Yucca Mountain: What do you think?

A survey to gain information about the health risks to Nevada citizens from the proposed high level nuclear waste repository at Yucca Mountain.

The Center for Business and Economic Research at the University of Nevada, Las Vegas is interested in your thoughts about the health risks that may be posed by the proposed Yucca Mountain nuclear waste repository today and in the future. You have already received a call from one of our researchers and scheduled an interview time for ________ on ________.

This booklet will serve as an information source for the questions the researcher will ask you on the telephone. Please take some time to read through the booklet and familiarize yourself with the contents. Thanks again for your participation!
Transportation of the Nuclear Waste

- DOE would transport spent nuclear fuel and high-level radioactive waste to the site by rail and legal-weight truck.

- The trucks would travel from 77 sites outside Nevada to the Yucca Mountain site primarily on the US Interstate Highway system.

Storage of High Level Radioactive Waste at Yucca Mountain

- The waste would be placed in waste packages at the originating site.

- Waste packages would range in size from 12 to 20 feet and weigh between 77,000 and 183,000 lbs.

- The waste packages will be placed in shipping casks and loaded onto trucks for transport to the Yucca Mountain Facility.

- DOE would receive materials at the repository in shipping casks.

- The casks would be unloaded and the material would be placed in disposal canisters at the Yucca Mountain processing facility.

- The disposal canisters would be placed in a number of interconnecting tunnels in the repository at Yucca Mountain.
Potential intermodal transfer station locations and potential routes in Nevada for heavy-haul trucks.
- Department of Energy (DOE) would construct, operate and monitor, and eventually close a geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste at Yucca Mountain.

- The proposed action would include the transportation of spent nuclear fuel and high-level radioactive waste from commercial and DOE sites across the US to the Yucca Mountain site.

- DOE would dispose of spent nuclear fuel and high-level radioactive waste in a series of interconnecting tunnels in the mountain.

- The tunnels would be between 660 and 1,440 feet below the surface and between 570 and 1,200 feet above the water table.

- The facility would be closed and sealed between 50 and 300 years after the start of waste placement.

- Closure activities would include closing the processing facilities on and below the surface, sealing openings in the mountain, and establishing permanent monuments to mark the site.

- Engineered barriers would ensure the long-term isolation of the materials from the accessible environment.
Accidents

- The heat generated by the spent nuclear fuel and high-level radioactive waste in the waste packages creates a thermal load that could affect the ability of the engineered and natural barriers to keep the materials out of the environment.

- Although positioned well above the water table, leaks into the water table could transport some radioactivity into the water supply.

- Transportation accidents could also occur.

Sources of accidents

Although shipping containers, trucks and the repository handling systems will be designed to minimize the probability and consequences of accidents, hazards still exist from events and external events. Some of these are:

<table>
<thead>
<tr>
<th>Internal Events</th>
<th>External Events</th>
</tr>
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<tbody>
<tr>
<td>Dropping disposal containers</td>
<td>Fire</td>
</tr>
<tr>
<td>Dropping shipping containers</td>
<td>Flooding</td>
</tr>
<tr>
<td>Motor vehicle collisions during transport</td>
<td>Earthquake</td>
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<tr>
<td>Other human error</td>
<td>Extreme weather events</td>
</tr>
<tr>
<td></td>
<td>Volcanoes</td>
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Health Impacts from Repository and Transportation

- **Radiological air quality impacts** would occur from the release of radionuclides.

- **Nonradiological air impacts** would occur from fugitive dust emissions, nitrogen dioxide, sulfur dioxide, and carbon monoxide, and cristobalite, a form of silica dust that may cause silicosis, a respiratory disease.

- **Radiological water quality impacts** could occur from the release of radioactive contaminants.
The risk ladder compares the risk that you will die from different causes during your lifetime. The Department of Energy has estimated the risks to people living at different distances from the repository in the diagram under “Repository health effects.” Risks from transporting nuclear waste are listed on the left-hand side of the ladder near the bottom.
SCRIPT FOR INTERVIEW 2

Hello, this is __________ from the Center for Business and Economic Research at UNLV. We spoke on ______ about our survey concerning the Yucca Mountain Nuclear Waste Repository. We have arranged an interview for __________. We want to thank you again for participating. Do you have the information booklet handy? Let's get started.

If there is any question you do not want to answer, tell me and we'll move on.

First, I'll ask you some general questions that will help us in our economic analysis.

1. How long have you lived in Nevada? __________ YEARS (OR MONTHS)
2. How long have you lived at your current address? __________ YEARS (OR MONTHS)
3. How many more years do you plan to remain in Nevada? __________ YEARS (OR MONTHS)
4. What is your occupation? ________________

5. Have you heard anything about the plan to build a radioactive waste repository at Yucca Mountain? YES __________ NO __________
6. Have you heard about it in:
   federal government reports _______
   booklet from UNLV _______
   local newspapers _______
   national media _______
   state and local government _______
   other people _______
   other (write in) ________________________

7. How many adults in your household? _____
8. How many children in your household under 18? _____
9. Do you have health insurance? YES _______ NO _______
Now, I have some questions that pertain to the Yucca Mountain Nuclear Waste Repository.

