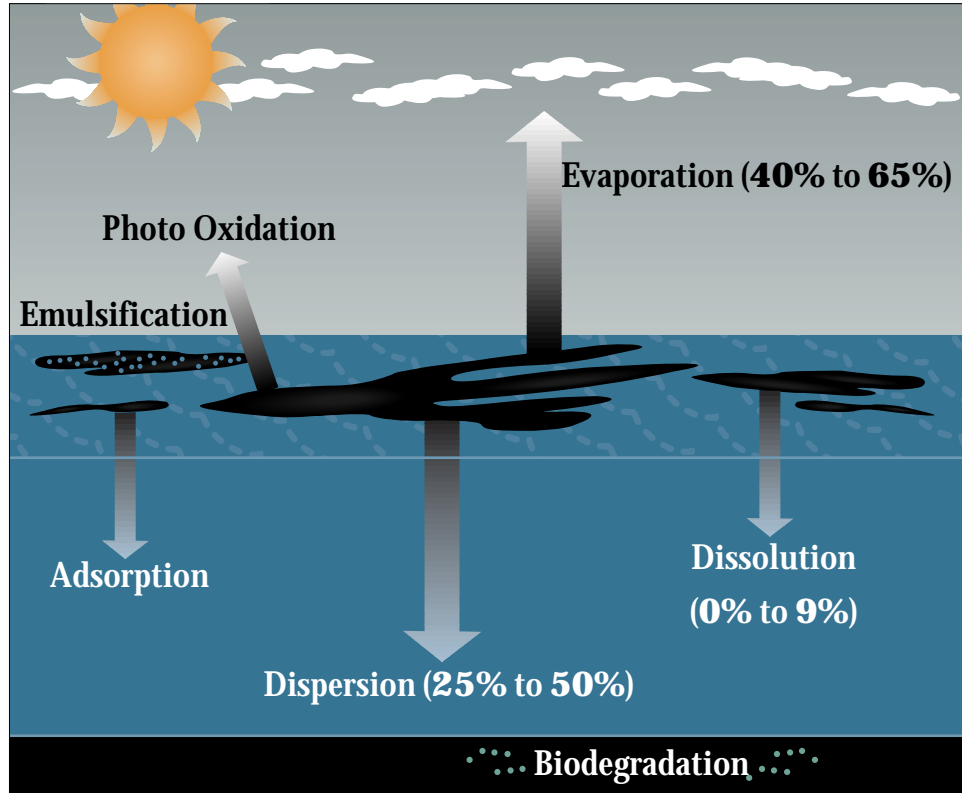


## FACT SHEET: Small Diesel Spills (500-5000 gallons)

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- Diesel fuel is a light, refined petroleum product with a relatively narrow boiling range, meaning that, when spilled on water, most of the oil will evaporate or naturally disperse within a few days or less. This is particularly true for typical spills from a fishing vessel (500-5,000 gallons), even in cold water. Thus, seldom is there any oil on the surface for responders to recover.
  - When spilled on water, diesel oil spreads very quickly to a thin film. Even when the oil is described as a heavy sheen, it is 0.0004 inches thick and contains about 1,000 gallons per square nautical mile of continuous coverage. The volume of oil in areas covered by streamers would be much less. Silver sheen only contains about 75 gallons per square nautical mile.
  - Diesel has a very low viscosity and is readily dispersed into the water column when winds reach 5-7 knots or sea conditions are 2-4 foot.
  - Diesel oil is much lighter than water (specific gravity is about 0.85, compared to 1.03 for seawater). It is not possible for this oil to sink and accumulate on the seafloor as pooled or free oil.
  - However, it is possible for the oil to be physically mixed into the water column by wave action, forming small droplets that are carried and kept in suspension by the currents.
  - Oil dispersed in the water column can adhere to fine-grained suspended sediments which then settle out and get deposited on the seafloor. This process is more likely to occur near river mouths where fine-grained sediment are carried in by rivers. It is less likely to occur in open marine settings. This process is not likely to result in measurable sediment contamination for small spills.
  - Diesel oil is not very sticky or viscous, compared to black oils. When small spills do strand on the shoreline, the oil tends to penetrate porous sediments quickly, but also to be washed off quickly by waves and tidal flushing. Thus, shoreline cleanup is usually not needed.
  - Diesel oil is readily and completely degraded by naturally occurring microbes, under time frames of one to two months.
  - In terms of toxicity to water-column organisms, diesel is considered to be one of the most acutely toxic oil types. Fish, invertebrates and seaweed that come in direct contact with a diesel spill may be killed. However, small spills in open water are so rapidly diluted that fish kills have never been reported. Fish kills have been reported for small spills in confined, shallow water.
  - Crabs and shellfish can be tainted from small diesel spills in shallow, nearshore areas. These organisms bioaccumulate the oil, but will also depurate the oil, usually over a period of several weeks after exposure.
  - Small diesel spills can affect marine birds by direct contact, though the number of birds affected is usually small because of the short time the oil is on the water surface. Mortality is caused by ingestion during preening as well as to hypothermia from matted feathers. Experience with small diesel spills, is that few birds are directly affected. However, small spills could result in serious impacts to birds under the "wrong" conditions, such as a grounding right next to a large nesting colony or transport of sheens into a high bird concentration area.
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# Weathering Processes Affecting Small Diesel Spills (500-5000 gallons)



**Over 90% of the diesel in a small spill incident into the marine environment is either evaporated or naturally dispersed into the water column in time frames of a couple of hours to a couple of days. Percent ranges, in parentheses above, represent effects of winds ranging from 5 to 30 knots.**

## **Adsorption**

The process by which one substance is attracted to and adheres to the surface of another substance without actually penetrating its internal structure

## **Biodegradation**

The degradation of substances resulting from their use as food energy sources by certain micro-organisms including bacteria, fungi, and yeasts

## **Dispersion**

The distribution of spilled oil into the upper layers of the water column by natural wave action or application of chemical dispersants

## **Dissolution**

The act or process of dissolving one substance in another

## **Emulsification**

The process whereby one liquid is dispersed into another liquid in the form of small droplets

## **Evaporation**

The process whereby any substance is converted from a liquid state to become part of the surrounding atmosphere in the form of a vapor

## **Photo Oxidation**

Sunlight-promoted chemical reaction of oxygen in the air and oil

**NOAA / Hazardous Materials Response and Assessment Division**

7600 Sand Point Way NE  
Seattle, Washington 98115  
206 / 526-6317

**NOAA Scientific Support Team**

