UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SEP 12 1980

TO ALL INDUSTRIAL LICENSEES

There are a number of steps licensees engaged in industrial uses of licensed material can take under NRC rules to substantially reduce, and in some cases eliminate, the need to send radioactive waste to commercial low-level waste disposal facilities. By taking advantage of these alternatives and following good waste management practices, licensees can often reduce the risk of having their programs impacted through further curtailment of commercial waste disposal facilities. Some of the more important steps that can be taken are to:

1. Segregate radioactive waste from non-radioactive waste to reduce unnecessary volume. This simply requires a little time and discipline in use of radioactive materials at a licensee's facility.

2. Compact radioactive waste to the extent practicable to reduce volume.

3. Hold waste with short-lived radionuclides in storage for decay to background levels, then dispose of it in the ordinary trash. This procedure requires a license amendment unless your license already contains provision for this method. (See Enclosure 1 for information to be submitted with the amendment request).

4. Release certain materials into the sanitary sewage system in accordance with 10 CFR Part 20.203. No license amendment is required but 10 CFR Part 20.203 should be carefully reviewed to stay within limits.

5. Industrial licensees who use relatively long-lived sealed sources in general may only dispose of their sources by transfer to an authorized recipient. However, even in cases where only sealed sources are used, if the half-life of the source is less than 90 days, considerations should be given to holding the source in storage until it decays to background.

Judicious use of these five steps can substantially reduce the volume of waste shipped to burial grounds. Some industrial licensees using only short-lived radionuclides can eliminate waste shipments.

Waste from industrial licensees involved in biomedical research or similar activity is generally somewhat more difficult to manage. Two of the most common problems are disposal of liquid scintillation counting waste (LSCW) and animal carcasses. The most frequently used radioisotopes in both are tritium and carbon-14. LSCW presents a particularly troublesome problem due to the flammability and toxicity of the solvents. Disposal of LSCW has been given special consideration by NRC. The staff has investigated alternatives to managing these wastes and the results have been published in NUREG-0656.

Consideration should be given to disposal by incineration for LSCW and laboratory animals containing small amounts of tritium and carbon-14. This method requires a license amendment; 10 CFR Part 20.305 contains the provisions for incineration. Enclosure 2 identifies the information to be submitted with an amendment request for incineration.

There are other provisions in the regulations that cover waste disposal. We have mentioned only the few that are most easily and commonly used. Other regulatory provisions include:

1. Disposal by burial in soil in accordance with 10 CFR 20.304 (A proposed rule change is under consideration to delete this provision. It will likely be replaced by a provision which requires specific approval by license amendment for burial).

2. Release as effluents to unrestricted areas pursuant to 10 CFR Part 20.106. In keeping with the ALARA concept, this method should normally be used only for releases incident to the procedures involved.

We suggest that you review and consider alternatives to commercial land burial for the management of your low-level radioactive waste. Implementation of some of these alternatives such as compaction, hold for decay and incineration may require an amendment to your license. Amendment requests should be submitted to the Material Licensing Branch through the use of normal channels. If you have any questions concerning what actions require an amendment to your license or any other questions concerning NUREG-0656, they should be directed to the Material Licensing Branch (301) 427-4228. Copies of the NUREG-0656 may be obtained from the Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Sincerely,

William L. Wallis for

Vandy L. Miller, Chief
Material Licensing Branch
Division of Fuel Cycle and
Material Safety

Enclosures:
1. Information to be submitted When Requesting Amendment to Dispose of Radioactive Waste by Decay-In-Storage.

2. Information Required for Commission Approval of Treatment or Disposal by Incineration.

Enclosure 1

Information to be Submitted When Requesting Amendment to Dispose of Radioactive Waste by Decay-In-Storage Method

This is in reference to your request for information concerning authorization to dispose of radioactive waste via decay-in-storage. In order to approve such an amendment request, we need the following information:

1. Please submit a diagram of the area where the waste will be decayed-in-storage. Show the type, location, and thickness of shielding that you will have available in this area of your diagram.

