

Conservation Vocabulary

1. **Conservation**: The wise and careful use of natural resources. The goal is to leave an adequate supply of resources for the future.
2. **Natural Resources**: Those things in the environment that are useful to people: soil, water, air, trees, animals, minerals, etc.
3. **Renewable Resources**: Resources that can be used and then easily replaced (within 100 years) Ex. Trees and animals
4. **Non-renewable Resources**: Resources that cannot be easily replaced. Ex. Fossil fuels, minerals, metals, soil
5. **Fossil fuels**: coal, oil, and natural gas; created from the decay of dead plants and animals over millions of years.
6. **Limiting Factors**: Factors that prevent a population from becoming too high – examples of limiting factors include disease, predation, and available resources (food, water, shelter, etc.)
7. **Biomass**: all of the living things on Earth
8. **Water conservation**: The three goals of water conservation are: to increase the amount of ground water (water that soaks into the ground) and to improve the quality of water that is collected and stored, to clean polluted water and to keep unpolluted water clean and usable, and to stop the wasteful use of water.
9. **Desalination**: The process of removing salt from ocean / salt water. During this process you heat the ocean water so that it evaporates. The salt gets left behind in the original container, the evaporated water is collected when it condenses.
10. **Water Cycle**: The movement of water throughout an ecosystem- the water cycle has four parts:
 - evaporation**- When liquid water changes into water vapor (a gas)
 - transpiration**- Evaporation of water through the leaves of a plant
 - Condensation**: When water vapor forms clouds and begins to turn back into a liquid.
 - precipitation**-Water falling back to the Earth (rain, sleet, snow, hail)
11. **Potable**: water that is clean, fresh, and drinkable for human use
12. **PCBs**: Polychlorinated Bi-phenols. PCBs were discovered when scientists were analyzing waste products from refining crude oil into gasoline to determine if they had any possible uses. PCBs are highly resistant to fire and make good insulators, so they were used in the plastic coating of electrical wires, as the insulating fluid for capacitors and transformers, mixed into inks, dyes, and adhesives, mixed in asphalt and fertilizers, etc.
 - PCBs do not break down once they get into the environment- concentrations of PCBs in living things builds as you move up the food chain.

Health risks associated with high concentrations of PCBs include disfiguring skin conditions, high incidence of cancer, problems with the immune and nervous system, physical and mental development of children, etc.

- The Hudson River is a superfund site due to the high concentration of PCBs in the river. There is currently an extensive dredging project underway to remove the PCBs from the river sediments of the Hudson.

13. **Carbon Monoxide**: A colorless, odorless gas; 95% of carbon monoxide in cities comes from the emissions of motor vehicles. CO is the result of the incomplete burning of fossil fuels. Exposure to too much CO can cause suffocation and death.
14. **Catalytic Converter**: attached to the exhaust pipe of a car; it converts carbon monoxide gas into non-poisonous carbon dioxide.
15. **Emission Standards**: There is a set level of pollutants that cars and factories are allowed to give off as established by the government. Tests are done on cars and factories to ensure that they are not giving off too many toxic fumes and pollutants.
16. **Sulfur Dioxide**: colorless gas that has a bad odor (like rotten eggs). Most sulfur dioxide comes from the burning of coal or oil. Sulfur dioxide in the air dissolves in rain water, causing acid rain.
17. **Acid rain**: Any form of precipitation that has a pH of less than 7 is considered acidic. Acid rain can harm / kill plants and wild life; destroy metal, concrete, marble, and paint on buildings and cars. It is caused when sulfur dioxide and nitrogen oxides combine with moisture in the atmosphere to produce sulfuric and nitric acids, which fall to the ground combined with precipitation. Main factors contributing to acid rain are burning fossil fuels for energy, emissions from automobiles, power plants and industries.
18. **Smog**: A mixture of smoke and waste gases that can irritate the linings of the nose and throat, and cause the eyes to sting.
19. **Atmosphere**: The layer of gases that surrounds the Earth
20. **The green house effect**: When the sun's light (energy) shines on Earth all day, about half of the solar energy passes through the atmosphere and reaches Earth, where most of the energy is converted into heat. Some of this heat is absorbed by Earth, but most of it flows back into the air. The atmosphere traps most of this thermal energy – it can't pass through the atmosphere like sunlight can. This trapped heat flows back to the Earth. We call this trapping of heat the green house effect. (A green house is a building made of clear glass or plastic. The glass lets the sunlight in, where it is turned into heat when it hits objects inside the green house. The heat energy becomes trapped in the green house, because unlike light energy, heat energy cannot pass through the glass.)
21. **Green house gases**: Make up less than 1% of the atmosphere; these are the gases in the atmosphere that allow light through, but that absorb heat energy and send it back to earth.

