

ISSUES AND VIEWPOINTS CONCERNING THE APPLICATION OF
RCRA TO RADIOACTIVE MIXED WASTE MANAGEMENT FACILITIES

C. L. Fredrickson, R. P. Hansen, J. S. Hart
International Technology (IT) Corporation
Albuquerque, New Mexico 87106
and
Englewood, Colorado 80112

ABSTRACT

This paper traces the origin and evolution of the controversy over whether the Resource Conservation and Recovery Act (RCRA) (1) and its attendant federal and state regulations apply to defense installations authorized under the Atomic Energy Act (AEA) (2), particularly those managed by the U.S. Department of Energy (DOE). The focus of the inquiry is on the application of RCRA to mixtures of high-level, transuranic (TRU), and low-level radioactive waste containing source, special nuclear, or byproduct material as defined by the AEA and hazardous chemical waste as identified under RCRA Subtitle C (i.e., mixed waste). The paper examines the mixed waste issue from an historical perspective, reviews the RCRA exclusions for nuclear material, compares AEA and the proposed DOE definition of "byproduct material," and analyzes various agency viewpoints on the regulation of mixed waste.

HISTORICAL PERSPECTIVE

The mixed waste issue has been slowly evolving since RCRA regulations were promulgated in 1980. Different interpretive stances are reflected in AEA provisions, U.S. Environmental Protection Agency (EPA) Congressional testimony, DOE orders, an important court decision and 1986 hearings before the U.S. Congress.

Atomic Energy Act Provisions

Section 161 of the AEA provides that the Atomic Energy Commission (succeeded for national defense purposes by the DOE) is authorized to prescribe necessary regulations and orders to:

[G]overn any activity authorized pursuant to [the AEA], including standards, and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property (3).

The court in Legal Environmental Assistance Foundation v. Hodel (L.E.A.F. v. Hodel) (4) held that this section did not vest the DOE with "exclusive authority" to regulate health and safety at the Oak Ridge National Laboratory. The court cited another case, holding that DOE's authority to prescribe health and safety regulations is discretionary and not mandatory (Blaber v. United States) (5). In other words, DOE is not required by the AEA to issue orders or regulations respecting health and safety aspects of radioactive waste. The AEA also provides, in Section 271, that:

Nothing in [the AEA] shall be construed to affect the authority or regulations of any Federal, State, or local agency with respect to the generation, sale, or transmission of electric power produced through the use of nuclear facilities licensed by the [Atomic Energy] Commission: Provided, that this

section shall not be deemed to confer upon any Federal, State, or local agency any authority to regulate control, or restrict any activities of the Commission. (Emphasis added.) (6)

There is some disagreement as to whether this section prohibits regulation of defense-related activities authorized under the AEA by other government entities or merely prohibits other agencies from usurping Nuclear Regulatory Commission (NRC) authority over licensing of electric power facilities. A strong argument can be made that the provision is intended to safeguard NRC authority over commercial nuclear power plants because defense installations authorized by the AEA are subject to a long list of federal, state, and local environmental laws and regulations. Unlike RCRA, other environmental statutes do not contain provisions limiting their application to consistency with the AEA.

DOE Orders and Interpretations

The DOE has issued numerous Orders addressing environmental, safety, and health protection aspects of radioactive waste and other radioactive materials. DOE 5480.2, which is still in effect, establishes hazardous waste management procedures for facilities operated under authority of the AEA. The Order mandates that DOE facilities follow RCRA regulations "to the extent practicable," emphasizing that AEA authorized facilities are not bound by EPA or state regulations conforming with RCRA. The Order requires operations offices to comply with the "technical" but not the "procedural" (i.e., permitting) RCRA requirements. The Order distinguishes high-level mixed waste, TRU mixed waste, and low-level mixed waste as follows:

- o High-level and TRU mixed waste are to be handled, packaged, transported, stored, disposed of and monitored according to DOE requirements (exclusively).

- o With respect to low-level mixed waste, additional controls are to be applied "as necessary" to assure a degree of protection "equivalent to" that provided by RCRA.

These distinctions are important when examining EPA and DOE positions respecting high-level, TRU and low-level mixed waste.

