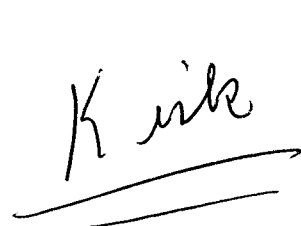



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RCRA COMPLIANCE AT THE DEPARTMENT OF ENERGY'S
WASTE ISOLATION PILOT PLANT

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1.0 INTRODUCTION

1.1 BACKGROUND

The Waste Isolation Pilot Plant (WIPP) was authorized by the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Pub. L. 96-164). Its legislative mandate is to provide a research and development facility to demonstrate the safe disposal of radioactive waste resulting from U.S. defense activities and programs. To fulfill this mandate, the WIPP is designed to achieve two primary objectives: (1) perform scientific investigations of the behavior of bedded salt and the interactions between the salt and radioactive wastes in a variety of forms, under a variety of conditions; and (2) demonstrate safe and efficient handling, transport, and emplacement of radioactive mixed waste in a fully operational facility.

The WIPP will commence receiving contact-handled transuranic waste from various DOE generator and interim status facilities in October 1988. Substantial quantities of the transuranic waste destined for shipment to the WIPP are co-contaminated with hazardous chemical components which qualify as "hazardous waste" under the Resource Conservation and Recovery Act (RCRA). Such wastes are referred to as radioactive mixed wastes.

The WIPP's Pilot Plant Phase is scheduled to continue for up to five years, during which time its performance will be evaluated. Although designed to receive wastes over a 25-year period, the full design capacity of the WIPP will not be utilized until operational and scientific data obtained during the Pilot Plant Phase indicate that disposal of radioactive mixed waste at the WIPP is protective of human health and the environment.

1.2 FACILITY DESCRIPTION

The WIPP facility, located in Eddy County in southeastern New Mexico, 25 miles east of Carlsbad, occupies a surface area of sixteen square miles, in a region historically used for grazing, potash mining, and oil and gas production. The facility is composed of surface buildings, several shafts, and a series of underground storage rooms and tunnels. The underground facilities, which when complete will cover about 100 acres, provide both a

storage area for isolating radioactive mixed wastes and a separate experimental area.

Continuous mining equipment is used to excavate the bedded salt in which the underground facilities are located. The mining activities take place 2,150 feet below the surface, close to the middle of the Salado Formation, a salt bed nearly 2,000 feet thick and composed of relatively pure evaporites. The formation has remained essentially stable and virtually unaffected by earthquake or faulting activity since its deposition about 225 million years ago. The salt in which the underground facilities are mined will very slowly flow or "creep" and eventually encapsulate the emplaced waste, with any moisture in the salt assisting in the creep closure process.

1.3 WASTE CHARACTERISTICS

The DOE has designed, developed, tested, and produced nuclear weapons for more than 40 years. These defense activities have created waste products known as transuranic (TRU) wastes, which are wastes contaminated by radioactive elements heavier than uranium.⁽¹⁾

TRU waste is typically classified according to the type of radiation emitted. The greatest percentage of TRU wastes emits only alpha radiation. These particles, dangerous if inhaled or ingested, do not represent an external radiation hazard. Alpha particles are stopped by air, paper, or skin and are handled in wooden or metal containers that provide additional shielding. TRU wastes in containers can be handled directly without special protective clothing. These alpha-emitting forms of TRU wastes are referred to as "contact-handled" transuranic (CH-TRU) waste. Ninety-seven percent of the waste scheduled for WIPP will be contact-handled.

A small percentage of TRU waste contain isotopes that emit beta and gamma radiation, as well as alpha radiation. Beta radiation can be stopped by a sheet of aluminum. Gamma radiation can pass through several inches of lead and must be heavily shielded for safe handling and storage. The beta- and gamma-emitting transuranic waste is referred to as "remote-handled" transuranic (RH-TRU) waste. Remote-handled TRU waste is handled and

(1)TRU waste is generally defined as waste containing alpha-emitting transuranic isotopes with half-lives greater than 20 years and at concentrations of more than 100 nanocuries per gram of waste (40 CFR 191.02).

transported in specially shielded containers which assure that employees and the public are protected. Three percent of the (RH-TRU) waste scheduled for disposal at the WIPP will be remote-handled.

