

LIFE CYCLE ASSESSMENT OF BIOFUELS 101



Overview: When selecting alternative fuels, it is important to consider the relative advantages and disadvantages of each. This activity asks students to begin to consider the life cycle energy and carbon dioxide emission costs of gasoline, corn ethanol and cellulosic ethanol. The various pieces help students trace energy and matter through a complex system and begin to critically analyze graphical comparisons of different fuels.

LEVELS

6 through Undergraduate

SUBJECTS

Science, Environmental Studies

OBJECTIVES

Students will:

- Trace energy and carbon through a transportation fuel production system.
- Identify ways to process transportation fuels without the use of fossil fuels.
- Describe steps in fuel processing where carbon dioxide is sequestered and released.
- Evaluate the sustainability of gasoline, corn ethanol and cellulosic ethanol.

MATERIALS

- Biofuels 101 Package
- Supplementary Videos - Available Online.

ACTIVITY TIME

Two or three 50-minute class periods

STANDARDS

AAAS Project 2061:

- 3C The Nature of Technology: Issues in Technology
- 4D The Physical Setting: Structure of Matter
- 4E The Physical Setting: Energy Transformations
- 5E The Living Environment: Flow of Matter and Energy
- 8A The Designed World: Agriculture
- 8C The Designed World: Energy Sources and Use
- 11A Systems

AAAS. 1993. *Benchmarks for Science Literacy: Project 2061.* Oxford University Press. New York