In a December 1983 memorandum, the DOE General Counsel held a firm position that DOE defense installations were totally and unqualifiedly exempt from regulation under RCRA (7). It was his opinion that any EPA or state permitting scheme would be totally inconsistent with the intent of Congress to utilize atomic energy for national defense purposes. The three major "inconsistencies" between the AEA and RCRA cited by DOE's General Counsel were: 1) AEA facilities would require state permits to operate; 2) EPA and state health and safety standards would govern AEA facilities; and 3) national security information would be made available to the public.

In June 1983, DOE issued a guidance document which referenced most of the RCRA regulations (8). It pointed out that AEA facilities generating PCBs, PCB contaminated waste, and low-level radioactive mixed waste were to comply with RCRA "at the earliest possible date" but that high-level and TRU mixed wastes were exempt from such a requirement. (Note: PCBs are regulated under the Toxic Substances Control Act.)

DOE/EPA Memorandum of Understanding

In an early effort to resolve the mixed waste controversy, DOE and EPA entered into a Memorandum of Understanding (MOU) on February 22, 1984 (9). The purpose of this now inoperative MOU was to establish a program for mixed waste management that was "comparable to" the requirements of the RCRA regulations. The MOU came very close to imposing a de facto RCRA regulatory program on mixed wastes at DOE operations. Principally because L.E.A.F. v. Hodel was decided two months later (April 1984), the agreement was never implemented.

L.E.A.F. v. Hodel

The hallmark case of L.E.A.F. v. Hodel was decided in April 1984. The case was brought by L.E.A.F., the Natural Resources Defense Council (NRDC), and the State of Tennessee. The matter in controversy was the applicability of RCRA to waste management operations at the Y-12 Plant at Oak Ridge National Laboratory.

The DOE relied on its traditional position that RCRA is inconsistent with the Atomic Energy Act. The court held that the DOE must seek a permit under RCRA for handling, transporting, and disposing of hazardous waste (other than nuclear and radioactive waste regulated by the AEA) at the Y-12 Plant since the application of RCRA to federal facilities is not inconsistent with the AEA. The court was of the opinion that RCRA and the AEA are not in "irreconcilable conflict"; Congress intended that RCRA be at least partially applicable to facilities operated pursuant to the AEA. The court argued that it was the intent of Congress that AEA authorized facilities be subject to RCRA except as to those wastes expressly regulated by the AEA: nuclear and radioactive materials.

The Tennessee case did not deal with the mixed waste issue nor the definition of byproduct material. However, the court confirmed DOE's historic position by stating that "the AEA regulates nuclear material,

regardless of whether it is considered waste." At the same time, the court held that Section 271 of the AEA does not give DOE exclusive authority to regulate health and safety aspects of defense installations.

RCRA RADIOACTIVE WASTE EXCLUSIONS

RCRA contains (qualified) provisions making it inapplicable to facilities authorized by the AEA. Two different sections of RCRA address these exclusions:

- o The "Solid Waste" Exclusion. RCRA defines a "solid waste" as a solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, agricultural operations, and community activities [Section 1004 (27)]. However, the definition specifically excludes "source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended." The RCRA Section 1004(27) exclusion per se is not a matter of disagreement between DOE and EPA.
- o The "Inconsistency" Exclusion. RCRA Section 1006(a) provides the following:

Nothing in this 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.)

The two general types of inconsistencies between the AEA and RCRA are: 1) informational inconsistencies, i.e., national security, and 2) technical inconsistencies.

DOE Proposed Redefinition of Byproduct Material

For purposes of the "solid waste" exclusion in RCRA Section 1004(27), "byproduct material", "source material" and "special nuclear material" are defined in the Atomic Energy Act as follows:

(e) The term "byproduct material" means (1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material. . . . (Emphasis added.) (10)

(z) The term "source material" means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 2091 of this title to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time (10).

(aa) The term "special nuclear material" means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission pursuant to the provisions of section 20071 of this title, determines to be special nuclear

material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material (10).

The definition of "source" and "special nuclear" material focus on "pure" radioisotopes. The definition of "byproduct material" presents an issue of controversy between the DOE, the EPA and the NRC.

Virtually all radioactive waste substances yielded in the process of producing or utilizing special nuclear material are contained, dissolved, or suspended in a nonradioactive medium -- often RCRA-hazardous chemicals. Since separation of the radioactive and nonradioactive components is impracticable, DOE has proposed a clarification or redefinition of the term "byproduct material."