Much of the TRU waste consists of items used routinely by employees at national defense facilities. Items such as rubber gloves, shoe covers, laboratory coats, plastic bags, laboratory glass, and rags become contaminated during laboratory operations and must be discarded. The oldest waste currently in storage dates back to the Manhattan Project (1942). Until recently, few records were required to document the chemical constituents of the waste.

The DOE has categorized the wastes generated by its facilities into waste "forms." Many of the waste forms that will be shipped to the WIPP from generator facilities contain radioactive waste that is co-contaminated with hazardous chemicals or materials with hazardous properties. The following is a description of the radioactive mixed waste forms that contain the majority of hazardous constituents as well as the percentage of each as part of the total volume of TRU mixed waste. Hazardous constituents have been characterized principally through knowledge of the processes generating the waste. The DOE has very conservatively estimated the volume of each constituent (in parenthesis).

Combustible Waste (40 percent)

This waste is comprised of paper and cloth (dry and damp), various plastics (e.g., polyethylene and polyvinyl chloride) and filters contaminated with trace quantities of halogenated organic solvents. These materials are generated during plutonium recovery, plutonium fabrication, and laboratory analyses.

Metal Waste (15 percent)

Lead, tantalum, stainless steel and aluminum comprise the majority of this waste form. These metallic wastes include equipment, tools, crucibles, and molds. Residual halogenated organic solvents may also be found in this waste form.

Solidified Aqueous Waste (10 percent)

Aqueous process waste is treated through neutralization, precipitation, flocculation, clarification, filtration, and immobilization. This waste form consists of wastewater treatment sludge that is precipitated at a pH of 10 to 12 and solidified with portland cement. Alcohols and halogenated organics in the sludge derive from the cleaning of equipment and glassware and the degreasing of metal. Solidified aqueous waste may also contain EP-toxic metals, although no analysis has been done to determine specific concentrations.

Uncemented Sludges (10 percent)

Since 1981, this waste form has been solidified with cement. This waste consists of a damp sludge produced from treating aqueous wastes, such as ion-exchange column effluent, distillates, and caustic scrub solutions. This waste is currently in retrievable storage at Idaho National Engineering Laboratory. The waste will be inspected by nondestructive Real Time Radiography for the presence of free liquids. If liquids are present, cement will be added before shipment to the WIPP.

Filter Waste (9 percent)

This waste form consists of Ful-Flo and high efficiency particulate air (HEPA) filters as well as processed filter media. Portland cement is added to absorb any residual liquid and neutralize residual acids. All exhaust streams are filtered and air can be laden with volatile organic solvents used in plutonium fabrication and recovery processes.

Solidified Process and Laboratory Solids (6 percent)

This waste form consists of ion column resins and incinerator ash which are neutralized and immobilized with portland cement. Solvents are utilized in plutonium recovery operations.

Solidified Organic Waste (3 percent)

Organic waste containing oil and halogenated organic solvents is solidified using Envirostone (gypsum) cement and an emulsifier. This waste form consists of lathe coolants and degreasing solvents used in plutonium fabrication.

Inorganic Solid Waste (2 percent)

Materials such as firebrick, Oil Dri, concrete, and soil are included in this waste form. This waste is generated from the decontamination and decommissioning of plutonium recovery areas. Oil Dri, concrete, and soil may be contaminated with residual halogenated organic solvents.

Glass Waste (0.5 percent)

Discarded containers, laboratory glassware, and ceramic crucibles are included in this waste form. Residual amounts of organic solvents may be present in this waste form.

Leaded Rubber Waste (0.5 percent)

The only material in this waste form is leaded rubber dry box gloves which are used throughout plutonium process areas. This waste is considered EP toxic for lead although no analysis has been done to establish the lead concentrations.

The DOE currently is compiling a complete inventory of the RCRA-regulated hazardous waste constituents within each waste form for inclusion in the WIPP Part A permit application. Attachment A provides a preliminary estimate of

the quantities of identified mixtures of hazardous constituents in the wastes scheduled for shipment to the WIPP. These estimates are derived from data submitted by all facilities that will be shipping waste to the WIPP and represent the total inventory of existing waste plus projections of waste generation through 1993.

