



Standard Guide for Ecological Considerations for the Use of Oilspill Dispersants in Freshwater and Other Inland Environments, Impermeable Surfaces¹

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1. Scope

1.1 This guide covers the use of oilspill dispersants to assist in the control of oil spills. This guide is written with the goal of minimizing the environmental impacts of oil spills; this goal is the basis on which the recommendations are made. Aesthetic and socioeconomic factors are not considered although these and other factors are often important in spill response.

1.2 Spill responders have available several means to control or clean up spilled oil. In this guide, the use of dispersants is given equal consideration with other spill countermeasures. It is not considered as a last resort after all other methods have failed.

1.3 This is a general guide only. It assumes the oil to be dispersible and the dispersant to be effective, available, applied correctly, and in compliance with relevant government regulations. In the case of impermeable surfaces, the dispersant may act as a detergent. In the assessment of environmental sensitivity, it is assumed that the dispersant is nonpersistent in the natural environment. Oil, as used in this guide, includes crude oils and refined petroleum products. Differences between individual dispersants or between different oil products are not considered.

1.4 The guide is organized by habitat type, for example, small ponds and lakes, rivers and streams, and land. It considers the use of dispersants primarily to protect habitats from impact (or to minimize impacts) and to clean them after a spill takes place.

1.5 This guide applies only to freshwater and other inland environments. It does not consider the direct application of dispersants to subsurface waters.

1.6 In making dispersant use decisions, appropriate government authorities should be consulted as required by law.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This guide is under the jurisdiction of ASTM Committee F-20 on Hazardous Substances and Oil Spill Response and is the direct responsibility of Subcommittee F20.13 on Treatment.

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2. Significance and Use

2.1 This guide is meant to aid local and regional response teams who may use it during spill response planning and spill events.

2.2 This guide should be adapted to site-specific circumstances.

3. Environment Covered—Impermeable Surfaces

3.1 Impermeable ground includes any soil, rock, hard pan or other natural surface that does not readily permit the passage of water and oil.

3.2 Impermeable structures include man-made surfaces such as paved roads and parking lots.

4. Background

4.1 The effects of oil on animals inhabiting impermeable ground is not fully known, but is suspected to be minimal as most animals on such surfaces are mobile and would avoid the oil.²

4.2 Plants inhabiting impermeable ground may be ecologically important.

4.3 Oil and dispersants will ultimately run off an impermeable surface. The environment receiving runoff should be considered. As an example, experience with spills on impermeable surfaces included runoff into a permeable zone and extensive groundwater contamination.³

4.4 A laboratory experiment has shown that explosion potential is increased by using dispersants on fuel spills in sewers.⁴ It is not known whether these results are applicable to full scale sewer systems.

5. General Considerations for Making Dispersant Use Decisions

5.1 The dispersant use decision is, in this case as most

² W. B. McGill, and D. Bergstrom, "Inland Oil Spills and their Impacts on Land," *Stress on Land in Canada*, Lands Directorate, Environment Canada, Ottawa, Ont., 1983, pp. 153–181.

³ A. J. Smith, "Success and Failures with Oil Spills in Southeastern Inland Waters," *Proceedings of the 1973 Conference on Prevention and Control of Oil Spills*, American Petroleum Institute, Washington, DC, 1973, pp. 583–588.

⁴ M. F. Fingas, K. A. Hughes, and A. M. Bobra, "The Behaviour of Dispersed and Nondispersed Fuels in a Sewer System," *Oil Dispersants: New Ecological Approaches*, ASTM STP 1018, ASTM, 1989, pp. 274–289.

others one of trade-offs. The use of dispersants can reduce the adverse effects of spilled oil on certain biological species at the expense of other components of the ecosystem.

5.2 In most cases the mortality of individual creatures is of less concern than the destruction of habitat. The repopulation of areas after the spill will occur naturally when an area becomes a suitable habitat for a given species.

6. Recommendations

6.1 Oil or dispersed oil on impermeable surfaces may run off to other environments. The effects of oil or dispersed oil on impermeable surfaces are largely unknown, but are thought to

be minimal. The use of dispersant can assist in cleaning of the surface and allow for the selection of the receiving environment.

6.2 The effects of oil on impermeable structures may be considerable; dispersants may reduce the effect of these.

6.3 Dispersants should never be used if the runoff can reach groundwater, especially that used for drinking water.

7. Keywords

7.1 dispersants; freshwater; impermeable; inland; oil spill; oilspill dispersants; road surfaces

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