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Getting Rid of the Nuclear Waste Problem: the WIPP Stalemate

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Getting Rid of the Nuclear Waste Problem: the WIPP Stalemate

by Don Hancock

For much of the 1980s, it seemed a foregone conclusion that the world's first permanent nuclear waste repository would be the Waste Isolation Pilot Plant (WIPP), a $700-million facility mined out of salt beds 2,150 feet below ground in southeastern New Mexico. During WIPP's construction over the past eight years, U.S. Department of Energy (DOE) officials frequently boasted that the project was "on schedule and under budget," and would begin receiving waste in October 1988. WIPP's opening seemed inevitable as no New Mexico politician seriously questioned the project, no scientists raised major technical objections, no congressional committees were interested enough even to hold a hearing on WIPP, no regulatory agency asserted any authority over the project, no national environmental organization worked against WIPP, and no large, organized citizen opposition existed.

But much has changed during the past two years. WIPP's opening is now delayed until at least mid-1990. The project is millions of dollars over budget with major additional cost increases inevitable, if it proceeds. WIPP now is one of the most important political issues in New Mexico, with the delay also contributing to major political controversies in Colorado and Idaho. Because of the delay, federal officials have raised the specter that President Bush might declare a national emergency to move nuclear wastes. Most important, independent scientists have stated that the WIPP site will not meet health and safety standards; the fact that the site cannot be proven to be safe has caused a major reconsideration of the project by politicians, regulators, and the public. Five congressional committees have held hearings on WIPP since October 1987, and Congress has failed to enact legislation to allow WIPP to open. The Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), and the New Mexico Environmental Improvement Board now have regulatory authority over some aspects of WIPP. Two national environmental organizations, two New Mexico-based organizations, and the State of Texas jointly have threatened to sue DOE if it tries to open WIPP without complying with several federal laws. Thousands of New Mexicans have become actively involved in opposing DOE's current plans for WIPP and public opinion polls show that more New Mexicans now oppose WIPP than support it. And numerous organizations in other states have become actively involved in objecting to WIPP and DOE's nuclear weapons production and waste facilities.

This article describes how the situation changed so dramatically, the current status of the project, and the prospects for WIPP in 1990, and suggests a program to solve the seemingly intractable nuclear waste problem. Readers looking for a more detailed history of WIPP and more geologic information about the site should refer to *The Workbook*, January-March 1988, pages 7-12, and to the endnotes.

DOUBTS ABOUT THE SAFETY OF WIPP DELAY ITS RIBBON-CUTTING

Few obstacles apparently remained to the scheduled October 1988 ribbon-cutting at the WIPP site when New Mexico Governor Garrey Carruthers and Attorney General Hal Stratton signed a revised "consultation and cooperation" agreement with DOE in August 1987.[1] They said the agreement resolved the state's concerns about environmental problems with the site and about waste transportation to WIPP. That agreement, coupled with DOE's unshaken confidence in the adequacy of the facility, created a blinders-like euphoria among WIPP promoters in southeastern New Mexico. Some people there were so enthusastic about the "economic development" potential of nuclear waste disposal that they began actively supporting the proposal of an anonymous "white paper" that recommended the state request that a southeastern New Mexico site be selected for the nation's high-level waste (HLW) and commercial spent fuel repository.[2]

But when WIPP was exposed to increased scientific and public scrutiny and thebasic assumptions about its safety were shown to be wrong, public concern about the project began toincrease dramatically. The site is not dry and stable, and DOE has not been able to demonstrate that the facility will comply with public health and safety standards. Waste transportation requirements have not been met, and DOE's own risk models show that people will be killed and injured if wastes are trucked to WIPP.[3]

In addition to those health and safety problems, revelations about the history of DOE's mismanagement of its production facilities and of its high-level waste repository program have increased congressional and public interest in WIPP. Cleaning up leaks and spills at its 14 major weapons production facilities will cost tens of billions of dollars and take decades — and complete clean up may prove to be impossible.[4]

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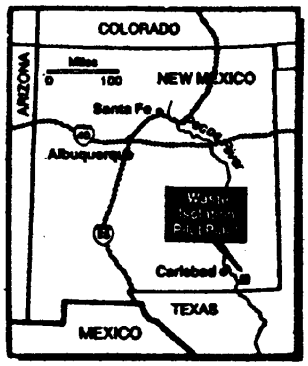
Many scientists, regulators, and politicians now acknowledge, as people living near the DOE facilities have stated for many years, that the extensive contamination at those DOE facilities is directly related to the fact that the agency has never been required to meet regulatory standards nor been subject to independent technical oversight (that is, an outside review of its activities). As a result, many people question whether DOE should be permitted to unilaterally determine the safety of its own facilities. As the first new DOE site in more than two decades, WIPP may well establish how much regulatory control and outside oversight will be required at other DOE facilities.



The New York Times/Dec. 17,1987

Congress authorized WIPP in December 1979 "for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs of the United States."[5] Yet, no transuranic (TRU) wastes can be emplaced at WIPP until Congress passes a law that permanently sets aside the site for nuclear waste disposal. (The law would transfer the public land from "multiple use" control by the Bureau of Land Management of the Department of the Interior to DOE's exclusive use for WIPP.) Such a "land withdrawal" bill was introduced by four of the five members of the New Mexico congressional delegation in May 1987. Representative Bill Richardson did not co-sponsor the bill because it did not include funding to build highway bypasses and because it did not require the site to meet federal environmental standards.

WIPP'S DELAY CAUSED BY POLICY, SCIENCE, AND CITIZEN ACTION

During the past two years, three elements were most responsible for the dramatically changed political and public perception of WIPP — the development of a coherent public policy agenda, scientific research that established that major technical problems exist at the site, and the formation of a strong, local citizen organization in Santa Fe.

Citizens initiate a public policy agenda for WIPP

Concerned about some aspects of the state's written agreement with DOE and the likelihood that the project would open without meeting existing standards to protect public health and safety, a group of medical doctors, scientists, lawyers, and other concerned citizens who had long been interested in WIPP formed the Committee to Make WIPP Safe in August 1987. The Committee is headed by an attorney who as secretary of the state's Health and Environment Department in 1984 had negotiated New Mexico's previous WIPP agreement with DOE. The Committee does not oppose WIPP (its various members hold disparate positions about the project), but it insists on the following four-point public policy agenda to ensure the safety of the facility:[6]

1) WIPP must meet EPA environmental standards for nuclear waste repositories before any waste is brought to the site, since those standards are the only technical criteria that exist to measure the long- term safety of the site.

2) Proposed experiments with HLW must be eliminated because they are unnecessary and would open the possibility that the site would be used for HLW disposal.

3) The project's mission must not be expanded to allow for storage or disposal of any nuclear wastes from commercial power plants.

4) Transportation must be as safe as possible by requiring, before wastes are shipped, that DOE comply with federal, state, and local laws for routing, driver qualifications, and packaging; assure continuous training of and provide equipment for emergency response personnel throughout the 25 years that wastes are hauled to WIPP; provide for development of adequate health care facilities to treat accident victims; and fund construction of highway bypasses around population centers.

This citizen-initiated policy agenda has set the minimum requirements for proving that WIPP is safe and has dominated the public and congressional debate about the project for more than two years.

WIPP must meet new

E.P.A.