2.0 REGULATORY FRAMEWORK

2.1 BACKGROUND

The Resource Conservation and Recovery Act (RCRA) of 1976, as amended, provides for development and implementation of a comprehensive "cradle to grave" program to protect human health and the environment from the improper management of hazardous wastes. It excludes certain wastes from regulation, including "source, special nuclear and by-product material as defined by the Atomic Energy Act of 1954" [1004(27)]. The Act also excludes from RCRA regulation activities or substances regulated by the Atomic Energy Act if RCRA requirements are "inconsistent" with the AEA [1006(a)]. These exclusions have resulted in considerable confusion regarding RCRA's applicability to mixtures of hazardous wastes and radioactive materials. As a result, most state RCRA programs do not include authority to regulate radioactive "mixed" wastes.

On July 3, 1986 (51 FR 24504), the U.S. Environmental Protection Agency (EPA) published a Federal Register notice to clarify state responsibilities with regard to mixed waste. It stated that "wastes containing both hazardous waste and radioactive waste are subject to the RCRA regulations." The notice also provided that states authorized to manage the federal RCRA program would be required to revise their existing hazardous waste programs to obtain additional, mixed-waste authorization.⁽²⁾

A schedule for meeting these requirements was included in the notice but was later modified by the "Cluster Rule" (51 FR 33712, September 22, 1986), which established annual deadlines for states to submit RCRA program changes in groups or clusters when modifying their state programs to conform to regulatory changes. The effect of this rule is to require states which received final RCRA authorization before July 3, 1986 to revise existing programs by July 1, 1988 (or by July 1, 1989 if a statutory amendment is necessary).⁽³⁾

(2) States seeking RCRA Subtitle C authorization after July 3, 1986 would be required to address mixed waste in their initial applications.

(3) States initially seeking final authorization after July 1, 1987 are required to seek authorization for mixed waste as part of their application for final authorization.

Prior to and following publication of EPA's July 3, 1986, "mixed waste" notification, there was considerable controversy over which mixed wastes were subject to RCRA and which mixed wastes qualified as "by-product material" and were therefore exempt as provided by RCRA 1004(27). This remained unresolved with respect to national defense facilities until DOE published an interpretive rule on May 1, 1987 (52 FR 15937) to delineate RCRA applicability to DOE generated radioactive waste. This rule, codified as 10 CFR Part 962, stated that the term "by-product material" as it applies to DOE-generated mixed wastes refers only to the actual radionuclides dispersed or suspended in the waste matrix. The effect of the DOE rule is that all DOE radioactive waste of whatever type (low-level, high-level, or TRU) which contains RCRA-hazardous components will be subject to dual regulation under both RCRA and the AEA.

In summary, while RCRA's applicability extends to radioactive mixed wastes with regard to their hazardous components, such wastes remain unregulated until states authorized to administer the basic hazardous waste program ("authorized states") modify their existing programs to regulate mixed waste. In states without base program authorization, the EPA ostensibly retains the authority to regulate mixed waste. Currently, 12 states and trust territories (Alaska, American Samoa, California, Connecticut, Hawaii, Idaho, Iowa, Marianna Islands, Ohio, Puerto Rico, Virgin Islands, and Wyoming) are unauthorized to carry out the federal hazardous waste program. Three states (Colorado, South Carolina, and Tennessee) have obtained EPA authorization under the July 3, 1986 notice to regulate radioactive mixed waste. One state, Georgia, can regulate mixed waste under its authority to administer the Hazardous and Solid Waste Amendments to RCRA. Thus, in 17 states and territories radioactive mixed waste is now subject to hazardous waste regulations.

With respect to states which are resident for DOE facilities planning to ship radioactive mixed waste to the WIPP, their mixed waste authorization status as of May 25, 1988, is as follows:

California. Not authorized for the federal RCRA program. No mixed waste authority. Regulation of mixed waste by EPA (Region IX).

Colorado. Authorized for the federal RCRA program. Mixed waste authority from EPA received October 24, 1987.

Idaho. Not authorized for the federal RCRA program. No mixed waste authority. Regulation of mixed waste by EPA (Region X).

Illinois. Authorized for the federal RCRA program. Mixed waste authority from EPA applied for.

Nevada. Authorized for the federal RCRA program. No mixed waste authority. EPA and State of Colorado concur with Nevada conferring interim status on DOE's Nevada Test Site under state law.

New Mexico. Authorized for the federal RCRA program. No mixed waste authority. No application for mixed waste authority submitted to EPA.

