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The fragmentation of existing responsibility governing the storage and disposal of nuclear wastes between the Energy Research and Development Agency (ERDA) and the Nuclear Regulatory Commission (NRC) and questions concerning the proper role of Federal/State relations dealing with nuclear waste management can potentially hinder the orderly development and implementation of a national nuclear waste management program. Findings/Conclusions: ERDA, NRC, agreement States, and the Environmental Protection Agency (EPA) are the principal agencies involved with regulating and/or managing nuclear materials in order to protect the public and the environment from harmful radiation. NRC has relinquished regulatory authority over certain types and quantities of radioactive materials to some States by entering into formal agreements with them. Before approving an "agreement State," NRC must determine that the State's radiation control program is compatible with NRC's regulatory program and is adequate to protect public health and safety. Currently, there are 25 agreement States. ERDA facilities for military weapons and nuclear research programs are not regulated by NRC. EPA is responsible for establishing overall environmental standards to protect the environment from radioactive hazards. Recommendations: NRC, in cooperation with the States, should identify long-term care requirements of commercial disposal sites which handle radioactive wastes, and should assist the States in planning for adequate funding to support such requirements. (SC)

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STATEMENT OF
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BEFORE THE
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
HOUSE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
ON
INSTITUTIONAL AND JURISDICTIONAL ISSUES
IN NUCLEAR WASTE MANAGEMENT

Mr. Chairman and Members of the Subcommittee:

We welcome the opportunity to be here today to discuss the institutional and jurisdictional issues surrounding nuclear waste management. In the last several years, GAO has issued three reports on radioactive waste, dealing with mill tailings, low level waste, and nuclear waste stored at West Valley, New York.

In addition, we are completing a comprehensive study of the major issues and problems involved in managing this country's high level nuclear wastes. This study addresses the Energy Research and Development Administration's (ERDA's) program for geological waste disposal, management of military and research waste, and management of commercial spent fuel. This study also addresses the jurisdictional and institutional split between the Nuclear Regulatory Commission (NRC) and ERDA concerning waste disposal facilities. We will immediately provide it to the Subcommittee as soon as it is finished.

In our past work, we have identified two issue areas which we feel are significant because they can potentially hinder the orderly development and implementation of a national nuclear waste management program.

These are:

- Fragmentation of existing responsibility governing the storage and disposal of nuclear wastes between ERDA and NRC; and
- Questions concerning the proper role of Federal/State relations dealing with nuclear waste management.

My testimony today will primarily discuss Federal/State relations --and touch only briefly on ERDA and NRC interrelationships, since this area is being more fully developed in the study we are now wrapping up.

WHO AND WHAT IS INVOLVED?

ERDA, NRC, agreement States, and the Environmental Protection Agency (EPA) are the principal agencies involved with regulating and/or managing nuclear materials in order to protect the public and the environment from harmful radiation. I will discuss the role of each very briefly.

First, NRC has the authority and responsibility to protect public health and safety through regulating the possession, use, and disposal of radioactive materials by the commercial sector. Second, NRC discharges its responsibility through a licensing and inspection program.

NRC has relinquished regulatory authority over certain types and quantities of radioactive materials to some States by entering into

formal agreements with them. These states are known in the jargon as "agreement States." Before approving an agreement State, NRC must determine that the State's radiation control program is compatible with NRC's regulatory program and is adequate to protect public health and safety. Currently, there are 25 agreement States.

Third, ERDA administers several Government-owned, contractor-operated laboratories and production facilities that process, use, and dispose of nuclear materials. These facilities are for the military weapons and nuclear research programs, and are not regulated by NRC. Instead, ERDA has established its own requirements at these nuclear facilities to protect workers and the public from radiation hazards.

In a recent report and testimony before the House Subcommittee on Energy and Power, we commented on the propriety of ERDA assessing the adequacy of its systems for protecting public health and safety. In brief we concluded that the Congress should amend ERDA's enabling legislation to provide for independent assessments of its nuclear operations to ensure, among other things, public health and safety. We recommended three alternatives to accomplish such assessments.

--Give NRC the authority and responsibility for establishing policies, standards, and requirements in cooperation with ERDA for carrying out these assessments,

--Retain this responsibility and authority within ERDA, subject to certain statutory provisions to insulate the oversight activities, or

--Authorize NRC to periodically assess ERDA's nuclear programs and facilities and annually report the results to the agency and the Congress.