STANDARDS

Technical flaws found at the WIPP site.

Responding to the anonymous proposal for high-level waste disposal in southeastern New Mexico, a group of geologists, hydrologists, mathematicians, and other scientists formed the Scientists Review Panel (SRP) to evaluate the suitability of the salt beds. During its studies, members of the SRP not only discovered major technical problems with the area for HLW disposal, but also brought to public attention for the first time significant unresolved technical problems with the site. The problems include brine seeping into waste rooms and the presence of a large pressurized brine reservoir beneath the repository horizon. In finding that the site is not dry because of brine seepage into the waste rooms, the scientists said that

there is a distinct possibility that a radioactive slurry would be created when the brine eats away the 55-gallon waste drums over an unknown number of years. Further investigations by the SRP disclosed other major problems posed by a 20-million-barrel pressurized brine reservoir underneath the waste disposal rooms and by gases that are generated by the wastes and by the interaction of the waste containers with the salt beds.[7] Those problems create geologic and hydrologic conditions that make it difficult for the site to meet long-term safety requirements, especially when considered in combination with the dangers caused by the gases produced by the radioactive materials and hazardous chemicals contained in the waste.

CCNS
Concerned Citizens for Nuclear Safety

Strong citizen opposition is organized

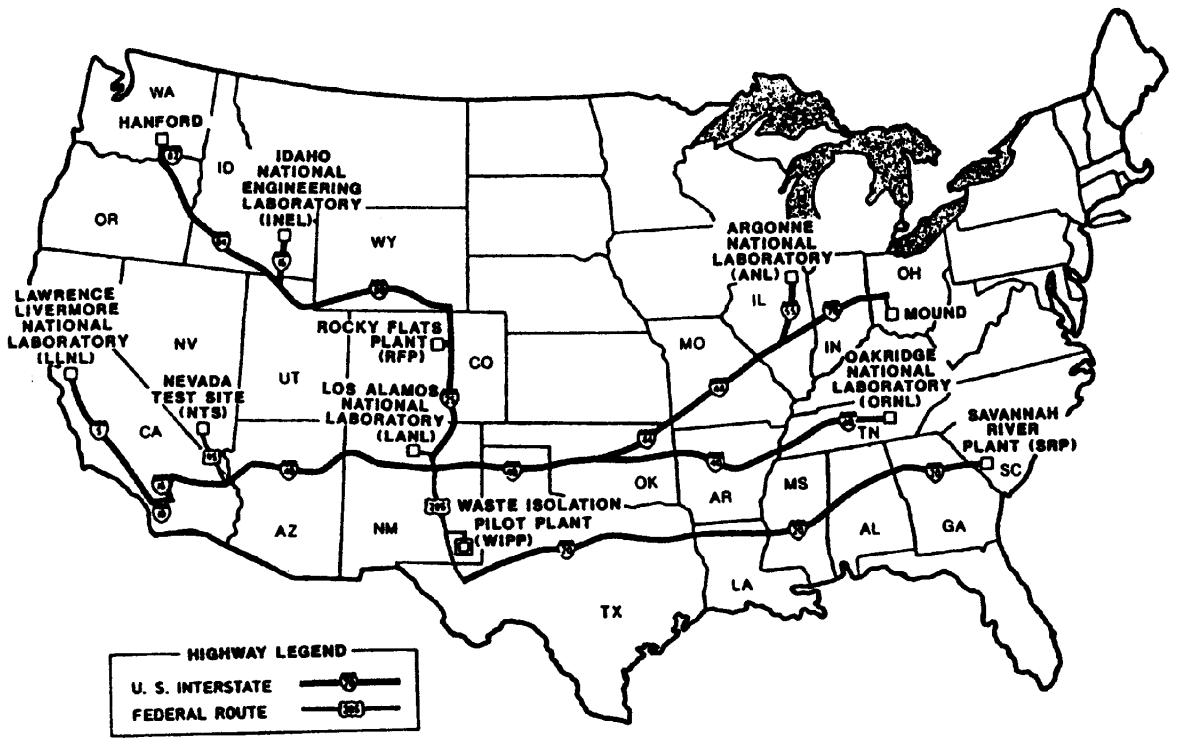
The third key element was the formation of a strong, local citizen organization, which served to significantly raise public awareness about WIPP. Concerned Citizens for Nuclear Safety (CCNS) was founded in March 1988 by Santa Feans alarmed by the dangers posed by waste transportation through their city on the way to WIPP. As people became more aware that there were other health and safety problems in addition to the transportation risks, they established an organization to educate the public and to actively participate in the WIPP debate. In less than two years, CCNS grew from a few people concerned about WIPP to an organization which is supported by hundreds of businesses and individuals and which now has a full-time staff working on WIPP and other issues.

CONGRESS TAKES A CLOSER LOOK AT WIPP

Since WIPP had always been the exclusive province of the armed services committees in Congress and had been viewed by most members as a New Mexico "pork barrel" project, little congressional attention had ever been given to WIPP. But because the WIPP land withdrawal bill was referred to the Senate Energy and Natural Resources Committee and the House committees on Interior, Energy and Commerce, and Armed Services, congressional hearings were required.

The view that WIPP's 1988 opening was inevitable suffered a major blow during the first of those hearings, a Senate Energy Committee field hearing in Carlsbad, New Mexico, in October 1987. The hearing, which was attended by all five members of the New Mexico congressional delegation, was dominated by discussion of compliance with EPA standards, transportation issues, and the history of DOE's broken promises about WIPP as described by witnesses from Southwest Research and Information Center (SRIC), the Committee to Make WIPP Safe, Scientists Review Panel, Citizens for Alternatives to Radioactive Dumping (CARD), and local citizens. Testimony from DOE, EPA, the Department of the Interior (which currently is in charge of the nine square miles of public land at the WIPP site), the National Academy of Sciences, the governor and attorney general of New Mexico, and several local politicians supported WIPP.

The trouble-free image of WIPP was further eroded by testimony at the House Interior Committee hearing on the land withdrawal bill in December 1987. Major technical problems with the site were discussed at the hearing and Rep. David Skaggs of Colorado testified that he and Governor Roy Romer had major concerns about transportation of WIPP wastes because of the thousands of shipments that would pass

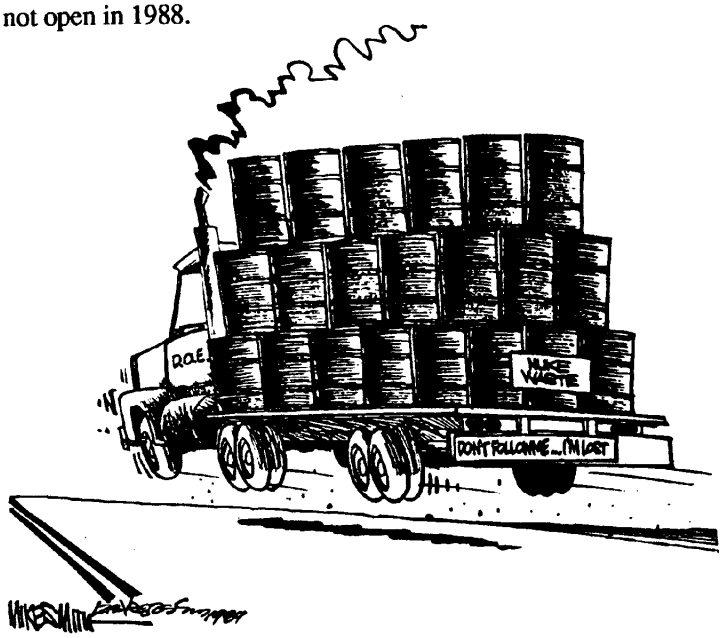


through their state. The national media coverage of those issues heightened public awareness outside of New Mexico to the fact that WIPP could affect millions of people across the nation.[8] By mid-1988, it was clear that DOE intended to proceed with WIPP's opening without having shown any compliance with EPA standards, without having NRC-approved shipping containers, without completing promised highway upgrading in New Mexico, without having trained and equipped most emergency response personnel in the more than 20 states along the transportation routes, and without having a technically adequate plan to resolve the geotechnical uncertainties of the site.

