

TYPES OF OIL: DIESEL



Diesel is a light petroleum product derived from crude oil during the refining process. It can be used as fuel or shipped as cargo. Many recreational and deep-sea cargo vessels on Canada's West Coast use diesel to fuel their engines.

WHAT TYPE OF OIL IS DIESEL?

Diesel is a non-persistent, distillate fuel classified as a light oil. Its exact physical-chemical properties are determined by the deposit of crude oil from which it originated, combined with the production year and blending ratio of the final fuel.

WHAT TYPES OF VESSELS USE DIESEL?

Diesel can be used by all types and sizes of vessel, but is typically used by smaller vessels such as tugs, work boats, fishing boats, yachts and other recreational boats.

WHAT HAPPENS WHEN DIESEL SPILLS IN SEA WATER?

Once released into the sea, diesel will typically spread quickly and be visible as a rainbow or silvery sheen on the water's surface. Because it is much lighter than water, diesel will not sink and accumulate on the seafloor in open marine environments.

Typically, diesel evaporates and disperses naturally within a couple of days, even in cold water. In rough open seas, it can take up to five days to evaporate and disperse. Adverse weather conditions will disperse the sheen into smaller slicks, creating a greater surface area for evaporation.

Due to its very low viscosity, diesel can be dispersed into the water column by breaking waves, or when winds reach 5-7 knots. If this occurs, it can form droplets that are small enough to be kept in suspension and moved by currents. Oil dispersed in the water column can adhere to fine-grained suspended sediments which then settle out and deposit on the seafloor. This process is more likely to occur near river mouths where fine-grained sediments are carried in by the river.

HOW DOES SPILLED DIESEL AFFECT MARINE FLORA AND FAUNA?

The aquatic toxicity of diesel to water-column organisms is high. Fish, invertebrates and seaweed that come into direct contact with diesel may die. Surface-dwelling wildlife or wildlife that frequently surfaces, including aquatic and semi-aquatic mammals, seabirds, waterfowl, turtles and aquatic insects, can also be affected by diesel spills. These species are vulnerable to acute mortality due to hypothermia from loss of insulation, oil ingestion or inhalation of toxic fumes.

In shallow, nearshore areas crabs and shellfish can be at risk from diesel spills. These organisms bioaccumulate the diesel but will also filter it out, usually over a period of several weeks following exposure.

If diesel becomes stranded in shoreline areas, it tends to penetrate porous sediments quickly but is also washed off quickly by waves and tidal flushing. In addition, diesel oil is readily and completely degraded by naturally occurring microbes within a period of one to two months. As a result, shoreline clean-up is not typically required. Stranded diesel can also evaporate.

HOW IS DIESEL CLEANED UP?

Due to the high evaporation rate of diesel, on-water recovery is generally not required. However, if the product is thick enough and persists on the surface, responders can use booms and skimmers to attempt recovery. Fuzzy disc skimmers can be effective in these situations. Sorbent pads and sorbent boom can also be used to absorb diesel on the surface.



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Sources

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