Fourth, in addition to NRC's and ERDA's responsibilities, EPA is responsible for establishing overall environmental standards to protect the environment from radioactive hazards.

All operations that produce or use nuclear materials generate radioactive wastes. The wastes produced vary widely in volume, composition, and intensity of radioactivity, depending on the materials and nature of the operations from which they originate. Most of the radioactive wastes generated today are from ERDA's weapons program and commercial nuclear reactors and nuclear fuel cycle activities, mainly at fuel fabrication and reprocessing facilities. Currently, there are no commercial reprocessing facilities operating.

The radioactive wastes that are produced are generally classified as either "high level" or "low level" wastes.

High level waste has extremely high radioactivity concentrations and is characterized by intense penetrating radioactivity, extreme heat, and a long toxic life. This waste is created during reprocessing operations when reactor spent fuel elements are dissolved in acid to recover the unused uranium and plutonium for reuse as nuclear fuel. The remaining acid solution is referred to as high level waste. It

contains many fission products and transuranics 1/--such as plutonium --which are not recovered during the reprocessing operations.

Now that President Carter has proposed indefinitely deferring commercial reprocessing, spent fuel which has been accumulating at nuclear power reactors since 1972 will have to be managed as high level waste since it has similar high concentrations of radioactivity.

Low level waste may either be radioactive or suspected of radioactive contamination. This waste is disposed of according to its type and concentration of radioactivity. Liquid and gaseous wastes are usually treated, diluted, or held at the generating facility for radioactive decay and are then released into the environment. Solid waste, sludges, and liquids that have been solidified are transported from the generating facilities and are disposed of at one of eleven shallow-land burial sites around the country.

It is not a simple matter to determine what constitutes "low level" vs. "high level" waste. For example, a great deal of the solid waste that is buried consists of dry waste materials with low levels of radioactivity. Such waste includes paper trash, packing material, protective clothing, and broken or obsolete equipment. Other types of solid waste have higher concentrations of radioactivity and include

1/Transuranic elements--those elements which have atomic weights greater than that of uranium (92), are man-made, long-lived, and extremely toxic. Transuranic elements--such as plutonium--are created during the normal nuclear reaction process. These elements are found in several nuclear fuel cycle operations and are contained in nuclear wastes in varying degrees of radioactive intensity. Generally, the long term hazards of nuclear waste are directly related to the transuranic elements they contain.

such things as discarded filters and filter sludge. Yet other buried wastes are contaminated with long lived and highly toxic radionuclides such as plutonium. To that extent, then, it is difficult to call these wastes "low level".

URANIUM MILL TAILINGS

A type of low level radioactive waste that has received increased attention from both ERDA and NRC is uranium mill tailings. Uranium tailings are a sand-like radioactive waste material resulting from the extraction of uranium from uranium ore. About 85 percent of the radioactivity in uranium ore remains in the tailings after the milling process. Radium is the major radioactive waste product in the tailings and takes thousands of years to decay.

On May 31, 1975, we reported to the Congress on Federal and State efforts to control the radiation hazard from uranium mill tailings. There are currently 16 mills processing uranium in the United States with a combined processing rate of about 31,000 tons of ore per day. By the 1980s, a rapid expansion of the uranium milling industry is expected, and by the year 2000, NRC estimates that about 109 mills with a combined 381,500 tons per day ore capacity will be needed, assuming no uranium or plutonium recycling.

Through 1976, an estimated 130 million tons of uranium mill tailings had been produced by 42 mills in 10 western States. Unless tailing piles at these locations are effectively controlled and stabilized, radioactivity can spread to the environment by wind and

water erosion, ground water, and deliberate removal and unauthorized use of tailings material. This is exactly what happened in Grand Junction, Colorado. Because uranium mill tailings compact easily, they serve well as fill material in construction projects. The operator of the uranium mill in Grand Junction gave the tailings to construction contractors and anyone else who wanted them at no cost. Contractors used the mill tailings extensively for construction projects in the area between 1952 and 1966.

Some of the more common uses of tailings were for backfill around building foundations and for grading material under sidewalks, driveways, garages, and concrete floors of homes.

In 1971, the mill operator estimated that about 300,000 tons of tailings had been used for construction purposes. About 250,000 tons were for nonstructural uses, such as roads, sidewalks, and driveways, and about 50,000 tons were used in constructing buildings.