How to resolve those issues became a major focus of the congressional consideration of the WIPP land withdrawal bill. In July 1988, the House Interior Committee approved H.R. 2504, which prevented WIPP from receiving wastes until DOE had demonstrated compliance with the "old" EPA standards (rules that had been struck down by a federal court for not being stringent enough), prohibited HLW storage or disposal at WIPP, required that emergency response training and equipment be provided to all states and Indian tribes along transportation routes, authorized $200 million for constructing bypasses in New Mexico, and mandated that the DOE pay New Mexico more than $50 million as compensation for lost royalties and taxes on the potash and natural gas resources that would not be developed at or near the WIPP site because the bill permanently banned mineral development there.[9]

In August 1988, the Senate Energy Committee approved S. 1272, which contained provisions similar to those in the House bill regarding HLW, emergency response training and equipment, highway bypasses, and compensation for New Mexico, but which had different provisions regarding compliance with the EPA standards. The Senate bill allowed DOE to ship up to three percent of WIPP's total waste volume (about 25,000 drums of the almost 900,000 drums planned for the facility) for a five-year test program prior to demonstrating that the site meets the EPA standards.[10]

Although DOE and WIPP's supporters continued to push for passage of a land withdrawal bill that would allow wastes to come to the site, others argued that, given all of the unresolved issues, WIPP could not yet accept wastes and DOE should first complete all necessary work to get the project ready to open before Congress needed to act. Those views were discussed in early September at hearings on the land withdrawal bill held by the House Energy and Armed Services committees. During a mid-September hearing on WIPP before a House Government Operations subcommittee, witnesses discussed the many unresolved issues and the fact that DOE's own internal reviews had not been completed, prompting subcommittee chairman Mike Synar of Oklahoma to ask incredulously how DOE officials could maintain the myth that WIPP would be ready to open in a month. Synar concluded that it was up to DOE to get WIPP ready before he would support a land withdrawal bill.[11] A few days later, when New Mexico's Richardson refused to support any bill, it became clear that Congress would not act and WIPP would not open in 1988.



WIPP'S DELAY PROVOKES A "CRISIS"

Until mid-1989, DOE had refused to develop any alternative to WIPP despite warnings by members of Congress, the General Accounting Office, and citizens that the nation lacked an alternative TRU-waste disposal plan if WIPP were delayed or stopped.[12] Yet, for much of the past decade, the agency has continually insisted that WIPP had special importance to the DOE nuclear weapons production program as the sole disposal site for weapons-derived wastes. The agency's deliberate inaction can be explained as either gross incompetence or, more likely, as a deliberate attempt to fabricate a "crisis" in order to pressure Congress into supporting a quick-fix solution to the TRU waste problem — either open WIPP quickly even though it does not meet environmental standards or use temporary storage sites that are not designed for waste disposal.

The genesis for this manufactured crisis — and the primary reason for a TRU waste disposal site — is to separate disposal from the facilities that generate wastes: the bomb plants. The federal government has tried to convince the public that weapons production is necessary for national security, that it means jobs and money for local communities, and that people need not be concerned about waste. Waste is kept out of sight and out of mind by being moved from one place to another as part of an elaborate "shell game" or by being left on site and forgotten. Both tactics have been used by the federal government during the last 45 years.

The majority of the TRU waste produced has been left at four major production facilities — Hanford, Washington; Savannah River Plant, South Carolina; Oak Ridge National Laboratory, Tennessee; and Los Alamos National Laboratory, New Mexico. The other 30 percent (by volume) of the nation's TRU waste has been generated at the Rocky Flats Plant (RFP), the only place in the U.S. where plutonium triggers for nuclear bombs are made. But for the last 20 years,

very little of that waste has been stored at Rocky Flats, a 6,550-acre facility north of Denver, Colorado; almost all of it has been shipped by train to the Idaho National Engineering Laboratory (INEL) near Idaho Falls, Idaho. More than 60 percent of the 90,000 cubic meters of RFP-generated waste brought to INEL was dumped into trenches at the Idaho facility, in the process contaminating as much as 156,000 cubic meters of soil. The rest of the RFP waste brought to INEL has been stored for eventual shipment to WIPP.[13]

When RFP waste was first shipped to INEL, the late Senator Frank Church of Idaho was told by the Atomic Energy Commission (DOE's predecessor agency) that a repository would be open by the late 1970s, based on the assumption that a site that had been selected near Lyons, Kansas, would be operating by then.[14] But the Kansas site was abandoned because of technical problems and political opposition, and for the past decade the exclusive focus of the federal government's TRU waste disposal program has been WIPP. Not surprisingly, federal officials have promoted the New Mexico facility — despite all of its problems — as the only way to get the waste out of Idaho.

When Congress adjourned in October 1988 without passing the WIPP land withdrawal bill, Governor Cecil Andrus of Idaho, concerned that wastes would continue to pile up in his state, started an offensive to try to get WIPP open in spite of its safety and transportation problems. He announced that he would close his state's borders to any further waste shipments from RFP because DOE had broken its promises to remove wastes from INEL to WIPP, and he called on DOE to expedite the opening of the New Mexico site.[15]

Although Andrus's ban seemed to have little legal validity (and was not supported by any Idaho law or gubernatorial executive order), DOE has so far agreed to abide by the governor's ban, despite expressing concerns about establishing a precedent that other governors might follow. DOE's current acquiescence to that ban seems consistent only with a strategy to promote a crisis; its present policy is otherwise inconsistent with the agency's history of ignoring the demands of two previous New Mexico governors to stop or delay WIPP. (Governor Bruce King had urged delays in 1980 and 1981 and Governor Toney Anaya had objected strongly to construction at the site in 1983.)[16]

With INEL no longer available as a waste storage site, Governor Romer, who had not previously voiced major concerns about waste storage, began to examine the alternatives at RFP. Waste production would be reduced somewhat if activities at RFP were curtailed, but the governor said he did not want any of the 6,000 jobs at the plant eliminated.[17] He also said he did not want to change the limit of 1,601 cubic yards of mixed radioactive and hazardous waste allowed to be stored at RFP under DOE's state-issued permit. The only options left seem to be to find an alternative storage site in Colorado or get other states to agree to store temporarily RFP wastes.

