

Visual Assessment Fact Sheet

Sensory Observations of Water Quality and Aquatic Habitat

What is It?

Evaluations of water quality and aquatic habitat using sensory observations are usually referred to as *Visual Assessments*. Odor and taste, also sensory observations, are sometimes included in visual assessment as well¹. Together, these observations provide the first level of information available to you about the condition of the aquatic environment. This FACT SHEET describes the sensory water quality characteristics that are most obvious to the casual observer, and offers guidance on how to make sensory observations a useful tool in citizen monitoring.

Why is It Important?

Visual assessments provide the first level of information about an environment and can serve as useful screening tools to help focus more detailed investigations. They are important because they permit us to gather useful information over a large area, or within a short amount of time, relative to other approaches requiring more detailed analysis of environmental conditions.

The following sensory water quality characteristics are the most obvious to the casual observer.

- Algae:** Excessive algal growth may be an indication of insufficient flow, high water temperatures, lack of riparian cover, excessive nutrients or other factors. The presence of some algae is natural and important because it forms the base for the food chain. An imbalance in the amount of algae can decrease water clarity and alter the color of the water.
- Foam:** The presence of foam may be an indication of detergents, excessive nutrients or other unnatural inputs to the waterway. While foam may be an undesirable result of pollution, it can also result from the presence of natural protein sources (for example, kelp and other natural organic matter whipped into a frothy foam due to wave action along a beach.)

¹ For purposes of citizen monitoring, it is not advisable to taste the water found in drains, streams, lakes, and bays. Such untreated water may contain contaminants and microorganisms that can cause illness.

- Turbidity:** In a general sense, this is also referred to as a lack of transparency or clarity. It is most commonly associated with rainfall events but can also be associated with excessive algal growth (e.g., a red tide) or point source pollution. In addition to visual observations of turbidity, this parameter can also be measured by empirical procedures.
- Color:** Color can be assessed for both flowing water (e.g. in streams) or in lakes, estuaries or bays. Poor color (e.g. brown or yellowish) can indicate turbidity caused by sediment, pollution, or excessive algae blooms.
- Oil:** Oil on the surface of water may be a result of naturally occurring lipids, but more commonly is an indicator of petroleum. Most of the hydrocarbon molecules found in petroleum are lighter than water and therefore float at its surface. Even very small amounts of oil can cause large rainbow colored “sheens,” which result from the fact that hydrocarbon molecules are repelled by water molecules. When weathered oil winds up on a shoreline, the lighter molecules evaporate or degrade, and the remaining tar is left behind. While petroleum is biodegradable, it is also toxic.
- Litter:** Litter degrades the aesthetic quality of a water body, but is often detrimental to wildlife due to entanglement or even ingestion. Litter can also increase nutrient loading.
- Odor:** Certain odors, such as chemical, petroleum, decay, fecal matter, and “rotten egg” smells can indicate water quality problems.

How is It Measured?

Measuring these characteristics of water quality through visual assessment requires careful recording of observations. It also requires that the information be collected in an objective, unbiased manner. The principal methods require minimal technical equipment and training and rely primarily on the monitor’s sensory abilities and common sense. The narrative approach involves the use of standardized forms to interpret visual (and other sensory) observations into words or numeric descriptions. The photographic approach provides a permanent visual documentation of specific conditions.