Ohio. Not authorized for the federal RCRA program. No mixed waste authority. Regulation of mixed waste by Region V.

South Carolina. Authorized for the federal RCRA program. Mixed waste authority from EPA received July 15, 1987.

Tennessee. Authorized for the federal RCRA program. Mixed waste authority from EPA received June 12, 1987.

Washington. Authorized for the federal RCRA program. Has applied to EPA for mixed waste authority. Currently, has mixed waste authority under state regulations.

2.2 IMPLICATIONS TO THE WIPP

To date, the State of New Mexico has not applied to the EPA for radioactive mixed waste authority. Because a statutory amendment appears to be required, the State has until July 1, 1989 to modify its RCRA hazardous waste program to regulate mixed waste.

The DOE intends to commence receiving radioactive mixed wastes at the WIPP in October 1988. It is important that the EPA, New Mexico, and states in which waste shipments to the WIPP will originate consider the WIPP an appropriate facility to which TRU waste can be transported.

3.0 PROVIDING AUTHORIZATION TO THE WIPP TO RECEIVE RADIOACTIVE MIXED WASTE

RCRA requires generators who ship wastes off site for treatment, storage, or disposal to "designate on the manifest one facility which is permitted to handle the waste described on the manifest" [40 CFR 262.20(b)]. Further, 40 CFR 263.20(a) prohibits a transporter from accepting waste from a generator unless it is accompanied by a manifest meeting the 40 CFR 262.20(b) requirements.

The WIPP requires authorization as an appropriate facility to receive radioactive mixed waste from DOE facilities located in mixed waste-authorized states. While the State of New Mexico has authority to administer the RCRA Subtitle C program, it has not applied for mixed waste authorization. This means that neither the State nor the EPA regulates mixed waste in New Mexico. It has been unclear as to which entity may provide the necessary authorization.

Hoping to resolve this conflict, the DOE will submit in July, 1988, a RCRA Part A permit application to the State of New Mexico Health and Environment Department, Environmental Improvement Division (NMEID). ✓

A precedent exists for determining that a DOE radioactive mixed waste storage facility in a state in which mixed wastes are unregulated qualifies as an appropriate facility to receive wastes under RCRA. The DOE's Rocky Flats Plant (RFP) near Denver, Colorado ceased shipping wastes to the Nevada Test Site (NTS), in the fall of 1986, when the State of Colorado obtained authority from the EPA to regulate mixed waste. The State of Nevada did not have mixed waste authority. EPA Regions VIII and IX, EPA headquarters, and the States of Nevada and Colorado began working with the DOE to resolve this issue and allow the RFP to ship radioactive mixed waste to the NTS.

EPA Region IX acknowledged the State of Nevada's prerogative in the matter. It notified the Nevada Test Site that, although mixed waste handlers in Nevada are not subject to federal RCRA regulation, this lack of regulation does not constitute a "ban" on mixed waste disposal at the Nevada Test Site. It explained that the Nevada Test Site would not be subject to federal hazardous waste rules until the State of Nevada receives mixed waste authorization.

Because the Nevada Test Site was authorized as an appropriate facility to receive radioactive mixed waste under Nevada state law, the State of Colorado notified the Rocky Flats Plant that the Nevada Test Site would qualify as a designated facility for the requirements of manifesting hazardous waste.

4.0 WIPP COMPLIANCE WITH INTERIM STATUS STANDARDS

The interim status standards of 40 CFR Part 265 apply to hazardous waste treatment, storage, and disposal facilities in RCRA authorized states which are not authorized to implement the 1984 RCRA amendments (HSWA). New Mexico is in this category. It is the DOE's intention to operate the WIPP in compliance with all applicable federal and state hazardous waste management interim status standards.

To accomplish this goal, plans and procedures are currently being developed by the DOE in accordance with 40 CFR Part 265 requirements and will be fully implemented by the time the WIPP facility commences operations. However, the EPA is aware that there are several RCRA requirements that are "inconsistent" with the requirements of the Atomic Energy Act in the context of RCRA 1006(a). The following sections summarize the interim status requirements and present the DOE's approach to RCRA compliance at the WIPP.

