technique, and demonstrate that the radiation emitted from the waste is indistinguishable from representative background levels. Licensees, not already authorized to hold wastes for decay-in-storage, that wish to hold mixed waste for decay-in-storage may need to obtain a license amendment from NRC prior to storing the mixed waste. Many licensees in possession of mixed waste and who use decay-in-storage will be required to obtain an amendment to store the mixed waste for decay prior to disposal as hazardous waste. The following should be included in a license amendment request to NRC:

• A description of the survey procedures to be used during storage and prior to release of the waste to a hazardous waste-only facility,

• A description of the procedures for segregating and tracking waste from placement in storage to release to a hazardous waste-only facility,

 A commitment that waste will be held for a minimum of ten half-lives prior to performing the final radiation survey before release to a hazardous waste-only facility and

• A statement that the decayed radioactive waste will not be released to a hazardous waste-only facility unless the radiation emitted from the waste is indistinguishable from background radiation.

While NRC licensing amendments address the management of the radioactive component of these wastes, they generally have no effect on the applicable RCRA storage provisions. Storage requirements under RCRA should ideally be implemented in a manner that provides appropriate protection of health and the environment, without setting up undue impediments to well conducted decay programs.

Under RCRA, a storage permit (or interim status) is generally required to manage the wastes during the decay period if this storage period exceeds 90 days. However, even with such a permit, a question has been raised as to whether accumulation of mixed wastes during the decay period violates the Land Disposal Restrictions (LDR) storage prohibition in RCRA section 3004(j). This latter provision, and regulations at 40 CFR 268.50, generally prohibit generators and owner/operators of hazardous waste treatment, storage, or disposal facilities from storing hazardous wastes that are restricted from land disposal under the LDR program, except when storage is "solely for the purpose of accumulation of such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal". Exceptions are recognized for hazardous wastes that have been treated to LDR treatment specifications, and for wastes exempted by virtue of one of the LDR variance authorities, i.e., a capacity variance, a no migration variance, or a case-by-case extension. In addition, RCRA and regulations at 40 CFR 268.50(a) define a conditional exception for on-site storage in tanks or containers, where the generator complies with the regulations at 40 CFR 262.34 requirements, and the storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal.

EPA believes that the limited periods of approved decay-in-storage of mixed waste do not violate the RCRA section 3004(j) storage prohibition. EPA believes this interpretation is supported by the following consideration.

EPA considers decay-in-storage a necessary and useful part of the best demonstrated available technology (BDAT) treatment process. "Decay-in-storage" meets the definition of "treatment" in 40 CFR 260.10, insofar as it is a method or technique designed to change the physical character or composition (amount of radioactivity) in the mixed wastes. Decay-in-storage subsequently makes the treatment of the hazardous constituents safer, and renders them safer for transport.

As a result, the LDR storage prohibition does not apply to mixed waste held pursuant to an NRC approved decay-in-storage program during the period of decay. EPA emphasizes that the inapplicability of the storage prohibition is coincident with the period of decay; once the waste has decayed to levels that are indistinguishable from background levels, the RCRA 3004(j) and 40 CFR 268.50 provisions apply fully to any additional storage that occurs prior to completing the required BDAT treatment.

Inspection/Surveillance Requirements for Stored Mixed Waste

Under RCRA, waste storage containers must be inspected on a weekly basis (40 CFR 264.174) and certain above-ground portions of waste storage tanks on a daily basis (40 CFR 264.195(b)(1)). The purpose of these inspections is to detect leakage from or deterioration of containers. NRC recommends that waste in storage be inspected on at least a quarterly basis. Licensees have expressed concerns that daily or weekly "walkthrough" inspections of high-activity mixed waste may result in increased exposures to workers at their facilities and thus violate their As Low as Reasonably Achievable (ALARA) programs.

The RCRA regulations and permit guidance do not require that inspections of mixed waste in storage must be "walk-through" inspections. NRC and EPA recognize that increased exposures to workers may result from daily or weekly "walk through inspections and suggest that licensees consider using methods other than walkthrough inspections as a means to inspect high-activity mixed waste in storage. Alternative methods for inspection could include the use of remote monitoring devices to determine if a waste container is leaking or television monitors, or other means that are capable of detecting leakage or deterioration. Such alternative methods would comply with the RCRA regulation and would avoid the additional exposures of walk-through inspections. However, these measures should be coupled with a means to promptly locate and segregate or remediate leaking containers.

Flexibility does exist in the RCRA regulations to allow use of such alternative inspection procedures at frequencies specified in the hazardous waste regulations and in the facility's waste analysis plan. Once a facility receives a RCRA permit, these procedures and frequencies are included in the permit. Facilities with existing RCRA permits may have to request a permit modification to change stated inspection procedures (40 CFR 270.42).

NRC licensees that have incorporated specific inspection procedures in their radioactive materials licenses or procedures referred to in license conditions should contact the appropriate NRC or State office to determine if the alternative inspection procedure will require the license to be amended.

Allowable Storage Practices—Dense Packing Practices

NRC currently allows containers with low exposure rates to be used to provide radiation shielding for containers with higher exposure rates. Licensees have expressed concerns that RCRA inspection requirements (40 CFR 264.174, 264.195(b)(1), 265.174, and 265.195(a)(1)) may restrict this use of low exposure rate containers and that such a restriction could cause an increase in worker exposures.

The agencies agree that using low-exposure rate containers for radiation shielding is a reasonable practice. However, concerns about the potential consequences of a container leaking liquid high-activity mixed waste must also be addressed. Containers may be used for radiation shielding, so long as a licensee is capable of detecting, locating the source, and responding to a release within 24 hours of detection to mitigate any significant release. An example of such a capability might include a remote monitoring capability coupled with a means for promptly locating and responding to such a release. So long as the container configuration does not compromise the ability to detect or respond to container leakage or deterioration, the configuration complies with RCRA requirements.

Waste Compatibility, Segregation and Spacing Requirements

In general, any facility that treats, stores or disposes of RCRA hazardous wastes (including mixed waste) must take special measures in handling ignitable, reactive, and potentially incompatible wastes. These measures are outlined in 40 CFR 264.17, including placing "No smoking" signs in areas where ignitable or reactive wastes present hazards, separating or protecting wastes from sources of ignition or reaction, and taking special precautions to avoid explosive, heat or gas generating reactions. Facilities must document their compliance with these measures (40 CFR 264.17(c)).

Additional requirements for ignitable, reactive, and incompatible wastes managed in tanks and containers are found in Subparts I and J of 40 CFR Parts 264 and 265. For example, 40 CFR 264.177 and 265.177 require that wastes managed in containers that are stored close to incompatible wastes or other materials "must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device' to prevent ignition or reaction. This separation, however, can occur in the same storage facility and does not necessitate the construction of an entirely separate storage unit. Hazardous wastes also may not be placed in unwashed or contaminated units that previously contained incompatible