104 Period 17: Nuclear Energy – Consequences of Its Use

1. As you watch the videos in class today, look for a pro-nuclear or anti-nuclear bias on the part of the video producers, narrators, and interviewers. Which ones had a very evident bias?

2. a) What are the three main types of nuclear reactors? Make sure you understand the components of each type, and the advantages and disadvantages of each from a safety perspective. b) Does the U.S. have the newest, safest nuclear reactors?

3. What type of reactor is a) an "RBMK"? b) a "magnox" reactor? c) a "PWR"?

4. a) What is the difference between and "meltdown" and an "uncontrolled chain reaction"? b) Which situation is worse? c) What occurred at Chernobyl? b) What occurred at Three Mile Island?

5. a) What was the cause of the Chernobyl accident? b) What was the main safety concern immediately after the accident? c) Presently, what is the greatest danger at Chernobyl?

6. What is the benefit of using water as both the moderator and the coolant in a nuclear reactor?

7. a) How long will it take for radioactive waste to reach radiation levels on the order of natural background radiation? b) What problems can you foresee in trying to find a place to store it for this length of time?

8. When there seem to be all these problems associated with nuclear power, why would anybody be interested in using or developing nuclear power. Compare the advantages and disadvantages of nuclear power with other energy sources.

8. a) What is the fuel used in a conventional nuclear reactor? b) What is the fuel used in a breeder reactor? c) Why don't breeder reactors need a moderator? d) What is the main advantage of a breeder reactor over a conventional reactor?

10. a) What is the difference between fusion and fission? b) What would be the advantage of a generating electricity using a fusion reactor rather than a fission reactor? c) What is the main difficulty with sustaining a controlled fusion reaction?