

Endangered & Extinct Animals

Investigation Data Sheet



Testing Freshwater For Nitrate Pollution

Have you ever wondered what is in the water that you are drinking? Because water is a fish's habitat, the amounts of pollutants and toxins in the water determine whether or not a fish survives. By visually observing the water, you might be able to detect some pollution. However, most of the materials in the water, both helpful and harmful, are invisible to the naked eye and have no smell at all. Scientists rely upon chemical tests to accurately measure whether a body of water is suitable to support life.

Most fish can tolerate a range in the concentration of chemicals found in water. These concentrations are reported in parts-per-million (ppm), or the amount of chemical material in a million parts of water. Most fish, for example, cannot survive more than three to five ppm of nitrates—chemicals that can come from sewage and industrial waste. What this means is that for every million glasses of water you can get out of a body of water, only three to five glasses can contain harmful nitrates. Any more than that would result in problems for the fish that reside in that body of water.

Objective

Test two different bodies of water to see which, if either, can support aquatic life.

Materials

- __ two bodies of water
- __ 4 containers with lids
- __ a stopwatch
- __ 2 pairs of rubber gloves
- __ a water test kit (with nitrate level test strips and a level chart)

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. Travel to the first body of water (site 1). Put on a pair of rubber gloves to protect both your hands and your water sample, dip one of the containers into the water and quickly cover the container with its lid. Be sure to label your sample with the location from which it came. Describe site 1 and any observable pollutants in the area.

2. Travel to the second body of water (site 2) and repeat the sample-collection process described in step 1 of this procedure. Describe site 2 and any observable pollutants in the area.

3. When you return to the classroom, fill two containers halfway with water from each sample. Be sure to label these containers as you did with the original containers.
4. Take two nitrate test strips and dip each into one of the containers of water for just two seconds. Remove the test strips and start the stopwatch. After exactly one minute, look at the strips and compare them to the nitrate level chart that came with the water testing kit. Record your results in the table below.
5. Repeat this nitrate test a few more times to ensure the accuracy of your results. Record your data in the table below.

Conclusions

- Does either sample show that the water contains more than 5 ppm of nitrates? If so, what do you think is the cause?

- Which site, if any, would you recommend as an ideal freshwater habitat? Use the data you collected and any observations of the area to support your recommendation. What steps should be taken to further ensure the health of the water in this area?

	Location	Nitrate level (ppm)
Site 1		
Site 2		