

Microplastics Lab

Grade Level: 7th and above

Timing: 1 hour

Summary: While not necessarily visible, microplastics are a global marine debris issue with documented impacts on animals from plankton to whales. Continued research and public education is necessary to create the best solution to this oceanwide problem. Students will have the opportunity to not only learn about the impacts of microplastics but they will see the problem firsthand. Students will have the opportunity to be a part of the solution by collecting data for the Florida Microplastic Awareness Program.

Program Objectives:

Students will be able to...

- Understand what microplastics are, where they come from and the impacts plastic has on our water
- Collect and filter water samples, analyze samples for microplastics using a vacuum filter and stereoscopes, and participate in a statewide citizen science microplastic program
- Discuss the future of plastics in our waters and possible solutions

Concepts Covered:

- Definition and types of microplastics?
- Impacts of microplastics on the marine environment
- Sources of microplastics
- Further microplastic research necessary in order to understand impacts
- Use of vacuum filter and stereoscope
- Solutions to the microplastic issue

Vocabulary: microplastic, primary/secondary microplastics, vacuum filter, nurdles, microfibers, grab sample, microbeads, photodegradation, polyethylene, biodegrade

Procedure: Students will collect a 1 L water sample while in the field. When back at MarineLab they will filter the samples to determine the number of microplastics/L. The impacts of microplastics and possible solutions will be discussed. Data collected will be submitted to SeaGrant's Florida Microplastics Awareness Project.

Extensions: If in Florida, students can continue to collect, analyze and enter data into FMAP's database once in hometown. Students from out of state will be introduced to other options.

Resources: www.plasticaware.org



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Standards:

Next Generation Sunshine State Standards

SC.912.L.17.14: Assess the need for adequate waste management strategies.

SC.912.L.17.16: Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.

SC.912.L.17.17: Assess the effectiveness of innovative methods of protecting the environment.

SC.912.L.17.18: Describe how human population size and resource use relate to environmental quality.

Ocean Literacy Principles

Principle 6. The ocean and humans are inextricably interconnected.

d. Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (point source, non-point source, and noise pollution), changes to ocean chemistry (ocean acidification) and physical modifications (changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

g. Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.