National media coverage of the "crisis" since late 1988 has focused on disputes among the governors of Idaho, Colorado, and New Mexico and the DOE, and the possibility that Rocky Flats might be forced to stop production of bomb parts if a waste storage or disposal facility is not available soon. (DOE's estimated date for reaching the 1,601-cubic-yard limit at RFP has frequently changed, with the latest date now given as spring 1990.) Because the media attention in essence has promoted DOE's "divide-and-conquer" strategy toward the states by emphasizing the positions of the individual governors, still to be adequately covered is whether "national security" problems really would occur if RFP were shut down at a time when the U.S. has more than 25,000 operational nuclear warheads and is negotiating with the Soviet Union on a major reduction in the number of those weapons.

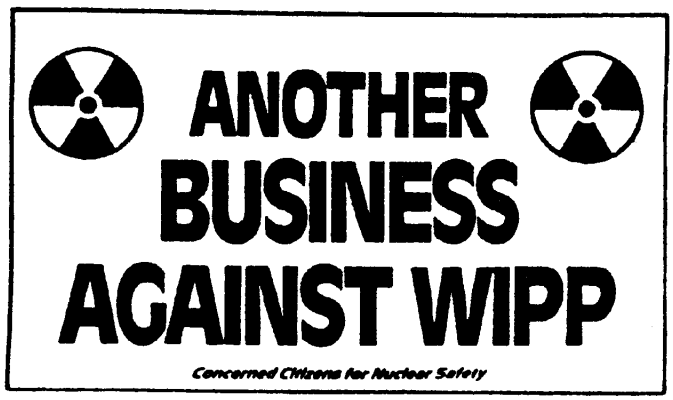
CITIZENS ATTACK DOE'S D-SEIS IN 1989

In early 1989 DOE finally agreed to supplement its 1980 environmental impact statement (EIS) for WIPP. DOE had been apprised by SRIC and the Environmental Defense Fund (EDF), and later by the Natural Resources Defense Council (NRDC), the state of Texas, and CCNS, that they would sue to force publication of an EIS supplement because of the many changes in the project since 1980.[18] So the agency's decision to issue a draft supplemental EIS (D-SEIS) seemed partly aimed at warding off a lawsuit and partly designed to build support outside of New Mexico for the early opening of WIPP. The latter objective was apparent from DOE's initial decision to hold only one of the five planned hearings on the D-SEIS in New Mexico (in Albuquerque). The other hearings were scheduled in Atlanta, Georgia; Pendleton, Oregon; Pocatello, Idaho; and Denver, Colorado. Under intense pressure from CCNS, DOE agreed to hold a sixth hearing in Santa Fe.

DOE's attempt to limit citizen input to those six places created additional controversy and became a major issue in itself. In less than two days, more than 1,200 citizens of Roswell, New Mexico, signed petitions circulated by the newly formed Southeastern Compadres for a Safe WIPP asking for a hearing in their town, the largest city in southeastern New Mexico. The Texas attorney general demanded a hearing in Texas, and the governor of Utah called for a hearing in his state. DOE finally added hearings in Artesia, New Mexico; Odessa, Texas; and Ogden, Utah.

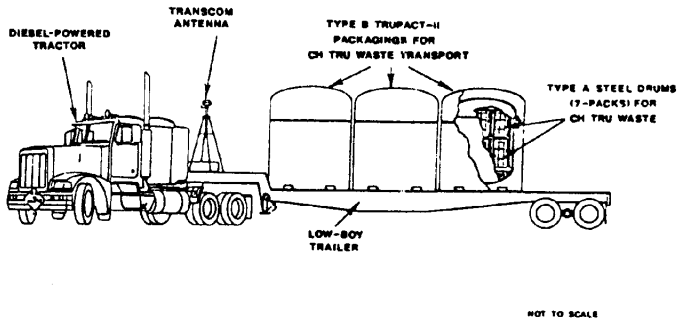
Although the D-SEIS was an imposing 1,000-page document, it could not serve as the basis to rally support for WIPP because of its many inadequacies. Within two weeks of its release, SRIC prepared a "Citizen's Guide" to the D-SEIS and distributed it to interested persons around the country. EDF developed a detailed critique of transportation issues not adequately addressed in the document. CCNS produced a series of issue summaries to help citizens analyze and comment on the document.

Testimony given at the D-SEIS hearings in May, June, and July clearly showed that DOE had not resolved several significant political and technical problems with WIPP. The first problem was a lack of public support for the project; there was no significant support for a quick opening for WIPP except from some people in Carlsbad and from Governor Andrus and some workers at INEL. At each of the hearings in Georgia, Oregon, Texas, and Utah, fewer than 25 people testified, and the large majority of those speakers raised major concerns about WIPP regarding transportation safety and the lack of showing of compliance with the EPA standards. Even in Idaho, a significant minority of the speakers raised substantive concerns about transportation and compliance with the EPA standards, despite Governor Andrus's support for an early opening of WIPP. The Idaho attorney general called for an additional EIS to be produced to discuss solutions for the transuranic waste problem. In Colorado, there was essentially no support for opening WIPP until the health and safety issues were resolved.



In New Mexico the vast majority of the more than 800 people who testified in Albuquerque, Santa Fe, and Artesia strongly opposed opening WIPP ever or at least until the site met new EPA repository standards. Numerous politicians, including the leading candidates in the 1990 gubernatorial election, raised major concerns about WIPP's safety.

The second problem was DOE's inability to explain adequately its decision to transport wastes to WIPP by truck. Many people pointed out that the calculations in the D-SEIS showed that DOE chose the transportation method that would result in the most deaths and injuries from shipping wastes to the site. The D-SEIS considered three possibilities — leaving wastes where they are, which was calculated to cause no deaths or injuries; transporting the wastes to WIPP by railroad, which would result in three deaths and 34 injuries from accidents; and bringing the wastes by truck, which would cause 8.3 deaths and 106 injuries from accidents. All the deaths and injuries were calculated from normal accidents, not from releases of radioactivity, since the D-SEIS assumed that no major releases could occur even in a severe accident.[19]



The third problem was that the D-SEIS gave no adequate scientific basis for DOE's desire to proceed with bringing waste to WIPP without first complying with the EPA standards. Rather, the document's own calculations showed that radioactivity escaping from the site in two of four release scenarios would substantially exceed the limits set in the old EPA standards. Further, the document did not explain why WIPP was totally different from any other repository, since the EPA standards must be met at any other repository before construction can begin, while at WIPP, DOE said it must emplace some significant amount of waste for unspecified experiments in order to show that the standards would be met eventually.

Another problem was that the D-SEIS did not consider all reasonable alternatives to WIPP. It did not even include discussion of alternative storage sites that DOE had begun to consider in the event WIPP was not opened right away. Nor did it adequately discuss the various alternative waste treatment technologies that could be used to reduce the mobility of the wastes or engineered barriers that will be needed in the waste rooms and tunnels if WIPP is ever to meet EPA's environmental standards.

