

Human Impacts, Benefits & Solutions



Department of
Environmental
Conservation

Topics: Community, environmental resources, diversity, pollution

GRADE LEVEL: High School

Big Ideas:

- Individuals and communities are doing things to help protect the Earth's resources and environments.
- Things that people do can affect the world around them.
- Humans use natural resources for everything they do.
- Pollution is made by humans.

Learning Objectives: *students will be able to...*

- Communicate solutions that reduce their impact on the environment.
- Identify the differences between different types of pollution.
- Develop an understanding of the importance of diversity in a community.
- Analyze the impact of environmental racism.

New Your State Science Learning Standards:

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Key Understandings:

- Energy and fuels that humans use, are derived from natural sources.
- Some resources are renewable over time, and others are not, and their use affects the environment.
- People can make choices that reduce their impacts on the land, water, air, and other living things.
- Humans depend on the living world for the resources and other benefits provided by biodiversity.
- Some communities are unfairly impacted by pollution more than others.
- Anthropogenic changes (induced by human activity) in the environment can disrupt an ecosystem and threaten the survival of some species.
- Human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change.

Essential Questions:

- What is pollution?
- What are some choices that people can make to reduce their impacts on the environment?
- Why is diversity important in a community?
- What are some ways we are different and how can we celebrate these differences in our community?

Students will know...

- Key vocabulary terms.
- Pollution comes in different forms and from many sources.
- Some communities have to deal with pollution more than others.
- How their actions can affect their surrounding environment.

Vocabulary:

- **Community:** a group of people who live in the same area (such as a city, town, or neighborhood).
- **Diversity:** the quality or state of having many different forms, types, and ideas.
- **Environmental justice:** is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income.
- **Microplastic:** small plastic pieces less than five millimeters long which can be harmful to our ocean and aquatic life.
- **Natural resource:** materials or substances that exist in nature such as air, sunlight, water, soil, stone, plants, animals, and fossil fuels.
- **Pollution:** harmful materials into the environment.
- **Rural:** any population, housing, or territory not in an urban area.
- **Suburban:** an outlying part of a city or town.
- **Urban:** living, located, or taking place in a city.

Learning Plan: We recommend doing these lessons in sequential order; however, they can be done as individual lessons. Lessons have multiple links (videos, songs, diagrams, activities) that can be used at the teacher's discretion depending on class time.

Pre-assess: What are some ways we are different and how can we celebrate these differences in our community? How do humans impact the environment? Use K-W-L to assess students' prior knowledge, have students write or draw in response to the essential questions.

Progress Monitoring: Formative assessment and teacher feedback should be ongoing throughout the lessons. Teachers should develop assessments based on their individual class needs. Think-pair share, exit tickets, interactive discussions, questions and listening, informal observations, quizzes and student work samples can all be used.

Lesson 1: Pollution- Students identify nonpoint and point source pollution and how it affects the environment and assess how consumer choices can reduce pollution.

- Sources & Solutions [Student Activity](#) (pg. 52-57)
- Extension: Build Your Own Water Filter [Student Activity](#)

Lesson 2: What are Microplastics? - Students watch a video, survey their own plastic use, and explore plastic's impacts on marine wildlife and the food web.

- Video: [Microplastics and Marine Debris](#)
- Microplastics Here and There [Presentation](#)

- Plastic Rapid Survey [Student Activity](#)
 - You Are What You Eat [Student Activity](#)
 - TEDx: [The economic injustice of plastic](#)
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Lesson 3: Analyzing Environmental Justice? - Students watch a video, then use a map to locate environmental injustice areas to learn how air pollution affects people of color and those living in poverty.

- Video: [Environmental Justice Explained](#)
 - Analyzing Environmental Justice? [Student Activity](#)
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Lesson 4: Build Your Own Equitable City- Students create a vision of a more equitable community by designing their own sustainable city.

- Build Your Own Equitable City [Student Activity](#)
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Lesson 5: Human Impacts & Sustainability- Students identify, analyze and address sustainability problems and how they can make changes in a system.

- Identifying and Analyzing Sustainability Problems [Student Activity](#)
 - Alternative: The Future of a Vacant Lot [Student Activity](#)
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Teachers: Would you like to visit us at Norrie Point environmental education center, or have an educator visit your classroom in-person or virtually? Contact us to schedule a program: hrteach@dec.ny.gov

Resources:

Websites:

- [Children's Environmental Literacy Foundation](#)
- [Learning for Justice](#)
- [EPA Environmental Justice](#)
- [Learning to Give](#)
- [NYSDEC](#)
- [Teach Hub](#)
- [Young Voices for the Planet](#)
- [Global Institute of Sustainability and Innovation](#)