

LEGAL AND REGULATORY PROBLEMS ASSOCIATED WITH THE
GENERATION OF MIXED HAZARDOUS AND RADIOACTIVE WASTE

Donald J. Silverman
Newman & Holtzinger, P.C.
1615 L Street, N.W.
Washington, D.C. 20036

ABSTRACT

Dual EPA and NRC regulation of mixed hazardous and radioactive waste may create a number of legal and regulatory problems for mixed waste generators. The paper briefly describes the history and current regulatory status of the issue, identifies the basic RCRA requirements that are likely to be imposed upon mixed waste generators, identifies the principal regulatory difficulties that mixed waste generators may encounter, and suggests some solutions to those problems. Although NRC and EPA are only beginning to resolve the mixed waste issue, its ultimate resolution may have significant implications for generators, and may affect the future availability of mixed waste disposal capacity.

INTRODUCTION

Until recently, it had generally been assumed that the Environmental Protection Agency (EPA) regulated the field of hazardous waste disposal, that the Nuclear Regulatory Commission (NRC) regulated the field of low-level radioactive waste disposal, and that the regulatory authorities of the two agencies were relatively distinct. Although it was understood that a given waste product might contain both hazardous and radioactive components (i.e., "mixed waste"), the presence of the radioactive component was thought by many to exempt the entire waste product from EPA regulation. That assumption may have stemmed from the language of section 1004(27) of the Resource Conservation and Recovery Act (RCRA), which excludes "source, special nuclear, or byproduct material" regulated by the NRC from the definition of "solid waste," and thus from the definition of hazardous waste. 42 U.S.C. § 6903(27) (1983).

Both the EPA and the NRC, however, have taken the position that, while section 1004(27) may exclude the radioactive component of mixed waste from EPA regulation, EPA, nevertheless, retains authority to regulate the hazardous component. The result of this interpretation of the agencies' respective responsibilities is to subject a large number of low-level radioactive waste generators, processors, transporters and disposal site operators to the extensive and complex requirements of RCRA.

The purpose of this paper is to identify some of the potential legal and regulatory problems associated with dual NRC and EPA regulation of mixed waste, by focusing primarily on those problems that may be encountered by mixed waste generators. After briefly describing the history and current regulatory status of the issue, the paper will address the basic RCRA requirements that are likely to be imposed upon mixed waste generators, and will identify the principal difficulties which mixed waste generators may face in attempting to meet those requirements. Where problems are identified, the paper suggests ways in which such problems can be avoided -- either through action by the regulatory agencies or by generators themselves.

HISTORY AND CURRENT REGULATORY STATUS

For several years, the NRC and EPA have attempted to more clearly define their regulatory responsibilities over mixed waste. While prior to 1985, the agencies' efforts had taken on little momentum, during development of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (42 U.S.C. § 2021b *et seq.* (1986)), (Amendments Act), the mixed waste issue took on increasing prominence.

The Amendments Act, among other things, established a series of milestones to be met by states

and regions in their development of new low-level radioactive waste disposal facilities, and authorized penalties and surcharges to be levied against states and regions which do not comply with those milestones. While attempting to spur the development of new low-level radioactive waste disposal facilities, Congress also sought to assure that all such waste would have a designated place for disposal and, thus, to avoid the creation of categories of "orphan" waste. Mixed waste was a potential "orphan."

Although it was hoped that the Amendments Act would resolve how best to apportion NRC and EPA regulatory responsibility, just prior to the Act's passage, Congress chose to delete provisions addressing the disposal of mixed waste. The effect of that decision was to leave mixed waste in a continuing regulatory limbo.

In hearings subsequent to the passage of the Amendments Act, Congress expressed its desire for the NRC and EPA to attempt to resolve the problem on an administrative level, rather than through legislative intervention. Accordingly, the NRC and EPA Staffs have been reviewing the gamut of their respective requirements in a difficult and time consuming effort to determine areas of potential conflict, and to identify how those requirements can be applied in a coordinated, consistent and practical manner.

