

Hodel. Responding to the secretary, Reed criticized Hodel for "single-minded grandstanding to the arch-conservative right wing of the Republican party."

In a telephone interview, Train said that Bush, whom he counts a friend, "suffered through some of the Reagan years in silence." One reason Bush never spoke up on the environment was that "he never had any responsibility that involved him getting into these issues at any depth."

Train coached Bush on his first speech of the Labor Day series, urging him to promise action on acid rain without getting into a "numbers game" on sulfur dioxide. Train says the sagebrush rebels who came into office with the Reagan Administration are on the way out because the politics of the Rocky Mountain states has changed. "It's no longer Republican big ranchers and mining interests against the smaller people out West. . . . You have the same urban interests as in the East, where people look upon the outdoors and wildlife as valuable assets" to be preserved.

But there is at least one issue, according to several environmental groups, on which Dukakis has been more direct than Bush—offshore oil drilling. Dukakis came out against drilling on the Georges Bank in the late 1970s, despite intense pressure to open up the continental shelf during an oil scare, and he has held his stand since then. Bush, on the other hand, has led both drillers of Texas and environmentalists of northern California to see good news in his statements. Before the California primary last spring, Bush recommended a delay in plans to permit drilling off the California coast; the Department of the Interior decided to postpone an auction of leases. More recently, he criticized Dukakis for opposing offshore drilling. Bush's position paper says that he will "prevent offshore drilling on certain tracts that are particularly environmentally sensitive." Skeptics point out that there is nothing new in making "certain tracts" off limits; that has always been done.

Many environmental leaders welcome the Vice President's rhetoric, but feel, as Michael McCloskey, chairman of the Sierra Club, says, that "Bush needs to be specific to be a player in the game." For example, McCloskey says, everyone agrees that sulfur dioxide emissions must be reduced by "millions of tons" a year, but there's a world of difference between 3 million tons, a goal once suggested by the Reagan Administration, and 12 million tons, a goal put forward by a National Academy of Sciences report. On this and many other strategic points, McCloskey finds the Vice President's statement "purposefully vague."

■ ELIOT MARSHALL

DOE Challenged on WIPP Site

After spending \$700 million and taking 7 years to build the nation's first permanent repository for radioactive wastes, the Department of Energy (DOE) is seeking permission from Congress to begin limited waste storage operations. DOE could begin to load up to 125,000 barrels of wastes produced in the nation's nuclear weapons factories into the Carlsbad, New Mexico, facility early next year. But the department is coming under fire for trying to proceed before important scientific and engineering issues are resolved.

Scientists, members of Congress, and environmentalists contend that questions about the soundness of waste storage experiments, compliance with federal environmental protection rules, and the design of the facility should be settled before large quantities of wastes are shipped to the complex. Indeed, critics argue that until the Waste Isolation Pilot Plant (WIPP) is qualified as a permanent disposal site—a process that will take 5 years—minimal waste material should be stored there.

Jill Lytle, deputy assistant secretary for nuclear materials at DOE, told *Science* that between 25,000 and 125,000 55-gallon barrels may be placed in the facility during the first 5 years of operation. Lytle said a large amount of material will be needed at WIPP in the first 5 years of operation to demonstrate that the facility can be managed effectively over its 25-year life.

Located 25 miles southeast of Carlsbad, WIPP is meant to be a permanent disposal facility for about 800,000 barrels of transuranic wastes—materials contaminated with alpha-ray-emitting isotopes with half-lives of 20 years or greater. These materials include clothing, plutonium fabrication hardware, and waste-water treatment sludge. Because the wastes often contain solvents and other chemicals, they are subject to Environmental Protection Agency (EPA) rules governing hazardous wastes.

The WIPP site was selected because the area is geologically stable. The complex is built 2150 feet beneath the surface of a 16-acre tract and is carved out of a massive formation of bedded salt. This formation is supposed to eventually encase the facility and prevent radioactive wastes from migrating to water sources.

There is, however, concern that water contained in the salt structure may eventually seep into the storage facility and create a slurry of brine and radioactive particles. The generation of gas from decaying waste materials could be sufficient to breach plugs in the complex's access shafts, under some worst-case scenarios.

DOE plans to resolve questions about the gas generation and water seepage with experiments that will involve loading as many as 25,000 barrels of wastes in the facility during the first year or so after it is opened. The National Academy of Sciences, the General Accounting Office, and New Mexico's Scientists Review Panel have been critical of DOE's proposed tests, stating that they would not provide sound data.

Wendell D. Weart, manager of the scientific program for WIPP, says the department will submit a new plan to the National Academy of Sciences in mid-November. Weart says he is looking at ways to minimize the amount of waste necessary to carry out experiments successfully.

Representative Mike Synar (D-OK), chairman of the House Government Operations subcommittee on the environment, energy, and natural resources, charged in a 13 September hearing that DOE has yet to justify putting even 25,000 barrels into WIPP for experimental purposes. Synar criticized the department for pressing for permission to load wastes into WIPP while key issues remain unsettled.

He advised Lytle to "Go home and do your homework." DOE had sought to begin loading waste at WIPP in October. But the required legislation is still pending before several House committees and has yet to be approved by the Senate. It is unclear whether Congress will act before its scheduled adjournment in early October.

The Environmental Evaluation Group, which is funded by DOE to provide New Mexico with technical analyses on WIPP, contends that much of the data required by the department can be obtained in aboveground experiments. Unnecessary handling of wastes should be avoided, adds Lokesh Chaturvedi, EEG's deputy director, because wastes placed in WIPP may have to be retrieved.

Chaturvedi is confident, however, that DOE can eventually prove that WIPP is a suitable disposal site. But he says this may require some processing to solidify wastes before they are sent to WIPP. This would reduce water seepage problems, but add to the department's disposal costs.

■ MARK CRAWFORD