Proposed 10 CFR 962

DOE's notice of proposed rulemaking was published in the Federal Register on November 1, 1985 (11). The purpose of the rule is to clarify application of the term "byproduct material" as defined by the AEA in order to determine which radioactive waste substances generated at DOE facilities qualify for exclusion from the definition of "solid waste" under RCRA. DOE feels that such a redefinition will clarify which radioactive mixed waste will fall under exclusive DOE jurisdiction and which will be subject to regulation by both the DOE and the EPA.

The proposed rule defines byproduct material as follows:

For purposes of this part, the term Byproduct Material means a waste substance containing radioactivity that is either directly yielded in the process of producing or utilizing Special Nuclear Material as that term is defined in the Atomic Energy Act of 1954, as amended, or its being made radioactive is a direct and necessary consequence of that process. (Emphasis added.)

Under the DOE proposed clarification, byproduct material meeting the above definition -- even if consisting of mixed radioactive and chemical waste -- would be regulated exclusively by DOE. If not meeting the definition, the mixed waste would be regulated under both RCRA and the AEA. In other words, the radioactive portion would be regulated by DOE and the chemical portion by EPA.

In its commentary on the proposed rule, DOE noted that radioactivity alone does not suffice to characterize a waste substance as byproduct material. Accelerator-produced waste or waste resulting from producing or utilizing source material or byproduct material would not qualify for the RCRA exclusion. Neither would wastes from processes employed by DOE to produce commercial radionuclide products qualify as byproduct material.

Examples of radioactive mixed waste which would qualify for DOE's proposed byproduct material definition include: high-level radioactive waste resulting from the chemical processing of spent fuel for the production of plutonium; radioactive cutting oil, which includes hazardous chemical components, used for machining plutonium; and other "direct process" mixtures of radioactive and chemical constituents.

Internally, DOE has taken the position that all high-level waste (HLW) and all TRU waste qualifies as "byproduct material" on the theory that the radioactive characteristics of "mixed waste" (if HLW or TRU) present a greater hazard to human health and the environment than do the chemical characteristics. Under this interpretation, only low-level mixed waste could be regulated under RCRA.

The DOE proposes to reintroduce its proposed rule on byproduct material in the Spring of 1987 in modified form. The effect of the rule would be that DOE would retain exclusive jurisdiction over high-level and transuranic wastes. Low-level radioactive mixed waste would be jointly regulated by DOE and EPA.

EPA and NRC Reaction

EPA has not attempted to define or redefine byproduct material since its position is that "mixed waste" is hazardous chemical waste regulated under Subtitle C of RCRA mixed with source, special nuclear, or byproduct material. This makes it subject to the dual jurisdiction of both the AEA and RCRA. For purposes of defining mixed waste, EPA does not distinguish between HLW, TRU, low-level waste (LLW), or spent fuel.

The NRC is particularly concerned about DOE's proposed distinction between "direct" and "indirect" process wastes because the rule would not be confined to DOE facilities but could affect NRC and agreement states' licensing activities as well. For example, wastes resulting from commercial use of DOE-produced cesium for product irradiation would not qualify as byproduct material under the proposed definition. This could result in effectively removing some types of commercial byproduct material from regulation by NRC and agreement states. NRC feels the rule would create a new class of radioactive waste: "indirect process wastes" for which no statutory control scheme exists.

PERSPECTIVES ON REGULATION OF MIXED WASTE

The following discussion provides different points of view from both a technical and a regulatory perspective on the mixed waste issue. Because positions on mixed waste by DOE, EPA, and NRC have evolved over the past several years, and because Congress is considering several bills, the situation can best be described as fluid. However, the positions of the various agencies indicate certain trends.

U.S. Department of Energy

DOE officials testified in early 1986 before Congressional committees holding hearings on the mixed waste issue. Based on this testimony, the DOE's position on the regulation of mixed waste can be highlighted as follows:

- o RCRA is applicable to chemical hazardous waste generation, storage, treatment, and disposal at all DOE operations.
- o High-level and transuranic radioactive mixed waste should be under the exclusive control of DOE, while low-level mixed waste should be jointly regulated by DOE and EPA.
- o When the application of a particular RCRA requirement (information or technical) is "inconsistent" with AEA requirements, "adaptations" may be required.