The NRC and EPA have only begun to provide guidance on the mixed waste issue. General guidelines advising generators on how to identify whether they are producing mixed waste have been signed by the agencies and should be published shortly, and brief comparative analyses of EPA and NRC requirements are being prepared. The agencies are also drafting a set of ten "location guidelines" which merge the low-level radioactive waste disposal facility site suitability requirements of 10 CFR § 61.50, with the EPA's hazardous waste management facility location standards (principally 40 CFR § 264.18). The various guidance documents will be discussed in greater depth below, in the context of particular issues of importance to mixed waste generators.

Although the agencies have begun to flesh out how they propose to mesh their regulatory responsibilities, that process can be expected to take years to complete. Given the extensive and complex nature of both NRC and EPA requirements, it seems highly likely that areas will be identified where application and enforcement of those requirements, in their present form, will be unnecessary, inappropriate, impractical or impossible. Thus, the agencies will need to be sensitive to potential inconsistencies, as well as to areas where unnecessary or impractical requirements can be eliminated.

AM I A GENERATOR OF MIXED WASTE?

The first question a low-level radioactive waste generator must ask, of course, is: "What precisely is mixed waste and do I generate it?" The NRC and EPA are attempting to assist generators in resolving this question by preparing guidance on the definition and identification of mixed waste. Under the agencies' draft definition, mixed waste is that waste which: (1) satisfies the definition of low-level radioactive waste in the Amendments Act; and (2) contains hazardous waste that is either listed as a hazardous waste in EPA regulations (40 CFR Part 261, Subpart D), or exhibits any of

the hazardous waste characteristics identified in those regulations (40 CFR Part 261, Subpart C).

The Amendments Act, of course, defines low-level radioactive waste as that waste which is not classified as high-level radioactive waste, spent nuclear fuel, or by-product material as defined by section 11e.(2) of the Atomic Energy Act (AEA) (i.e., mill tailings). 42 U.S.C. § 2014(e)(2)(1986). Once a generator recognizes that it produces low-level radioactive waste, it must then determine whether the waste contains a hazardous component.

40 CFR Part 261, Subpart D lists a large number of wastes already determined to be hazardous by the EPA. According to EPA regulations, and the agencies' draft guidance, a generator should determine whether its low-level radioactive waste contains any listed hazardous components on the basis of its knowledge of the characteristics of the process that produces the waste. In other words, if the process which produces the waste stream utilizes listed hazardous materials, then the generator should "suspect" that it is producing mixed waste.

If no listed hazardous substance is present, a generator must still determine whether it is producing waste which exhibits any of the hazardous "characteristics" identified in 40 CFR Part 261, Subpart C. Those characteristics include ignitability (40 CFR § 261.21), corrosivity (40 CFR § 261.22), reactivity (40 CFR § 261.23), and Extraction Procedure (EP) toxicity (40 CFR § 261.24), and are defined in greater depth in the cited regulations. To make that determination, a generator may, as described earlier for listed hazardous components, rely upon its knowledge of the relevant process and materials which produce the waste. Only if there is reason to suspect the presence of a "characteristic" waste, should a generator test representative samples of the waste. 40 CFR § 262.11(c). Some appropriate test methods are described in 40 CFR Part 261, Appendix I.

The ability of generators to make reasonable judgments regarding the presence of hazardous components, without testing, is particularly important with respect to mixed waste, since such testing can result in unnecessary occupational exposures to radioactive materials, contrary to the NRC's worker protection requirements in 10 CFR Part 20. Pursuant to those requirements, NRC licensees must, among other things, undertake reasonable efforts to maintain occupational exposures to radiation "as low as reasonably achievable" (ALARA).

At least in general terms, the agencies appear to have recognized the potential inconsistency between EPA testing requirements and NRC ALARA requirements. They have explicitly stated that, given ALARA considerations, testing should be undertaken "only . . . if" there is reason to suspect the presence of a RCRA-regulated substance. Furthermore, it appears that a generator may rely upon its practice of segregating low-level radioactive waste from hazardous waste, and need not "demonstrate routinely" that "every" container of low-level radioactive waste does not contain hazardous waste.

