

California's Disposal Plan Goes Nowhere Fast

California desperately needs a place to store as much as 5.5 million cubic feet of low-level radioactive waste over the next 30 years. Ward Valley, a barren stretch of the Mojave Desert located some 250 miles east of Los Angeles, was supposed to be that place. Last year, trenches dug in the arid, seismically stable valley were supposed to begin holding wastes like the gadolinium-153 used to detect osteoporosis and the selenium-75 used to study proteins, as well as wastes from nuclear power plants. But construction crews haven't even begun to dig, because Ward Valley has become ground zero in the fierce national debate over radioactive waste disposal.

Lawsuits filed by opponents, who fear the waste will contaminate the environment, and the intervention of influential politicians such as Sen. Barbara Boxer (D-CA) have blocked the Interior Department from selling the federally owned Ward Valley land to California to begin construction. As a result, universities, biotechnology companies, and hospitals may be stuck with wastes piling up at their institutions, which could have repercussions. "If we don't sort this thing out, there will be no isotopes available for research and treatment," warns Stephen Romano, a vice president at US Ecology, the company that the California Department of Health Services (DHS) licensed last September to run the Ward Valley site. "You also have the danger of driving biotech out of the country, and certainly California." Chiron of Emeryville has made just such a threat, and Irvine's ICN Biomedicals already has moved its tritium-processing division out of state.

The problem actually stretches far beyond the Golden State. For years, most states shipped this kind of waste to a handful of commercial sites around the country which, by law, had no choice but to accept it. Then in 1980, Congress passed a new law that forced states to dispose of their own wastes,

and allowed the existing commercial sites to turn down outsiders. This led states to form 9 regional waste disposal compacts; California, which allied with Arizona and the Dakotas, was expected to be the first to open a site. Now the other compacts are anxiously watching the Ward Valley fight. "I don't know how you could have a better site for disposal than that," says Gregg Larson, who represents a consortium of Midwestern states called the Midwest Compact. "If we can't get a facility built at that site, you sort of wonder how you can get a site built anywhere."

The problem has become especially acute because Barnwell, South Carolina, the site California and many other states have relied on for years, is closing its gates to outsiders come 1 July. "You have to be able to have a home for these wastes," says Carol Marcus of the University of California at Los Angeles (UCLA), who is director of nuclear medicine at the Harbor-UCLA Medical Center and also develops radioactive drugs.

But opponents to Ward Valley insist that a home must be found elsewhere, for they contend that contaminants may

leach down from the site and over to the Colorado River, a major source of drinking water for southern Californians. "Tens of thousands of people could come down with cancer if this occurs," warns Daniel Hirsch of the Los Angeles-based Committee to Bridge the Gap, the main foe. While the degree of cancer risk is highly debatable, the leaching scenario of Hirsch and his allies was supported last fall by a study by three geologists at the Menlo Park branch of the U.S. Geological Survey (USGS). The USGS, however, has distanced itself from the report, insisting that the researchers—Howard Wilshire, Keith Howard, and David Miller—were acting independently. This prompted a furious letter on 7 February from Boxer to Secretary of the Interior Bruce Babbitt, whose department, in addition to overseeing the Ward Valley land, supervises the USGS. Interior, wrote Boxer, "has gagged

the geologists, sought to discredit them and their work, and rejected their findings—all without making the slightest effort at objective analysis."

In essence, the battle comes down to two scientific questions: First, can rainwater pick up radionuclides from the site and transport them down to the groundwater, 650 feet below the surface? And second, can that groundwater travel to the Colorado River?

To proponents of Ward Valley, the answer to both questions is a resounding no. US Ecology and DHS both note that wastes will be stored in either steel drums or concrete more than 25 feet below the surface. Even when the containers disintegrate many years down the road, the radionuclides will not be touched by water, they maintain, because precipitation cannot penetrate to that depth—hydraulic and thermal gradients in the desert typically prevent water from going below about six feet. And even if the groundwater does unexplainably become contaminated, US Ecology says Ward Valley is in a separate drainage basin from the Colorado River, 70 miles away, and there's no hydrologic connection to it.

But several scientists, including one from the Environmental Protection Agency (EPA) and the three from USGS, have challenged both these contentions. They note that relatively high concentrations of tritium, a radioactive isotope of hydrogen, were found in soil samples taken 100 feet below the site. Tritium comes from the surface, and calculations based on the tritium levels and its half-life of 12.4 years, the USGS group says, indicate the radionuclides may have leached to 100 feet in as little as 35 years. As for the journey to the Colorado, the USGS group's controversial 53-page report details five routes that groundwater could take from Ward Valley to the river. David Huntley, a hydrologist at San Diego State University who reviewed the report for the USGS team, thinks they may have a point. "I don't think we know enough about groundwater hydrology to stand up and say, 'Yes, this isn't a problem,'" says Huntley, who studies groundwater flows and contaminants in fractured rock systems.

At this point, the fate of Ward Valley is up in the air. On 27 April, the Los Angeles Superior Court will begin hearing a lawsuit brought by Committee to Bridge the Gap and three other groups alleging that DHS improperly issued US Ecology a license and that their environmental impact report was inadequate. Babbitt said he will decide Interior's next move following the resolution of the suit—which, given the likely appeals, could mean that California researchers will be forced to keep their radioactive trash on-site for years to come.

—Jon Cohen

