



Foam in Surface Water

What is Natural Foam?

Natural foam is technically Dissolved Organic Carbon (DOC). The primary source of DOC in lakes and streams is from the surrounding watershed soils. Bogs and wetlands deliver large amounts of DOC to streams and lakes because they are very productive and the breakdown of plant material within wetlands is slow. The presence of DOC in lakes and streams is why they are dark in color and often referred to as "brown-water streams."

Is foam harmful?

Natural foam is of no threat to human health. Some studies indicate foam can be beneficial to fish as natural cover or a place to hide. However, the foam is often considered an aesthetic problem when it accumulates on the banks, shore, and in snags and eddies.

What causes natural foam?

As with most liquids, water molecules are normally attracted to each other. This attraction creates tension at the surface of the water, often referred to as a thin "skin," which allows some insects to glide across it. When leaves, twigs or other organic substances fall into water and begin decaying, they release compounds such as DOC, which is a natural surfactant. Surfactants break the surface tension, which in turn allows air to more easily mix with water and creates bubbles. Foam is produced as air is churned into water by turbulent flow or wave action. Additionally, clay and fine soils that tend to float near the water's surface contribute to foam production.

How can we identify natural foam vs. detergent foam?

Natural foam accumulates in quantities on windward shores, in eddies, behind rocks and logs, and in slow water. The natural foam has a somewhat earthy or fishy aroma. It is usually a dirty brown color with small bubbles and is often seen with algal scum. Foam is quick to dissipate and is frequently observed in the early morning hours and is gone by midday. Detergent foam, by contrast, will have a noticeable perfume-like smell from additives which give wash a "rosegarden" or "lemon fresh" smell. Detergent pollution and foam will usually be localized close to the source of the discharge and have large glistening white bubbles. The most widely used synthetic surfactants today are linear alkylbenzenesulfonates (LAS) listed on most products as sodium or ammonium laureth or lauryl sulfate. If field observations are inconsistent with the natural foam descriptions in this flyer, please contact the TN Dept. of Environment and Conservation for further assistance at 1-888-891-TDEC.

Thank you very much for recognizing the importance of our streams as a valuable natural resource and your help in the protection and improvement of the streams within Metro Nashville/Davidson County.

This publication is a public service of:
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Metro Water Services is in the process of complying with all appropriate Americans with Disabilities Act Guidelines. For additional information contact Joseph A. Estes, Sr., 1600 2nd Avenue North, Nashville, TN 37208-2206; telephone 615-862-4862.



Natural foam on the shore



Natural foam in an eddy

light tan foam on Sugartree Creek



Natural foam on Sugartree Creek in Nashville