

**Unit Issue** Provides context for relevant and connected anchoring and investigative phenomena within the unit.

Chemicals and chemical reactions are used to make and power useful products, including the batteries and circuits in electronics, but they also create waste. How can our understanding of science and engineering improve product design and methods to clean up waste?

**Unit Phenomena** What can we observe in science that makes us wonder?

Sometimes when we make a product, we get side products we don't want.

When you mix substances, they do things like fizz, change color, or temperature.

The amount of matter after a chemical reaction is the same as the total before.

When you mix chemicals, they get hot or cold or give off electricity or light.

Sometimes when we make a product, we get unwanted side products, but we can do something about it.

**Activities** Students use SEPs and understanding of DCI and CCC to explain, justify, and argue a point of view about the issue.

design a circuit board

collect waste

observe chemical changes

reactions at the molecular scale

conservation of mass

design a battery

develop a product prototype

refine the design

solutions to waste pollution

