BENEFICIAL MICRO-ORGANISMS AT WORK

PART 6 – Two 60 minute sessions

PART 6

OVERVIEW

Students read a one-page information sheet about microorganisms. After reading the information, the class will discuss the components of a water ecosystem and how they rely on each other for survival. Each student draws a water ecosystem and includes one source of pollution indicating how it may have an impact based on what they learned during their investigations.

Standards: 3a, 3b, 3d

Materials

- Information Sheet C – Beneficial Microorganisms at Work – 1 per student
- Poster paper
- Drawing/writing materials
- Information Sheets A & B

Vocabulary Words

- Algae Bacteria
- Contamination
- Decomposition
- Fungus
- Microorganisms
- Natural Attenuation
- Wetland

Other Resources

See Teacher Resources, page 116 for additional activities that relate to water ecosystems.

Helpful Hints

- When discussing an ecosystem, it is important that students visualize the connections between the different components.
- Use pictures of water environments to help students diagram the different components of a water ecosystem. They should include non-living (abiotic) components: sun, water, air, rock, and soil; and living (biotic) components: plants, fish, insects, microorganisms, amphibians, etc.
- When students are working independently on their own diagrams, allow them use of Information Sheets A and B as resources.

PROCEDURE

1. Have each student read Information Sheet C – Beneficial Microorganisms at Work.
2. As a group, discuss what they read and the importance of microorganisms as one of the living components of an ecosystem.
3. As a class or in student groups, illustrate the different components of a water ecosystem.
4. To represent their understanding of living organisms in a water ecosystem and their link to water quality, have students work independently to illustrate a water ecosystem. Have them include one type of land pollution as part of their diagram and describe how it will affect the water organisms and which may or may not survive. For each component of the water ecosystem, students should indicate whether it is a living or non-living component.

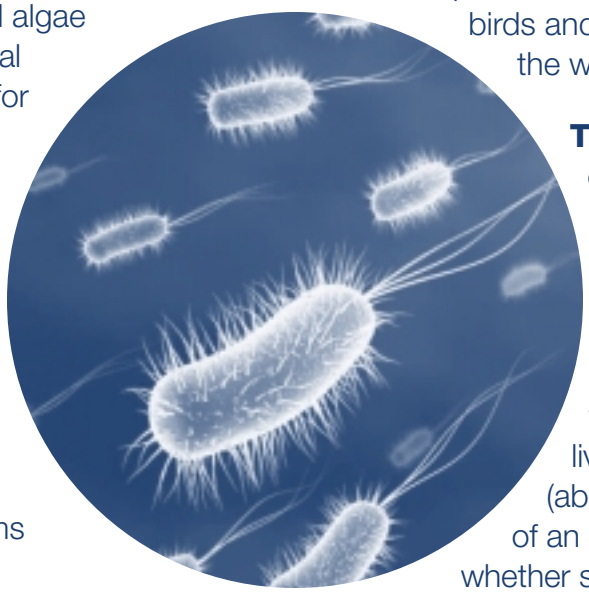
GUIDED QUESTIONS

- How are microorganisms beneficial?
- How are wetlands beneficial?
- What components of a water ecosystem are living (biotic)?
- What components of a water ecosystem are non-living (abiotic)?
- How do humans impact a water ecosystem?
- How does human impact on a water ecosystem determine whether a living organism will survive?

BENEFICIAL MICROORGANISMS AT WORK

Microorganisms are found everywhere in our watershed. They are found in the air, soil, and water and are one of the many living components of our ecosystem. They are called microorganisms because they are so tiny that it would take a microscope to see them.

The majority of microorganisms do not cause disease; in fact most are quite beneficial. For example, microorganisms such as bacteria, fungi, and algae break down plant and animal waste and turn it into food for other plants and animals. This is called decomposition. We depend on decomposition to keep ecosystems healthy.



These beneficial microorganisms can also help remove pollutants in rivers, streams and groundwater through a process called self-purification. These living organisms, like humans, eat and digest the contaminants using them for food and oxygen. However, in order for this method to work, the source of the pollution must be reduced or removed.

Wetlands are also used to improve water quality. Wetlands are a water ecosystem – a land area covered by shallow water that provides habitats for a wide range of plants and animals. Wetland plants and microorganisms consume and filter waste materials and pollutants from the water that flows through the wetland. The plants and microorganisms change the pollutants into nutrients that they can use to grow. The plants then provide shelter and food for wetland birds and animals. Resources within the wetland work together.

The functions of an ecosystem are at work everyday! Natural resources such as a wetland or stream are limited within an ecosystem. It is important that every component – living (biotic) and non-living (abiotic) – is healthy. The health of an ecosystem will determine whether some kinds of plants and animals will survive, or not survive.

How does the water that flows across the school playground affect the ecosystem? What are the factors that will determine whether a living organism will survive? What can be done to ensure that enough of our water stays clean and is allowed to provide a healthy environment for all living organisms, including you?