Energy from Biomass

Biomass

- Biomass is the material that comes from plants and animals that were recently living
  - Can be burned directly, such as setting fire to wood
  - Can also process biomass to make fuel, called biofuel
  - Can be created from crops, such as corn or algae, and processed for use in a car
- Biofuels burn more cleanly than fossil fuels
  - Create less pollution and carbon dioxide emissions
- Biomass power is a great use of wastes and is more reliable than other renewable energy sources,
- However, biomass plants produce pollutants including greenhouse gases
  - E.g. methane gas
- Consequences of biomass use:
  - Amount of energy, fertilizer, and land needed to produce the crops used make biofuels mean that they often produce very little more energy than they consume
  - Fertilizers and pesticides used to grow the crops run off and become damaging pollutants in nearby water bodies or in the oceans

Connection

Biofuels provide energy through a process very similar to photosynthesis. Both processes use carbon fixation, the reduction of inorganic carbon to organic compounds.

Biofuels, such as ethanol, are added to gasoline to cut down the amount of fossil fuels that are used.

Algae Biofuels

- Algae is a promising alternative crop for biofuels
  - Growing algae requires much less land and energy than crops
  - Can be grown in locations that are not used for other things (i.e. desert areas where other crops are not often grown)
  - Can be fed agricultural and other waste so valuable resources are not used

Concept Check

- What are the advantages of algae over other sources of biofuels?
- Why are some crops, like corn, not necessarily a good source of biofuels?
- How can an energy source produce very little energy more than the energy it takes to produce it?