- o The dual character of low-level radioactive mixed wastes warrants dual regulation: regulation under RCRA to protect against its chemical hazard and regulation under the AEA to protect against its radiological hazard.
- o DOE low-level mixed waste facilities are required to be permitted under RCRA the same as they are required to be regulated under the AEA.

In their 1986 Congressional testimony, DOE officials pointed out that instead of appealing the district court's decision in *L.E.A.F. v. Hodel*, DOE adopted a policy of implementing the decision at all defense installations authorized by the Atomic Energy Act. The testimony of Mary Walker, DOE Assistant Secretary for Environment, Safety, and Health, included this summary statement about the case:

Although the case did not involve, and the decision did not discuss mixed wastes as such, the Department felt that the dual character of mixed wastes warranted dual regulation: regulation under RCRA to guard against its chemical hazard, and regulation under AEA to guard against its radiological hazard. Where the application of a particular RCRA requirement is inconsistent with the AEA, as RCRA Section 1006(a) anticipates, adaptations may be required. (Emphasis added.) (12)

On the question of dual RCRA/AEA jurisdiction over mixed waste, John Barker, Director of the DOE Office of Environmental Audit and Compliance, made this statement:

[W]e believe that current law provides an inadequate framework for the regulation of "mixed waste." Its bifurcation of responsibility would seem to be preferable, because in distinguishing between hazardous solid waste which is subject to EPA jurisdiction under RCRA, and "source, special nuclear and byproduct material" which is subject to DOE jurisdiction under the Atomic Energy Act (AEA), current law ensures that each type of waste will be regulated by the agency with the appropriate expertise. DOE believes that the abandonment of this distinction would complicate the important task of integrating the requirements of RCRA with those of the AEA so as to maximize the protection of the environment from both chemical and radiation hazards (13).

U.S. Environmental Protection Agency

EPA's position on the mixed waste issue has not changed substantially since the RCRA rules were first promulgated on May 19, 1980 (14). Although mixtures of radioactive and hazardous chemical waste may or may not have been contemplated at that time, EPA recognized the need to clarify whether mixtures of hazardous and nonhazardous waste (source, special nuclear, and byproduct material) are excluded from the definition of solid waste in 40 CFR §261.4) would be subject to Subtitle C requirements. The preamble to publication of the final RCRA rules in 1980 stated the following:

Although it was not expressly stated in the proposed regulation, EPA intended waste mixtures containing listed hazardous wastes to

be considered a hazardous waste and managed accordingly. Without such a rule, generators could evade Subtitle C requirements simply by commingling listed wastes with nonhazardous solid waste. . . . Obviously, this would leave a major loophole in the Subtitle C management system and create inconsistencies of how wastes must be managed under that system (15).

EPA has always contended that DOE's authority to regulate health and safety aspects of atomic energy is not *per se* "inconsistent" with EPA regulation of mixed waste under RCRA. EPA's Acting General Counsel noted in a June 22, 1983 memorandum that "DOE has not identified a single RCRA regulation that is inconsistent with requirements that DOE facilities must meet under the AEA (16)."

In her testimony of March 25, 1986 to the Senate Committee on Environment and Public Works, Marcia E. Williams, Director of the EPA Office of Solid Waste, divided radioactive waste into three categories as follows:

- (1) Source, special nuclear, and byproduct material expressly excluded from regulation as a solid waste under RCRA.
- (2) Mixed waste consisting of hazardous waste as defined by RCRA Subtitle C mixed with source, special nuclear or byproduct material which is regulated under both the AEA and RCRA.
- (3) Naturally occurring and accelerator-produced radioactive material (NARM) waste which is not subject to the AEA but could be regulated under RCRA (or, perhaps, more appropriately regulated by the Nuclear Regulatory Commission) (17).

It should be noted that, in making these classifications, Ms. Williams did not make any regulatory distinction between HLW, TRU, or LLW (18). Clearly, EPA considers mixtures of byproduct material and Subtitle C waste to qualify for regulation under RCRA. This is a major point of contention between DOE and EPA. The DOE and EPA viewpoints on the mixed waste issue are compared in Fig. 1.

