UNIVERSITY OF MINNESOTA | EXTENSION

Sustainable Polymers: Taking Action to Solve the Challenge of Plastics

A 4-H STEM Curriculum for Grades 6-8

Developed by: A partnership between the NSF Center for Sustainable Polymers, University of Minnesota Extension Center for Youth Development, University of California Agriculture and Natural Resources, Cornell (NY) University Cooperative Extension, and *SciGirls.* This work is supported by the National Science Foundation (NSF) under the Center for Sustainable Polymers CHE-1901635

Target Audience: Youth in grades 6-8 (ages 12 to 15) **Free download** at:www.4hpolymers.org

Sustainable Polymers: Taking Action to Solve the Challenge of Plastics
is an inquiry-based science curriculum focusing on engaging youth as change agents in addressing and developing solutions to plastic pollution. The curriculum contains three phases, each with a plastic related driving question designed to engage youth in discovering their own questions related to plastics. Each module begins with youth using science and engineering skills as they explore hands-on polymer science activities. Youth then apply their learning by creating action projects that address a plastic related issue of their choice. The action project phase includes youth **discovering, planning, carrying out,** and **reflecting and celebrating** their action project. The curriculum can be delivered over 5-6 sessions and is intended for delivery in out-of-school time facilitated by an educator (trained volunteers or program staff).

Phases:

Phase 1: The Plastic Past: Rise of the World's Most Popular Material:
Driving Question: How did plastics become one of the most consumed materials in the world? What did we use before plastics?

Phase 2: The Plastic Present: Inescapable Impacts of Polymers:
Driving Question: What happens to all the plastic we continue to consume, what impact does it have on the environment, and what can we do to protect plants, animals, and the environment?

Phase 3: The Plastic Future: Search for Alternatives and Renewable Energy
Driving Question: Plastics make life easier, safer, and more fun, but they come mostly from non-renewable fossil fuels and cause environmental problems. Imagine a world where plastics are sustainable, non-harmful to the environment, and recycled to create energy. What could this future look like and how can we each play an important role in achieving this vision?

Supplies: Activities use inexpensive and easy-to-obtain supplies. A materials list is provided. A kit including some of the materials used in each phase may be provided.

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