

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

<p><u>PE</u> Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.</p>	<p><u>DCI</u> • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments.</p>	<p><u>CCC</u> • Systems and System Models – A system can be described in terms of its components and their interactions.</p>	<p><u>Practices</u> Obtaining, Evaluating, and Communicating Information – <i>Obtaining, evaluating, and communicating information in 3-5 builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.</i> Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.</p>
<p><u>Activity</u> Whole Class: Watch this quick video (a special feature from the film <i>Ratatouille</i>) to get students thinking about the problem posed by a world without toilets. Discuss the health and environmental issues if wastes were disposed of in the road or back yard instead of a sanitary system.</p>	<p><u>Question</u> What would life be like without toilets?</p>	<p><u>Objectives / Next Steps</u> • When humans dispose of their waste in the streets or other open areas, disease is easily spread. <i>What do we do with poo?</i></p>	<p><u>Notes</u> If you would like students to do additional research related to this problem and solution, consider exploring the 1854 Cholera outbreak in London (names of interest: Dr. John Snow and Reverend Henry Whitehead) or the sanitary sewer movement pioneered by Edwin Chadwick. This is also a continuing problem in many developing countries.</p>
<p>Small Group: Play the game to see what the modern wastewater treatment process looks like. As you’re playing, try to identify some of the problems you think this process is solving.</p>	<p>What do we do with poo?</p>	<p>• After sewers carry wastewater to a treatment plant, it undergoes a series of processes to ensure it is clean.</p>	<p>All that is needed for this simple game is a copy of the gameboard (11x17”) and a set of cards for each group. The game instructions might be considered optional.</p>

<p>Whole Class: What problems did this process solve? See the whole process in action using this video. Reinforce the purpose of wastewater treatment: protecting the Earth and its waters from pollution.</p>	<p>What do we do with poo? [Continued]</p>	<ul style="list-style-type: none"> • Wastewater treatment processes include removing large solids, filtering water, and using bacteria to remove waste. • Wastewater treatment usually results in water which is cleaner than river water. <p><i>What other problems have humans created for themselves and their environment?</i></p>	
<p>Small Group: Conduct research to determine how an industry creates challenges for the earth. Consider the geosphere (land), biosphere (life), hydrosphere (water), and atmosphere (air). After conducting research, describe what solutions the industry has put in place and what additional ideas you have for solutions.</p>	<p>What other problems have humans created for themselves and their environment?</p>	<ul style="list-style-type: none"> • (Objectives vary) 	<p>The terms geosphere, biosphere, hydrosphere, and atmosphere were established in the lesson for 5-ESS3-1. These activities could be used together or independently.</p> <p>Industries for students to choose from include agriculture, aerospace, food service, construction, clothing/textiles, mining, health services, technology, publishing, sports, transportation, waste management.</p>
<p>Small Group: Create a game of your own which walks players through the challenges and solution of your assigned industry.</p>	<p>What other problems have humans created for themselves and their environment? [Continued]</p>		