Moreover, section 1006 of RCRA prohibits EPA from imposing requirements which are "inconsistent" with AEA requirements. 42 U.S.C. § 6905(a) (1983). The agencies' draft guidelines define "inconsistent" requirements as those which, among other

things, would "increase the radiation hazard, [or] would be technically infeasible. . . ." Thus, section 1006 appears to require EPA to waive requirements which are inconsistent with AEA requirements, and the agencies' draft guidance instructs NRC licensees that "variances" may be requested.

Although the agencies' proposed guidance appears to be sound, the manner in which they apply it in practice, deserves careful scrutiny. Generators must be permitted to make reasonable assumptions regarding the absence of hazardous components in lieu of actual testing. Even where hazardous characteristics are suspected, there may be circumstances where ALARA considerations outweigh the need to identify the hazardous constituent (particularly where there is reason to believe that the nature of the hazard from the RCRA - regulated substances is small). If the benefits of identifying the hazardous component do not exceed the costs of exposing workers to the radioactive component, tests should not be required.

DO I QUALIFY FOR AN EXEMPTION AS A SMALL QUANTITY GENERATOR?

The next question that a generator must ask if it has determined that it is, in fact, producing mixed waste, is "how much do I produce?" Under recently amended EPA regulations (40 CFR § 261.5), a generator is "conditionally exempt" from RCRA regulation if it produces no more than 100 kilograms (kg) (or about 220 pounds) of hazardous waste in a calendar month. Although many mixed waste generators may immediately conclude that they exceed the 100 kg per month quantity limitation, more careful analysis is warranted.

In general, when a hazardous waste is mixed with a non-hazardous waste, the entire mixture is considered hazardous and subject to full EPA regulation. There appears, however, to be an exception carved out from the general requirement.

Pursuant to 40 CFR § 261.5(h), if a generator produces no more than 100 kg per month of hazardous waste, and that waste is mixed with other non-hazardous waste, the generator will still qualify for conditionally exempt status, unless the overall resulting mixture meets any of the hazardous characteristics identified in 40 CFR Part 261, Subpart C. Thus, mixed waste generators should not necessarily assume that the entire mixed waste product is considered in determining the availability of the small quantity generator exemption.

The problem with mixed waste, of course, is the difficulty in determining the weight of the hazardous component without subjecting testing personnel to unnecessary radiation exposures. Methods must, therefore, be developed which will allow mixed waste generators to ascertain the weight of the hazardous component without detailed testing. In some cases, it may be possible for a generator to determine that it meets the small quantity generator weight limitation based upon its knowledge of the process and materials which produced the waste.

If a generator does determine that it produces no more than 100 kg of hazardous waste per month, it need not comply with the requirements otherwise applicable to hazardous waste generators. It must, of course, continue to verify that it is not exceeding the 100 kg per month weight limitation, and may not accumulate in excess of 1,000 kg of hazardous waste on-site at any time.

Generators of "acute" hazardous waste, as listed in 40 CFR Part 261, Subpart D, are treated more stringently. They may not generate or accumulate more than one kg per month of such waste.

Unlike other hazardous waste generators, a generator of no greater than 100 kg of hazardous waste per month need not notify the EPA regarding the nature of its activities nor the types of hazardous waste it handles. Furthermore, it need not dispose of such waste in a RCRA-permitted hazardous waste disposal facility, but instead, may dispose of the waste on-site, or in a state-permitted municipal or industrial solid waste disposal facility. The presence of the radioactive component of mixed waste, however, will make these options generally unavailable to mixed waste generators.

The EPA regulations do not, on their face, authorize disposal of mixed waste by small quantity generators at licensed low-level radioactive waste disposal facilities. However, if small quantities of hazardous waste can be disposed of in solid waste landfills and other facilities not permitted under RCRA, then generators should be permitted to dispose of mixed waste containing similar quantities of hazardous waste in low-level radioactive waste disposal facilities without subjecting such generators to full RCRA regulation, and without the need for the disposal facilities to obtain RCRA permits. The controls over such waste at licensed low-level radioactive waste disposal sites should provide more protection of the public health and safety from the hazardous components of the waste than on-site disposal, or municipal or industrial solid waste disposal facilities.