   Identify adjacent unrestricted areas located across the walls from the storage area and show that adequate steps have been taken to assure that radiation levels do not exceed the limits specified in 10 CFR 20.105 (enclosed).

2. Describe your security measures for the decay-in-storage area.

3. Confirm that radiation levels in this area will be surveyed and recorded at least weekly.

4. Describe your procedures for monitoring the waste to assure that it has decayed to background levels prior to disposal. As a minimum, your description should include these points:

   a. Monitor the waste in a low background area.

   b. Monitor with a low level GM type survey meter as appropriate for contamination surveys. Use the most sensitive scale.

   c. Remove all shielding prior to monitoring.

   d. Maintain records of these surveys as required under 10 CFR 20.

Be certain to submit your amendment request in duplicate. Unless your activity is fee exempt, your request should be accompanied by the appropriate amendment fee. Refer to 10 CFR 170.

Enclosure 2

INFORMATION REQUIRED FOR COMMISSION APPROVAL OF TREATMENT OR DISPOSAL BY INCINERATION

Revised October 3, 1979

1. State specifically the isotopes you wish to incinerate. For each isotope listed, you should submit calculations demonstrating that air concentrations of the effluents at the stack are in accordance with the requirements of Section 20.106 of 10 CFR Part 20.

2. Submit the characteristics of the incinerator such as height of the stack, height of and distance to buildings in the surrounding areas, rated airflow of the incinerator in cubic feet per hour or similar units and its proximity to any air intake ducts.

3. The gaseous effluent from the incinerator stack should not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20, when averaged over a twenty-hour (24) hour period.

4. In order to be in compliance with the ALARA philosophy stated in Section 20.1(c) of 10 CFR Part 20, the gaseous effluent from the incinerator stack should be a fraction (approximately 10%) of the limits specified for air in Appendix B, Table II, 10 CFR Part 20, when averaged over a one year period.

5. Describe the method of measurement or estimation of the concentration of radioactive material appearing in ash residue.

6. Describe the procedures for handling and disposing of ash from the incinerator.

7. Describe procedures to be followed to prevent overexposure of personnel during all phases of the operation, including instruction given to personnel handling the combustibles and the ash.

8. State the maximum number of burns to be performed in any one week and the maximum number of burns per year.

9. Submit confirmation that you have complied with all state and local regulations concerning incineration.

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NOVEMBER 1980

INFORMATION NEEDED IN AN APPLICATION FOR BURIAL OF RADIOACTIVE WASTE IN SOIL BY INDIVIDUAL LICENSEES

The Nuclear Regulatory Commission (NRC) has amended its regulations to delete Section 20.304 of 10 CFR Part 20 which provided for disposal of radioactive material by burial in soil. The Federal Register Notice dated October 30, 1980, pertaining to this action is enclosed for your information. The purpose of the deletion of Section 20.304 is to minimize burials by individual licensees because of the uncertainties associated with assessing the risk of burials under Section 20.304 and the need to protect public health by improving data regarding amounts and locations of buried radioactive materials.

The policy of the NRC is that the burial of radioactive waste by licensees be specifically authorized pursuant to Section 20.302 of 10 CFR Part 20. Any current licensee now burying radioactive waste without such authorization must file an application pursuant to Section 20.302 of 10 CFR Part 20 and receive NRC approval for continued burial by January 28, 1981.

Since the purpose of deletion of Section 20.304 is to minimize waste burials by individual licensees, it is incumbent on the applicant to demonstrate that local land burial is preferable to other disposal alternatives. Convenience and lesser cost than other disposal methods will not, by themselves, be considered acceptable justification for burial of waste pursuant to Section 20.302.

The amendment to delete Section 20.304 does not affect material already buried, material held under general license for which there is an exemption from the requirements of 10 CFR Part 20, and material held under an exemption from NRC regulatory requirements.

