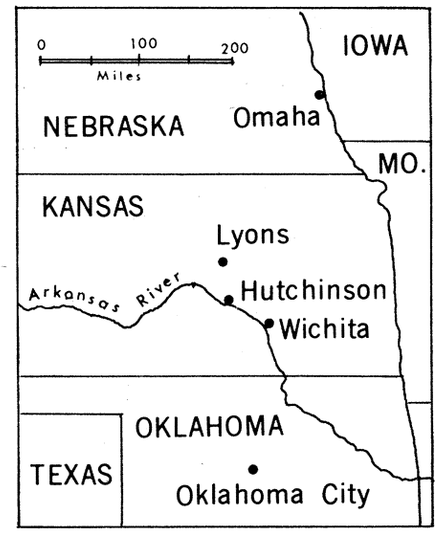
Nuclear Waste: Kansans Riled by AEC Plans for Atom Dump



Plans by the Atomic Energy Commission (AEC) to set up its first graveyard for radioactive wastes in the middle of Kansas have met with objections from Kansans who believe the safety of the project is doubtful and who resent being selected without being thoroughly informed and consulted on the matter.

The dump, which the AEC plans to make out of an abandoned salt mine in Lyons, is billed as a "demonstration project." It would be a permanent repository for solid, high-level radioactive matter imported from commercial nuclear power plants, and for alpha wastes, which are low-level, from the AEC's Rocky Flats, Colorado, plutonium refining plant.

The plan has raised a good deal of controversy in the state, fueled by reports from the Kansas State Geological Survey, which doesn't want the AEC to purchase the 1000-acre site and the 1700 acres of underground rights until further studies prove that all risks have been eliminated.

The AEC's Oak Ridge National Laboratory has been performing the studies. It insists that all conceivable problems are under control and that what is needed now is "confirmatory data," best supplied as work progresses on the site. The AEC has asked the Joint Committee on Atomic Energy, which last month held 2 days of hearings on the subject, to authorize a $3.5-million appropriation for purchase of the site, architect and engineering services, and further detailed investigation of the salt beds. The total cost is estimated at $25 million.

Surveys Favor Lyons Site

The AEC has had its eye on the Lyons bed since 1955, when it was surveyed as a possible repository by the National Research Council of the National Academy of Sciences (NAS). Salt has been found to be the best material available for this purpose because of its seismic stability, compressive strength, ability to conduct heat, high melting point (1450°F), self-sealing ability, and nuclear shielding property, which is similar to that of concrete. The Lyons salt field, 1000 feet down and 300 feet thick, has emerged from studies carried on through the years as an ideal final resting-place for nuclear-age garbage, which must "cook" for a half a million years before the radioactivity of the longest-lived plutonium isotopes has been spent.

The AEC has more than 80 million gallons of high-level wastes stored underground in concrete-encased, million-gallon, stainless steel vats at its defense installations in Richland, Washington; near Idaho Falls, Idaho; and at the Savannah River plant in South Carolina. The AEC is experimenting with ways to solidify this waste and bury it in various geological formations, but it will be many years before its final disposition is decided on.

It is the proliferation of civilian commercial plants, of which there will be 29 by the end of this year, that is creating the urgent need for the big new dump. Lethal wastes just from these sources will amount to an average of 58,000 cubic feet per year by 2000 A.D. At present, there exists no technology for neutralizing the wastes or hastening the radioactive decay process.

Thus, the AEC is eager, after 16 years of planning and studying, to get the show on the road. Some Kansans, however, are saying, "Not so fast."

For months, Representative Joe Skubitz (R–Kans.) has been speaking out for his state's rights in letters to the Commission. He and William H. Hambleton, director of the state geological survey, have asked that the $3.5 million be used for more research and development rather than for purchase of the land.

At the hearing, they cited the survey's report, released last December, which insisted that serious questions remained unanswered. They have to do with possible migration of waste containers through the salt, the possibility that thermal expansion of the salt might cause overlying layers of rock to crack and allow groundwater to seep in, and possible surprises brought about by unforeseen radioactive interactions. The report also criticizes the AEC's transportation plans as "completely inadequate," and says that no retrieval plan for the wastes "exists at all."

Skubitz further pleaded for the AEC to stop "playing God" and to pay more attention to the wishes of the state's residents. "Kansas has some rights," he said plaintively. "We are not country bumpkins who can be taken for granted."

AEC Wants To Get Moving

The position of the AEC, represented at the hearing by Milton Shaw, director of reactor development, and Floyd Culler, associate director of Oak Ridge National Laboratory, was that all necessary data have been accumulated, and the only way to confirm the safety of the installation is through actual work on the site. Three-dimensional studies—which Hambleton repeatedly called for in his testimony—could be carried on concurrently with the development of the site, said the Oak Ridge men.

Shaw said the AEC's Salt Vault project, conducted in Lyons over a 19-month period ending in 1967, had proved beyond any doubt that the Lyons salt could contain the wastes effectively. In this project, radioactive fuel elements were inserted in core samples of salt to monitor radioactivity and heat distribution and to test waste handling techniques. The NAS Radioactive Waste Committee reaffirmed the suitability of the salt mine in a 1970 report, he added. Shaw and Culler fired off highly polished rounds of statistics to prove that the Kansas people have nothing to worry about

hydrologically, geologically, thermally, or radioactively. As for transportation, they invoked the Commission's 20-year history of hauling wastes around with no serious accidents.

On the subject of retrieval, they said they could conceive of no circumstance that might necessitate removing the wastes, but if one arose, there would be plenty of time to design and build the remote-control mining machinery needed for such an operation.