Special rules apply to small quantity generators who produce more than 100 kg, but less than 1,000 kg of hazardous waste per month. 40 C.F.R. § 262.34. While most hazardous waste generators may only store waste on-site for 90 days, those who generate 100 to 1,000 kg per month may store on-site for 180 days, and are subject to a number of other relaxed requirements. Generators who must dispose of their waste at a distance of 200 miles or more off-site, may store, under identical requirements, for 270 days. In both cases, generators may not accumulate more than 6,000 kg of hazardous waste on-site at any time.

Unlike other hazardous waste generators, such a generator need not develop a contingency plan nor implement full emergency procedures, need not meet certain personnel training requirements, and need not comply with some reporting and record keeping provisions. Generators of between 100 and 1,000 kg of hazardous waste per month must, however, meet the remaining requirements imposed upon other generators (discussed in the next section below), and must undertake certain measures in the event of an accident. 40 CFR §§ 262.34(d), 262.44.

If a generator accumulates waste in excess of the applicable time limits, it will not only be considered a waste generator, but will also be considered an "operator" of a "storage" facility and will, therefore, be subject to the substantially more complex and detailed set of requirements imposed by 40 CFR Parts 264, 265, and 270. Generators that produce no more than 100 kg of hazardous waste per month, but that accumulate more than 1,000 kg of such waste at any time, are subject to the special rules discussed above, as well.

WHAT IF I PRODUCE MORE THAN 1,000 KILOGRAMS OF HAZARDOUS WASTE PER MONTH?

If a generator produces in excess of 1,000 kg of hazardous waste per month, then the full requirements imposed by RCRA on hazardous waste generators are applicable, as set forth in 40 CFR Part 262. Pursuant to those requirements, a generator must, (as described earlier) determine, through tests or knowledge of its process and materials, if it generates hazardous waste (40 CFR § 262.11), and must obtain an EPA identification number (40 CFR § 262.12). It must prepare a manifest before shipping waste off-site which will be used to track the waste through to its final destination (40 CFR § 262.20), and must package, label, mark and placard the waste in accordance with Department of Transportation (DOT) regulations (40 CFR §§ 262.30-33). It must also complete various reports to the EPA, and must retain copies of the manifest and reports. 40 CFR §§ 262.40-43. Generators must comply with specific technical requirements governing the storage of waste in containers or tanks (40 CFR Part 265, Subparts I and J, respectively), and regulations governing personnel training (40 CFR § 265.16), and emergency preparedness and contingency plans (40 CFR Part 265, Subparts C and D, respectively).

The requirements governing manifests require, among other things, that a generator certify that it has a program in place "to reduce the volume and toxicity of [hazardous] waste generated to the degree . . . [it] determine[s] to be economically practicable," and that it has complied with those waste minimization requirements. 42 U.S.C. § 6922(b) (1986) and 40 CFR Part 262, Appendix, Item 16. While these provisions (one statutory in nature) require that waste be minimized or treated to the extent "economically practicable," they do not explicitly allow a generator to consider, with respect to mixed waste, the potentially adverse radiological consequences of such activities.

Like the requirements governing waste testing, this is an area where it is appropriate to recognize that, in some cases, ALARA considerations will outweigh the benefits of reducing the volume or toxicity of the hazardous component. Since neither the statutory language nor the Uniform Hazardous Waste Manifest appear to authorize consideration of ALARA principles in deciding whether to reduce or treat the waste, there is a potential conflict between EPA and NRC requirements in this regard. The conflict can be resolved if the agencies acknowledge that a potential inconsistency exists (i.e., that meeting the RCRA requirement will increase the radiation hazard), and do not require mixed waste generators to reduce or treat waste unless the benefits of such activities outweigh the resulting occupational exposures.

