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October 6, 1978	NUCLEAR REGULATORY COMMISSION SECY-78-536
• <u>••••••••••••••••••••••••••••</u> ••••••••	CONSENT CALENDAR ITEM
<u>For</u> :	The Commissioners
From:	Robert B. Minogue, Director, Office of Standards Development
Thru:	Executive Director for Operations (4, 1): Duris
<u>Subject</u> :	BURIAL OF SMALL QUANTITIES OF RADIONUCLIDES: PUBLICATION OF PROPOSED AMENDMENT TO 10 CFR § 20.304 FOR PUBLIC COMMENT
<u>Furpose</u> :	To obtain Commission decision on proposed amendments to require NRC approval prior to burial of small quantities of radionuclides.
<u>Category</u> :	This paper concerns a minor policy question.
<u>Issue</u> :	Should licensees be required to obtain specific approval prior to burying small quantities of radionuclides?
<u>Discussion</u> :	NRC regulations (10 CFR § 20.304) currently allow licensees to bury small quantities of radionuclides anywhere without noti- fication or specific approval from NRC. There is a slight possibility that a person accider. ally disturbing such a burial could receive doses in excess ofRC limits.
	Many State officials have expressed concern to NRC over the permissiveness of 10 CFR § 20.304. Some have suggested that § 20.304 should be deleted. This would have the effect of requiring all proposed burials to receive prior NRC review under § 20.302, which now applies to disposal of larger quantities of radionuclides.
	There are many uncertainties associated with assessing the risk of burials under § 20.304. Deletion of § 20.304 would contribute to the protection of the public health by encouraging the shipment of small quantities of radioactive waste to licensed burial grounds and by imprcving the NRC's available data regarding amounts and locations of radioactive materials buried elsewhere.
	In light of the above considerations, the staff recommends that the Commission approve proposed amendments to delete 10 CFR § 20.304. As stated above, licensees would then have to receive prior approval for proposed burials as provided in § 20.302. The staff estimates that relatively few licensees would be affected by deletion of § 20.304 (see Enclosure "B"), and therefore the impact on the industry will be minimal.
Contact: J. Hickey, SD 443-5966	

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The Commissioners

#### <u>Staff</u> <u>Resources</u>:

In the past, staff review of applications for minor burials has involved a few man-hours per application. This would indicate that the impact of deletion of § 20.304 on staff man-power would be minimal. However, before the proposed deletion is made final, the staff will review this assessment in light of public comments and any new developments in waste management policies or regulations.

In order to maximize the opportunity for public comment, copies of the proposed rule would be sent directly to several thousand licensees, requiring a few mar-hours of staff effort and several hundred dollars in printing and mailing expenses.

A more detailed discussion of issues, alternatives, and the impacts of the staff's recommendation is included in Enclosures "A" and "B".

#### <u>Recommendation</u>: That the Commission:

- <u>Approve</u> publication in the FEDERAL REGISTER of a notice of proposed rule making to delete 10 CFR § 20.304, (Enclosure "D").
- 2. <u>Note</u> that the Senate Committee on Environment and Public Works, the House Committee on Interior and Insular Affairs, and the Subcommittee on Energy and Power of the House Committee un Interstate and Foreign Commerce will be informed of this action.
- 3. <u>Note</u> that the notice will be published in the FEDERAL REGISTER allowing 60 days for public comment. If no significant comments are received, the Executive Director for Operations will arrange for publication of the amendment in final form.
- 4. <u>Note</u> that the amendments will not have a substantive and significant impact on the environment because the action is purely a change in administrative procedure affecting few licensees. It is possible that, as a result of Commission review of individual burial proposals, the potential environmental impact will be reduced. Therefore, an environmental statement or appraisal need not be prepared.
- 5. <u>Note</u> that the amendments will not affect radioactive material already buried or generally licensed and exempt material.

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The Commissioners

6. Note that if the proposed rule is made effective, it must be cleared by the Government Accounting Office, which requires a report justification analysis. A preliminary value-impact assessment and report justification (Enclosure "B") has been approved by the Paperwork Reduction Subgroup of the Standing Committee on Regulatory Effectiveness.

<u>Coordination</u>: The Offices of Inspection and Enforcement, Nuclear Material Safety and Safeguards, State Programs, Nuclear Regulatory Research, and Nuclear Reactor Regulation concur in the recommendations of this paper. The Office of Public Affairs recommends that no public announcement be issued. The Office of the Executive Legal Director has no legal objection to the paper.

Scheduling:

For early consideration at an open session.

Robert B. Minogue, Director Office of Standards Development

Enclosures:

- "A" Detailed Discussion of Issues and Alternatives
- "B" Value-Impact Assessment
- "C" Staff correspondence with Wisconsin
- "D" Proposed Federal Register
  - Notice

Commissioners' comments or consent should be provided directly to the Office of the Secretary by cob Thursday, October 19, 1978.

Commission Staff Office comments, <u>if any</u>, should be submitted to the Commissioners NLT October 13, 1978, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

This paper is tentatively scheduled for affirmation at an Open Meeting during the Week of October 23, 1978. Please refer to the appropriate Weekly Commission Schedule, when published, for a specific date and time.

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# ENCLOSURE A

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# Enclosure "A" DETAILED DISCUSSION OF ISSUES, ALTERNATIVES, AND IMPACTS OF DELETION OF 10 CFR 20.304

#### I. Background

Section 20.304 of 10 CFR Part 20 allows licensees to bury small quantities of radionuclides anywhere without notifying or obtaining approval from NRC, provided that: (1) each burial does not exceed 1000 times the amounts specified in Appendix C of 10 CFR Part 20, (2) each burial is at least four feet deep, (3) burials are separated by distances of at least six feet, and (4) no more than 12 burials are made per year. The Appendix C quantities are approximately equal to the lesser of two values: (1) the quantity that would be inhaled by a standard man exposed for 1 year at the highest average air concentration permitted by 10 CFR Part 20 for members of the general public, or (2) the quantity that, from a point source, would produce a radiation level of one milliroentgen per hour at a distance of 10 centimeters.

Larger quantities of radionuclides may only be buried with prior NRC approval, as provided by 10 CFR § 20.302.