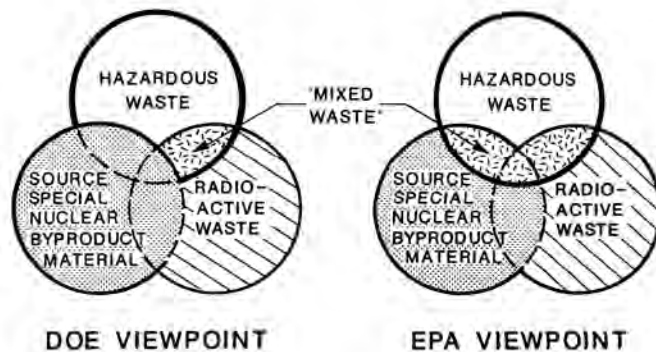


Fig. 1. Current viewpoints on mixed waste.

Nuclear Regulatory Commission

Commercial low-level radioactive waste is regulated by the NRC and "agreement states" under the AEA. While EPA defines mixed waste as being composed of mixtures of source, special nuclear, or byproduct material and RCRA hazardous chemicals, NRC comes closer to the DOE concept by defining mixed waste as low-level radioactive waste that also contains hazardous chemical constituents. NRC's major concern is that the mixed waste issue impedes the ability of various states and interstate compacts to develop needed low-level waste disposal capacity as required by the Low-Level Radioactive Waste Policy Amendments Act of 1985.

According to studies conducted for NRC by the Brookhaven National Laboratory (18), scintillation media and other low-level wastes containing organic solvents which are produced by biomedical research activities comprise the largest category of commercially generated (low-level) mixed waste. However, the Brookhaven study suggests that mixed wastes currently being generated represents a very small volume when compared to all wastes, whether hazardous or radioactive. Mixed wastes are estimated by the Brookhaven National Laboratory to make up less than three percent of all radioactive wastes shipped for disposal in 1984 to the three existing licensed low-level radioactive waste disposal sites.

NRC and EPA have recently entered into an agreement that provides NRC with regulatory jurisdiction with respect to radionuclides contained in low-level mixed waste. EPA would retain jurisdiction over RCRA hazardous mixed waste constituents. The primary purpose of the agreement is to help implement the objectives of the Low-Level Radioactive Waste Policy Amendments Act of 1985.

John B. Davis, Director of the NRC Office of Nuclear Material Safety and Safeguards, testifying before the Senate Committee on Environment and Public Works in March 1986, recommended that Congress take the following action: 1) minimize the generation of mixed waste (meaning low-level radioactive and chemical waste); 2) remove current regulatory uncertainty which will impede implementation of the Low-Level Radioactive Waste Policy Amendments Act; and (3) resolve questions of multiple and/or conflicting jurisdictions among NRC, EPA and DOE (19).

Members of Congress

Certain members of Congress have been active concerning the mixed waste issue. A number of bills have been introduced and hearings have been held before various House and Senate committees. As with all workings of Congress, it is not possible to predict the likely legislative outcome. It is possible that the mixed waste matter is amenable to administrative resolution among DOE, NRC and EPA and that legislation will not be necessary.

SUMMARY

DOE's position with respect to regulation of mixed waste has changed considerably since 1983: from viewing RCRA and the AEA as being in irreconcilable conflict, to requiring technical compliance with RCRA "to the extent practicable," to the DOE/EPA MOU establishing a de facto RCRA compliance program, to the most recent position of favoring dual RCRA/AEA regulation while "adapting" to national security and technical inconsistencies. However, EPA and some members of Congress view DOE as retrieving with the left hand

what it has given with the right by expanding the universe of DOE waste excluded from RCRA with the byproduct material redefinition.

The EPA, while defending its thesis that RCRA covers byproduct material and chemical waste mixtures, appears to be flexible in its attitude toward technical and informational inconsistencies between RCRA and the AEA. Both DOE and EPA seem receptive to the idea of "adapting" RCRA requirements to AEA requirements through case-by-case negotiation or RCRA variance procedures.