Green house gases have increased dramatically in the atmosphere over the past 50 years. Scientists believe that an increase in green house gases is leading to global climate change.

The green house gases are:

- a. Water vapor: the most prevalent green house gas.
- b. Carbon dioxide: produced when we breathe and burn wood and fossil fuels
- c. Methane: the main gas in natural gas; produced when plants and animals decay, produced in rice patties and swampy areas, produced by cows.
- d. CFC's
- e. Ozone
- f. Nitrous oxide

22. **Global Climate Change**: (formerly known as global warming) Scientists believe that the average temperature of the Earth is rising, which has major impacts on climate world wide. Some areas are experiencing more flooding or more droughts than usual, there are more severe storms, El Ninos are occurring more frequently, ice caps and glaciers are melting, ocean levels are rising, animals are at risk of going extinct as their habitats are changing, etc.

Contributing factors to global climate change:

- a. Burning fossil fuels: Coal, oil, and natural gas (most of the energy we use in the US comes from burning coal)
- b. Deforestation: Cutting down and destroying forest areas removes one of our largest carbon dioxide sinks (places where carbon dioxide is removed from the air naturally). Take away the forests, and less CO₂ gets removed from the air.
- c. Decaying garbage puts methane gas into the air

23. **Energy Alternatives**: Alternatives to using fossil fuels, like solar power, hydro electric energy, wind energy, geothermal energy, and nuclear energy are beginning to gain favor because they cause less pollution, conserve fossil fuels, and put less green house gases into the atmosphere.

24. **Soil**: made from solid rock that has undergone weathering and erosion. It takes between 200 and 400 years to make 1 cm of soil. Soil is a non-renewable resource.

25. **Topsoil**: The upper layer of soil where plants grow. It contains rock particles, humus, and a variety of living organisms.

26. **Subsoil**: The lower layer of soil. Consists only of rock particles of various sizes. It is lighter in color than topsoil because it does not contain humus.

27. **Humus**: materials formed from the decay of dead plants and animals. It makes soil more "crumbly" and increases the water holding capacity of soil.

28. **Fertilizer**: used to increase the organic matter and mineral nutrients in the soil.

29. **Erosion**: The wearing away of topsoil caused by rainwater (which loosens and washes away the soil) and by wind (which dries up and blows away the topsoil).

30. **Runoff**: Rain water that doesn't soak into the ground runs across the surface, carrying soil particles with it. The steeper the slope, the faster the runoff and the greater the erosion. One

of the best protections against runoff is plants (they keep the soil covered, their roots lock soil in place)

31. **Ground cover:** a plant / crop that covers the topsoil with the goal of reducing runoff. Ex: clover, grass, or alfalfa.
32. **Infiltration:** the process of water soaking into the soil
33. **Leaching:** The removal of minerals from soil by water. As water soaks into the soil, it dissolves minerals and carries them deep into the subsoil, where they cannot be used by plants. Organic matter (humus) in the soil helps prevent leaching by absorbing water and holding it in the topsoil.
34. **Crop Rotation:** Helps preserve the minerals in the soil by switching the crops that are grown in a given area each year. (One year a farmer might grow corn in a field; the next year he might grow oats; the next year he might just grow hay; then he might repeat the pattern).
35. **Contour Plowing:** Used on gently sloping areas, it produces horizontal ridges in soil that go across the hill (rather than up and down the hill) to help reduce runoff and erosion.
36. **Terracing:** Used on very steep slopes; the process is very expensive, and involves “cutting” very wide “steps” along the hillside; crops are grown on the steps. This is done in China and in the vineyards of France.
37. **Strip Cropping:** Planting strips of alfalfa (legumes) and grasses between the rows of row crops (like corn) to keep the ground covered and to prevent erosion.
38. **Green manure crops:** Planting a crop after the main crop is harvested to keep the ground covered during the rainy season and winter months, then plowing the crop under in the spring. This adds humus to the soil and supplies nitrogen to the soil.
39. **Shelter belt:** Rows of trees planted along the edges of a field to act as a wind break, to prevent erosion by wind.