

5E Lesson Plan: Coral Bleaching and Oxybenzone: The Ten Dollar Solution to a Global Crisis

Teacher: Kim Wilson

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Subject / grade level: 3rd Grade

Materials: 4-6 sunscreens: half with oxybenzone and half without; SunArt Color Changing Paper; Q-tips; paper plates; zinc oxide; titanium dioxide; plastic gloves; cocoa butter; plastic containers; running water; sunlight; sunscreens brought from student homes.

NC SCOS Essential Standards and Clarifying Objectives:

3-LS1-1 Patterns of change can be used to make predictions.

3-ESS3-1 Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

ESS3.B A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impact.

W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.

Lesson objective(s):

Students will look at the evidence against oxybenzone, a chemical commonly used in sunscreen, and will make a claim to support their reasoning about why oxybenzone should be banned from skincare products.

Differentiation strategies to meet diverse learner needs:

Due to the various reading levels in the third grade classroom, the articles will be read together as a class. The teacher will model note taking on the topic in her science notebook.

ENGAGEMENT

Students will look at two articles on oxybenzone. The first will discuss the impact on the coral reefs:

<https://www.ewg.org/enviroblog/2015/10/sunscreen-ingredient-toxic-coral-reefs> The second will go over the impact on the human body: <https://www.ewg.org/news/news-releases/2008/03/25/cdc-americans-carry-%E2%80%98body-burden%E2%80%99-toxic-sunscreen-chemical>

Students will look at the ingredients in their own sunscreens to determine whether the sunscreen they use contains oxybenzone.

EXPLORATION

1. Students will look at the list of their sunscreen's ingredients on the Environmental Working Group's Cosmetic Database: <https://www.ewg.org/skindeep/> and will determine how toxic their sunscreen is.
2. Students will place sunscreen on SunArt Paper with Q-tips, and will place the SunArt paper in the sunlight for 10 minutes.
3. Students will rinse the SunArt paper and will compare results with other students' sunscreens. The sunscreens that change the color of the paper most are the sunscreens the best.
4. Students will record their findings in their science notebooks and will make a list of the top sunscreens that protect skin.

EXPLANATION

- Students will use Claim, Evidence, Reasoning model to construct an argument about why sunscreen with oxybenzone should not be used. From the research, students will be able to note that 1. Oxybenzone is harmful to coral reefs, 2. Oxybenzone is harmful to humans, and 3. Sunscreens with oxybenzone do not protect the skin as well as sunscreens without.
- Students will turn develop these pieces into opinion writings on the topic.

ELABORATION

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Students will create their own sunscreens using zinc oxide and/or titanium dioxide, and will determine the effectiveness of their sunscreens by testing them on SunArt Paper.

EVALUATION

- Did students effectively construct a claim about oxybenzone supported by evidence and reasoning from their research?
- Were students able to test their sunscreens and record data about the sunscreens effectively?
- Were students able to create and test their own sunscreen and determine its effectiveness?