Microfibers Lesson

(Approximately 30-40 mins)

Intro – (pairs/small groups)

- Tell youth: "*Take a moment and think about all the things you use and/or come in contact with each day that are made of plastic."*
- In pairs/small groups: brainstorm/write list of plastic items they use in everyday life (2 mins)
- Share out some items
- *How does plastic get into our waterways and the Puget Sound? (littering, stormdrains, boats/ships….washing our clothes!)*
- Alarming stat: More than 400 million tons of plastic are produced worldwide each year, with over 8 million tons winding up in the oceans.

  Huge contributor to plastic pollution in our waterways are: ***MICROFIBERS****. What do you know about microfibers?*

- What are microfibers?
  - Tiny strands of plastic (>5mm) that are woven together to create synthetic fabrics
  - Synthetic fabrics = polyester, acrylic, spandex, nylon, rayon
    (Natural fabrics = cotton, wool)
  - ***Have people look at tags on their shirts, jackets, etc., and see how many people are wearing synthetic clothing***
  - A recent study: of all the human-made material found on the shoreline across the globe, 85% were microfibers and matched the types of material (such as nylon & polyester) used in clothing.

Microfibers video - Is Your Fleece Jacket Polluting the Oceans?

- Stop the video at **:53** and study the graphics: *What do they mean?*
- Stop at **3:30 –** Small group discussion:
  - *How should this problem be solved? Who is responsible*? Have youth think about what steps they would take to solve this problem. Write these potential responsible parties on the board:
    Wastewater treatment plants, washing machine manufacturers, individuals/consumers, clothing companies, corporations creating these synthetic fibers from petroleum, government
  - Have groups share out ideas and write them on the board.
- Finish video
  - Make a list of the ideas/solutions that were presented in the video. *How do they compare to our ideas?*
  - *How could bacteria play a role in reducing microfiber pollution?*
  - *What are some ways that individuals could help prevent microfiber pollution?*

Reflection Discussion (pairs/small groups)

- Have students take turns sharing their thoughts and concerns about microfiber pollution by answering the following questions: *"What did you learn? What concerns you most about microfiber pollution?"*
- *Now that you know more about plastics and microfibers, is there anything you're willing to do in your daily life to help reduce microfiber pollution?*

Helpful actions we can easily do at home:

- Filling up your washing machine as much as possible, because a full load means less friction and less microfibers shed;
- Washing with cold water, as hot water can release more microfibers;
- washing your clothing less often; and opting for clothing made from natural materials over synthetics whenever possible.
- Sign a petition! http://action.storyofstuff.org/sign/stop_microfiber_plastic_pollution/

Resources

Videos:
https://www.pbs.org/video/is-your-fleece-jacket-polluting-the-oceans-desq43/

https://storyofstuff.org/movies/story-of-microfibers/

Oxford University Press video

Articles:
https://www.vox.com/the-goods/2018/9/19/17800654/clothes-plastic-pollution-polyester-washing-machine

https://www.theguardian.com/environment/2016/jun/20/microfibers-plastic-pollution-oceans-patagonia-synthetic-clothes-microbeads

https://www.surfrider.org/coastal-blog/entry/bills-and-best-practices-for-microfiber-pollution-solutions

https://www.patagonia.com/stories/an-update-on-microfiber-pollution/story-31370.html

Facts About Microplastics & Plastic Pollution

- "Plastic" simply means pliable and easily shaped. It only recently became the name for a category of materials called polymers ("of many parts"), which refer to long chains of molecules arranged in repeating units.
- There are lots of naturally occurring polymers -- many of which have long been exploited by humans -- including silk, wool, rubber and cellulose, the material that makes up the cell walls of plants.
- Plastic polymers don't occur naturally; we create them. And since they aren't found in nature, no organisms exist to break them down completely. Plastics don't biodegrade, they just break into smaller and smaller pieces.
- Worldwide, more than 400 million tons of plastics are churned out annually, generating a huge amount of waste of which less than 10 percent is recycled. The rest either ends up in landfills, where it will take an average of 500 years to decompose, or in waterways and oceans.
- Although originally hailed as a miraculous innovation that could reduce a rapidly industrializing society's reliance on scarce natural resources, plastic has also created a monumental environmental mess.
- Plastics smaller than 5mm are called microplastics.
- Microfibers are tiny strands of plastic that are woven together to create synthetic fabrics.
- Synthetic fabrics, including nylon, polyester and polypropylene, acrylic, and spandex shed these tiny fibers into the air when we wear them or walk on them (rugs!) and into the water when we wash them
- More than 400 million tons of plastic are produced each year, with over 8 million tons winding up in the oceans.
- A recent study: of all the human-made material found on the shoreline across the globe, 85% were microfibers and matched the types of material (such as nylon and acrylic) used in clothing.
- More companies are developing bioplastic alternatives derived from renewable biomass sources like vegetable fats and oils, corn starch, microbiota and agricultural by-products.