Chemistry 100
Homework Problem Set # 8
Due Friday, November 14

1. Give a chemical equation describing how oxygen is converted to ozone in the atmosphere.

2. Ozone is a naturally occurring species in our atmosphere with some beneficial properties. It is also a pollutant with many harmful properties. Explain why these two sentences are not contradictory. (hint: develop your response around the following questions: In which regions of the atmosphere is ozone found? What causes it in those regions? What are its harmful and beneficial effects?) (1-2 paragraphs)

3. Describe how the ozone layer protects us from ultraviolet radiation. Why is ozone necessary when we know oxygen (O_2) also screens out ultraviolet radiation?

4. What are the four properties of CFCs that make them desirable as refrigerants?

5. Give a set of chemical equations describing how CFCs destroy ozone.

6. Using what you wrote above, describe how it is possible for one CFC molecule to destroy 100,000 ozone molecules.

7. Describe the major factors involved in the formation of the ozone hole over Antarctica in the Antarctic Spring.

8. Describe the process of nuclear fission including how a chain reaction is produced. Include a general description of all the starting materials (everything one needs to induce fission) and then what is produced as a result of fission.

9. 99.3% of natural uranium is U-238, whereas 0.7% is U-235. What is "enriched" uranium and what is it used for?