



State-of-Science for Dispersant Use in Arctic Waters

Outline of the Sub-Topics Covered Under Each Topic

The outline presented below indicates the general scope and breadth of each of the 5 major topics for which statements of knowns and uncertainties were developed. This outline provides information on where certain topic areas are discussed. Because much of the science is interrelated and the documents are being released sequentially, you may find it helpful to review the knowns and uncertainties on more than one topic.

More information is available here>> http://crrc.unh.edu/workshop/crrc/dispersant_science

Efficacy and Effectiveness

1. General Overarching Statements Concerning Dispersant Efficacy and Effectiveness
2. Environmental Factors that Impact Dispersant Effectiveness
3. Individual Factors
 - a) Temperature
 - b) Mixing Energy
4. Limitations to the Understanding of Dispersant Effectiveness
 - a) General Effectiveness
 - b) Formulations
 - c) Subsea Application
5. Detection and Monitoring of Effectiveness in the Field

Physical Transport and Chemical Behavior

1. Arctic Physical Oceanography
 - a) General Statements
 - b) Sea Ice and Mixing
 - c) Storms
2. Oil and Dispersed Oil Behavior
 - a) Droplet Size/Formation
 - b) Coalescence and Slick Reformation
 - c) Transport
 - d) Oil in Ice
 - e) Temperature Effects on Oil Weathering
 - f) Weathering
 - g) Testing/Monitoring

- h) OMA/OSA
- i) Mathematical Modeling
- j) Subsea Release

Degradation and Fate

- 1. Fate of Dispersants
- 2. Oil Sedimentation
 - a) OMA/OSA
 - b) Bulk Sinking
 - c) Marine Snow
- 3. Biodegradation of Oil
- 4. Biodegradation of Oil: Pathways
- 5. Factors Affecting Biodegradation
- 6. Effect of Chemical Dispersants on Oil Biodegradation

Public Health and Food Security

- 1. Human Health & Toxicity
 - a) Human Exposure to Dispersants and Dispersed Oil
 - b) Potential Toxicological Impacts of Dispersants and Dispersed Oil
- 2. Arctic Food Security
- 3. Seafood Safety
- 4. Risk Assessment and Communication

Eco-Toxicity and Sublethal Impacts

- 1. Exposure Pathways
- 2. Arctic Conditions
- 3. Toxicity of Oil and Dispersed Oil to Arctic Species
 - a) Birds
 - b) Marine Mammals
 - c) Fish and Lower Trophic Levels
- 4. Overall Summary