In addition to the demonstration of justification for burial, the following information should be included in the application for burial:

1. A description of the type and quantity of material to be buried.

    a. Isotopes and estimated quantity of each isotope for any one burial.

    b. The number of burials anticipated annually.

    c. The estimated volume of waste per burial and annually.

    d. The physical form(s) of the waste.

2. Packaging for the waste. As a minimum, waste should be packaged in strong, tight containers which would preclude loss of the contents. Acceptable containers would include, for example, 55-gallon steel drums or steel boxes which would not be readily susceptible to corrosion. Cardboard or wooden boxes would not be considered suitable containers. If packaging is not contemplated, an explanation and justification for not packaging should be submitted.

(5)

3. Burial location. In general, only burial sites which are located on the property of the applicant will be considered acceptable. The nature of the waste proposed to be buried should be such that long-term site control is not necessary for protection of public health and safety. A map or sketch of the applicant's property which shows specifically where on the property burials will be made should be submitted.

4. Nature of the burial site. An analysis of the adequacy of the site which demonstrates that transport of radioactive material away from the site is highly unlikely to occur must be submitted. Information which should be included in the analysis is the nature of the environment, including typographical, geological, hydrological, and meteorological characteristics of the site; usage of ground and surface waters in the general area; and the nature and location of other potentially affected facilities. The water table should be a minimum of 10 feet below the depth at which the waste will be buried. The 10 foot depth should be the high point for the water table.

5. Depth of burial. The depth at which waste will be buried should be specified. As a minimum, the burial depth should be at least four feet below the surface.

6. Restriction and posting of burial sites. The means for assuring that access to the burial site will be limited to authorized personnel should be described. An acceptable method for access restriction would be an 8 foot chain link fence around the site posted with "CAUTION-RADIOACTIVE MATERIAL" signs.

7. Radiation safety procedures. The specific program for handling the waste to be buried including radiation safety precautions to be followed, should be submitted.

8. Recordkeeping. The program for maintaining records of burial should be described.

9. Local requirements. The contacts made with local officials to determine the extent to which local laws and requirements could affect burial of radioactive waste should be described. It is the responsibility of the applicant to assure that all local requirements are met.

Section 30.34(f), 10 CFR Part 30; Section 40.41(f), 10 CFR Part 40; and Section 70.32(b), 10 CFR Part 70 require notification in writing when the licensee decides to permanently discontinue all activities involving materials. Therefore, if for some reason a licensee intends to abandon, sell, transfer or otherwise give up control of the burial site, the NRC must be notified.

For further information, you may contact Mr. Vandy L. Miller, Chief, Material Licensing Branch, Division of Fuel Cycle and Material Safety (Telephone (301) 427-4002).

NUCLEAR REGULATORY COMMISSION

10 CFR Part 20

Standards for Protection Against Radiation; Burial of Small Quantities of Radionuclides

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require NRC licensees to obtain specific approval to bury small quantities of radionuclides. Current NRC regulations provide that licensees may bury certain small quantities of radionuclides without prior approval. The amendments will provide greater assurance that buried radioactive material will not present a health hazard.

EFFECTIVE DATE: January 28, 1981.

Note.—The Nuclear Regulatory Commission has submitted this rule to the Comptroller General for such review as may be appropriate under the Federal Reports Act, as amended, 44 U.S.C. 3512. The date on which the reporting requirement of this rule becomes effective, unless advised to the contrary, reflects inclusion of the 45-day period which that statute allows for such review (44 U.S.C. 3512(c)(2)).

FOR FURTHER INFORMATION CONTACT: Mr. John W. N. Hickey, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (phone: 301–443–5966).

SUPPLEMENTARY INFORMATION: On December 4, 1978, the Nuclear Regulatory Commission (NRC or Commission) proposed to delete § 20.304 of 10 CFR Part 20, "Standards for Protection Against Radiation" (43 FR 56877). Section 20.304 allows licensees to bury certain small quantities of radionuclides without prior NRC approval.