4.1 WASTE CHARACTERIZATION

EPA regulations (40 CFR 264.13) require that sufficient detailed information on the physical and chemical characteristics of hazardous waste be known to treat, store, or dispose of the waste without endangering human health or the environment. This information may be supplied by the generator and can be obtained through analyses of representative samples of the waste or from knowledge of the waste or the process by which it is generated. If the generator cannot provide the necessary information, then the owner or operator of an off-site disposal facility such as the WIPP is required to ensure that the waste characterization requirements are met.

This rule also requires owners and operators of off-site disposal facilities to inspect and, if necessary, to analyze each shipment of waste to verify its manifest description. A waste analysis plan is required to describe procedures by which all waste inspections and analyses will be conducted and the frequency by which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up-to-date. It must also describe the waste analyses that generators have agreed to supply.

The land disposal restrictions under 40 CFR 268.7 require the owner or operator of any land disposal facility accepting a restricted waste to maintain records of the notices and certifications received from generators stating that restricted waste shipments are exempt from the land disposal restrictions, are subject to a nationwide variance, or can be land disposed without further treatment. Waste characteristics data, through actual testing of the waste or process knowledge, must be obtained to determine that the wastes are in compliance with the applicable treatment standards in 40 CFR 268.41.

The EPA Guidance Manual for Hazardous Waste Disposal in Geologic Repositories emphasizes the importance of waste properties that could impact waste mobility or repository stability such as volatility, reactivity, corrosivity, solubility, and susceptibility to transformation. It recommends that reactive and ignitable wastes be excluded unless it can be demonstrated that volatile emissions will be adequately controlled and will present no threat to human health or the environment. Wastes that are incompatible with repository materials, engineered materials, formation gasses, or other waste components, or which corrode any of those materials, should not be placed in a repository.

Information on the hazardous constituents of TRU-mixed wastes currently generated and generated in the recent past can be obtained from process and waste knowledge. However, a large volume of TRU-mixed wastes to be sent to WIPP was generated from defense programs in the distant past. Documentation on the chemical constituents of these wastes or the processes generating these wastes is often inadequate or does not exist. Waste characterization through actual testing of these wastes is not feasible due to the potential for exposing personnel to unacceptable radiation hazards which would be inconsistent with DOE orders issued under the Atomic Energy Act. In addition, collection of a representative sample from many of the containers would be difficult or impossible due to complex waste matrices and/or the physical form of these wastes.

Many of EPA's concerns regarding the chemical nature of wastes placed in geologic repositories are addressed in the WIPP Waste Acceptance Criteria (WAC) document (WIPP-DOE-069, Revision 2, 1985). The WAC prohibits the inclusion of pressurized gasses, explosives, free liquids, or corrosive materials in the wastes sent to WIPP. Waste packages that contain waste forms known or

suspected to generate gas, potentially allowing a combination of pressure and explosive mixtures to affect the integrity of the container, must be provided with a pressure relief mechanism.

Even though the WAC contains protective provisions aimed at certain waste characteristics, full analytical characterization of the hazardous components of TRU mixed waste to be shipped to the WIPP is not feasible. The DOE will utilize waste characterization data supplied by the generators of the mixed waste received by the WIPP. When process knowledge is used to document hazardous waste constituents it will, by necessity, be conservative. To verify that mixed waste shipments match their manifest description, the computerized bar code applied to each container of waste or on groups of containers referred to as "seven packs," will be scanned, providing sufficient information to positively identify each shipment. With regard to the documentation required by the land disposal restrictions, the WIPP will maintain all pertinent records as required, although these restrictions, as the proceeding section describes, may not fully apply to mixed waste.

4.2 LAND DISPOSAL RESTRICTION

The WIPP is defined as a "land disposal" facility under RCRA 3004(k). As a result, the facility is subject to the land disposal restrictions of RCRA 3004(d). The DOE assumes that some of the hazardous waste constituents destined for shipment to the WIPP may be restricted according to the schedules contained in 40 CFR Part 268.

The land disposal prohibitions require that any restricted hazardous constituents be treated prior to emplacement. In setting treatment levels, the EPA examined the effectiveness of Best Demonstrated Available Technologies (BDATs) in reducing the toxicity and/or mobility of hazardous waste constituents in a number of common waste streams. The national treatment capacity and treatability of solvents or other restricted wastes mixed with radioactive material was not addressed. Further, the regulations do not address the fact that the waste handling involved in radioactive waste treatment operations, as emissions resulting from such operations, may present a far more significant risk to human health and the environment due to the radioactive components than the emplacement of untreated chemical wastes in

deep geologic repositories. Treatment technologies intended to apply to the BDAT treatability groups do not seem appropriate for mixtures of TRU and chemical wastes because the physical and chemical properties of the mixed waste differs significantly from the purely chemical wastes analyzed in developing the treatment standard (see 40 CFR 268.44).

