

F it For A Fish: *DISSOLVED OXYGEN*

ACTIVITY DESCRIPTION:

Learning why fish need dissolved oxygen to live.

OBJECTIVE:

To learn what dissolved oxygen is and why it is important.

AGE GROUP:

Grades 6-8

MATERIALS:

- Two candles
- A glass jar large enough to place upside down over a candle
- Matches

Introduction:

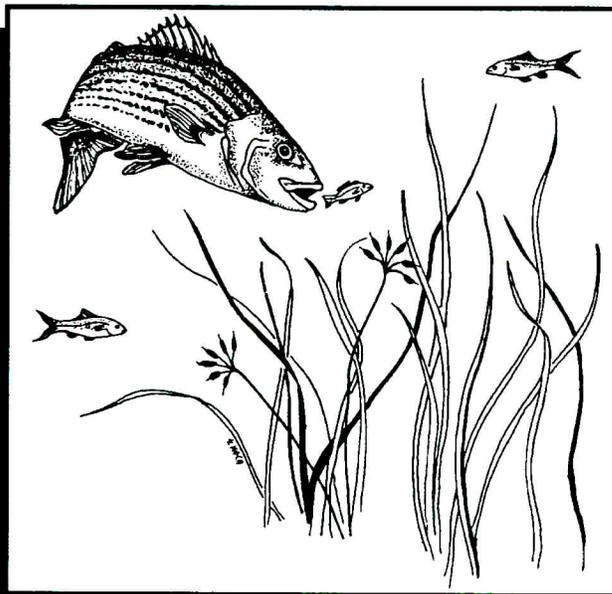
The air we breathe is 21 percent oxygen. It is oxygen that keeps us alive. Fish need oxygen too, but since they don't have lungs, they take oxygen from the water in which they live. The oxygen in the water available to fish is called dissolved oxygen (oxygen that is dissolved in the water). Fish use gills to take oxygen from water just as we use our lungs to take oxygen from the air. In a fish's world oxygen is a rare and precious resource. Although air is 21 percent oxygen, water has only a very tiny amount of dissolved oxygen. Most fish do well when the dissolved oxygen is five parts per million (ppm) (= 5/1,000,000) or higher. When the dissolved oxygen is less than five ppm they become uncomfortable. Most fish will begin to suffocate and die when the dissolved oxygen is two ppm or lower. Because fish are so dependent on dissolved oxygen, it is important that we understand what dissolved oxygen is. Furthermore, we must not put things into our rivers and streams that will decrease the amount of dissolved oxygen below the level that fish need to be comfortable or, even more importantly, to stay alive.

The 30,880 square-mile Albemarle-Pamlico watershed has about 600 dischargers that pour up to 368 million gallons per day of treated wastewater (sewage) into the rivers and streams that eventually run into our Sounds.

into our rivers and streams because it carries germs and solid waste that can quickly take the dissolved oxygen out of the water in which it is poured causing fish to suffocate. Modern sewage treatment plants do a good job of killing the germs in sewage before it is poured into our rivers and streams. Some sewage treatment plants do an excellent job of taking the oxygen consuming wastes out of sewage so that it does not take the dissolved oxygen out of streams and rivers, but some plants do a poor job. In situations where the water is not sufficiently cleaned, it can cause large numbers of crabs and fish to suffocate.

Solid waste from poorly designed or operated wastewater plants will break down or decompose in the river or stream into which it is poured. The

