



Designation: ~~F1231 – 19~~ F1231 – 23

## Standard Guide for Ecological Considerations for the Use of Oil Spill Dispersants in Freshwater and Other Inland Environments, Rivers and Creeks<sup>1</sup>

This standard is issued under the fixed designation F1231; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This guide covers the use of oil spill 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 Chemical dispersants should be given equal consideration with other spill countermeasures. It is not considered as “last resort” after all other methods have failed.~~

1.3 This is a general guide only. 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. The dispersibility of the oil with the chosen dispersant should be evaluated.

1.4 This 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).

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 guide does not address getting regulatory ~~approval~~ approval.

1.8 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.9 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee F20 on Hazardous Substances and Oil Spill Response and is the direct responsibility of Subcommittee F20.13 on Treatment.

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1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**F2532 Guide for Determining Net Environmental Benefit of Dispersant Use**

## 3. Significance and Use

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

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

## 4. Environment Covered—Rivers and Creeks

4.1 Rivers and creeks are moving bodies of fresh water that are a significant part of major water systems. They have a dynamic near-shore ecology and a wide variety of animal and plant species. In northern regions, these water bodies may be partly or completely ice covered during part of the year. Shallow rivers and most creeks may freeze to the bottom in the winter. Commercially important fishing and recreational activities are frequently associated with these water bodies.

4.2 Rivers generally refer to large bodies of moving water, whereas creeks are smaller bodies of flowing water.

4.3 The characteristics of these water bodies are:

4.3.1 Flowing water,

4.3.2 Water depths in excess of 1 m is designated as a river, shallower would be a creek,

4.3.3 A low organic content bottom except in shallow near shore still-water areas,

4.3.4 A well defined source or outlet, or both, and

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4.3.5 A well defined shoreline consisting of sand beaches and rocky headlands similar to marine and lake environments.

## 5. Background

5.1 The effects of oil and dispersed oil on these aquatic environments have been the subject of numerous studies. The studies have involved both intentional experimental spills and studies undertaken during actual spill situations **(1-6)**.<sup>3</sup>

5.2 There have been a number of studies on the impact of oil and oil/dispersant mixtures on microbiological systems **(7-17)** and freshwater biota **(18, 19)**.

5.3 The principal biotic components of such water bodies are a variety of fauna and flora. The aquatic flora include algae (planktonic and attached) and floating or submerged vascular plants. Terrestrial flora include grasses, moss, lichens, herbs, forbs, and woody plants. In deep water areas, there is little vegetation except for algae **(20-22)**.

5.4 The fauna include invertebrates (molluscs, crustaceans, worms and other similar species), fish, a variety of waterfowl and seabirds (ducks, loons, gulls, terns, and herons), mammals, such as beaver and muskrat, and in many areas, significant human activity. The distribution and composition of species is a function of climate, local geography, season, and soil type, and human use of the area **(23)**.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The boldface numbers in parentheses refer to the list of references at the end of this guide.