The fifth, and perhaps most important, problem was that the document failed to justify the need for WIPP in light of DOE's admission in the D-SEIS that the wastes could remain safely at the generation and storage sites for at least 100 years. It also did not explain how WIPP would solve the transuranic waste problem since only 15 percent of the existing TRU waste inventory would be disposed at WIPP; most of the existing TRU waste would remain buried in shallow trenches at various DOE facilities. (The wastes coming to WIPP contain less than 0.01 percent of all of the radioactivity in the existing military and commercial waste now stockpiled in the U.S.)[20]

Because of those deficiencies and others, on July 5, the state of Texas, NRDC, EDF, SRIC, and CCNS formally asked DOE Secretary Watkins to withdraw the D-SEIS and to

reissue a new one for public comment before proceeding to a final EIS. Despite all the criticisms, Secretary Watkins still considers the D-SEIS to be adequate, and DOE is planning to issue the final supplement to the EIS in early 1990.[21]

DOE MAKES INTERIM STORAGE PROPOSALS

Faced with the serious problems of the WIPP site and the lack of public support for the project, Secretary Watkins announced on June 27 that he would further delay WIPP's opening and include it in a 10-point plan "to help restore public credibility in the Department's ability to safely operate its unique defense, research, and test facilities." The secretary admitted that "the Department relies on insufficient scientific information in making its decisions and in developing public policy." He also said that he "will not be driven by any previously set schedules or management decisions." Further, he stated that the department lacked the technical expertise to safely operate its facilities.[22]

Since Congress would not pass a land withdrawal bill because DOE could not give assurances about when WIPP would be ready to open, it became obvious that some interim storage sites would be necessary if the RFP limits and the Andrus ban on shipments to INEL were to be honored. Two types of "interim solutions" were proposed.

The first of those "solutions" came in October when DOE announced that it wanted each of seven states with DOE facilities (Colorado, Idaho, New Mexico, Nevada, Washington, Tennessee, and South Carolina) to take seven boxcar loads of Rocky Flats wastes over a 29-month period at which time WIPP might be open or a private storage facility might be available. Quickly, the governors of the target states and several members of Congress denounced the idea as dangerous, ill-conceived, unnecessary, and probably illegal. DOE officials responded publicly that the president might declare a national emergency to waive environmental standards so that wastes could remain at RFP or be moved to other sites. Such threats and meetings with DOE officials have not yet shaken the states' strong opposition to the plan.[23]

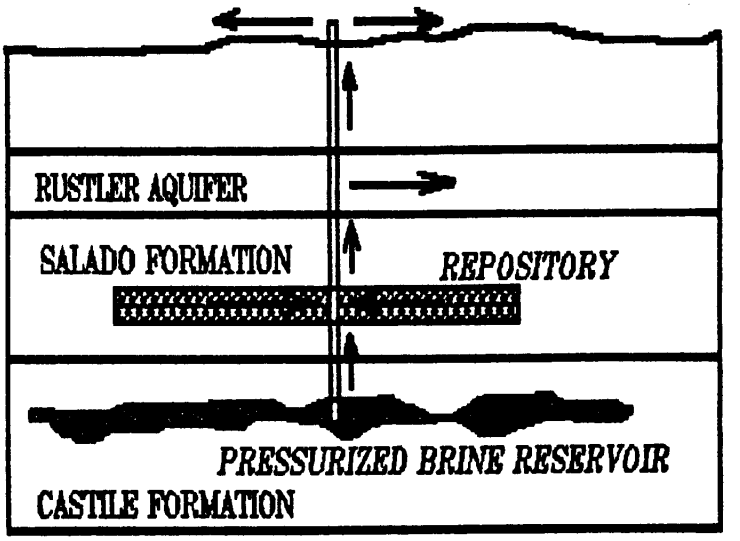
The second "solution" was to find an alternative site in southern Colorado along the Interstate 25 route to WIPP. Sites in Los Animas County were discussed and the Pacific Nuclear Corporation proposed a specific site near the town of Aguilar in October 1989. Hundreds of local citizens rallied to stop that proposal. [24] No other site has since been publicly identified.

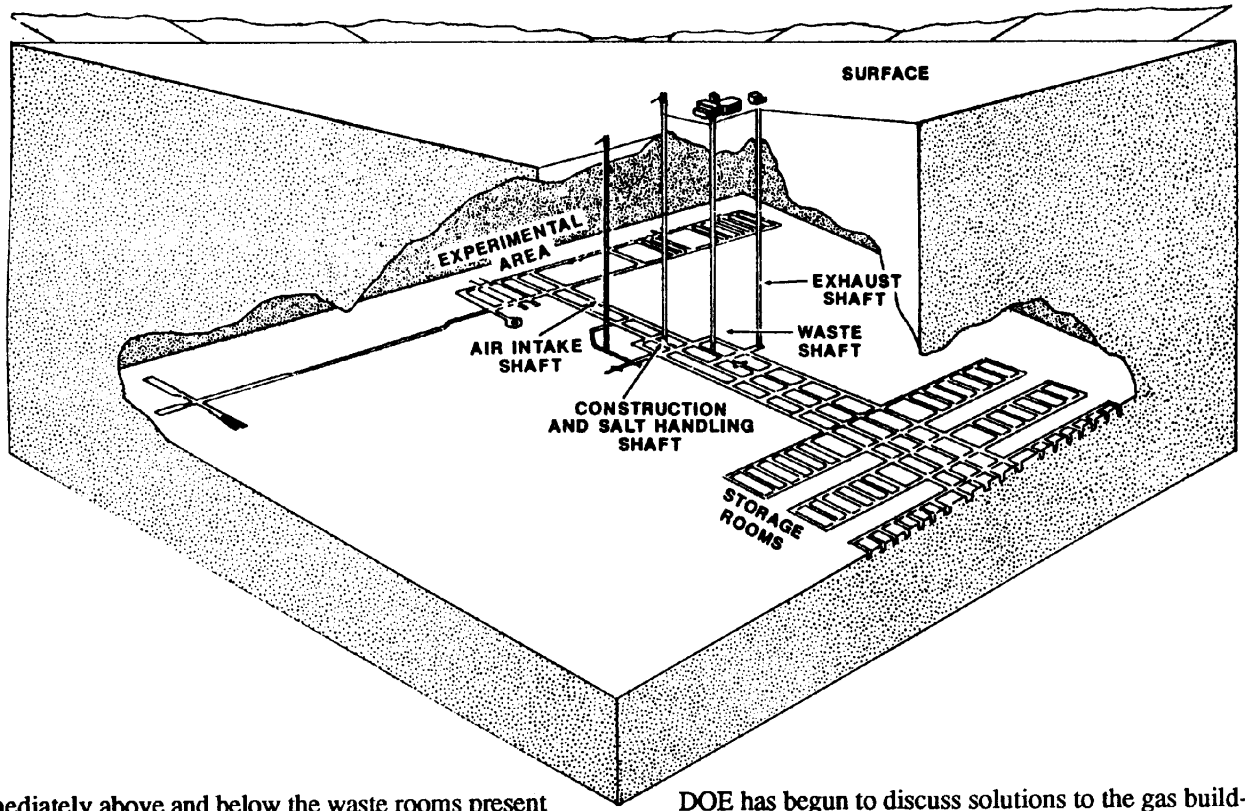
Another possible option is for Colorado to amend RFP's waste storage permit to allow DOE and RFP's new managing contractor, EG&G, to increase the volume of wastes kept on site. But DOE has not requested such an amendment and Governor Romer has opposed the idea. In light of Rocky Flats's history of operational problems that have caused releases of radioactive materials and the ongoing FBI investigation of criminal violations at RFP,[25] public opposition to such a proposal is likely.

