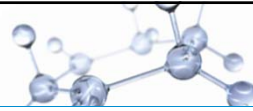


Impacts/Recovery/Restoration

1

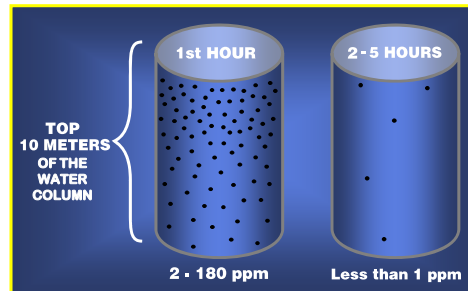
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Environmental Impacts



• Toxicity

- Rapid dilution limits ecosystem impacts of both dispersant and dispersed oil, i.e., concentrations start low and decrease quickly
- Many studies use high constant concentrations and long exposures
- Lab toxicity tests should reflect real world exposures, e.g., protocols developed by Chemical Response to Oil Spills: Ecological Research Forum (CROSERF)



Lessard, R.R. and DeMarco, G. (2000) The significance of oil spill dispersants. *Spill Science & Technology Bulletin*, 6, 59-68


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Human Health

- Modern dispersants use ingredients found in many household products
 - NALCO website*
- Following proper application procedures is important
- Test results for dispersants in Gulf seafood indicated very low levels of concern, "There is no question Gulf seafood coming to market is safe from oil or dispersant residue."

(http://www.noaa.gov/stories/2010/20101029_seafood.html)



| Corexit® 9500 Ingredients | Common Day-to-Day Use Examples |
|------------------------------|--|
| Span™ 80 (surfactant) | Skin cream, body shampoo, emulsifier in juice |
| Tween® 80 (surfactant) | Baby bath, mouth wash, face lotion, emulsifier in food |
| Tween® 85 (surfactant) | Body/Face lotion, tanning lotions |
| Aerosol® OT (surfactant) | Wetting agent in cosmetic products, gelatin, beverages |
| Glycol butyl ether (solvent) | Household cleaning products |
| Isopar™ M (solvent) | Air freshener, cleaner |

*<http://www.nalco.com/applications/corexit-technology.htm>


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Relative Toxicity

- It's important to frame the discussion in a balanced fashion
- Potential risks need to be understood

Environment Canada Study



| <u>Product</u> | <u>Toxicity (ppm)</u> |
|----------------------|-----------------------|
| Palmolive® Dish Soap | 13 |
| Sunlight® Dish Soap | 13 |
| Mr. Clean® | 30 |
| Corexit® 9500 | 350 |

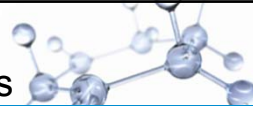
(96 HR Rainbow Trout LC50)

↓
Less toxic

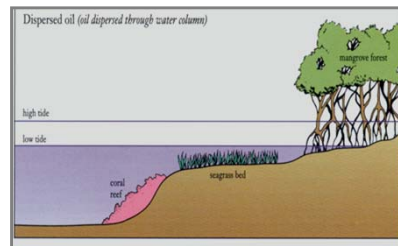
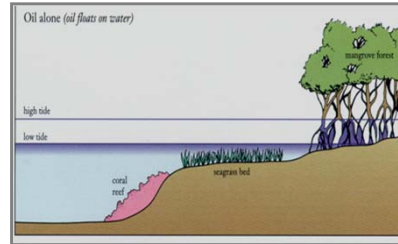
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Net Environmental Benefit Analysis



- It's important to consider potential tradeoffs during a spill response decision making process
- The goal is to minimize negative consequences
- Spills are different and all response options should be considered



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