As discussed in the notice of proposed rulemaking, several State representatives have suggested that the risk from burials of radioactive waste allowed by § 20.304 may be unacceptable. The quantities of radionuclides allowed to be buried pursuant to § 20.304 are 1,000 times greater than exempt quantities. Such quantities pose a small risk if they are properly buried and left undisturbed, particularly if they are dispersed through a large volume of waste material. However, § 20.304 imposes no concentration limits, and the quantities as concentrated "point sources" are potentially large enough to cause excessive radiation exposures if the radioactive material is mishandled, improperly buried, or disturbed after burial. For example, § 20.304 allows burial of up to one millicurie of cobalt-60. As a point source this quantity delivers a dose rate of over 100 millirems per hour at a distance of 10 centimeters. If a burial site were disturbed, and a person came into contact with one millicurie of cobalt-60 for an extended period, an overexposure could occur.

The Commission has concluded that it is inappropriate to continue generic authorization of burials pursuant to § 20.304 without regard to such factors as location of burial, concentrations of radioactive material, form of packaging, and notification of NRC. Therefore, the Commission will require that licensees obtain prior approval for new burials of the type currently allowed by § 20.304, and accordingly § 20.304 is being deleted from NRC regulations. Prior review of proposed burials will result in improved records regarding amounts and locations of future burials of radioactive material, and provide greater assurance that buried material will not present a health hazard at a later date. Thus, the risk of exposure of individuals accidentally disturbing buried radioactive waste would be reduced.

The Commission staff estimates that fewer than 100 licensees (out of about 20,000 NRC and Agreement State licensees) are performing burials allowed by § 20.304. NRC licensees will have 90 days to halt burials and apply for specific approval to resume burials pursuant to 10 CFR 20.302, or use alternative disposal methods such as transfer of waste to licensed commercial burial grounds. The NRC staff will provide information to licensees as appropriate related to obtaining approval for burials. Deletion of 10 CFR 20.304 will not affect material already buried, generally licensed and exempt material, or licensees who have already obtained specific approval to perform burials pursuant to 10 CFR 20.302.

Agreement State licensees will not be directly affected by the final rule, because they are subject to individual State regulations rather than NRC regulations. However, Agreement State officials have consistently supported deletion of § 20.304, and the Commission anticipates that those States which have not already done so will make changes in their regulations compatible with deletion of § 20.304.

As discussed in the notice of proposed rulemaking, the Commission has determined that an environmental impact statement need not be prepared because deletion of 10 CFR 20.304 will not significantly affect the quality of the human environment.

Public Comments

In reaching the decision to delete § 20.304, the Commission considered public comments received on the proposed rule change. These comments and the impact of deletion of § 20.304 are discussed in the value-impact assessment, which is available for inspection or copying for a fee at the NRC Public Document Room, 1717 H Street, Washington, D.C. 20555. The major public comments received are discussed below.

Thirty-eight sets of public comments were received on the proposed deletion of § 20.304. Seventeen commenters favored deletion, fourteen opposed deletion, and seven took no clear position. The major comments opposing deletion are: (1) Burials pursuant to § 20.304 do not represent a public health problem, (2) disposal of wastes at commercial burial grounds is not a good alternative because it is too expensive, it carriers its own risks, and the commercial sites are overburdened, and (3) NRC has not adequately outlined requirements for obtaining specific approvals for burials.

1. *Public health risk.* Several comments from institutions performing burials pursuant to § 20.304 provided information on their operations, indicating that their burial sites are safe because they are owned by the licensee, fenced and marked, located in areas of low risk of ground water contamination, or contain short-lived radionuclides in waste with low specific activity. Nevertheless, as discussed previously, the radionuclide quantities involved are potentially large enough to cause significant radiation exposures, if they are concentrated point sources, and the Commission has decided that case-by-case review of proposed burials is appropriate.

