

Shoreline In Situ Treatment (Sediment Mixing and Relocation) Fact Sheet

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Things You Should Know

All oil spills are unique events and require response actions based on the conditions encountered.

There are a variety of different treatment techniques available that may be used to clean up oil on the shoreline.

Cleanup techniques may be applied individually, in combination, or in sequence, depending on the scenario.

In most cases, physical removal of mobile bulk oil on the surface is recommended as an initial action, to minimize the potential for oil to remobilize and spread to other areas.

When choosing cleanup techniques it is important to consider the site-specific conditions, including the natural recovery potential, and changes in natural oil removal rates and weathering processes over time.

The selected cleanup technique(s) should minimize environmental harm. In certain cases, this may involve natural recovery.

In situ treatment techniques, such as dry or wet mixing and sediment relocation, are effective and proven tools for shoreline response.

In situ techniques enhance natural weathering processes, and therefore accelerate the natural recovery of the shoreline.

There are many benefits to in situ treatment, including rapid cleanup rates, low labor and equipment requirements, no/minimal waste generation, and no removal of shore sediments.

In situ techniques have been used in many different spill responses and field studies, and have resulted in the successful acceleration of oil removal from shoreline sediments.

Contents

Things You Should Know	v
Introduction and Principles of Shoreline In Situ Treatment.....	1
Weathering, Persistence, and Fate of Oil on the Shoreline.....	3
Oil Particle Aggregates (OPAs), Natural Dispersion, and Weathering	4
Oil and Particle Interaction	4
OPA Formation	4
OPA Representation	4
OPA Requirements	5
Fate of OPA	5
Dry Mixing	6
Wet Mixing.....	8
Sediment Relocation	10
Selected Examples	13
FAQs	14
Cases	17
References.....	18
Acknowledgements	20

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Introduction and Principles of Shoreline In Situ Treatment

When spilled on water, whether at sea, on a lake, or in a river, oil may become stranded on a shoreline or riverbank. If this occurs, there are four basic groups of techniques for shoreline treatment ¹, including natural recovery:

Natural Recovery	Removal	In situ	Chemical and Biological
• No intervention • Shoreline recovery may be monitored	• Manual removal • Mechanical removal • Flushing • Washing • Vacuum removal	• Dry mixing • Wet mixing • Sediment relocation • Burning	• Dispersants • Shoreline cleaners • Solidifiers • Bioremediation

This Fact Sheet explains the use of shoreline in situ techniques, including wet and dry **mixing** (also known as tilling or aeration) and **sediment relocation** (also known as surf washing or berm relocation) for oil spill cleanup. Burning is outside the scope of this Fact Sheet.



Dry Mixing



Wet Mixing



Sediment Relocation

The shoreline environment recovers naturally from an oil spill over time in all but a few rare cases. The objective of shoreline treatment is to accelerate the recovery process by enhancing the natural physical removal of oil from the shoreline (see Section 1), and therefore reduce the time and extent of environmental, economic, and other impacts. Unlike removal techniques, dry mixing and sediment relocation do not involve the removal, recovery, or transfer of oil or oiled materials from the treatment location.

Shoreline in situ treatment techniques can be used in a variety of situations, including:

- ✓ Oiled sediments, ranging from mud to cobbles
- ✓ Marine and freshwater (lake and river) environments
- ✓ High and low energy environments
- ✓ Dry and wet (underwater) environments
- ✓ Surface and subsurface oiling.