The question being considered is: Should the Commission continue to allow licensees to bury small quantities of radionuclides anywhere without Commission review, given the slight risk to persons who might later disturb the burials.

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#### II. <u>Alternatives</u>

A. Postpone action on 10 CFR § 20.304, until further progress is made on waste management regulations; that is, continue for at least one year to allow licensees to bury small quantities of radionuclides without notifying NRC.

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- <u>Pro</u>: (1) Maintains status quo: allows expeditious disposal of small quantities of radionuclides.
  - (2) Avoids double rule change (deletion of § 20.304 now, followed by waste management regulations at least one year later).
  - (3) Would have no impact on industry or licensing staff case load.
- <u>Con</u>: (1) Leaves small risk of future public health or environmental problems should buried radionuclides be disturbed.
  - (2) Not responsive to expressed concern of State agencies.

B. Allow burials under § 20.304 to continue (as in Alternative A), but require notification of NRC and Agreement States when burials occur.

<u>Pro</u>: (1) Allows expeditions disposal of radionuclides.

- (2) Would have little impact on industry and no impact on licensing staff case load.
- (3) Would keep NRC, the States, and other interested parties informed on the numbers and types of burials under § 20.304.

<u>Con</u>: (1) Leaves small risk of problems if burials are disturbed.

(2) Not completely responsive to concerns of State agencies.

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C. Amend 10 CFR § 20.304 to require (a) that burials under § 20.304 be in a restricted area, and (b) that the buried materials be removed prior to termination of the license except as specifically approved by the Commission.

- <u>Pro</u>: (1) Continues to allow expeditious disposal of small quantities of radionuclides.
  - (2) Reduce already small risk of future public health or environmental problems associated with buried radionuclides.
  - (3) Partially responsive to expressed concern of State agencies.
  - (4) Allows opportunity for public comment on issue.
- <u>Con</u>: (1) Continues to allow burial without prior review by NRC, leaving the possibility of problems resulting from disturbances, inadequate marking of burial location, etc.
  - (2) Would have slight impact on industry and licensing case load.

D. Amend 10 CFR § 20.304 to require NRC approval prior to burial of some radionuclides (for example, those with long half-lives), but not others.

- <u>Pro</u>: (1) Reduces already small risk of future public health or environmental problems associated with buried radionuclides.
  - (2) Partially resposive to expressed concern of State agencies.
  - (3) Allows opportunity for public comment on issue.
- <u>Con</u>: (1) Would have slight impact on industry and licensing case load.

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(2) Would require detailed analysis to determine which radionuclides require approval prior to burial.

E. Recommended: Propose an amendment to delete 10 CFR § 20.304, which would have the effect of requiring licensees to obtain NRC approval prior to burial of any quantity of radioactive material.

- <u>Pro</u>: (1) Further reduces already small risk of future public health or environmental problems associated with buried radionuclides.
  - (2) Allows opportunity for public comment on issue.
  - (3) Responsive to expressed concern of State agencies.
- <u>Con</u>: (1) Effective rule would have slightly greater impact on industry and licensing case load than Alternatives C and D.

#### III. Discussion

A. Discussion of Issues

When 10 CFR Part 20, including section 20.304, was published in 1957, the Atomic Energy Commission stated that Part 20 was designed such that "there is no reasonable probability of individuals in unrestricted areas receiving exposures in excess of 10 percent of the permissible levels for restricted areas."

As of now, licensees can bury radioactive material under 20.304 without prior approval or even notification of NRC. The National Conference of Radiation Control Program Directors and officials from the NRC Agreement States have expressed their concern to NRC over the permissiveness of 10 CFR § 20.304. The staff expects that expressions of concern will

Enclosure "A"

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continue to arise if burials under 10 CFR § 20.304 and equivalent Agreement State regulations are allowed to continue. Examples of problems identified by the States are described below:

- 1. A licensee in Hawaii buried radioactive material on land which was taken over by the local government in 1976. The licensee did not inform local officials of the presence of radioactive material on the land until the last minute. The local government asked the NRC staff about the hazard associated with excavating the burial area to build a swimming pool. The NRC staff replied that there was only a remote possibility that a person disturbing the site could receive doses in excess of 10 CFR Part 20 limits. However, the staff did recommend that the radioactive material remain covered by at least four feet of soil.
- 2. In the Agreement State Maryland, under a state regulation similar to Section 20.304, a licensee buried radioactive material in the yard of a private residence. Although the material was later removed, such a burial in a non-agreement state might have been allowable under 10 CFR § 20.304, depending on the circumstances.
- 3. Officials of the State of Wisconsin have expressed concern to the NRC staff over the practice of several licensees disposing of radioactive material in local landfills. Staff correspondence with Ms. Bonnie Reese, Executive Secretary, Wisconsin Legislative Council, is included in Enclosure "C". In connection with this correspondence, the staff has conducted an informal analysis which concludes that the risk associated with burials at a sanitary landfill under 20.304 is small.

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Although the staff believes that the risk associated with burials under § 20.304 is small, the staff recommends that such proposed burials should remeive prior NPC review on a case-by-case basis, pending development of waste classification regulations and other related waste management regulations. (See Section D, Related NRC Activities.) Deletion of § 20.304 is likely to promote protection of the public health and the environment by (1) improving the NRC's available data regarding amounts and locations of small quantities of radioactive material and (2) encouraging licer ees to transfer even small quantities of waste to existing licensed burial grounds.

If § 20.304 is deleted, licensees will have to transfer waste to authorized recipients (for example, licensed burial grounds), or apply to NRC for approval of turial. The staff will review applications for all proposed burials as provided in § 20.302. The staff anticipates that it will normally approve only burials on licensee's property or at local landfills. Records would be required showing the types and quantities of material, along with dates, depths, and locations of burials. Since the burials under § 20.304 have involved licensees burying their own wastes, the burials are not considered commercial waste disposal operations. Due to the small quantities involved, the environmental impact of the burials will be minimal, so individual environmental statements will not normally be required. The staff does not anticipate that licensees choosing to send small quantities of waste to commercial burial grounds will significantly increase the volume of waste disposed of at the commercial grounds.