2. *Commercial burial grounds.* Many commenters incorrectly interpreted the proposed rule to mean that local burial would be prohibited, and that all waste would have to be shipped to commercial burial grounds. The Commission is not requiring that all radioactive waste affected by deletion of § 20.304 be shipped to commercial burial grounds. Licensee proposals for waste disposal will be reviewed on a case-by-case basis, including consideration of risk and economic costs. This is consistent with § 20.1(c) which provides that licensees should make every reasonable effort to maintain radiation exposures as low as is reasonably achievable, where "as low as is reasonably achievable" includes taking into account economics

of improvement in relation to benefits to the public health and safety.

Several licensees performing burials pursuant to § 20.304 commented that it would be too expensive to ship wastes to commercial burial sites, and that in any case the sites are already overburdened. Estimates of the extra costs and volumes of waste involved ranged from $400 to $21,000 and 70 to 2000 cubic feet per year. It should be noted that: (1) The staff estimates that fewer than 100 licensees are performing burials pursuant to § 20.304, (2) until recently about 3,000,000 cubic feet of radioactive waste were being shipped annually to commercial sites, and (3) many institutions similar to those using § 20.304 are using commercial disposal sites. Therefore, while certain licensees may wish to dispose of high-volume, slightly contaminated waste by local burial for justifiable economic reasons, in many cases licensees could ship low-volume waste to commercial sites at reasonable cost without adding significantly to the total volume accepted at the sites.

The Commission recognizes problems associated with closures or reduced capacity of commercial burial grounds. This issue affects all licensees disposing of low-level radioactive waste, not just burials pursuant to § 20.304. The Commission staff will, of course, take into account the status of commercial burial sites in making any licensing decisions regarding disposal of radioactive waste.

3. *Criteria for disposal.* As discussed in the notice of proposed rulemaking, the Commission is reviewing existing policy on disposal of low-level radioactive waste and developing new regulations. These will be published in separate notices of proposed rulemaking. Until new regulations are developed, applications for waste disposal will be reviewed according to § 20.302, which requires licensees to submit information describing the waste material, the levels of radioactivity involved, the proposed conditions of disposal, the environment of the disposal site, and procedures to be observed to minimize the risk of unexpected or hazardous exposures.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended and section 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 20, are published as a document subject to codification.

§ 20.304 [Removed]

1. Section 20.304, Disposal by burial in soil, is deleted.

2. In § 20.301, paragraph (c) is revised to read as follows:

§ 20.301 General requirement.

* * * * *

(c) As provided in § 20.303, applicable to the disposal of licensed material by release into sanitary sewerage systems, or in § 20.106 (Radioactivity in effluents to unrestricted areas).

3. In § 20.401, paragraphs (b) and (c)(3) are revised to read as follows:

§ 20.401 Records of surveys, radiation monitoring, and disposal.

* * * * *

(b) Each licensee shall maintain records in the same units used in this part, showing the results of surveys required by § 20.301(b), monitoring required by §§ 20.205(b) and 20.205(c), and disposals made under §§ 20.302, 20.303, and deleted § 20.304.[1]

(c) * * *

* * * * *

(3) Records of disposal of licensed material made pursuant to §§ 20.302, 20.303, and deleted § 20.304[1] are to be maintained until the Commission authorizes their disposition.

[1] Section 20.304 provided for burial of small quantities of licensed materials in soil. Notice of its deletion appears in the Federal Register of October 30, 1980 (45 FR ——).

4. The note following Appendix C of 10 CFR Part 20 is amended to read as follows:

Appendix C

* * * * *

Note.—For purposes of § 20.303, where there is involved a combination of isotopes in known amounts, the limit for the combination should be derived as follows: Determine, for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope when not in combination. The sum of such ratios for all the isotopes in the combination may not exceed "1" (i.e., "unity").

* * * * *

(Sec. 161, b. and i., Pub. L. 83-703, 68 Stat. 948; sec. 201, Pub. L. 93-438, 88 Stat. 1243 (42 U.S.C. 2201, 5841))

Dated at Washington, DC this 24th day of October 1980.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

[FR Doc. 80-33823 Filed 10-29-80; 8:45 am]

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