UNRESOLVED PROBLEMS PLAGUE WIPP

The basic unresolved scientific issues related to WIPP are the same as they have been for years, but as the project is further scrutinized, additional problems are uncovered. Most of the geologic concerns about the site have been known for several years but more information generally has raised new questions, rather than lessening the uncertainties. Those problems relate to the impurities in the salt, cracking of the rock, potential contamination of water, and gases that might cause major releases of radioactive materials into aquifers or to the surface.[26]

Salt with few impurities has been viewed by DOE as a preferred nuclear waste disposal medium for three decades. As the salt beds were formed more than 200 million years ago, the purest salt was deposited first (deepest) in the more than 1,500-foot-deep salt layer picked to house TRU wastes at WIPP. The deeper zone is purer salt, but it is also within 200 feet of a pressurized brine reservoir that contains more than 20 million barrels of brine and is located at the edge of the salt bed. (See illustration.) At higher elevations in the salt formation, interbeds (non-salt layers a few inches thick) that





lie immediately above and below the waste rooms present several unfavorable characteristics, primarily cracks and water movement. As the salt moves naturally or "creeps" to fill in the rooms and tunnels of the repository, those more brittle anhydrite layers fracture, creating risks to workers from possible ceiling collapse. Those "marker beds" also serve as passages for brine to seep into the waste rooms and as potential pathways for wastes to escape from the repository into aquifers or to the surface. According to the D-SEIS, one way DOE might alleviate the problems created by the interbeds is to grout or mine them out — although no estimates of the costs and feasibility of such actions were described.

The wastes themselves, which contain toxic chemicals in addition to being radioactive, also create long-term disposal problems, many of which were not recognized until recently. Because the WIPP site's geology was considered by DOE's scientists to be nearly ideal and because the radioactivity of the wastes being disposed is low compared with that of HLW, little thought was given to specific problems that the "mixed" radioactive and chemical wastes would cause. One such major problem is gas buildup in the repository. Gas comes from at least five sources: corrosion or rusting of the 55-gallon drums in which the waste is stored and the metal in the wastes, decomposition of organic materials in the wastes, radioactive decomposition of waste materials, gases that naturally occur in the salt itself, and gases formed by other gases spreading into the salt. If the seals on the four shafts hold, the gases could build up to a pressure higher than the surrounding rock. Such a "pressure cooker" ultimately would result in a loss of containment, either through a continuous release of pressure or through an explosion if the seals suddenly fail, the rock cracks, or a borehole penetrates the repository.

DOE has begun to discuss solutions to the gas build-up problem. It could repackage some or all of the 900,000 waste drums slated to be brought to WIPP. It might compact the waste to reduce the amount of oxygen in the drums in order to reduce the biologic decomposition of the wastes. It might "treat" the wastes by putting concrete-like materials inside the drums. It might incinerate the wastes to remove the organic materials. It might use chemical or biological "getters" at the site to absorb and dissipate gas. However, none of those "solutions" has been tested by themselves or together for reliability, all would increase costs and delay opening the site, and some might increase risks to workers. DOE wants to "test" those possibilities by shipping several thousand barrels of waste to WIPP and putting them in the repository "to see what happens." But independent scientists say that the only way to credibly model the long-term interactions of the gases and various treatment possibilities in a closed repository is in a laboratory setting, not in an open mine.[27]

DOE has never been willing to agree to any criteria that the site must meet — or criteria to disqualify the site from further consideration. Thus, when problems have arisen, DOE's response always has been to say that it could resolve the concern — in the future. However, for a licensed repository, NRC must give final approval that the site meets NRC and EPA standards. No such independent determination, based on specific criteria, has been applied to WIPP — and none will be if the site is not required to meet newly promulgated EPA repository standards. Instead, the DOE secretary plans to be the sole decision maker about when WIPP is ready to operate. Although Secretary Watkins maintains that he has changed departmental policy to make safety the first priority, his unilateral decision making is the same practice that was followed by his predecessors.

Many people no longer are willing to let the secretary be the final decision maker precisely because of the public's growing understanding that this fundamental lack of oversight and accountability has resulted in the environmental contamination and health and safety problems that beset workers and the public around existing DOE weapons facilities. If the secretary maintains his position, legal action to overturn his decision to open WIPP is likely. Alternatively, citizens have suggested that the land withdrawal bill should mandate oversight by other agencies or that Congress should not enact a bill until DOE certifies that all safety issues have been resolved so that the congressional consideration of the law can be a means to review DOE's work.

What independent agency should regulate DOE or WIPP also is a difficult question. Whether EPA — the agency that in 1985 issued repository standards that were judged to be inadequate by a federal appeals court[28] — is willing and able to fulfill the responsibility of an independent overseer remains to be seen. Its recent suggestion that wastes should be put into WIPP for tests before the standards are met, without any clear technical criteria as to what tests should be conducted and what the results would mean for meeting the repository standards, suggests that the agency may have no enthusiasm for regulating DOE. Moreover, EPA may once again write repository standards to fit DOE's already-chosen sites rather than issue objective requirements designed to protect the environment and public health and safety for hundreds of generations.[29]

One indication of how well EPA would regulate WIPP will be its disposition of DOE's "no migration" variance petition in early 1990. The Resource Conservation and Recovery Act (RCRA) of 1976 — the nation's hazardous waste law — prohibits several highly toxic and mobile hazardous substances from being buried without first being treated to reduce their toxicity, unless the site can be shown to allow no migration of the wastes. Since several substances subject to that "land ban" are in the mixed wastes coming to WIPP, DOE would normally be required to treat them before they could be transported or disposed. DOE, however, has not shown that the WIPP site would allow no movement of the wastes; consequently, it would seem that EPA has no choice but to deny the variance request.[30]

Various transportation safety issues can be addressed by federal or state agencies. Waste container safety standards established for nuclear materials by the NRC should be applied to WIPP, although DOE has so far refused to let the NRC review the quality assurance program to ensure that the TRUPACT-II container is properly used and maintained.[31] Local and state officials should be allowed to determine the safest routes, conduct regular inspections of the shipments, establish time-of-day limits for shipments, require escort vehicles, and designate rest areas.

WIPP IN 1990: AGAIN A STALEMATE

According to DOE's current schedule for WIPP, the agency hopes to complete several actions during the spring so that the facility can begin to receive wastes in July. That schedule assumes that all internal reviews are completed, the final SEIS is released and the Record of Decision is issued, EPA grants the RCRA no-migration variance, and Congress approves a land withdrawal bill that waives compliance with the EPA repository standards at least for a "test phase." In addition to those overly optimistic assumptions, the plan assumes that promised transportation improvements (highway upgrading, bypasses, emergency response training and equipment, health care facilities, and compliance with state and local regulations) can be left undone and that no lawsuits are filed to force compliance with federal and state laws.

Given that outlook, public attention in early 1990 will focus on congressional review of DOE's work as part of the consideration of new land withdrawal bills. Citizens in New Mexico and other states will be involved in federal and state decision making. Legal action is possible against DOE regarding the adequacy of the final SEIS. Litigation is also possible against EPA if it approves the no-migration variance. Various types of litigation are possible regarding transportation issues and compliance with the EPA repository standards. WIPP will likely be a major issue in the gubernatorial election in New Mexico as well as in other congressional and state races. Waste storage and disposal may also become significant issues in elections in other states.

