



Classroom Teacher Preparation

Earth Science 20: Our Carbon Footprint

Please use the following to prepare for the next SfS lesson.

Description

Students learn what a carbon footprint is by playing the Carbon Footprint game and learning about different human activities that increase and decrease our carbon footprints. Students gain understanding on the types of decisions they can make in their daily lives to reduce their carbon footprints. Students also learn how carbon dioxide affects climate change.

Lesson Objectives – SWBAT (“Students Will Be Able To...”):

3rd-5th

- Explain that human activities lead to an increase of carbon dioxide (a greenhouse gas) in the atmosphere, which has increased the Earth’s temperatures.
- Identify which actions can be taken to increase or reduce an individual’s carbon footprint

Disciplinary Core Idea (DCI)

ESS3 Earth and Human Activity - ESS3.C Human impacts on Earth systems

- (3rd-5th) Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth’s resources and environments.

Science & Engineering Practice (SEP)

Obtaining, Evaluating, and Communicating Information

- (3rd-5th) Read and comprehend grade appropriate complex texts and/or other reliable media to summarize and obtain scientific and technical ideas and describe how they are supported by evidence.

Crosscutting Concept (CCC)

Stability and Change

- (3rd-5th) Some systems appear stable, but over long periods of time will eventually change.

Preparation:

This lesson is an introduction to the leading causes of global warming.

Room Set Up for Activities:

Lecture demo requires an electric outlet to connect electric kettle.

Students will work in pairs or trios, max of 10 groups.

Safety:

There are no safety concerns for this lesson.



Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Human Impact**. Modules include:

Earth Science 1: Oil Spill – Students explore the issues surrounding an oil spill, particularly the methods of environmental cleanup as they act as environmental engineers to test different methods for effectively cleaning up a model oil spill.

Engineering 6: Saving the Beach – Students work in small groups to engineer solutions to beach erosion through brainstorming, planning, and designing prototypes for their model beaches.

Life Science 10: Sustainability - Fishing for Answers – This lesson uses a fishing game to explore the concepts of sustainability and the tragedy of the commons.

Technology 5: E-trashing our Future – This lesson provides students with an opportunity to examine the increasing volume of e-waste in society and what happens with it after people get rid of it. Students will model the e-waste handling in the U.S. and discuss challenges associated with proper recycling.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state:

www.sciencefromscientists.org/standards/

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by having students obtain a donation of a tree to plant in their community. See the classroom post for details.

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

- “Crash Course Kids: Climate Change” (3:40): <https://www.youtube.com/watch?v=SzcGTd8qWTg>
- “National Geographic: Global Warming” (3:30): <https://www.youtube.com/watch?v=oJAbATJCugs>
- “FuseSchool: What are Carbon Footprints?” (5:01): <https://www.youtube.com/watch?v=Dwkh46MZulc>
- “Simpleshow: The Carbon Footprint” (2:00): https://www.youtube.com/watch?v=8q7_aV8eLUE