Based on a review of Congressional hearing testimony and interviews with DOE, EPA and NRC officials, there are several possible future scenarios emerging:

- (1) Congress could divide mixed waste into three categories with each being under the jurisdiction of a single authority. To determine which authority had control -- DOE, EPA or NRC -- each waste stream would have to be examined on a case-by-case basis. The agency assigned jurisdiction would have sole responsibility for regulating both radioactive and hazardous chemical waste.
- (2) Mixed waste at DOE facilities could be made subject to all Subtitle C and state technical requirements (adapted to the AEA as necessary) but not formal EPA or state permitting. This would require legislation by Congress to overcome the *L.E.A.F. v. Hodel* court decision. Such legislation would reaffirm the DOE/EPA MOU of February 22, 1984.
- (3) Mixed waste of whatever type (high-level, low-level or TRU) would be subject to the dual jurisdiction of DOE and EPA and would require RCRA permitting. Inconsistencies between RCRA and AEA would be resolved administratively. The states would assume the regulatory role as soon as EPA authorized their mixed waste program.
- (4) The proposed byproduct rule of DOE will become final and all high-level and TRU mixed waste will be exempt from RCRA at DOE facilities; only mixtures of low-level radioactive waste and chemical waste will be under RCRA jurisdiction.

If EPA, NRC and some Congressional viewpoints and interpretations prevail, any mixtures of radioactive waste and hazardous chemical waste will be subject to dual regulation under both the RCRA and the AEA. Distinctions between high-level, TRU and low-level waste may not suffice to sustain exclusive DOE jurisdiction over high-level and TRU waste. "Byproduct material" qualifying as "direct process waste" under DOE's proposed redefinition may not escape RCRA regulation so long as hazardous chemicals are present in the waste stream.

REFERENCES

1. Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901 et seq.
2. Atomic Energy Act of 1954, 42 U.S.C. 2011 et. seq.

3. 42 U.S.C. Section 2201.
4. 586 F. Supp. 1163 (E.D. Tenn. 1984).
5. 212 F. Supp. 95, 332 F. 2d 629.
6. 42 U.S.C. Section 2018.
7. GARRISH, THEODORE J., General Counsel, U.S. Department of Energy (U.S. DOE), December 2, 1983, Memorandum to the Secretary of Energy on the "Relationship of the Resource Conservation and Recovery Act to the Department of Energy's Activities Under the Atomic Energy Act."
8. U.S. DEPARTMENT OF ENERGY (U.S. DOE), June, 1983, "Guidance for Preparing Implementation Plans for Hazardous and Radioactive Mixed Waste Management," U.S. DOE Office of Operational Safety, Washington, D.C.
9. U.S. DEPARTMENT OF ENERGY (U.S. DOE) and U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA), February 22, 1984, Memorandum of Understanding Between the U.S. DOE and the U.S. EPA for Hazardous Waste and Radioactive Mixed Waste Management, Washington, D.C.
10. 42 U.S.C. Section 2018.
11. 50 Fed. Reg. 45736.
12. WALKER, MARY L., Assistant Secretary for Environment, Safety and Health, U.S. Department of Energy, April 10, 1986, Statement before the Subcommittee on Energy Conservation and Power and the Subcommittee on Commerce, Transportation and Tourism of the Committee on Energy and Commerce, U.S. House of Representatives, Washington, D.C.
13. BARKER, JOHN R., Director, Office of Environmental Audit and Compliance, U.S. Department of Energy, March 25, 1986, Statement before the Subcommittee on Environmental Pollution and the Subcommittee on Nuclear Regulation of the Committee on Environment and Public Works, U.S. Senate, Washington, D.C.
14. 45 Fed. Reg. 33151.
15. 45 Fed. Reg. 33151, May 19, 1980.
16. BARNES, A. JAMES, Acting General Counsel, Environmental Protection Agency (EPA), June 22, 1983, Memorandum to Pasquale A. Albeveico, Acting Director, Office of Federal Activities, EPA.
17. BOWERMAN, B. S., et. al., "An Analysis of Low-Level Wastes: Review of Hazardous Waste Regulations and Identification of Radioactive Mixed Wastes," NUREG/CR-4406, BNL-NUREG 51933, November, 1985.
18. WILLIAMS, MARCIA E., Director, Office of Solid Waste, U.S. Environmental Protection Agency, Mar. 25, 1986, Statement before the Subcommittee on Environmental Pollution and the Subcommittee on Nuclear Regulation of the Committee on Environment and Public Works, U.S. Senate, Washington, D.C.
19. DAVIS, JOHN B., Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Mar. 25, 1986, Testimony before the Subcommittee on Nuclear Regulation and the Subcommittee on Environmental Pollution of the Committee on Environment and Public Works, U.S. Senate, Washington, D.C.