In addition, there currently are no facilities permitted by EPA for treatment of mixed waste. Imposing the land disposal prohibitions on mixed waste according to the schedule established in 40 CFR Part 268 places a difficult burden on the WIPP and other DOE facilities and is inconsistent with the purposes of the AEA.

The DOE has suggested to the EPA that the EPA provide a nationwide variance from the statutory effective date of the prohibitions for radioactive mixed waste. Many parallels exist between mixed waste and other waste which have been granted a nationwide variance (dioxin, spent solvents, RCRA/CERCLA cleanup waste, and small quantity generator waste). During the variance period, the EPA could assess national treatment capacity demand versus supply, available alternative technologies, treatment standards achievable, and other important factors. By the time the variance expires, the DOE would likely have demonstrated, through a no-migration petition, that land disposal of TRU mixed waste in the WIPP is protective of human health and the environment.

4.3 GROUNDWATER MONITORING

RCRA regulations in 40 CFR Part 265, Subpart F, describe groundwater monitoring requirements that are applicable to regulated land disposal units. These requirements establish a program to detect, evaluate, and, if necessary, correct ground water contamination during the active life of the unit and the thirty-year post-closure care period. While the specific requirements of this subpart apply to surface impoundments, waste piles, land treatment units, and landfills, they may also apply to Subpart X miscellaneous units when necessary to comply with environmental performance standards. In fact, due to the unique nature of geologic repositories, the EPA recognizes that groundwater monitoring requirements may be significantly modified or waived entirely.

The DOE intends to demonstrate that there is low probability for the movement of liquids from the disposal unit to the accessible environment during the

active life of the facility in accordance with 40 CFR 265.90(c). It will also demonstrate that leaks or the generation of hazardous leachate will not occur within the WIPP. This waiver petition will be maintained at the facility during interim status and included in its Part B permit application for submittal to appropriate regulatory agencies.

4.4 CLOSURE/POST-CLOSURE CARE

Closure is the period when wastes are no longer accepted, during which owners or operators of TSD facilities complete treatment, storage, and disposal operations and dispose of or decontaminate equipment, structures and soil. Post-closure care which applies only to disposal facilities, is the thirty-year period after closure during which owners or operators of disposal facilities conduct monitoring and maintenance activities to preserve the integrity of the disposal system.

During interim status, the DOE will prepare and maintain on-site at the WIPP plans for closure in compliance with applicable regulations under 40 CFR Part 265, Subpart G. The closure plan will describe partial closure activities that will be conducted to close each disposal unit ("room") in the facility, as well as the final closure activities that will occur at the end of the facility's operating life. The WIPP's waste retrievability features will be described and, if a decision to retrieve the waste is made during the first five years of operation, the closure plan will be amended pursuant to 40 CFR 264.112.

Because the DOE intends to show that the nature of the wastes in the repository and the repository characteristics are such that RCRA groundwater monitoring is not appropriate, it is likewise inappropriate to conduct such monitoring during the post-closure care period. The DOE, however, is and will be conducting a number of studies to document waste containment, the results of which can provide information necessary to document attainment of RCRA's environmental performance standards. As a result, the post-closure care requirements of Subpart G will not apply to the WIPP, as will be demonstrated to the NMEID. 17

5.0 FINAL PERMITTING AS A "SUBPART X" MISCELLANEOUS UNIT

RCRA authorizes the EPA to issue standards applicable to owners and operators of hazardous waste management facilities. The EPA has promulgated these regulations in stages for specific types of treatment, storage and disposal units: containers, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, underground injection wells, and research, development and demonstration facilities. These represent the major hazardous waste management practices and technologies.

However, certain hazardous waste management practices and technologies do not fit the description of any of these units. As a result, they could not be fully permitted and could operate only as interim status facilities. On December 10, 1987, the EPA published final rules covering "miscellaneous" hazardous waste management units in order to fill the gaps in the regulatory framework and to allow final permitting of units utilizing innovative and diverse technologies (52 FR 46946). These regulations are contained in 40 CFR Part 264, Subpart X.

