveness via wave tank oil plume simulations; a decision support tool.
- Evaluating biodegradation and toxicity of diluted bitumen crude oils to determine fate.
- Integrating Enviroatlas products into oil spills focus area.

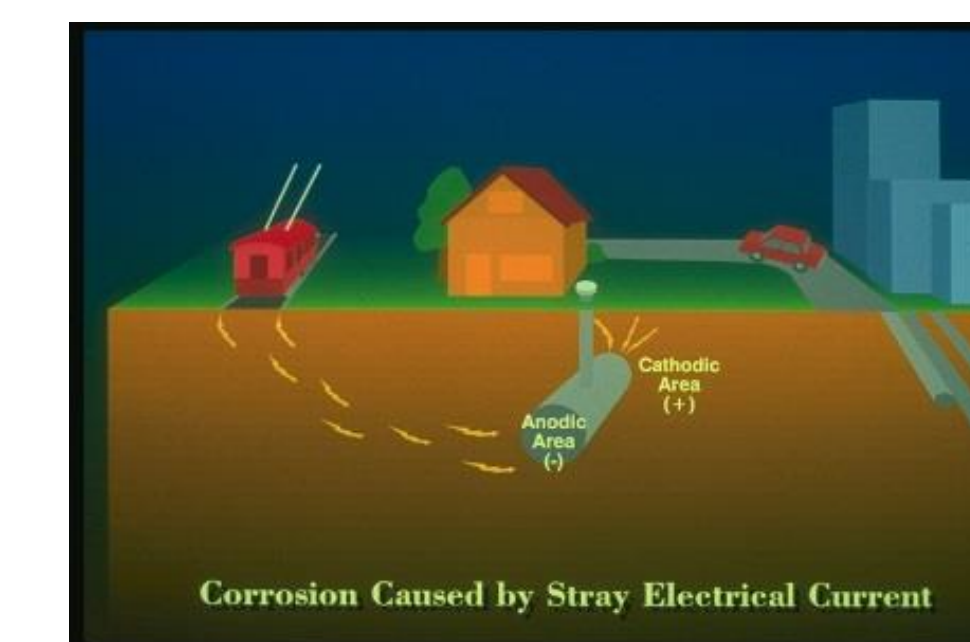


Conceptual diagram of the Deepwater Horizon Spill monitoring.

L.U.S.T. Focus Area (Leaking underground Storage Tanks)

Future Program Office Deliverables

- User's Guide for PVIScreen Model including distributable software.
- Ethanol corrosion studies and on-going tech support to states.
- Gasoline composition evaluation, including expanded information for state agency use.
- Models of hydrocarbon transport from sources in support of backlog reduction (subsurface impacts assessment).
- Assessment of domestic water well locations and proximity to LUST and potential brownfields sites using GIS tools.
- Plume transport tool for National Enviroatlas.



Partner Engagement Opportunities

Charter 3.62 would like to engage the Office of Water in research planning with respect to oil spill impacts. Please contact Robyn Conmy conmy.robyn@epa.gov