10. Please refer to the map in the center of your booklet. How far are you located from the transportation route in the map? Are you...
   a. less than a mile ________
   b. between 1 and 5 miles. ________
   c. between 5 and 25 miles ________
   d. between 25 and 50 miles ________
   e. more than 50 miles ________

11. The risk ladder on the back of the information booklet gives risk of death from different causes. High risks are at the top of the ladder, and low risk causes of death are at the bottom. The numbers on the right are the number of deaths per 100,000 persons for each category. The DOE thinks that the risk from the repository is between fire and weedkiller. They think the transportation risk is the same as weedkiller. Do you see these points? (HELP RESPONDENT FIND THE POINTS).

   Those are the risks estimated by the DOE. You may agree with the DOE, or you may have a different perception of the risk. Using the risk ladder, can you rank the increase in risk to your health and safety from transporting the nuclear waste?

   between ______________________ and ______________________.

   or: the risk is like ________.

12. Suppose the route shown on the map in red is chosen for transporting high level radioactive waste to a containment facility. In return, the citizens of Nevada will receive ______________ per year in the form of a federal tax rebate. If the rebate exceeds the taxes owed, then a check will be issued for the remainder. If you decide to move, you will not receive the rebate. But the federal government will pay your moving costs. Will you stay in your present location, or move because of the risk to your health from transporting the spent nuclear fuel? STAY____ MOVE______

   IF STAY, GO TO A. IF MOVE, GO TO B.

12a (STAY) What if the rebate was __________ ? STAY______ MOVE ________

12b (MOVE) What if the rebate was __________ ? STAY______ MOVE ________
13. What distance will you move?
   a. between 1 and 5 miles ______
   b. between 5 and 25 miles ______
   c. between 25 and 50 miles ______
   d. more than 50 miles ______

The next questions I will ask you will be hypothetical questions. I will ask you to assume things and base your answers on those assumptions. Some of the assumptions may seem unlikely, but please try to answer the questions as accurately as you can anyway.

Assume that a transportation route has been chosen that cannot cause adverse health effects to you or your family. The facility itself still poses health risks.

14. Please rank the increase in risk to your health and safety from the proposed nuclear waste repository at Yucca Mountain using the risk ladder.
   between ______________________ and ______________________.
   
   Or: The risk is like ________.

15. Still assume that the transportation does not pose any risks to your health. Suppose the Yucca Mountain site on the map is chosen for the nuclear waste repository. In return, the citizens of Nevada will receive ______ per year in the form of a federal tax rebate. If the rebate exceeds the taxes owed, then a check will be issued for the remainder. If you decide to move, you will not receive the rebate. But the federal government will pay your moving costs. Will you stay in your present location, or move because of the risk to you from the repository? STAY ___ MOVE ___ (IF YES, GO TO A. IF NO, GO TO B)

15a. (STAY) What if the rebate was ______. Would you stay in your present location or would you move? STAY_____ MOVE ___________ (IF MOVE, GO TO C, ELSE GO TO 16).

15. b (MOVE) What if the rebate were ______. Would you stay in your present location or would you move? STAY _____ MOVE __________ (IF MOVE GO TO C, ELSE GO TO 16)

   c. Will you move out of the state? YES_______ NO _______
If you won't move out of the state, how far will you move from the repository?  
__________ miles

16. Still assume that a transportation route has been chosen that cannot cause adverse health impacts to you or your family. Suppose that a new technology, transmutation, exists that will make the radioactive material at Yucca Mountain harmless in 50 years. The treatment facility will be located at Yucca Mountain. The technology is very expensive. Realizing that the technology will not cut health risks currently, but would get rid of them altogether in the future, would you be willing to accept ______ per year in compensation for the Yucca Mountain site? YES ______ NO ______

IF YES, GO TO A. IF NO GO TO B.

a. If yes, would you be willing to accept ______ per year? YES ______ NO ______

b. If no, would you be willing to accept ______ per year? YES ______ NO ______

17. Sex: F ________ M ________

18. Is your age (READ ALL UNTIL ANSWERED):
   ______ 18-24 years
   ______ 25-34 years
   ______ 35-44 years
   ______ 45-54 years
   ______ 55-64 years
   ______ 65-74 years
   ______ 75 or more years

19. Is your health status: (READ ALL UNTIL ANSWERED)
   ______ excellent
   ______ good
   ______ fair
   ______ poor

20. Is your income between: (READ ALL UNTIL ANSWERED)
   ______ less than 15,000 yr
   ______ 15,000 to 34,999
   ______ 35,000 to 54,999
   ______ 55,000 to 74,999
   ______ 75,000 to 99,999
   ______ 100,000 or more

21. Do you have a high school diploma? ______

21. How many years of schooling do you have after high school? ______