Enclosure "A"

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The staff effort required for review of individual applications would vary according to circumstances. Proposals involving disposal of shortlived radionuclides on a licensee's property would have a minimal impact on the staff's work load. Proposals for turial of long-lived material would require more detailed review to address the potential long-term impact of the turial. The staff will be able to assess better the work load associated with implementing the proposed rule after public comments have been obtained. It is anticipated that some comments from licensees will include information on the numbers and types of burials affected by the proposed rule.

B. Impact on Licensees

Deletion of § 20.304 would have the effect of requiring licensees to apply for approval of burials under § 20.302. The potential impact is difficult to evaluate because licensees can now perform the burials without notifying NRC. Therefore, it is difficult to estimate how many licensees are performing burials.

However, the NRC staff has informally contacted several NRC inspectors and State officials who are interested in the problem. Three Agreement States have outlawed burial of radioactive material other than at a licensed burial ground. They report that only one or two licensees per State were affected. The people contacted agreed with the need for prior approval of proposed burials, and expressed a belief that few licensees will be affected.

Thus, it is probable that only a few licensees would be affected by an amendment to delete § 20.304. Of course, the best way to obtain

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more information would be to publish a proposed rule for public comment. This would allow licensees who would be affected to make this fact known to the Commission.

A more detailed discussion of the impacts of the proposed amendment is included in Enclosure "B".

C. Discussion of Alternatives

Alternative A, to postpone action for at least one year, would leave the small risk associated with burials performed without price approval of NRC, and would not be responsive to the concerns of the State agencies. While these concerns involve a small risk to the public health, the staff recommends that they be given serious consideration, since they involve the advisability of allowing continued disposal of radioactive material without prior regulatory review.

Alternative B would require notification of NRC and the Agreement States when burials occur. This would have the advantage of keeping regulatory agencies informed. However, the burials would still be conducted without <u>prior</u> NRC review for suitability of location, proper marking, etc.

Alternative C would modify § 20.304 to require burials in restricted areas only, with removal prior to termination of the licerse except as specifically approved by the Commission. "This would have the advantages of allowing both expeditious disposal of radionuclides in restricted areas and NRC review to assure protection against potential hazards at the time of termination of the license. However, burials would be allowed without <u>prior</u> NRC review, leaving a greater possibility of disturbances, burials

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in areas inadequately marked, etc. Furthermore, this alternative would not be completely responsive to the expressed concern of State agencies, who recommend prior review of all burials.

Alternative D, to allow some burials under § 20.304, but not others, would require an extensive analysis to determine which burials should be allowed. This would have some disruptive effect on the waste management programs underway in the Office of Nuclear Material Safety and Safeguards.

Alternative E, the recommended option, would propose deletion of 10 CFR § 20.304 in order to obtain public comments. This would have the effects of requiring licensees to apply for prior approval of all burials under § 20.302. The staff believes that this option would affect only a few licensees. Furthermore, it would be responsive to the expressed concern of State agencies.

D. Related NRC Activities

The NRC staff has a study underway to develop a system to classify radioactive wastes (that is, determine the kinds and quantities of radioactive wastes that are acceptable for various disposal methods). One objective of the study is to identify whether certain radioactive waste may be disposed of by methods used for non-radioactive waste (for example, disposal in a landfill). Preliminary results of the study indicate that such disposal would be feasible for certain radioactive wastes. The waste classification regulation will be drafted in 1 to 1-1/2 years, with an associated environmental statement. Deletion of § 20.304 would not adversely affect the development or implementation of this regulation.

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An NRC Task Force issued a report in 1977 on burial of low-level radioactive waste (NUREG-0217). The report did not specifically address the issue of burial of small quantities of radionuclides. On December 7,1977, the Commission issued comments on NUREG-0217 (42 FR 61904). An amendment to § 20.304 would not conflict with the recommendations in NUREG-0217 or the Commission's comments.

E. EPA Regulations

The Environmental Protection Agency has authority to issue generally applicable environmental standards related to disposal of low level radioactive waste. Informal discussion between the EPA staff and the NRC staff indicates that such EPA regulations may not be forthcoming for several years. Therefore, for the present, amendments to 10 CFR Part 20 related to burial of radioactive material will not conflict with any EPA regulations.

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## ' ENCLOSURE B

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VALUE-IMPACT ASSESSMENT AND REPORT JUSTIFICATION FOR DELETION OF 10 CFR 20.304 (Burial of small quantities of radionuclides)

Task Leader: John W. Hickey Environmental Standards Branch Office of Standards Development Telephone: 443-5966

#### CONTENTS

- I. Summary
- II. The Proposed Action
  - A. Description of Proposed Action
  - B. Need for Proposed Action
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    - 1. Industry
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    - 3. Other Government Agencies
    - 4. Value to the Public
  - D. Decision on the Proposed Action
- III. Alternatives to the Proposed Action
  - A. No Action
  - B. Modification of § 20.304
- IV. Statutory Considerations
  - A. NRC Authority
  - B. NEPA Assessment
- V. Relationship of Proposed Action to Other Regulations and Policies

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- A. NRC Staff Positions
- B. The States
- C. NRC Waste Management Program

VI. Conclusion

B. NEPA Assessment

The proposed amendment is purely a change in administrative procedure which will affect few licensees. Therefore, an environmental statement need not be prepared:

V. Relationship of Proposed Action to Other Regulations and Policies

A. NRC Staff Position

In 1975, NMSS, NRR, IE. and RES all endorsed the concept of amending 10 CFR Part 20.304 to make it more restrictive. The Office of State Programs has urged that 10 CFR 20.304 be amended as soon as possible.

B. The States

The Agreement States, the National Conference of Radiation Program Control Directors, and several individual State Agencies have urged NRC to amend 10 CFR Section 20.304. The Agreement States Florida, South Carolina, and Oregon have already outlawed burials which would be allowed under Section 20.304.

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C. NRC Waste Management Program

Consideration of the proposed action is included in the NRC Waste Management Program. However, if the proposed action is undertaken separately in order to resolve the issue more quickly, it would not adversely affect the overall program.