Because of the magnitude of the problem, the Federal Government initiated a program in June 1972 to reclaim the tailings in, under, and around houses and schools. To date, the Federal Government has appropriated \$5 million and the State of Colorado \$1 million to correct the situation in Grand Junction. In addition, there are current proposals to provide additional Federal funding of \$3 million to continue these efforts.

Since radioactivity from tailings is released into the environment, man can be adversely affected, thus, tailings control and stabilization measures have been developed. These are intended to prevent such exposures

Uranium mills are either licensed by NRC or agreement States. NRC and the States exercise control through license provisions such as (1) restricting access to certain areas, (2) isolating the tailing piles from sources of water, and (3) containing them by using a suitable ground cover.

NRC and the States periodically inspect the mills to determine whether mill operators are complying with the terms of their licenses and applicable NRC and State regulations. Following license termination, however, the regulatory agencies do not have authority to inspect and monitor the tailings piles to insure that tailings control and stabilization measures taken do not deteriorate and cause a potential health hazard. Six States, including four agreement States, however, have provided additional regulatory authority requiring tailings stabilization at mills which are no longer licensed.

Since these procedures were not uniform in our report on mill tailings, we recommended that NRC (1) assess the capability and willingness of public health authorities or other State agencies to assume responsibility for control programs and to adequately carry them out for the long term monitoring of tailings piles, and for correcting any problems in tailings stabilization and control and (2) determine whether additional Federal authority is needed to improve such programs.

In this regard, NRC is currently preparing a generic environmental impact statement on mill tailings with a draft target date of August 1978--some 3 years after we brought the matter to their attention.

Among other things, this statement will address land use control around tailings piles, the type of financing required for long term management, the adequacy of State regulations and resources to provide long term control, and the need--if any--for the Federal Government to assume responsibility for perpetual care of such sites.

LOW LEVEL WASTE

In a report issued in January 1976, and in testimony before the Congress on February 23, 1976, on low level waste, we reported that a large volume of waste so classified--including some that is long lived and highly toxic--is disposed at six licensed commercial facilities and five principal Federal facilities in the United States. While some of these sites have been operating for more than 30 years, it is still not known what mixture of hydrogeological characteristics and engineering features offer the greatest assurance that radioactivity, once disposed of underground, will not migrate and create a possible public health hazard. Because some of these sites were releasing radioactivity into the environment, we recommended to NRC and ERDA that (1) a comprehensive study of existing disposal sites be undertaken, (2) site selection criteria for future sites be developed, and (3) other efforts be undertaken to improve program management and regulation of disposal sites.

Although NRC and ERDA are evaluating existing burial sites to determine their ability to retain radioactive waste, monitoring and maintaining the sites will be required for many centuries. It is important, therefore, that long term care requirements be identified

and adequately funded before terminating and decommissioning sites. However, at the time of our report, neither NRC nor five of the six agreement States that license commercial disposal sites have established long-term care requirements or determined the adequacy of long-term funding arrangements to meet such requirements. Currently, when operations at commercial sites are completed and the facilities are decommissioned and the licenses terminated, the State assumes responsibility for the long-term care of the commercial site.

Our report showed that States have different financial arrangements with commercial site operators to meet this long-term cost requirement. In some cases, these arrangements do not appear adequate. In light of this, we recommended that NRC, in cooperation with the States, identify long-term care requirements of commercial disposal sites and that it assist the States in planning for adequate funding to support such requirements.

In addition, we reported that current funding levels were not adequate for financing corrective actions if the comprehensive studies of disposal sites show extensive remedial actions are necessary. We pointed out that the Federal Government currently had no policy for taking corrective action at commercial disposal sites should it become needed, and recommended that a policy be developed that will describe the extent of Federal involvement--both financial and research--to be provided.

As a result of our report and testimony from Federal and State officials, the House Operations Subcommittee on Conservation, Energy and Natural Resources found that management and regulatory responsibilities for low level radioactive waste disposal are dispersed throughout the Federal and State Governments and are without consistent direction and coordination. Their House Report recommended, among other things, that the Congress and the Executive Branch consider legislation which would (1) "reassert Federal jurisdiction and the regulatory authority" of NRC "over commercial land burial sites" and (2) assign title to commercial facilities and leases governing those sites to ERDA.