The WIPP qualifies as a miscellaneous unit because it is not one of the conventional technologies for which final standards had been previously promulgated (40 CFR 260.10). Compliance with Subpart X regulations will not , supercede, supplant or substitute for most of the existing RCRA regulations which apply to conventional hazardous waste management units. For example, the RCRA 3004(d) land disposal restrictions discussed in Section 4.2 apply to miscellaneous land disposal units, unless a "no migration" exemption has been granted.

In proposing Subpart X, EPA considered all of the usual strategies for developing standards: design and operating standards, technical performance standards, containment standards, and environmental performance standards. Design/operating standards and technical performance standards may be developed in the future when it becomes apparent that certain types of miscellaneous units will be widely used and accepted. The EPA has generally adopted the environmental performance standard approach (40 CFR 264.601). Thus, Subpart X allows for a "customized" permitting process designed to fit each waste management situation. In other words, each permit will be tailored by the EPA,

or a state with Subpart X authority, to particular circumstances and risks associated with a particular type of waste management unit. The permitting process will consider the nature of the technology, type and form of waste material, site location, hydrogeologic characteristics, and other factors. The Subpart X "environmental performance standards" in 40 CFR 264.601 require that miscellaneous units be "located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment." This means that the system must be designed and operated to prevent any releases of hazardous wastes or hazardous constituents that may have adverse effects on ground water quality, surface water quality, or air quality. Further, the performance standards specifically require an examination of the "potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures" caused by exposure to waste constituents.

Part B of a Subpart X permit application will be even more complex and detailed than the usual Part B application for conventional hazardous waste management units. The application must include the contents specified by 40 CFR 270.13 and 270.14 for Part A and Part B, respectively. In addition, there are specific Part B information requirements for miscellaneous units set out in 40 CFR 270.23. A miscellaneous unit application may also be required to include "any additional information determined by the Director to be necessary for evaluation of compliance of the unit with the environmental performance standards of 264.601."

Under Subpart X, the EPA will customize requirements on a case-by-case basis by developing design, construction, operation, monitoring and closure specifications through the permitting process. Initially, the EPA will be responsible for issuing these permits, although states are required to have Subpart X authorization by July 1, 1989.

In summary, the DOE will submit a Part B permit application for the WIPP according to the requirements for miscellaneous units. The application will be prepared with the advice of the EPA headquarters technical group responsible for the permitting of miscellaneous units and by developing a close interface with EPA Region VI and the NMEID. The application will also meet the technical objectives suggested by the EPA Guidance Manual for Hazardous Waste Disposal in Geologic Repositories where appropriate.

*1st step should be storage facility
2nd step should be disposal*

6.0 OTHER REGULATORY ISSUES

6.1 INCONSISTENCIES WITH THE ATOMIC ENERGY ACT

Although it is the intent of the DOE to operate the WIPP in compliance with all applicable hazardous waste rules and regulations, there are instances in which full compliance with RCRA requirements for hazardous waste management may not be technically feasible. In these instances, compliance with AEA requirements for radioactive wastes offers a level of protection greater than or equal to that provided by RCRA. RCRA addresses the possibility of conflicts in managing radioactive mixed waste under regulations aimed solely at their hazardous components. Section 1006(a) of the Act provides as follows:

Nothing in the Act shall be construed to apply to (or to authorize any State, interstate, or local authority to regulate) any activity or substance which is subject to [listed Acts] or the Atomic Energy Act of 1954. . . except to the extent that such application (or regulation) is not inconsistent with the requirements of such Acts. (Emphasis added.)

There are at least three types of potential inconsistencies between the Atomic Energy Act and RCRA: (1) informational inconsistencies (based on national security needs), (2) technical inconsistencies, and (3) inconsistencies in requirements that would protect public health and the environment from chemical waste hazards but would increase the radiation hazard.

The EPA July 3, 1986 notice on state mixed waste authorization established that EPA and a state may, on a case-by-case basis, use 1006 authority to modify RCRA requirements as applied to mixed waste activities, pending issuance of EPA regulations on the inconsistency issue. As these inconsistencies arise the DOE will apprise the regulatory agencies of the actions necessary to resolve each issue. In such cases, it is believed by both the DOE and the EPA that the requirements of the Atomic Energy Act will provide a level of environmental and human health protection equal to or more stringent than that provided by RCRA.