According to the plan, canisters of the hot, solidified, high-level wastes, which range from the size of firewood logs to 18 feet long and 2 feet in diameter, will be brought to the mine in railroad cars and lowered down shafts into large rooms that have been carved in the salt. There, drivers operating heavily shielded, motorized vehicles will use remote-control hoists to insert the canisters into holes drilled about 22 feet apart in the floor of the mine. When each vault has its complement of containers, it will be filled in with salt. The pressure of the salt and the heat of the cylinders—ranging from 600° to 900°F—will cause the natural plastic action of the salt, which has the consistency of very hard wax, to move in and seal around the containers. Within a period of 6 months to 10 years, the steel-covered ceramic canisters will disintegrate, leaving the salt to hold the wastes in place.

Shaw emphasized the flexibility that has been built into the plans: If heat or radioactivity projections prove inaccurate, the energy can be diluted by reducing the amount of material in each container or by placing the canisters farther apart.

Skubitz and his friends in Kansas are still not buying. Several members of the Kansas state legislature, backed by Governor Robert Docking, have introduced bills asking for postponement of AEC's land purchase plans until further studies have been made. The AEC is well aware that it will have to make greater efforts in public relations if it wants its plans realized on schedule. As Senator Joseph Pastore (D–R.I.) warned at the hearing, "you are not going to stuff this down the Kansas governor's throat."

Oak Ridge, in response to Hambleton's complaint that it was not furnishing information promptly to the state geological survey, has offered to let a state representative sit in at Oak Ridge as planning continues. Further efforts at communication will probably be needed to overcome the appearance of an attitude that Skubitz characterizes as "leave it to us . . . we're great scientists." Ironically, the 5000 citizens of Lyons—who have been reassured at public meetings with AEC officials, and who may gain 200 permanent jobs manning the dump—appear not to be perturbed at all by the prospect of being the country's nuclear waste capital.

The Lyons Nuclear Park, as it is called, is designed to hold all the nondefense atomic refuse this country will have accumulated by the end of the century—a total of 770,000 cubic feet, or 38,000 tons. So it will not be long before the AEC will be scouting around for a new repository, probably somewhere in the extensive salt beds underlying New York, Michigan, and states along the Gulf coast. But even if the AEC can prove the safety of its plans beyond the doubts of the most skeptical Kansan, it seems likely that there will always be psychological objections to the idea of a half a million years' worth of man-made hell simmering under the earth's surface.

—CONSTANCE HOLDEN

RECENT DEATHS

David B. Allman, 79; former president, American Medical Association; 30 March.

William C. Arsem, 90; retired consultant, Office of Naval Research; 11 February.

M. Helen Barton, 79; professor emeritus of mathematics, University of North Carolina, Greensboro; 19 March.

Byron N. Cooper, 58; chairman, geological sciences division, Virginia Polytechnic Institute and State University; 26 March.

Matthew E. Dunlap, 79; retired scientist, U.S. Forest Products Laboratory, Madison, Wis.; 18 March.

Sherwood D. Fox, 53; chairman, sociology and anthropology department, Union College, New York; 24 February.

Jennings B. George, 77; former president, Mississippi Southern University; 12 March.

Carter Goodrich, 73; professor of economics, University of Pittsburgh; 7 April.

Frank A. Hartman, 87; professor emeritus of physiology, Ohio State University; 21 March.

Frank W. Hastings, 52; head, artificial heart program, National Heart and Lung Institute, NIH; 25 March.

Edward M. Holmes, Jr., 63; professor of public health and epidemiology, University of Alabama, Birmingham; 26 February.

Herbert I. Horowitz, 42; assistant professor of hematology, Cornell University Medical College; 31 March.

Bela Jambor, 54; professor of plant biochemistry, Eotvos Lorand University, Hungary; 30 January.

John C. Keller, 52; entomologist in charge, Western Cotton Research Laboratory, Phoenix, Arizona; 5 January.

Mervin J. Kelly, 77; former president, Bell Laboratories; 18 March.

Otto Laporte, 68; professor of physics, University of Michigan; 28 March.

Elbert C. Lathrop, 85; chemical engineering consultant, formerly with the U.S. Department of Agriculture; 4 March.

Kathleen Lonsdale, 68; former professor of chemistry, University College, London; 1 April.

Eugene L. Opie, 97; retired dean, Medical School, Washington University; 12 March.

Benjamin H. Orndoff, 90; former professor of radiology, Loyola University; 6 March.

Robert D. Rands, Sr., 80; retired head agriculturist, Bureau of Plant Industry, U.S. Department of Agriculture; 10 December.

Thornton B. Roby, 46; professor of psychology, Tufts University; 23 February.

Mary L. Sague, 85; professor emeritus of chemistry, Vassar College, 12 March.

Robert H. Shaw, 52; professor of mathematics, Mary Washington College, Fredericksburg, Virginia; 6 March.

William B. Sherman, 63; former director, Roosevelt Hospital's Institute of Allergy; 2 March.

Theodor H. E. Svedberg, 86; former professor of physical chemistry, Uppsala University, Sweden; 25 February.

Juris Veidemanis, 47; professor of sociology, Wisconsin State University, Oshkosh; 20 February.

Karl M. Wilson, 85; former chairman, obstetrics and gynecology department, University of Rochester; 14 February.

William B. Wood, Jr., 60; chairman, microbiology department, Johns Hopkins University; 9 March.

Walter A. Young, 88; former president, Friends University, Wichita, Kansas; 3 March.