An NRC Task Force has issued a report (NUREG-0217) on burial of low-level radioactive waste (42 FR 13366, March 10, 1977). The report did not specifically address the issue of burial of small quantities of radionuclides. On December 7, 1977, the Commission issued comments on NUREG-0217 (42 FR 61904). The proposed action would not conflict with the recommendations in NUREG-0217 or the Commission's comments.

VI. Conclusion

The proposed action should be undertaken immediately. That is, 10 CFR 20.304 should be deleted. The concerns expressed by the States justifies immediate resolution of the issue.

Enclosure "B"

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Enclosure "C"

Correspondence with Ms. Bonnie Reese of Wisconsin related to 10 CFR 20.304

J.

STATE OF WISCONSIN



October 19, 1977

LEGISLATIVE COUNCIL ROOM 147 NORTH, STATE CAPITOL MADISON, WI 53702 TELEPHONE 16081 266-1304

Dr. William Bishop, Chief Fuel Cycle Waste Management Branch United States Nuclear Regulatory Commission Washington, D.C. 20555

Dear Dr. Bishop:

The Subcommittee on Radioactive Waste Management of the Wisconsin Legislative Council Special Committee on Solid Waste Management is presently studying the management of radioactive wastes within Wisconsin.

After hearing testimony to the effect that small quantities of radioactive waste are being buried in local landfills, several questions have arisen about burial of radioactive wastes under 10 CFR s. 20.304. In particular, concerns of the Subcommittee center on the cumulative effects of more than one licensee burying wastes in a local landfill not licensed by the Nuclear Regulatory Commission (NRC) or an agreement state.

Mr. Ernest Resner in the NRC Office of State Programs suggested that these questions be addressed to your office. The Subcommittee would be grateful if you could answer the following questions:

- Does the NRC require a record of where a licensee buries material under s. 20.304? Are these records, if they exist, reviewed periodically by the NRC?
- 2. Does the NRC keep records on the number of licensees burying wastes in any one local landfill?
- When licensed material is disposed of under s. 20.304, whose responsibility is it to ensure that the requirements in this section are met? (These requirements include that burial must be at a minimum depth of four feet and that successive burials must be separated by a distance of at least six feet.) Is it the responsibility of the licensee or of the local landfill operator? In practice, how is this responsibility fulfilled?
- 4. On what basis was it determined that it is safe to bury quantities of licensed material that do not exceed 1,000 times the amount specified in Appendix C of 10 CFR s. 20?

Dr. William Bishop Page 2 October 19, 1977.

5. What, if any, health hazards would be posed by several licensees disposing of their radioactive wastes in a single local landfill, assuming that each licensee buries the maximum amount permissible?

Finally, we are aware that the NRC is reviewing s. 20.304. He would appreciate any information you can provide on the present status and anticipated results of this review.

A prompt reply would be deeply appreciated, if possible by November 1, 1977, the date of the next scheduled Subcommittee meeting.

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Bonnie Reese Executive Secretary

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CC: Mr. Donald Percy, Secretary Wisconsin Department of Health DEC 7 :977

Hs. Bonnie Reese Legislative Council Room 147 North, State Capitol Padison, Hisconsin 53702

Dear Ms. Reese:

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→ File: Rules & Regs. 20.30-Small Qty Burial のないというである。

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This letter is in reply to your October 19, 1977 request for information about burial of radioactive wastes under 10 CFR § 20.304.

Section 20.304 is currently under review by the Nuclear Regulatory Commission (NRC). If changes to Section 20.304 are deemed necessary, the proposed rule change would be published in the <u>Federal Recister</u>. In the meantime, Section 20.304 is still in force.

The following are answers to the specific questions raised in your letter:

1. Under 1 20.401(b) the NRC requires the licensee to keep a record of all material buried under 1 20.304. These records are inspected during the regular inspections of licensed operations made by the NRC. The length of time between inspections varies and depends upon the type of license involved. The records should include the location of the burial, the amount of waste buried and the nature of the waste. If the licensee stops burying wastes, the licensee generally summarizes all burial records to date.

2. The NRC does not keep records on the number of licensees burying wastes in any one local landfill.

3. The licensee is responsible for ensuring that disposal requirements under 5 20.304 are met. In practice the licensee generally buries the waste on his own property or supervises the burial. Burial of wastes under 5 20.304 is not common due to the small quantities allowed. Nost licensees send their wastes to licensed commercial burial grounds.

4. The determination that it is safe to bury licensed material in amounts that do not exceed 1,000 times the Appendix C levels was made about 25 years ago on the basis that radioactive wastes in those amounts would not present a public health hazard after burial. Some of the levels in Appendix C have since been revised downward.

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Ms. Bonnie Reese

5. The NRC has not undertaken a study of the health hazards that would be posed by several licensees disposing of their radioactive wastes in a single local landfill.

Sincerely,

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P. H. Friansfor

Michael J. Bell, Chief Low-Level Waste Branch Division of Fuel Cycle and Naterial Safety

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... STATE OF WISCONSIN



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December 16, 1977

LEGISLATIVE COUNCIL ROOM 147 NORTH, STATE CAPITOL MADISON, WI \$3702 TELEPHONE (603) 266-1304

Bonnie Reese

Mr. Michael J. Bell, Chief Low-Level Waste Branch Division of Fuel Cycle and Material Safety U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Dear Hr. Bell:

Thank you for your letter of December 7, 1977 which responded to our October 19, 1977 request for information about burial of radioactive waste under 10 C.F.R. s. 20.304. If possible, we would appreciate receiving, if available, an elaboration upon the answers you gave to two of our five questions.

Question No. 4 regards the basis for determining the quantities of licensed radioactive material which may be safely buried in local landfills. Are any documents available which set forth the rationale or standards which were applied in determining why such radioactive waste would not present a "public health hazard after burial." In particular, how was "public health hazard" defined and what was the basis for revising some of the levels downward more recently?

Question No. 5 dealt with the cumulative health hazard posed by several licensees disposing of their radioactive waste in the same local landfill. You commented that the Nuclear Regulatory Commission has not undertaken a study of the health hazards posed by such cumulative disposal. If no formal documents are available, are there any persons on your Staff who could comment, either in writing or by phone, on this matter. If not, could you direct us to persons outside of the Commission Staff who could.

We appreciate your continued assistance on these matters.

