



BEAR CREEK WATERSHED

Fact Sheet 75 Different Types of Foams In Water July 21, 2021

The Bear Creek Watershed Association protects and restores water and environmental quality within the Bear Creek Watershed from the effects of land use.

Clear Creek County
Jefferson County
City of Lakewood
Town of Morrison
Aspen Park Metropolitan District
Conifer Sanitation Association
Denver Water Department
City and County Denver
Evergreen Metropolitan District
Forrest Hills Metropolitan District
Genesee Sanitation & Water District
Geneva Glen
Jefferson County School District
Kittredge Water & Sanitation District
Tiny Town Foundation, Inc.
West Jefferson County Metropolitan District
U.S. Army Corps of Engineers
Jefferson Conservation District

Generally, naturally occurring foam:

- is off-white and/or brown
- has uniform bubbles
- often accumulates in bays, eddies, or river blockages, and below waterfalls
- may have an earthy or fishy smell
- is usually persistent, light, not slimy to the touch.

Generally, synthetic foam:

- is bright white
- is usually lightweight
- can be sticky
- may pile up like shaving cream
- can blow onto beach or shoreline
- breaks down faster
- bubbles in soapy foams are larger and of variable size
- may have a chemical or perfume smell



Foam in waterways (streams, rivers, ponds, lakes, reservoirs, wetlands or stormwater runoff) is common and year-round. Foam is produced by 'surfactant' chemicals that produce a thin film floating on the water surface. When this film is agitated by rocks, waves, waterfalls, strong currents or wind, the surfactant molecules trap small bubbles, producing foam. Surfactant chemicals can be natural

(decaying plants) or synthetic (detergents, soaps, shampoos, weed killers or other human-caused surfactant chemicals). Naturally occurring surfactants are generally a by-product of the breakdown of decaying natural material such as leaves, wood and algae. Synthetic surfactants such as detergents, are introduced to waterways or stormwater runoff systems by accident or by a pollution incident.



All plant cells contain small amounts of natural surfactants that change water surface tension. When an algae bloom begins to die, their cells rupture and release natural surfactants into the water. Add some current or wave action to this mixture and this water will form a froth or foam. Natural foams form in water with a lot of organic matter such as during stormwater runoff events. Leaves and woody debris rapidly decay and release their natural surfactants back into the water. This is the same reason tea and coffee form a froth on the surface when boiled.



Natural surfactants include carboxylic fatty acids derived from plant lipids and lignin from wood. These contribute to a large variety of soluble organic material collectively referred to as dissolved organic carbon (DOC). Though some DOC is produced within surface waters, the primary source is usually from the surrounding watershed. High DOC concentrations in lakes, wetlands and streams can impart a 'tea' color to the water.



Foams in water can collect and concentrate chemicals from the surrounding environment to much higher levels. This includes chemical contaminants. Chemical contamination in a foam does not necessarily mean that the foam itself is synthetic. Environmental Protection Agency analysis of foam types (natural or synthetic) show both natural and synthetic foams concentrate chemicals. Natural foams are typically harmless but synthetic foams can be harmful to aquatic life and pets. Avoid contact with foam.

How can you tell the difference between foams from detergents versus natural foams?

The two different sources of foam usually can be determined by closer inspection of the foam. Soaps and detergents usually contain substances called brighteners, which help the detergent keep a bright white color and prevent staining. Foam formed by soaps and detergents will retain its bright white color for many days regardless of the color or clarity of the water.



Natural foams, on the other hand, are formed by organics that rapidly biodegrade. Natural foams usually begin to turn brown within hours of formation. Look at the individual bubbles in the foam. Soaps are more efficient surfactants so they can create larger bubbles, bubbles in soapy foams are larger and of variable size. Natural foams cannot create large bubbles, so they have small more uniform bubbles. Soapy foams disperse easily, so they often spread out from their source. Natural foams do not disperse as well, so they tend to stay close to the source.