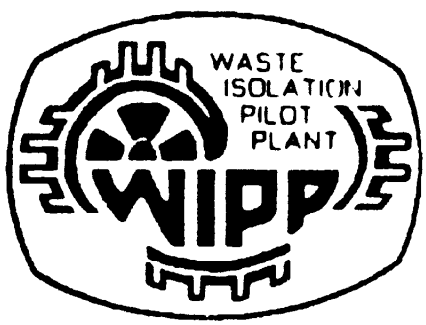
If recent history is repeated, the most likely scenario for 1990 is that WIPP will continue to be a major public policy issue and that DOE will continue to miss its deadlines and Congress will not enact land withdrawal legislation. In short, stalemate will continue as more millions are spent on WIPP and no clear decisions are made about which long-term, on-site storage technologies should be developed.

For the next few years, there are only three options for TRU wastes — leave the wastes where they are, move them to interim storage sites, or use WIPP even though it cannot meet health and safety requirements. As it has done in the past, DOE may also try to "solve" part of the waste problem by reclassifying waste materials so that they are either no longer considered wastes or are wastes that can be "disposed" in shallow trenches. DOE favors reclassifying some of its wastes as "below regulatory concern" (see *The Workbook*, Vol. 14, No. 2, pp. 46-55), which, if done, would eliminate them from the existing waste inventory even though the materials would remain in their same condition. In 1983 DOE decided that some wastes would no longer be considered transuranic, and it intends to reclassify at least 10 percent of its existing TRU waste as "low-level" so that those wastes can be left in place or put in shallow trenches.[32]

Since WIPP cannot be shown to meet EPA repository or RCRA standards, the site cannot open for at least several years unless Congress exempts WIPP from those standards. DOE is requesting that WIPP be allowed to open the facility for a five-year test period even though that program is not designed to show that the site would meet the EPA repository

standards or to show that possible treatment techniques would be successful. If Congress is willing to permit such a test program, it will again have given de facto approval to a policy that says that DOE facilities are not required to meet environmental and public health standards.

Ominously, perhaps WIPP ultimately will be used for much more waste than that now proposed. If Congress allows WIPP to open without meeting standards, perhaps at some future date it could decide that the more stringent standards for HLW repositories can also be waived — at WIPP or some other site. Long before the 1987 "white papers" promoted southeastern New Mexico for high-level waste disposal, DOE had the same idea. In fact, the original 1977 WIPP design called for high-level waste disposal at a deeper level. In 1978, DOE proposed putting 1,000 spent fuel assemblies into WIPP (an action that was also included in the preferred alternative in the 1979 draft environmental impact statement).[33] And given the department's November 1989 statement that a licensed HLW repository cannot be opened until 2010 at the earliest, no other alternative site exists for HLW disposal in the next two decades.[34] So some real or fabricated "crisis" in the future could be used to waive HLW repository standards in order to "solve" the HLW problem.



IS WIPP A SOLUTION TO THE NUCLEAR WASTE PROBLEM?

A fundamental issue that DOE has tried to avoid for years is whether WIPP would provide a solution for any significant amount of the nation's nuclear wastes. Measured in volume, the stored TRU waste destined for WIPP amounted to about nine percent of the nation's inventory of high-level and transuranic waste in 1988. But measured in terms of radioactivity (in curies), WIPP-bound TRU waste accounts for only 0.3 percent of the military waste inventory and only 0.002 percent of the nation's total waste inventory.[35]

The vast majority of the volume and the radioactivity of existing wastes is in HLW from weapons production and in irradiated (spent) fuel at commercial nuclear power plants. Improved storage methods are being developed and implemented for those wastes so that they can be stored at the generating sites for a few decades. Long-term disposal sites for those wastes will require billions of dollars and several decades of research.

Wastes leaking at DOE's facilities are not currently targeted for disposal at WIPP. The toxic components of those wastes that have been released into the air, water, and soil are difficult or impossible to retrieve. Accordingly, extensive research and, in some cases, new technologies are needed to better stabilize those wastes that have leaked into the ground. From a short-term environmental and public health perspective, those clean-up activities should be, but are not yet, a major focus of DOE activities.

Given the problems with the WIPP site and the stored TRU wastes, DOE now is considering treatments to make them less dangerous. Such treatment should occur at the existing sites and when completed could allow those wastes to be left where they are for some years. Future waste production should also take into consideration the need for adequate treatment techniques. Another benefit of such on-site treatment and storage is to eliminate the costs and risks of transporting wastes to other locations.

WHAT CAN BE DONE ABOUT THE WASTE PROBLEM?

The nuclear waste problem continues to be one of the nation's most intractable ones. Rather than continued political and scientific stalemate or bureaucratic or congressional imposition of storage or disposal "solutions," public and congressional debate should focus on developing and implementing adequate on-site storage, cleanup, and waste treatment programs as just discussed. Those efforts will demand very significant financial resources as well as the full attention of state and federal officials and concerned citizens.

But if the hope of a safe, long-term disposal program or the dream of developing some new technology to make nuclear waste harmless are to be realized, several steps are necessary to develop and implement a scientifically sound and publicly acceptable plan. First, the size of the problem must be limited. As long as more and more wastes are generated, it is impossible to determine how many repositories or surface storage facilities are needed. Second, clear and technically sound criteria must be established through a public process that will be used to determine whether sites are suitable — or not suitable. Third, technical experts must be put in charge of the program, given adequate funding to consider all reasonable alternatives including exploring alternative technologies and developing safe transportation methods, and not be required to meet arbitrary schedules. Fourth, outside oversight by independent experts and the public must be a hallmark of the program.

Such a program will be expensive and will take a few decades to carry out successfully. Because of the large hazard the wastes pose for tens of thousands of years, nothing less can be successful. The alternative would be to continue the policies of the last 45 years, which will always be unsuccessful because they are aimed at "getting rid of" the nuclear waste problem rather than solving it.