Cordially,

Bonnie Reese Executive Secretary

BR:jc

cc: Dr. William Bishop

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Burial

File: Rules & Regs 20.304 Small Quty

Hs. Bonnie Reese Executive Secretary Legislative Council Room 147 North, State Capitol Hadison, Wisconsin 53702

Dear Ms. Reese:

This letter is in reply to your December 16 request for elaboration  $SD \leftarrow on$  information we gave you in our December 7 letter concerning buriate of radioactive wastes under 10 CFR Section 20.304. We apologize for not having responded to your letter in a more timely manner.

In further response to Question No. 4, we are enclosing copies of the original regulations (1957), and the proposed rule for the change of some Appendix C values (1953). The sections that deal with your questions are nighlighted. Specifically, the regulations were "designed to assure that individuals in 'unrestricted areas' do not receive exposure in excess of NO per cent of the limits established for persons exposed in restricted areas." Revision of some of the Appendix C values was made in 1970 to reduce them to "values more consistent with the toxicity of those nuclides and the criteria used to derive the exempt quantities."

When we stated that the waste would not present a public health hazard after burial we used the words "public health hazard" in a general sense. "Public health hazard" is not a formal definition or term in NRC's regulations.

In further response to Question No. 5 there have been no "formal" studies dealing with the "potential cumulative health hazard" posed by several licensees disposing of small amounts of radioactive waste generated in their operation at the same local sanitary landfill according to 10 CFR Seion 20.304. The regulation does not address the subject of burial of waste in local sanitary landfills, although such a practice is not prohibited if the conditions of 20.304 are met. The original rule was principally directed at permitting individual licensees to dispose of small quantities of radioactive material on their property, and limits were placed on the number, depth, and spacings of such burials as well as on the total quantity of material which could be buried.

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#### Bonnie Reuse

As indicated above, the original regulations were designed to assure that individuals in unrestricted areas would not receive exposure in excess of 10 per cent of the limits established for persons exposed in restricted areas. Then in 1963, when certain values were modified, the Conmission noted that "two basic criteria were used in deriving the quantities. Since inhalation is considered the most likely route of entry into the body, the quantity that would be inhaled by a standard man exposed for one year at the highest average concentration permitted in air (by 10 CFR Part 20) for members of the general public was computed. If the radioisotope emits gamma radiation, the quantity from a point source, that would produce a radiation level of 1 milliroentgen per hour at a distance of 10 centimeters was also computed. The smaller of these two quantities was then logarithmically rounded to the nearest decade in microcuries, and entered in Section 30.71, Schedule 8." (These values were also added in Appendix C)

In response to your inquiry, we have performed an informal analysis of the impact of cumulative disposal in a landfill at the maximum levels allowed by Section 20.304. A copy of this analysis is enclosed. It concludes that the dose to an individual digging up the buried waste would not exceed the doses allowed under Part 20 for members of the general public although a remote possibility exists for higher doses (see pages 3 and 4 of the analysis). You may also wish to have an independent analysis performed by State authorities (such as the Radiation Protection Section in the Health and Social Services Department) or by other competent scientists; we would be pleased to receive a copy of their report.

Let me note, additionally, that we presently have a study underway to determine the quantities of radioactive material that would be acceptable for disposal by methods normally used for management of regular non-radioactive trash (e.g., disposal at a local sanitary landfill). The study is part of a larger research project to develop a waste classification system. (Drafts of volumes I and II are enclosed). Chapters 7, S and 9 address the disposal of small quantities of radioactive material at a sanitary landfill. This draft report is preliminary, has not been thoroughly reviewed and the final report will contain additional information and detailed discussion. Although it may be modified, the final report is likely to conclude, as the preliminary version does, that there are radioactive wastes of such low toxicity that they can be disposed of safely by methods normally used for management of non-radioactive trash.

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#### Bonnie Reese

When reviewing Chapters 7, 8 and 9, it is important to recognize that the concentration values listed in the tables (e.g. Table 9.1) are the maximum concentrations of radioactive material in waste to be disposed of at a sanitary landfill. The report characterizes a reference sonitary landfill and calculates maximum concentrations based on analyses of release pathways most likely to yield maximum exposures. The concentrations of radioactive material in soil calculated in Table I of our analysis based on Section 20.304 are not directly comparable to those in Table 9.1. Also, the manner in which material is buried under Section 20.304 (requiring burial at 4 foot depths with minimum spacing between burials) more closely resembles the manner in which material is disposed of at a commercially operated shallow land burial ground. (i.e. ap controls are exercised on burials at a sanitary landfill in the Haste Classification report analysis). Thus, Chapters 3, 4 and 5, which discuss other pathways for release of material from a shallow land burial site, may also be of assistance in evaluating potential releases from burials of material under Section 20.304.

As discussed in our earlier letter, we are considering amendments to Part 20 to delete Section 20.304; burials of small quantities of material would then be reviewed on a specific case-by-case basis until our waste classification regulations have been developed. We would appreciate receiving any comments you may have regarding the approaches being suggested in the Waste Classification report to develop a Waste classification system.

If we may be of further assistance, please let me know.

Sincerely,

ORIGINAL SIGNED BY M. J. BELL

Hichael J. Bell, Chief Low-Level Waste Branch Division of Fuel Cycle and Haterial Safety

Enclosures: As stated

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#### ANALYSIS OF FIVE LICENSEES BURYING WASTE AT A LOCAL SANITARY LANDFILL UNDER 10 CFR 20.304

### Background

This analysis assesses the potential maximum dose to an individual from five licensees disposing of radioactive waste according to 10 CFR Part 20, Section 20.304 "Disposal by Burial in Soil." The exposure pathway used in this analysis is termed the "intruder scenario." It assumes an individual digs into the waste immediately after burial causing suspension of the radioactive material into the air. The individual inhales the air, resulting in his exposure to the radioactive material. The staff recognizes that other scenarios may be postulated but believes the intruder scenario presents a limiting (conservative) case. The intruder would be exposed to <u>high\_concentrations\_of</u>\_\_\_\_\_\_\_ radioactive material and represents the person receiving the greatest dose from the disturbance. This scenario, then, is both credible (individuals could dig into burial sites) and conservative (it assumes conditions which yield maximum upper bound doses).

