


Note to students:

This presentation received a 42/50 as graded by me and their fellow students. Keep in mind, the grade also reflects things you didn't see (delivery, presentation, participation, etc.). I liked that they covered a topic that we really don't address and that it was something not too many people are aware of. I think it was knocked down a little because of delivery and too much text on some slides.

Greg

## Nuclear/Radioactive Waste Disposal




Yucca Mountain Repository

- By:
  - Sienna Britton
  - Megan Bernhardt
  - Kyle Smith

### What is nuclear waste?

- Byproduct of the use of radioactive materials
- Material that nuclear fuel becomes after the fuel is used in a reactor
- It's either radioactive itself or contaminated by radioactive elements
- Different categories of nuclear waste (high level radioactive waste, low level radioactive waste)




### High level waste vs. Low level waste

- High level radioactive waste: results from the fuel used by reactors to produce energy
- Low level radioactive waste: results from reactor operations from medical, industrial and other commercial uses
- High level radioactive waste is stored in special designed pools of purified water at the reactor sites
- Low level radioactive waste is put inside shallow burial sites, however, they are regulated

### Type of waste disposed at Yucca Mountain

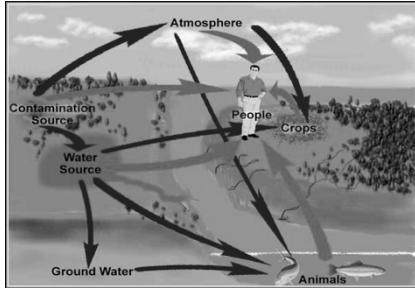
- This site is a proposed high level waste disposal
- The nuclear waste at Yucca Mountain is categorized as spent, or used, nuclear fuel



### Information on nuclear waste

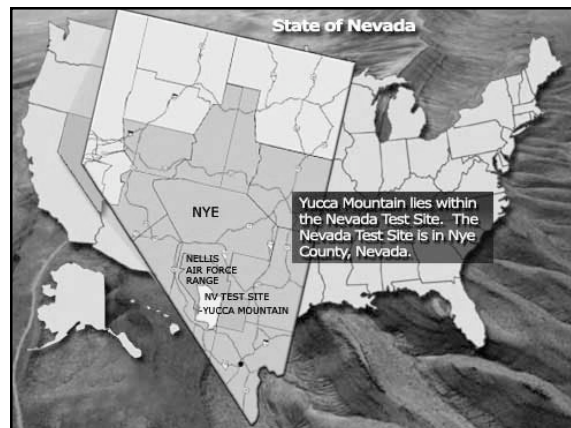
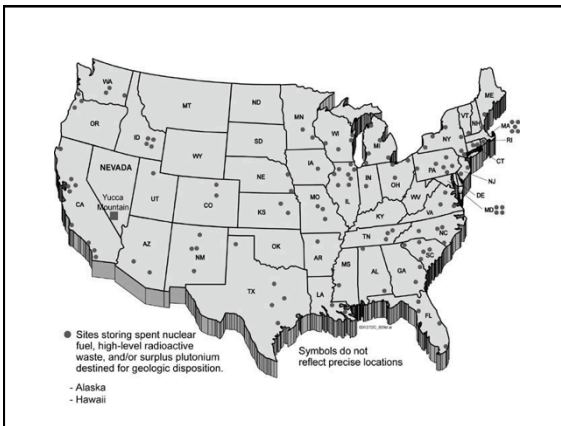
- Remains hazardous for hundreds of thousands of years
- Many of the nuclear sites will require monitoring and protection for centuries after they close down

### How does nuclear waste get into the environment?



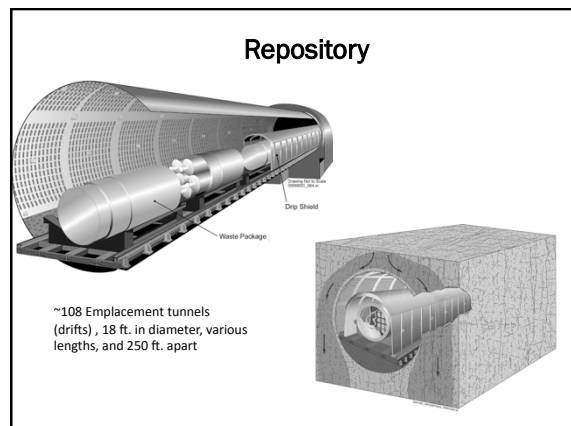
### Issues/Concerns

- Preventing water from reaching waste and carrying away radioactive particles
- Earthquakes
- Transportation



### Yucca Mountain Repository

- Safely isolate highly radioactive nuclear waste for at least 10,000 years
- 1,000 ft. below earth's surface and 1,000 ft. above the nearest water table
- Hold 70,000 metric tons of spent nuclear fuel and high-level radioactive waste

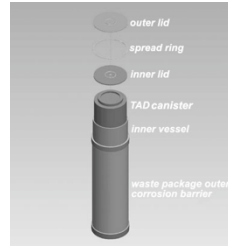


### Surface Facilities



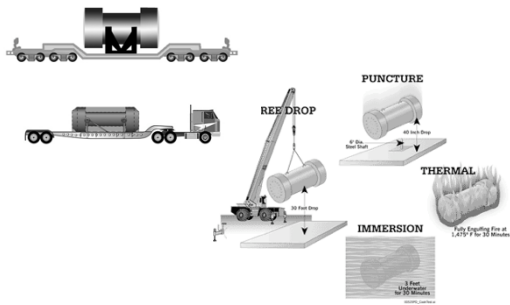
- Hold advanced equipment and radiation shielding for receiving and preparing waste for disposal
- Initial Handling Facility
- Canister Receipt and Closure Facility
- Wet Handling Facility

### Transportation, Aging and Disposal (TAD) canister



- Waste inserted into TAD canister
- TAD canister inserted into a stainless steel canister designed and built to provide additional strength
- Then placed in the outermost canister consisting of nickel alloy which is highly resistant to corrosion.

### Transportation - Cask



### Warning!



### Where is Yucca Mountain at Today?



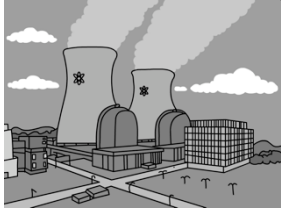
- 2002 – Governor of Nevada rejected site, overridden by congress
- March 2017 – “Projected Start Date”

### Where is Yucca Mountain at Today?

- Currently \$9 billion dollars have been spent
- Penalties - \$ 300-\$500 million per year



## What is the future for Yucca Mountain?



- Opposition
- Spent fuel rods and nuclear waste continues to increase
- "Unknown"