NOTES

1. The 1987 agreement was the "Second Modification" to the original 1981 Consultation and Concurrence Agreement reached as part of the settlement of the State of New Mexico's lawsuit against DOE. A Supplemental Stipulated Agreement was signed in December 1982. The "First Modification" was signed in November 1984.
2. One "white paper" was entitled "Past Experience: Prologue to a New Commercial Nuclear Waste Management Program — A Concept Paper." The other was called "New Mexico Again — If the Price is Right: A Discussion Paper." Both were dated July 1987. *Albuquerque Journal*, September 10, 1987, p. D-3. *Albuquerque Tribune*, September 15, 1987, p. A-8. Governor Garrey Carruthers also publicly supported the idea for a time, but withdrew his support after the New Mexico congressional delegation refused to go along. *Albuquerque Journal*, September 21, 1987, p. A-4; *Albuquerque Journal*, September 22, 1987, p. B-3; *Albuquerque Journal*, September 25, 1987, p. A-1; *Albuquerque Journal*, September 26, 1987, p. B-3.
3. U.S. Department of Energy, 1989. *Draft Supplement Environmental Impact Statement — Waste Isolation Pilot Plant*, DOE/EIS-0026-DS, p. S-15.
4. There are dozens of facilities involved in the DOE Nuclear Weapons Complex, but the department states that there are "15 major sites" (including WIPP) in its *Nuclear Weapons Complex Modernization Report*, December 1988, p. 1. Those 14 sites are: Los Alamos National Lab, Lawrence Livermore National Lab, Sandia National Lab, Nevada Test Site, Kansas City Plant, Mound (Ohio) Plant, Pantex Plant, Pinellas (Florida) Plant, Rocky Flats Plant, Y-12 (Oak Ridge, Tennessee) Plant, Savannah River Plant, Hanford Plant, Feed Materials Production Center (Fernald, Ohio), and Idaho National Engineering Lab. In addition to that "2010 Report," costs of cleanup have been estimated by various General Accounting Office reports; for example, "GAO's Views on DOE's Modernization Plan for the Weapons Complex," GAO/T-RCED-89-5, January 1989. DOE's "Five Year Plan" — *Environmental Restoration and Waste Management*, DOE/S-0070, September 1989, sets a goal of "cleanup at all sites within 30 years." (p. 2).
5. Public Law 96-164, Section 213, December 29, 1979.
6. Committee to Make WIPP Safe letter, resolution, and petition, dated August 15, 1987.
7. SRP reports include: "Evaluation of the Waste Isolation Pilot Plant (WIPP) as a Water-Saturated Nuclear Waste Repository," January 1988; "Evaluation of Preliminary Draft of the Radioactive Waste Experiment (Panel One Monitoring Plan), Waste Isolation Pilot Plant, May 1988; "Pressurized Brine Beneath the WIPP Facility as a Threat to Compliance with EPA Standards," June 1988; and "Review of U.S. Department of Energy's 'Draft Plan for the Waste Isolation Pilot Plant Test Phase: Performance Assessment and Operations Demonstration,'" May 1989.
8. *New York Times*, "Water Leaks Found At a Nuclear Dump, Raising Safety Fear," December 17, 1987, p. 1; *Newsweek*, "A Nuclear Dump Springs a Leak, " December 28, 1987, p. 65; *New York Times*, "Leaky Mine Threatens A-Waste Storage Plan," February 1, 1988, p. 10; *New York Times*, "Why the Rush on Nuclear Waste?" July 13, 1988, p. A-25.
9. U.S. House of Representatives Report 100-867, Part 1.
10. U.S. Senate Report 100-522.
11. U.S. House of Representatives Hearing before a Subcommittee of the Committee on Government Operations, "Status of the Waste Isolation Pilot Plant Project," September 13, 1988, p. 131.
12. In Public Law 97-90 (1982), Congress required DOE to develop a report on plans for HLW and TRU waste disposal. DOE responded with its *Defense Waste Management Plan*, DOE/DP-0015, in June 1983. That plan was strongly criticized by the GAO, "Department of Energy's Transuranic Waste Disposal Plan Needs Revision," GAO/RCED-86-90, March 1986. The plan has also been strongly criticized by SRIC and other groups on numerous occasions.
13. All data on waste inventories are estimates, at best, because of faulty record-keeping by DOE and its predecessor agencies. Different DOE documents often have conflicting figures, but the department's "official" data is contained in its "Integrated Data Base" (IDB), which is updated each year in September. Data from *Integrated Data Base for 1988: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, DOE/RW-0006, Rev. 4, are used in this article.
14. Jackie L. Braitman. *Nuclear Waste Disposal: Can Government Cope?* Rand Graduate Institute, P-6942-RGI, December 1983, pp. 100-101.
15. Letter from Governor Cecil Andrus to DOE Secretary John Herrington, October 19, 1988.
16. Governor King's comments on the 1980 FEIS for WIPP asked DOE to delay any decision to proceed with WIPP until the state could fully review that document. When the Reagan Administration decided to proceed with WIPP in January 1981, the governor objected strongly and urged the attorney general to file a lawsuit, which was done. At the end of the initial two-year construction program, in 1983 DOE allowed state and public comment on its "SPDV program" evaluation and the decision to proceed with construction of "full WIPP." Governor Anaya objected strongly to that decision, but DOE proceeded anyway.
17. *New York Times*, "Colorado, Needing Jobs, Tiptoes on Nuclear Plant," June 21, 1989.
18. Letter from NRDC, EDF, the Texas attorney general, CCNS, and SRIC to Secretary Watkins, March 21, 1989.
19. DOE, D-SEIS, pp. 5-94 to 5-100.
20. DOE, *IDB*, p. 14, see note 13.
21. Letter from Secretary Watkins to SRIC, October 25, 1989, and his "Draft Decision Plan for WIPP."
22. Remarks by James D. Watkins, Secretary of Energy, June 27, 1989; *New York Times*, "Energy Chief Says Top Aides Lack Skills to Run U.S. Bomb Complex," June 28, 1989, p. 1.
23. *Albuquerque Tribune*, "DOE says it can force waste," December 22, 1989, p. A-4.
24. *Albuquerque Journal*, "Trinidad Crowd Vents Fear, Anger at Waste Dump Plan, October 25, 1989, p. A-1; *Albuquerque Journal*, "Romer Decides To Keep Waste at Rocky Flats," October 29, 1989, p. A-11.
25. More than 70 FBI and EPA agents made a surprise raid at RFP on June 6, 1989, to seize documents related to alleged violations of federal laws. A federal grand jury in Denver is expected to hand down criminal indictments of RFP officials in early 1990.
26. This article discusses the problems only in a simplified, summary fashion. Contact SRIC, DOE (P.O. Box 2078, Carlsbad, NM 88221, (505) 885-8883), or the Environmental Evaluation Group (EEG--7007 Wyoming, N.E., #F-2, Albuquerque, NM 87109, (505) 828-1003) for more detailed information.
27. SRP, see note 7.
28. Natural Resources Defense Council v. United States Environmental Protection Agency, 824 F.2d 1258 (1st Cir. July 17, 1987, amended Aug. 12,1987).
29. The court's 1987 decision required EPA to redraft the standards. Draft standards may be published for public comment during 1990.
30. EPA's draft decision should be issued for public comment in early 1990.
31. Letter from SRIC and EDF to Secretary Watkins, August 9, 1989; DOE response from John L. Meinhardt, September 7, 1989.
32. DOE, D-SEIS, p. 5-7, says that up to 1.15 million cubic feet of the INEL waste is expected to be reclassified as low-level waste.
33. DOE, *Draft Environmental Impact Statement — Waste Isolation Pilot Plant*, DOE/EIS-0026-D, April 1979, p. 1-2.
34. DOE, *Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program*, November 29, 1989. *New York Times*, "U.S. Will Start Over on Planning For Nevada Waste Dump," November 29, 1989, p. A-1; and *Washington Post*, "U.S. Suing to Force Nevada To Allow Nuclear Waste Site," November 29, 1989, p. A-2. Some news media erroneously reported the DOE announcement as an abandonment of the Yucca Mountain, Nevada, site. In fact, DOE admitted that the HLW program was bogged down so that 2010 would be the earliest that Yucca Mountain could be operating, but the agency intends to try to proceed at that site. DOE announced that it would file suit against the state of Nevada in early 1990 in order to force it to issue permits to allow the site investigation to proceed. In 1989, the Nevada Legislature passed a law prohibiting HLW disposal in the state.
35. DOE, *IDB*, p. 14, see note 13.

Southwest Research and Information Center

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