#### Analysis

The limits on burials under 10 CFR \$20.304 are:

Quantity allowed per burial:	1000 times the Appendix C Value
Minimum depth:	4 feet
Minimum spacing:	6 feet by 6 feet
Maximum Number of burials:	12/yr

For five licensees, each complying with 520.304, and aware of the other\_\_\_\_\_ burials, the number of burials per year is determined by multiplying the maximum number of burials allowed per year by the number of licensees burying material:  $12/yr \ge 5$  licensees = 60 burials/yr. The total area of the landfill affected is determined by multiplying the minimum spacing by the number of burials per year:  $6 \ge 6 \ge 0/yr = 2,160 \text{ ft}^2/yr$ . (An area about 46 feet by 46 feet.) The average volume surrounding each burial can be determined by multiplying the minimum spacing by the minimum depth:  $6 \ge 6 \ge 4 = 144 \text{ ft}^3 = 4 \ge 10^6 \text{ cc.}$ 

For purposes of this analysis, we assume that the radionuclides buried are uniformly dispersed throughout the top four feet of soil. This assumes that the average concentration of radionuclides in the dust would be the same as the average concentration in the ground. We next assume the waste and soil mixture has an average density of 1.5 gm/cc. We can then calculate the concentration of radioactive material in the soil in  $\mu$ Ci/gm by dividing the quantity allowed per burial by the average volume surrounding each burial and, in turn, dividing that quotient by the density of soil. We evaluated the impact from burial of six critical nuclides from Appendix C for this analysis; plutonium 239, hydrogen 3, cesium 137,

- 2 -

strontium 90, iodine 129 and cobalt 60. The calculational method for determining the concentration of each radionuclide in the soil and results are shown in Table I.

We next assume an intruder digs in the landfill for one month (170 hours). One month is a reasonable time a worker could spend in excavation activities in preparing a house foundation (e.g. excavating a 46' x 46'  $\times$  44' deep hole). The intruder will breathe about 200 m<sup>3</sup> of air in the 170 hours that he is digging. If we assume the "dust loading" of the air is 2 mg of dust in one cubic meter of air (a conservative estimate by an order of magnitude), the intruder will inhale 0.4 gm of dust from the site while digging. (2 mg/m<sup>3</sup> x 200 m<sup>3</sup> = 400 mg = 0.4 gm). It is further conservatively assumed that all of the inhaled dust is deposited in the lung and subsequently assimilated into the body. The quantity of radioactive material inhaled by the intruder is calculated by multiplying the soil concentration of each radionuclide in  $\mu$ Ci/gm (as given in Table I) by the amount of dust inhaled (0.4 gm). The calculational method and results are shown in Table II.

The 50-year dose to the intruder resulting from inhalation of the radioactivity can then be determined by multiplying the quantity of radioactivity inhaled by dose conversion factors such as those given in NUREG-0172.<sup>(1)</sup> The calculational method and results are shown in Table III. These 50-year doses are fractions of the 500 millirem allowable

- 3 -

yearly doses for the general public provided by 10 CFR Part 20 and the potential her!th effects of these doses are considered negligible. The BEIR Report<sup>(2)</sup> presents information on and analyzes the potential health effects from exposure to low levels of ionizing radiation.

If the five licensees were ignorant of each other's burial facilities at the sanitary landfill, the burials could overlap and the concentration of material where the burials overlap could be up to five times higher. (Overlap of burials is not permitted by Section 20.304.) In this case, depending on the concentration of material and digging time, the dose to the intruder could range up to five times higher. In addition, as noted earlier, there are other scenarios that may be postulated and which would yield doses different than those calculated on the basis of the intruder scenario. Some are theoretically possible and likely to happen (e.g. eating dirt containing the waste or drinking water that has been in contact with the waste). These events would yield doses similar to those calculated for the intruder scenario. (i.e. doses not in excess of those allowed under Part 20). Other scenarios would be theoretically possible but highly unlikely (e.g. inhaling the contents of one whole burial, ignoring whether such an event were physically possible). Such events would yield doses higher than those calculated for the intruder scenario. However,

- 4 -

these scenarios would have a very remote possibility of actual occurrence and although yielding higher doses because of highly unlikely assumptions, they would not always serve as a basis for our regulatory actions.

#### **References:**

- NUREG-0217 "Age-Specific Radiation Dose Commitment Factors for a One-Year Chronic Intake," USNRC; November 1977.
- (2) BEIR Report "The Effects on Populations of Exposure to Low-Levels of Ionizing Radiation", National Academy of Sciences; November 1972.

		TABLE I	_	
Isotope*	(a) Allowed Per Burtal (µCl) 10 <sup>3</sup> x Appendix C Value	(b) Volume Available (cc)	(a) ÷ (b) = (c) Average Concentration ( <u>µCi</u> )	(c) + (1.5gm/cc) Soil Concentration ( <u>uCi</u> )
<sub>Բս</sub> 239	10 <sup>1</sup>	4 x 10 <sup>6</sup>	$2.5 \times 10^{-6}$	$1.67 \times 10^{-6}$
11 <sup>3</sup>	10 <sup>6</sup>	4 x 10 <sup>6</sup>	.25	$1.67 \times 10^{-1}$
Cs <sup>137</sup>	104	4 x 10 <sup>6</sup>	$2.5 \times 10^{-3}$	$1.67 \times 10^{-3}$
Sr <sup>90</sup>	10 <sup>2</sup>	4 x 10 <sup>6</sup>	2.5 x 10 <sup>-5</sup>	1.67 x 10 <sup>-5</sup>
1129	10 <sup>2</sup>	4 x 10 <sup>6</sup>	$2.5 \times 10^{-5}$	1.67 x 10 <sup>-5</sup>
0 <sup>60</sup>	103	4 x 10 <sup>6</sup>	$2.5 \times 10^{-4}$	$1.67 \times 10^{-4}$

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	(a)	(b)	(a) x (b)
Isotope	Concentration $(\frac{\mu Ci}{gm})$	Amount of Dust Inhaled	µCi Inhaled
Pu <sup>239</sup>	1.67×10 <sup>-6</sup>	.4 gm	6.6x10 <sup>-7</sup>
н <sup>3</sup>	1.67×10 <sup>-1</sup>	.4 gm	6.6x10 <sup>-2</sup>
Cs <sup>137</sup>	1.67x10 <sup>-3</sup>	.4 gm	6.6×10 <sup>-4</sup>
Sr <sup>90</sup>	1.67x10 <sup>-5</sup>	.4 gm	6.6x10 <sup>-6</sup>
1 <sup>129</sup>	1.67x10 <sup>-5</sup>	.4 gm	6.6x10 <sup>-6</sup>
0 <sup>60</sup>	1.67X10 <sup>-4</sup>	.4 gm	6.6x10 <sup>-5</sup>

.