One of the greatest potential concerns for a mixed waste generator, however, is the possibility of inadvertently being classified as an "operator" of a "storage" facility, and thereby being subjected to the requirements governing such facilities. Under EPA regulations, if a generator accumulates waste on-site for a period of time in excess of those described earlier, it will be deemed to be an "operator" of a "storage" facility, and will be subject to the applicable requirements of 40 CFR Parts 264, 265 and 270. 40 CFR § 262.34. Although a full discussion of those requirements is beyond the scope of this paper, they are extensive and far exceed those applicable to hazardous waste generators.

They include, among other things, requirements to obtain an EPA permit, seismic and floodplain location standards, preparedness and contingency plan provisions, manifest requirements, groundwater monitoring and protection standards, financial responsibility regulations, closure requirements, and regulations governing various hazardous waste management methods. A mixed waste generator will want to do everything in its power to avoid being inadvertently classified as an operator of a storage facility.

ENFORCEMENT AND LIABILITY

The application of hazardous waste requirements to mixed waste generators, of course, carries with it the potential for EPA, as well as NRC enforcement action. Most low-level radioactive waste generators should be generally familiar with the NRC's enforcement authority and policies. EPA has a number of enforcement mechanisms which may be applied to mixed waste generators.

EPA may issue "compliance orders" requiring immediate compliance with applicable requirements or may file a civil suit seeking appropriate relief. EPA may also levy civil penalties not to exceed \$25,000 per day of noncompliance for each violation. In issuing civil penalties, EPA must take into account both the "seriousness" of the violation and the extent to which the party has engaged in "good faith efforts" to comply with the applicable requirements. Accordingly, EPA has developed a series of violation levels somewhat similar to the "severity levels" of NRC violations. Persons who are subject to EPA compliance orders are entitled to a public adjudicatory (i.e., trial-type) hearing. 42 U.S.C. § 6928 (1986).

EPA also has authority to sue and issue orders if it finds that conditions exist which "may present an imminent and substantial endangerment to health or environment." Pursuant to this provision, EPA may sue or order "any person" (including past or present generators) who has "contributed or who is contributing" to the condition. 42 U.S.C. § 6973 (1986). This provision is similar to a provision of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) which has been recently utilized to initiate clean-up of the Maxey Flats Nuclear Disposal Site, and which establishes liability, without fault, for cleanup costs. RCRA also imposes criminal penalties for "knowing" violations of applicable requirements, including fines and imprisonment. 42 U.S.C. § 6928 (1986).

Finally, unlike the AEA, RCRA authorizes "citizen suits" for regulatory violations, unless the EPA "has commenced and is diligently prosecuting a civil or criminal action." Although individual entities may sue past and present contributors to conditions which allegedly "may present an imminent and substantial endangerment to health or the environment," no such suit is permitted if, among other things, EPA has "incurred costs" to initiate a "Remedial Investigation and Feasibility Study" (RI/FS) under section 104 of CERCLA, and if it is "diligently proceeding" with remedial action. 42 U.S.C. § 6972 (1986). The potential future use (or misuse) of RCRA citizen suits in connection with the generation of mixed waste is a serious concern.

STATE REGULATORY AUTHORITY

One of the greatest concerns associated with mixed waste regulation is the potential for individual states to develop and enforce inconsistent or burdensome regulatory requirements. Pursuant to 40 CFR Part 271, the EPA may authorize individual states to administer and enforce hazardous waste regulatory programs in lieu of the Federal program. Such state programs must be "consistent" with both the Federal program and other state programs, may not "unreasonably restrict . . . the free movement" of waste for treatment, storage or disposal, and must have some basis in "human health and environmental protection." 40 CFR § 271.4. However, such programs may, apparently, be more stringent than Federal requirements. At the present time, most states have implemented hazardous waste regulatory programs.

Recently, however, the EPA published a notice (51 Fed. Reg. 24504 (July 3, 1986)) informing states that, in order to obtain or maintain approved hazardous waste programs, they must demonstrate that they possess the authority to regulate mixed waste. To do so, such states must submit an attorney general's opinion stating that such regulatory authority exists, and must provide EPA with a copy of all applicable statutory and regulatory provisions. Apparently, EPA also proposes to verify that such programs are being properly implemented. At the present time, only one state (Colorado) has applied for and received the necessary EPA authorization.