As a result, NRC committed itself to reassess the roles of the Federal and State Governments in the regulation and operation of the commercial burial grounds. In March 1977, NRC published the results of a task force study of programs used by NRC and State Governments to regulate low level waste burial grounds. The task force proposed that the Federal Government increase its control over the disposal of low level wastes by, among other things, requiring Federal ownership and Federally administered perpetual care programs at low level burial grounds. NRC has not been able to tell us if and when the task force's recommendations will be implemented.

HIGH LEVEL WASTE

ERDA has begun an ambitious program to demonstrate the feasibility of safely placing commercial and military radioactive wastes in deep geological formations. It is currently seeking seven sites for pilot facilities in widely separated areas across the country.

ERDA has set 1985 as the target year for completing two pilot geological disposal facilities for spent fuel or high level and transuranic contaminated commercial wastes. It plans to complete four more pilot geological disposal facilities for commercial waste between 1987 and 1991. In addition, ERDA plans to build a separate disposal facility by 1983 for its own transuranic contaminated waste generated by military and research activities. At this latter facility, ERDA intends to experiment with high level waste storage.

NRC has specific responsibility for licensing and regulating all ERDA facilities used for the storage of commercial high level waste, for long-term retrievable surface storage facilities, and for long-term storage facilities for ERDA high level waste. The act does not specifically give NRC licensing authority over (1) ERDA research and development facilities or for full-scale facilities for the storage and/or disposal of commercial and ERDA-produced transuranic contaminated waste and (2) facilities for the temporary storage of ERDA high level waste or (3) ERDA research and development facilities or full-scale facilities for storage and/or disposal of commercial spent fuel.

Our assessment of the critical problems surrounding high level waste disposal will be issued to Congress shortly.

The West Valley case

The importance of these hearings is underscored by what is currently happening in West Valley, New York. The West Valley case clearly shows that nuclear waste is a problem that just doesn't go away, but needs

sound, farsighted, comprehensive planning across the entire spectrum of governmental institutions. Involved are both financial considerations and overriding concerns for the health and safety of our population and environment.

A classic example of where institutions did not foresee the long-term implications of radioactive waste management is the Nuclear Fuel Services, Incorporated (NFS) reprocessing plant at West Valley, New York--a subject of a report we issued to the House Operations Subcommittee on Conservation, Energy, and Natural Resources on March 8, 1977. The West Valley site was the only commercial reprocessing facility that operated in the United States. The site consists of a reprocessing plant, high level liquid waste storage tanks containing about 612,000 gallons of waste, a high level burial ground containing about 100,000 cubic feet of waste, and a low level burial ground containing about 2 million cubic feet of solid radioactive waste.

NFS, under a license with NRC, operated the plant from 1966 to 1972, when it closed for modifications aimed at limiting effluent releases, reducing personnel exposures to radiation, and increasing plant capacity. In 1976, NFS announced that it was (1) withdrawing its plans to modernize, expand, and reopen the plant and (2) planning to transfer control of the high level waste storage and low level waste burial site to the New York State Energy Research and Development Authority--the owner of the site--in accordance with contracts with the Authority which were signed in 1963.

This decision by NFS imposes upon the State of New York through its Authority a wide range of complex technical problems for long term management and a potentially large financial burden estimated in the hundreds of millions of dollars. Yet New York has available to it only \$4 million which it has set aside to take care of the problem. Because of this, the New York Authority has asked ERDA to completely take over the West Valley site. ERDA has not accepted this request, but has agreed to discuss West Valley issues with the Authority.

It appears to us that, at a minimum, the Federal Government will have to provide technical assistance to New York to resolve the outstanding waste management issues at West Valley. If the Federal Government adopts a policy to accept full financial responsibility for the West Valley site, it potentially raises a bigger issue concerning whether or not, and to what extent, the Federal Government should provide financial assistance to the nuclear industry by taking over the cost of managing activities in the so called "back end" of fuel cycle.

Perhaps West Valley can be distinguished as a one-of-a-kind situation. But the extent and role of the Federal Government, State Government and private industry relationships in nuclear waste management needs to be clarified and decided. We cannot procrastinate much longer over these very difficult decisions. While dialogue is important, action is critical if we are to develop an adequate and comprehensive national nuclear waste management program in a timely manner. We believe that positive, straight-forward decisions need to be made on nuclear waste. We believe they need to be made soon.

Mr. Chairman, this concludes my prepared statement. We will be glad to answer any questions you may have at this time.