### TABLE III

Isotope	nCi inhaled	NUREG-0172 µ Rem dose/µCi	Critical Organ	Net Dose (µ Rem)
Pu <sup>239</sup>	6.6 x 10 <sup>-7</sup>	3.19 x 10 <sup>9</sup>	Bone	2100
11 <sup>3</sup>	6.6 x $10^{-2}$	1.58 x 10 <sup>2</sup>	Whole Body	10
Cs <sup>137</sup>	6.6 x $10^{-4}$	7.76 x 10 <sup>4</sup>	Liver	51
Sr <sup>90</sup>	6.6 x 10 <sup>-6</sup>	1.24 x 10 <sup>7</sup>	Bone	82
I158	6.6 x 10 <sup>-6</sup>	5.54 x 10 <sup>6</sup>	Thyrold	37
Co <sup>60</sup> .	6.6 x 10 <sup>-5</sup>	7.46 x 10 <sup>5</sup>	Lung	49



# TITLE 10-ATOMIC ENERGY

. Chapter I—Atomic Energy Commission

PART 20-STANDARDS FOR PROTECTION AGAINST PADIATION

In July 1955 the Commission issued for public comment a proposed regulation to establish general standards for protection of licensees, their employees, and the public sparse radiation heards arising cut of the possession or use of special nuclear, source, or byproduce material under license issued by AEC. In preparing the effective regulation published below, the Commission has had the benefit of numerous comments and suggestions received since publication of the proposed rules. A number of changes suggested by those comments have been incorporated in the following regulation.

The regulation establishes standards which must be followed in handling radioactive materials which are subject to the licensing authority of the Commission and provides procedures whereby deviations from such standards may be suthorized on a case-to-case basis. The regulation presentes limits which govern exposure of personnel to radiation and concentrations of radioactive matterial which may be discharged into air and water, and disposal of radioactive wastes. It also establishes certain precautionary procedures and administrative controls.

The standards established by this regulation will be found to agree substantially with those published by the National Committee on Radiation Protestion in N. E. S. Handbook 52 "Maximum Permissible Amounts of Radioustopes in the Suman Body and Maximum Permissible Concentrations in Air and Water." and N. B. S. Mandbook 59 "Permusible Dose from External Sources of Ionizing Padiation." The Mational Committee on Rediction Protection has under review recommendations to lunit cumulative 722 exposures over periods of years. Commission is giving consideration to appropriate amenements to its regulations to deal with this cumulative

exposure problem. Limitations upon levels of radiation nd concentrations of rapionetive material in areas affected by but not controlled by the licensee are contained principally in 120.162 ("Permissible Levels of Radiation in Unrestricted Areas"), § 20.103 ("Concentrations in Effuents to Unrestricted Areas") and the sections on warte dispread. The sec viduals in "unrestricted areas" do not receive exposure in encess of 10 percent of the limits established for persons exposed in restricted areas. For this purpose, the sections limit levels of radiation and concentrations of radioactive material which may be created in unrestricted areas by licensees, without special au-thorization from the AEC, to extremely low levels. These levels are believed to be sufficiently low to assure that there is no reasonable probability of individuals in unrestricted areas receiving exposures in excess of 10 percent of the permissible levels for restricted areas. Procedures are incorporated in those sections, however, under which the Commission may authorize licensees in specife cases to create higher levels in unrestricted areas where the circumstances of the particular case are such as to provide reasonable assurance that individuals in the unrestricted areas will not receive exposures in excess of 10 percent of the limitation established for restricted areas.

It is believed that the standards incorporated in these regulations provide, in accordance with present knowledge, a very substantial margin of safety for expored individuals. It is believed also that the standards are practical from the standyoint of licensees. It should be emphasized that the standards are subject to change with the development of new knowledge, with significant increase in the average excessive of the whole population to maistant and with further experience in the administration of the Commission's recylatory reserve.

courses Act. Public Law 404, 75th. Concress, 2d Session, the following rules are published as a cocument subject to codification to be effective 20 days after publication in the Festaat Resister.

CENERAL PROVISIONS

	CENERAL PROVISIONS					
	Sec.	- •				
	19.1	Purpose.				
	::2	Scape.				
	::3	Definitions.				
	22.4	Units of radiation dose.				
	22.5	Units of radioactivity.				
ľ	23.5	Interpretations.				
	10.7	Communications.				
		PERMISSIBLE DOSES, LEVELS, AND				
		CONCENTRATIONS				
	20.:01	Exposure of individuals in restricted				
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ł	<b>73.102</b>	Permissible levels of radiation in un-				
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ľ		PRECAUTIONARY PROCEDURES				
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ł	3.	LCOADS, REPORTS, AND NOTIFICATION				
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	22 201	Applications for exemptions.				
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- . CENERAL PROVISIONS
- 1 20.1 Purpose. (a) The regulations

in this part establish standards for protection accurst radiation hazards arising, out of activities, under licenses issued by the Atomic Energy Commission and are issued pursuant to the Atomic Energy Act of 1954 (68 Stat. 919).

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(b) The use of radioactive material or other sources of radiation not licensed by the Commission is not subject to the regulations in this part. However, it is the purpose of the regulations in this part to control the possession, use, and transfer of licensed material by any !!censee in such a manner that exposure to such material and to radiation from such material, when added to exposures to unlicensed radioactive material and to other unlicensed sources of radiation In the possession of the licensee, and to radiation therefrom, does not exceed the standards of radiation protection prescribed in the regulations in this part.