The difficulty with this approach is that it requires the states to administer and enforce regulatory authority over mixed waste before the Federal government itself has determined how it proposes to perform that task. Given the dearth of Federal guidance to date, it is difficult to imagine states not imposing (through regulation or practice) requirements that may be unnecessary, burdensome or inconsistent with the developing Federal program. Under the circumstances, there is no practical way in which consistency of state programs with Federal requirements can be assured. Accordingly, it seems premature to require states to begin regulating mixed waste before the Federal program is better defined.

IMPLICATIONS FOR THE DEVELOPMENT OF NEW LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITIES

Although most of the impacts on mixed waste generators resulting from dual NRC and EPA regulation result from the direct application of RCRA "generator" requirements, there is another less direct, but nonetheless potentially serious impact, resulting from dual regulation. Under the Amendments Act, numerous regions and states are in the process of developing new low-level radioactive waste disposal facilities. If these facilities are to accept mixed waste, it appears that they will be required to obtain RCRA permits and to meet the requirements applicable to owners and operators of hazardous waste disposal facilities. EPA is currently in the process of developing additional standards for the siting of hazardous waste disposal facilities which are not anticipated to be promulgated before September, 1988. However, by January 1, 1988, the Amendments Act requires states to have prepared a "siting plan" for their new disposal facilities containing a number of specific elements.

The absence of final EPA siting standards introduces an element of uncertainty regarding what standards may ultimately be applied to these new disposal facilities and could hamper development of new disposal sites. EPA and NRC are preparing joint siting guidelines and will encourage regions and states to closely consult with them in their planning of new facilities. The draft siting guidelines do not appear to be substantially different from those already applicable to new low-level radioactive waste disposal facilities pursuant to 10 CFR § 61.50. While joint siting guidelines are a step in the right direction, the wholesale application of RCRA requirements to existing low-level radioactive waste disposal facilities could result in the refusal of such facilities to apply for permits and to accept mixed waste.

Apart from disposal facility siting issues, the host of technical requirements governing the design and operation of hazardous waste disposal facilities will need to be reconciled with NRC's 10 CFR Part 61 requirements. Draft comparative analyses of a number of EPA's and NRC's disposal facility requirements have been prepared by the agencies. Those analyses suggest that most of the EPA requirements will, in some manner, be applied to low-level radioactive waste disposal facilities desiring to accept mixed waste.

Shipment of mixed waste to low-level radioactive waste disposal facilities is likely to be the principal method of disposal of such waste. Under the circumstances, it is essential that, in implementing EPA requirements for low-level radioactive waste disposal facilities that handle mixed waste, EPA and NRC carefully weigh the effects of their actions on the availability of mixed waste disposal capacity. The agencies should promptly determine, on a generic basis, what RCRA requirements need be applied to such facilities in order to protect the public health and safety, and should apply no more than those requirements.

It seems highly likely that many of the NRC's existing requirements, as well as the current design of, and disposal practices at, the existing low-level radioactive waste disposal facilities, will be more than adequate to achieve a level of protection of the public and the environment commensurate with that contemplated by RCRA. The redundant or unnecessary application of RCRA requirements to such facilities can only be counterproductive to the objective of ensuring the safe and timely disposal of mixed waste. While specific aspects of NRC and EPA requirements may not technically or literally be inconsistent, the agencies must consider the practical effect of applying and enforcing redundant or unnecessary standards.

CONCLUSION

The NRC and EPA have only begun to define the manner in which their respective requirements will be applied to the generation of mixed hazardous and radioactive waste. Generators should follow that process closely and should assistencies in developing a rational and workable regulatory scheme. While inconsistent regulatory requirements must be resolved, it is equally important to assure that unnecessary or redundant requirements are also addressed, in order to provide an efficient regulatory program and to assure the future availability of mixed waste disposal capacity.