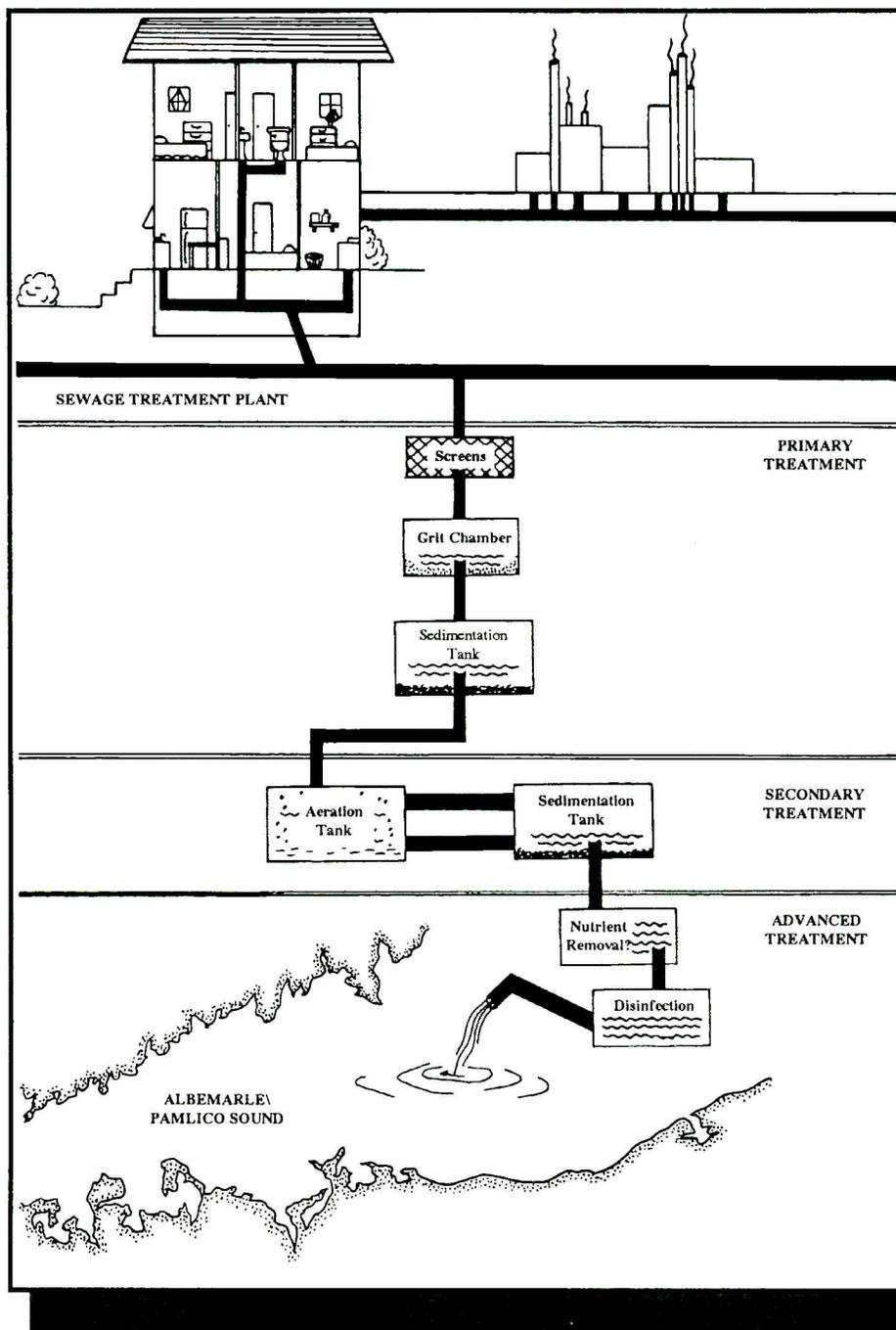
breaking down of solid wastes requires oxygen which is also needed by fish. Therefore, this waste must be removed from wastewater (sewage) before the



This sewage comes from homes, offices, and factories, and must be cleaned before it is returned to our rivers and streams. Raw sewage is not emptied

The Journey of Wastewater to Albemarle-Pamlico Sounds

water is returned to the rivers and streams. When the waste is not sufficiently removed from wastewater, we turn our streams and rivers into wastewater treatment areas which degrades these areas for fish and wildlife. We should consider our fish and wildlife as good neighbors and feel free to borrow water as we do now, as long as we return it in the same condition as we found it.



Activity:

Light two candles. Place a glass jar over one of the candles. What happens? Since we have lungs and abundant oxygen to breathe we live in the same environment as the still burning candle (the candle without the jar over it). In a fish's world dissolved oxygen is a rare

and precious resource. Watch the candle under the jar flicker and go out. When we pour oxygen-consuming waste into our streams, we are taking away the oxygen from fish. When too much waste is present, their lives flicker and fade just like the covered candle.

Illustrations by Sandra Koch