

START HERE

Environmental Science

YOUR WORLD, YOUR TURN

Phenomenal Connections

Exploration begins with an engaging **Anchoring Phenomenon** that introduces and unifies the program's upcoming environmental science concepts. Students track their knowledge throughout the unit in a Claim-Evidence-Reasoning or Modeling document and build understanding with an Anchoring Phenomenon Project.

REVISIT

ANCHORING PHENOMENON

These questions will help you apply what you have learned in this Unit to the Anchoring Phenomenon.

- 1. SEP Asking Questions** Research more information about harmful algal blooms (HABs). Suppose you plan to attend a public meeting about how your local or state government is working to reduce the environmental and economic impacts of HABs. Write a list of questions you would ask officials at the meeting.
- 2. SEP Developing and Using Models** Make models of the carbon cycle, the phosphorus cycle, and the nitrogen cycle to show both the short-term and long-term effects of excess nitrogen and phosphorus in runoff. How does making the model help you visualize the impacts of excess nutrients on ecosystems?

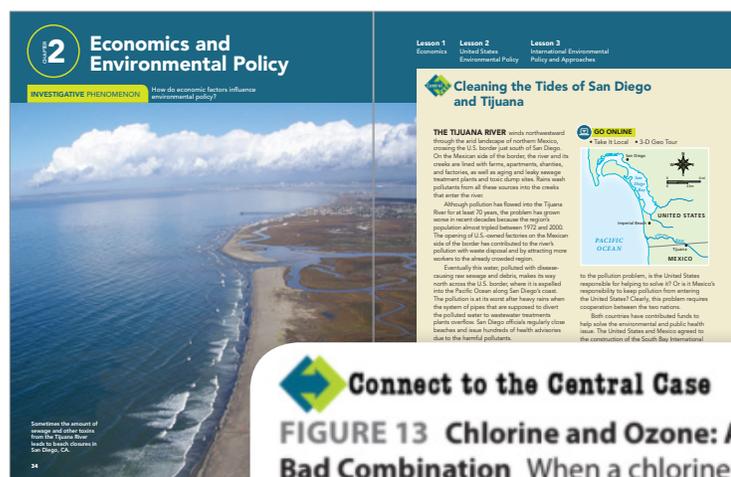
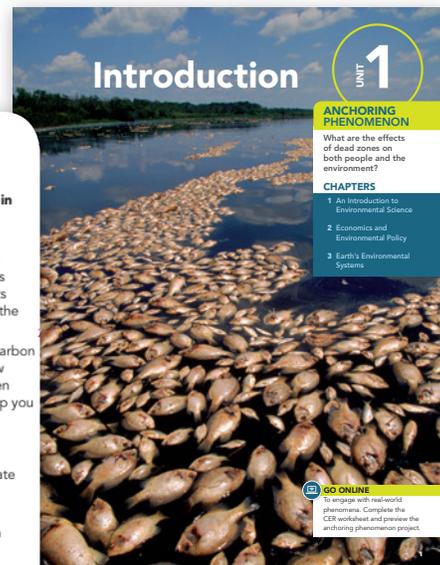


GO ONLINE

For activities that will give you an opportunity to demonstrate what you have learned.

CLAIM-EVIDENCE-REASONING Revisit your Anchoring Phenomenon CER with the information you have learned in this unit.

ANCHORING PHENOMENON PROJECT Design a solution to reduce external costs associated with excess nutrients in oceans and waterways.

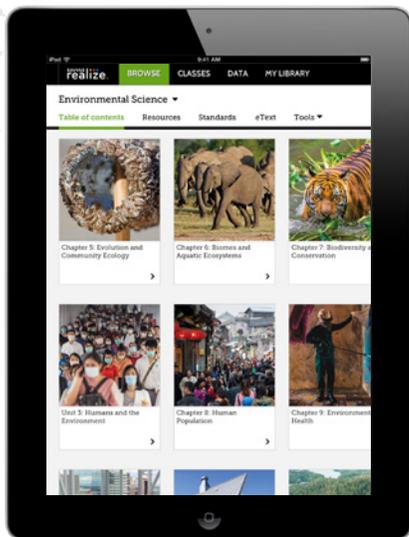


Connect to the Central Case

FIGURE 13 Chlorine and Ozone: A Bad Combination When a chlorine atom collides with ozone in the upper atmosphere, a chain reaction starts that results in the destruction of many—even tens of thousands—ozone molecules. **Interpret Diagrams** Where do the chlorine atoms in the upper atmosphere come from?

Case Studies Drive Learning

Introduce every chapter with an **Investigative Phenomenon Case Study**. This engaging real-world case encourages students to draw connections between environmental science and their life while providing a storyline for them to follow. Students “Defend Their Case” at the end of the chapter.



Award-Winning Digital Platform

Access all of your digital content, inquiry labs, planning materials, assessments, and student data in ONE location. The **Savvas Realize™** digital platform includes offline capabilities, integration with learning management systems, and editable documents and assessments.



Hands-on Inquiry

Editable hands-on **inquiry activities**, including labs, Take It Local, Real Data math practice, and Claim-Evidence-Reasoning documents support student understanding of the phenomenon under study.

Name _____ Class _____ Date _____

SKILL BUILDER Organize Information

15. Fill in the compare/contrast table below with information about the different types of matter.

Matter type	O ₂ Molecule	Hydrocarbons Compound	Protein Macromolecule	DNA Macromolecule
Description	Two atoms oxygen joined a covalent			

Real Data

Population Density and Carbon Emissions

In the accompanying graph, urban population density is used as an indicator of sprawl (lower density = more sprawl). Carbon emissions per person per year for transportation represents the environmental impact of the transportation system or preferences for each of the cities represented.

- Describe** What relationship between population density and carbon emissions for transportation does the graph show?
- Form a Hypothesis** Assuming that the rate of car ownership is similar in these cities, how would you explain the relationship in **Question 1**?
- Predict** If Houston were to pass laws limiting sprawl, resulting in a doubling of its population density, how would you predict its data would change?

Data from Formanville, L., et al. (2016). An environmental characterization of automobile dependence in cities. Boulder, CO: University Press of Colorado, as cited by Oberman, M.J. 2013. What will it take to halt sprawl? Washington DC: Worldwatch Institute.

Student-Centered Experiences

Facts, questions, and thought-provoking scenarios including **Make a Difference**, **Find Out More**, and **What Do You Think?** appear throughout the book, empowering students to apply the science, make choices, and interact with content.

WHAT DO YOU THINK?

Do you think we should attempt to quantify and assign market values to ecosystem services and other entities that have only non-market values? Why or why not?

FIND OUT MORE

Choose a local department or agency that handles the management of natural resources in your area. Find out about the projects the office is currently working on and those planned for the future.

MAKE A DIFFERENCE

Many household detergents contain phosphates (phosphorus compounds). Phosphates in runoff can cause or worsen eutrophication. Check the packages of dishwasher and laundry detergents in your home to see if they contain phosphates. With your family, consider switching to a brand with less phosphate.



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