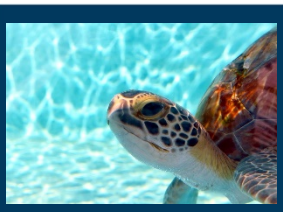
LOGGERHEAD
MARINELIFE CENTER

Human Impact Lab: Microfiber Detectives

Loggerhead Marinelife Center

Loggerhead Marinelife Center is an ocean conservation organization and sea turtle hospital located adjacent to one of the most important sea turtle nesting beaches in the world. The Center features an on-site campus hospital, research laboratory, educational exhibits and aquariums, and also operates the Juno Beach Pier, which hosts world-class angling and sightseeing. The Center's conservation team works with 76 local and international organizations across six continents to form partnerships and share conservation initiatives and best practices that are core to its mission of ocean conservation. The Center is expanding and has launched its Waves of Progress capital expansion campaign, designed to accelerate and amplify LMC's conservation and education impact.

Our mission is to promote conservation of ocean ecosystems with a special focus on threatened and endangered sea turtles. Our vision is to be recognized locally and internationally as the leading authority in sea turtle education, research and rehabilitation.



Visit Marinelife.org to learn more about Loggerhead Marinelife Center!

Lesson Objectives

- I can identify sources of microfiber pollution
- I can define what marine debris is and how it is effecting our ocean ecosystems
- I can conduct an experiment to identify synthetic microfibers versus natural material

Vocabulary

- Microfiber: a very fine, synthetic yarn; 97% of microplastic pollution is believed to be microfibers
- Microplastic: extremely small pieces of plastic debris in the environment resulting from the disposal and breakdown of consumer products
- Pollution: the presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects

Material

- Adhesive (sticky) lint roller
- Long forceps or tweezers
- A lighter or match
- Magnifying glass (or microscope)

Microfiber Detectives: Natural or Synthetic?

Directions: In this activity, students will detect microfibers on their clothing using an adhesive lint roller and determine whether those fibers are natural or synthetic by using a flame in the form of a lighter or match. Microfibers are very fine, synthetic yarns that are typically made of petroleum products and are used to make many fabrics from clothing to towels. When we wash these fabrics in our washing machines, microfibers get washed away into the drains, which eventually lead to our oceans. According to a study by the *National Oceanographic and Atmospheric Administration*, about 97% of microplastics found on our beaches are in the form of microfibers.

Collecting microfibers:

1. Using an adhesive lint roller (sticky roller, not the velvet kind) rub it on a piece of clothing or fabric in your house.
2. Use a magnifying glass, or microscope, to look at the lint roller sheet to detect any microfibers that were picked up. Some microfibers are big enough to see with the naked eye.
3. Gently, take the forceps or tweezer and try to extract one of the microfibers from the lint roller sheet.

Flame Test: Determining between natural or synthetic:

1. CAREFULLY, hold the bottom end of the forceps that hold the microfiber to be tested. Using a lighter or match, touch the flame to one end of the microfiber.
2. What happened? Did the microfiber burn and disintegrate when touched by the flame? Or did the microfiber melt?

Reading the results:

Place the burned microfiber back under the magnifying glass or microscope. Examine the end of the microfiber that was touched by the flame. If the flame caused the microfiber end to burn off and disintegrate, then it is a natural fiber such as cotton. If the flame caused the microfiber end to melt or liquify and bulge at the end, then you have detected a synthetic fiber.

Call to Action: How you can help reduce microfiber pollution:

The best way to reduce microfiber pollution is by purchasing products that are made from 100% cotton materials with no synthetic fibers. However, this can be costly, and many products are only made with synthetic fibers. Another great option is to purchase a microfiber collector for your washing machine, these come in the form of sheets, bags, and collection balls and are designed to capture microfibers before they enter the drainage system.