

1. List the five most common life-essential elements.

NCHOPS

2. Which essential elements are recycled in nature?

All essential elements are recycled.

3. List three reactions of the carbon cycle that remove carbon dioxide from the atmosphere.

Photosynthesis; reaction between rainwater and between ocean water and CO_2 :
($\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$)

4. The combustion of which fossil fuel produces the most carbon dioxide on a per weight basis?

Coal

5. Are coal and petroleum derived from the same types of fossils? Explain.

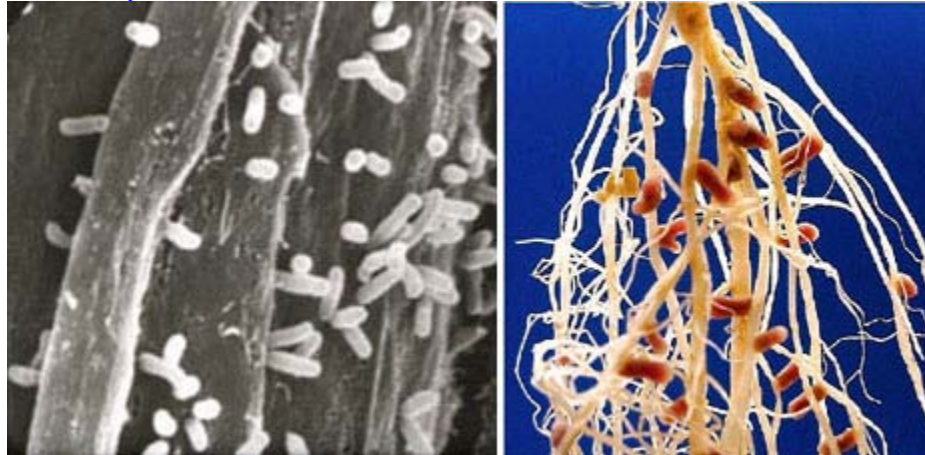
No. Petroleum and natural gas are from dead sea organisms. Coal originates from land plants.

6. How does relatively inert nitrogen from the air end up as useful nitrates in the soils? List four natural or industrial ways.

a. fixation by lightning



b. fixation by bacteria



- c. industrial fertilizer
- d. animal waste

7. a) What is the connection between eutrophication and runoff?
b) List the drawbacks of eutrophication.

a) As a result of runoff, too many nitrates and phosphates end up in river systems where they overfertilize algae. Some emit toxins, and when they die: (b)

- (1) Oxygen levels in the water decrease.
- (2) Sediments build up in lakes, making them more shallow and more difficult for fish.

8. What is the use of nitrates?

Plants use them to make amino acids (later end up as protein), DNA, RNA and ATP.

9. How could biodiversity be increased in your lawn. What advantage would that have?

Let a balanced number of other species other than grass live. Examples of beneficial plants: (white and red clover, birds' foot trefoil, chicory; pictures below are in order). The first three are legumes and enrich the soil with nitrates. The last one has leaves that are edible when young.



10. A) List a producer of a local Montreal forest (example Mont royal, Bois de Ilesse or Iles Boucherville)

Maple tree, poison ivy etc.

b) List a primary (1st order) consumer

Deer, chipmunk, squirrel

c) List a secondary (2nd order) consumer

Fox, hawk

d) List a decomposer : mushroom, bacteria

11. Why would the extinction of ladybugs have a greater impact on the food web than the extinction of the slug?

