2E. Sample quiz questions

Each week, students were given study questions to help them prepare for the biweekly quizzes. Here are examples. The complete set of study questions can be found on the calendar at the course web site. (http://www.chemincontext.com/201-spring04/04Jan.htm)

1. Sample quiz questions relating to the history and uses of uranium

(a) Over a thousand years ago, minerals containing uranium were extracted from the ground. For what purpose?

(b) When uranium was first mined, people did not know that it was radioactive. About what year - 1700, 1800, 1900, or 2000 - was radioactivity discovered?

(c) At the turn of the century, uranium ore was not mined in this country to get the uranium. Rather, some other metal in the ore was of interest. What was this metal and what did folks want to do with it?

(d) About a decade later (1912), uranium ore was mined to obtain the metal radium. Explain why radium is present in all uranium ores. For what purposes was radium desired?

(e) In 1929, Paddy Martinez, a Navajo man, received land by the Land Allotment Act. Describe this act and its significance to the Dine'.

(f) OK, and for fun now, what made the Fiesta ware plates orange back in the 30s? In what way might (or might not) these plates be dangerous to their users? Why were these plates abruptly discontinued in 1942?

(g) Briefly, what was the goal of the Manhattan project? In the 1940s, what took place at the Los Alamos laboratory in New Mexico? (Be sure you can locate Los Alamos, Albuquerque, Alamagordo and the Grants mining district on a map.)

(h) Trinity was the code name for one of the most significant events in the history of humankind. What event? Where? What happened next?

(i) In 1947, the U.S. had only 13 "nuclear devices". Why didn't it have more ...?

(j) In 1950, the Soviets detonated their first "nuclear device". Paddy Martinez becomes famous in 1951. What did he discover and where?

(k) Still back in the 1950s, describe the Kerr-McGee industry. What were they doing in the Haystack area of New Mexico?

(l) Write a short paragraph on the dangers of atmospheric testing of nuclear weapons. Approximately when did the Limited Nuclear Test Ban Treaty go into effect? (and stay tuned for the health hazards of testing nuclear weapons on the lands of indigenous peoples).

(m) On July 16, 1979, the largest low level release took place near Church Rock, New Mexico. What happened? Whose land did this happen on? What clean up measures were enacted?

(n) Depleted uranium is in use by the military today. How is this connected to the story of uranium mining and milling in the 1950s?

2. Sample quiz questions relating to the textbook readings in week 4

If You Poison Us - Secrets of the Earth (Chapter 3)

(a) Mining in the Four Corners Area went through cycles of bust & boom. The period from 1910-1923 was a booming time for radium, vanadium and uranium ... followed by a closing of the mines in 1923. What caused the mine closures?

(b) Again uranium mining was in a cycle of boom starting in 1938. At first, the mines reopened for vanadium. Why? A few years later uranium was sought after. Why?What eventually brought this second period of boom to an end?

(c) The "atomic device" dropped on Hiroshima was a fission bomb fueled by U-235. Some, but not all of the U-235 came from the Four Corners Area. Where did the U.S. get the rest of the uranium?

If You Poison Us - The Uranium Boom and the Cold War (Chapter 4)

(a) "Drill and blast" was the common method of extracting uranium ore. What did this process involve? What were the dangers to the miners? (see page 50).

(b) The early radiation measurements in the mines were made in roentgens (actually milliroentgens). What does this unit measure? Later, the unit was switched to millirems. How do a rem and a roentgen differ?

(c) Miners were exposed to ionizing radiation in several different ways: directly from the rocks, from dust, from radon in the air, and from the water in the mines that they drank. Discuss the different and relative hazards of each.

(d) Silica dust (from blasting sandstone that contained quartz) was also hazardous to the miners. Why?

(e) In 1951, Paddy Martinez identified a uranium ore (tyuyamunite) near Haystack Butte. Locate Haystack on a map in relationship to Window Rock, Gallup, Albuquerque and Grants. Where was the ore from Haystack mine milled 16 and processed?

(f) The Atomic Energy Commission ended a cycle of the uranium boom in 1957. Why and how?

Uranium Mines

(a) There were two kinds of mines back in the 1950s. What were these? What third kind of mining is more common now?

(b) What was a "dog hole"? "Dog holes" were particularly dangerous to miners. Name two reasons.

(c) In terms of worker safety, what advantages do underground mines have over open pits? What disadvantages?

(d) In terms of environmental cleanup, what advantages do underground mines have over open pits? What disadvantages?

(e) Read any selection from Memories Come to us in the Wind and the Rain that describes the conditions in the mines. Who was the speaker? What does he or she report about the conditions in the mines?

Sample quiz questions relating to a class presentation by a student entitled “Japanese Atomic Bomb Survivors and Navajo Uranium Miners: Members of a Global Hibakusha.” (Questions written by a student)

1. What does the word hibakusha mean, and to whom does it refer?

2. Name three similar effects Navajo miners and Japanese hibakusha suffered due to working in the mines and the dropping of atomic bombs, respectively.

3. Fill in the steps of the nuclear fuel cycle.
    1. Uranium mining and milling
    2.
    3.
    4. Fuel Fabrication
    5. Nuclear Power Station
    6.
    7. Reprocessing
    8.
    9.

4. Why do some experts think the nuclear fuel cycle is not really a “cycle?”

5. Briefly describe two different accidents and/or cover-ups that have troubled Japan’s nuclear power program.