7.0 CONCLUSIONS

This document addresses a number of RCRA-related regulatory issues in need of resolution by the DOE, the EPA, the State of New Mexico, and (in certain cases) by other affected states. Although this list is not intended to be all inclusive, the issues addressed are: waste characterization, obtaining RCRA-related approval to ship TRU wastes to the WIPP, complying with interim status standards, land disposal restrictions, ground water monitoring, closure/post-closure, permitting under Subpart X, and relationships between RCRA and 40 CFR Part 191.

Acting on the assumption that the WIPP permitting jurisdictional issue will be resolved in the near future, the DOE is preparing Part A of the RCRA permit application and associated interim status compliance documentation. The DOE intends to work closely with the NMEID, EPA Region VI, and EPA headquarters to resolve conflicts and inconsistencies between RCRA and the AEA in a timely manner. The DOE further assumes that the WIPP will ultimately be permitted by the State of New Mexico, with EPA assistance, under 40 CFR Part 264, Subpart X as a miscellaneous unit. This will afford the permitting flexibility needed for this unique facility while assuring the greatest possible protection of human health and the environment.

ATTACHMENT A

RCRA-REGULATED HAZARDOUS COMPONENTS OF
WASTE TO BE EMPLACED AT THE WIPP⁽¹⁾

HAZARDOUS COMPONENT	EPA HAZARDOUS WASTE CODE	ESTIMATED QUANTITY (m ³)(2)
Lead only	D008	2,152
<u>Mixtures of the following:</u>		3,302
Corrosive	D002	
Reactive	D003	
Arsenic	D004	
Barium	D005	
Cadmium	D006	
Chromium	D007	
Lead	D008	
Mercury	D009	
Silver	D011	
<u>Mixtures of the following:</u>		5,521
Lead	D008	
Cadmium	D006	
1,1,1 trichloroethane	F001	
Carbon tetrachloride	F001	
1,1,2-trichloro-		
1,2,2-trifluoroethane	F001	
Methylene chloride	F002	
Xylene	F003	
n-butyl alcohol	F003	
Methanol	F003	
<u>Mixtures of the following:</u>		20,379
1,1,1 trichloroethane	F001	
Carbon tetrachloride	F001	
1,1,2-trichloro-		
1,2,2-trifluoroethane	F001	
Methylene chloride	F002	
<u>Mixtures of the following:</u>		10,243
Lead	D008	
1,1,1 trichloroethane	F001	
Carbon tetrachloride	F001	
1,1,2-trichloro-		
1,2,2-trifluoroethane	F001	
Methylene chloride	F002	
Beryllium	P015	

ATTACHMENT A

RCRA-REGULATED HAZARDOUS COMPONENTS OF
WASTE TO BE EMPLACED AT THE WIPP⁽¹⁾
(CONTINUED)

HAZARDOUS COMPONENT	EPA HAZARDOUS WASTE CODE	ESTIMATED QUANTITY (m ³) ⁽²⁾
<u>Mixtures of the following:</u>		1,872
1,1,1 trichloroethane	F001	
Carbon tetrachloride	F001	
1,1,2-trichloro-		
1,2,2-trifluoroethane	F001	
Methylene chloride	F002	
Xylene	F003	
n-butyl alcohol	F003	
Methanol	F003	
Nitrobenzene	F004	
Toluene	F005	
<u>Mixtures of the following:</u>		3,629
Lead	D008	
Cadmium	D006	
Chromium	D007	
Mercury	D009	
Selenium	D010	
Silver	D011	
1,1,1 trichloroethane	F001	
Carbon tetrachloride	F001	
1,1,2-trichloro		
1,2,2-trifluoroethane	F001	
Methylene chloride	F002	
Xylene	F003	
n-butyl alcohol	F003	
Methanol	F003	
Unknown wastes		<u>1,000</u>
TOTAL ESTIMATED QUANTITY		48,098

(1)Source: Data provided by all DOE generator sites for the preparation of Part A of the WIPP RCRA permit application, 1988.

(2)Estimated quantity represents total container volume. Container may contain nonhazardous materials and void space in addition to the hazardous waste components identified.