

## Identifying Water Sheens

### What is a water sheen?

A sheen is a shiny or iridescent appearance on the surface of the water. Sheens can be caused by petroleum products finding their way into the water, or they can be the result of naturally occurring phenomena.

Seeing a shiny, translucent reflection on a pond or lake may look unnatural, but not all sheens are the result of pollution. Here is what you should know about sheens and how to tell the difference between naturally occurring sheens and those that are caused by pollution.



Diesel Sheen. The sheen pictured above is the result of a diesel spill. The colour of the sheen helps to indicate its origin. Refined petroleum products often have a rainbow sheen that fades to a silvery colour at the edges. This silvery colour increases the longer it interacts with the water. Also, note how the sheen has a swirling appearance and the way it clings together.

### Petroleum sheens

Most sheens caused by pollution are the result of petroleum products entering the environment. Petroleum products refer to the class of chemical products made from hydrogen and carbon (hydrocarbons) such as gasoline, diesel fuel, motor oil, heating oil, crude oil, waste or used oil, kerosene, and any other refined products. Nearly all petroleum products that are spilled in water will eventually form a sheen. The formation and appearance of this sheen will vary depending on the properties of the spilled material and weather conditions. Refined products such as gasoline and diesel fuel will spread quickly and generally only form rainbow colours that blend into a sheen. Crude oil sheens are black-brown in colour and as it interacts with the environment may take on a brown-orange colour that can be easily mistaken for red algae blooms.



Furnace fuel sheen. Note the swirling rainbow colour and silvery edges.

### **Naturally occurring sheens**

There are a wide variety of natural surface sheens that can be found on water. Most of these sheens are harmless and the result of naturally occurring phenomena. Some of these sheens are associated with poor water quality but do not pose a risk to human health.

### **Organic sheens**

Another commonly found sheen is created by the decomposition of plant or animal materials within the water. These sheens are often found in areas of stagnant water or where there is a large presence of biomass.

Organic sheens occasionally produce a smell. The scent produced by this process is comparable to the scent of humus-rich potting soil or an unpleasant smell of decay. This process can produce harmless rainbow-coloured sheens that are easily confused for pollution.

### **Stagnant water bodies**

Stagnant water bodies occur when water flow stops, is interrupted, or is particularly low. The water will often have little dissolved oxygen and will be a prime breeding ground for bacteria. Stagnant streams are more common in the summertime, they are more common during times of low rainfall or when streamflow has been disrupted, they can appear black in colour and have a bad odour, this odour is frequently mistaken for sewage. This scent and colour are the result of micro-organisms consuming all the oxygen in the water.



Iron-oxide bacteria.

### **Iron-oxide bacteria**

Certain bacteria in the water break down iron into iron-oxides creating a fuzzy, orange, slime as a by-product. This process can often result in a foul and swampy odour. The by-product from this process can be easily mistaken for oil or water pollution.

Sometimes a blue-silver sheen is also associated with this process. However, the sheen can be easily differentiated from pollution as it forms jagged edges when broken up and does not easily reform.

These deposits are non-toxic and pose no risk to the environment or human health.



Blue-green algae bloom that resembles paint.

### Algae blooms

Blooms are naturally occurring phenomena created by the growth of large amounts of algae or phytoplankton. These blooms can come in a variety of colours and are easily mistaken for paint or oil depending upon the species.

This growth most commonly occurs during periods of warm temperatures and in nutrient-rich waters. Blooms can occur in a variety of colours. Including a red-orange colour which can be mistaken for weathered crude oil.

If it is safe to do so, blooms may be differentiated from pollution by scent. Blooms will have either no scent or a grassy and/or fishy odour. Pollution will often have the scent of oil, gasoline, and/or chemicals.

### Natural surface scums

Seafoam occurs around mangroves, in surf, and during rough weather conditions. It is caused by the churning of water with organic materials.

This foam tends to be a light brown/creamy colour and can look similar to a diesel scum or a layer of oil.

Natural scum is an oily, brown film that accumulates in streams, normally behind obstructions. This scum consists of organic compounds and is an indicator of poor water quality. It will often have bubbles, normally builds up in concentric rings, and contains general debris.



Natural seafoam. Note how the colour is off-white and the dirt and debris in the foam.



Detergent based foam. Note how the colour is bright white and the way it repels dirt and debris.

## How to tell the difference between sheens?

### The stick test

The easiest way to tell the difference between naturally occurring sheens and petroleum-based pollutions is with something called “the stick test.”

- Take a stick or rock and use it to break up the sheen in the water.
- Oil sheens will swirl and elongate before reforming together.
- Organic sheens will break up into irregularly shaped platelets that resist reforming and tend to have a mirrored appearance.
- In some cases, sheens caused by pollution may be difficult to break up and may adhere to the tool used for dispersal.

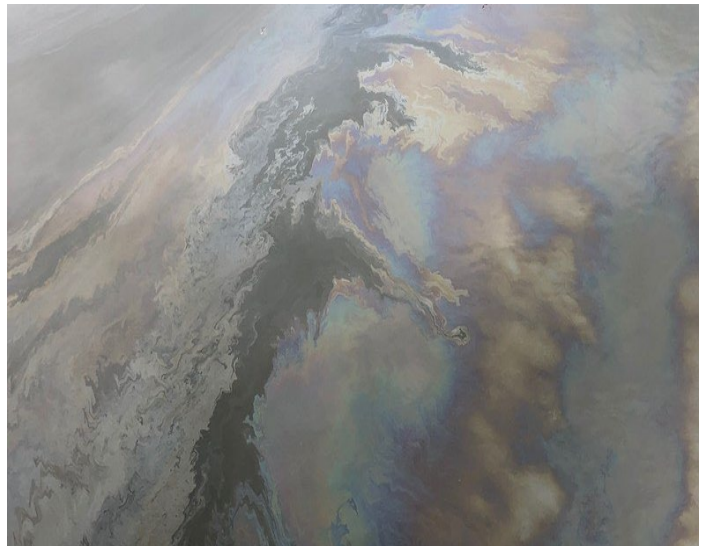


Organic sheen. Note the jagged, irregular edges and how the platelets do not readily form together.

### The shake test

Natural foam can be distinguished from detergents by using “the shake test.”

- If safe to do so, take a medium sized (0.5-1 litre) sample of foamy water.
- Shake the sample of water vigorously for at least 30 seconds.
- Natural foam will dissipate under agitation, detergent foams will increase.



Petroleum sheen. Note the swirling appearance.

For more information, contact the Environmental Emergencies and Land Remediation Branch at [SpillReports@gov.bc.ca](mailto:SpillReports@gov.bc.ca) or refer to the Province’s Algae Watch webpage:

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/algae-watch>

*Note: This document is solely for the convenience of the reader. It does not contain and should not be construed as legal advice. The current legislation and regulations should be consulted for complete information.*

**Report a spill at 1-800-663-3456**