1 20.2 Scope. The regulations in this part apply to all persons who receive, possess, use or transfer byproduct material, source material, or special nuclear material under a general or specific license issued by the Commission pursuant to the regulations in Part 30, 40, or 70 of this chapter.

§ 20.3 Definitions. (a) As used in this part:

(1) "Act" means the Atomic Energy Act of 1954 (68 Stat. 919) including any amendments thereto;

(2) "Alrborne radicactive material" means any radioactive material dispersed in the air in the form of dusts, fumes, mists, vapors, or pases:

(3) "Eyproduct material" means 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; (4) "Commission" means the Atomic

(4) "Commission" means the Atomic Energy Commission or its duly authorized representatives;

(5) "Government acency" means any executive department, commission, incependent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government;

(6) "Individual" means any human being:

(7) "Licensed material" means source material, special nuclear material, or byproduct material received, possessed, used, or transferred under a general or specific license issued by the Commission pursuant to the regulations in this chapter:

(8) "License" means a license issued under the regulations in Part 20, 40, or 70 of this chapter. "Licensee" means the holder of such license;

(9) "Person" means (i) any individual, corporation, partnership, firm, assoclation, trust, estate, public or private institution, group, Government agency other than the Commission, any State, any foreign government or nation or any political subdivision of any such gavernment or nations, or other entity; and

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(11) any legal successor, representative, agent, or agency of the foregoing:

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(10) "Radiation" means any or all of the following: alpha rays, beth rays, ramma rays, X-rays, neutrons, highspeed electrons, high-speed protons, and other atomic particles: but not sound or radio waves, or visible, infrared, or ultraviole: light:

(11) "Padioactive material" includes any such material whether or not subject to licensing control by the Commission;

(12) "Restricted area" means any area access to which is controlled by the licensee. "Restricted area" shall not include any areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area;

(13) "Source material" means any material except special nuclear material, which contains by weight one-twentieth of one percent (0.05-percent or more of (1) uranium, (11) thorium, or (11) any combination Mpreof:

(14) "Special nuclear material" means (1) plutonium, uranium 203, uranium enriched in the isotope 203 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section \$1 of the act, determines to be special nuclear material, but does not include source material; or (ii) any material artificially enriched by any of the foregoing but does not include source material;

(15) "Unrestricted area" means any area entry into which is not controlled by the licensee, and any area used for residential quarters.

(b) Definitions of certain other words and phrases as used in this part are set forth in other sections, including:

(1) "Airborne radioactivity area" defined in § 20.003;

(2) "Padiation area" and "high radiation area" defined in § 20.202;

(3) "Personnel monitorial equipment" defined in 1 20.202; .

(4) "Survey" dedned in 1 20.201:

(5) Units of measurement of dose (rad, rem) defined in § 20.4;

(3) Units of measurement of radioactivity defined in § 20.5.

129.4 Units of radiation date. (a) "Dose." as used in this part, is the quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body. When the regulations in this part specify a dose during a period of time, the dose means the total quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body during such period of time. Several cliferent units of cose are in current use. Definitions of units as used in this part are set forth in paragraphs (b) and (c) of this section.

(b) The rad, as used in this part, is a measure of the dose of any contains radiation to body tastes in terms of the energy absorbed per unit mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of taste. (One milling (mrad)=0.001 rad.)

(c) The rem, as used in this part, is a measure of the dose of any ionizing radiation to body tasive in terms of its

estimated biological effect relative to a dose of one roentzen (r) of M-rays. (One millirem (mrem)  $\approx 0.001$  rem.) The relation of the rem to other done units depends upon the biological effect under consideration and upon the conditions of irradiation. For the purpose of the regulations in this part, any of the following is considered to be equivalent to a doze of one rem:

(1) A dose of 1 r due to X- or gamma rediation:

(2) A dose of 1 rad due to X-, camma, or beta radiation;

(3) A dose of 0.1 rad due to neutrons

or high energy protons: (4) A dose of 0.05 rad due to particles heavier than protons and with sufficient energy to reach the lens of the cye;

If it is more convenient to measure the neutron flux, or equivalent, than to determine the neutron dose in rads. as provided in subparagraph (3) of this paragraph, one rem of neutron radiation may, for purposes of the regulations in this part, be assumed to be equivalent to 14 million neutrons per square centimeter incident upon the body; or. if there exists sufficient information to estimate with reasonable accuracy the approximate distribution in energy of the neutrons, the incident number of neutrons per square contimeter equivalent to one rem may be estimated from the foilowing table:

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§ 20.5 Units of radicactivity. (a) Radioactivity is commonly, and for purposes of the regulations in this part shall be, measured in terms of Gisintegrations per unit time or in curies. One curies (c)  $\pm 3.7 \times 10^{-1}$  disintegrations per secand (dps)  $\pm 2.2 \times 10^{-1}$  disintegrations per minute (dpm). A commonly used submultiple of the curie is the microcurie (sc). One sc  $\pm 0.000001$  c  $\pm 3.7 \times 10^{-1}$  dpm.

North Many tadioisotopes disintegrate into isotopes which are also radioactive. In expressing maximum permissible concentrations in air and water of these matching, as in Appendix B of this part, the settivity stated is that of the parent isotope. In some cares, the fact that daupher products may contribute to the total does and been taken intosecount in the determination of the maximum permissible concentration of the maxient isotopes. In the tables of Appendix B of this part this is incleated by writing Sa'r-Law, Sr-Yr, Ram-er, Ram-is er, tic.

ZECMPLE. In Column 1. Table I. Appencix 3 the missimum permissible concentration of Zerm in all for occupational use is 2+10-3c/mil. This is the maximum permissible concentration regardless of withher or hat any of the Lerm which may have resulted from the decay of the Baim is present

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or not. However, the value given for  $DA^{im}$ is leas than it would be if  $LA^{im}$  were a stable hotope, not only because of the possibility of  $LA^{im}$  in the air but principally because. If the  $BA^{im}$  is limited, its radioactive decay in the body will traut in the production of  $LA^{im}$  in the body.

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(b) Redon. Alreorne radioactivity of radon and its decay products may be determined by measurement of the activity of one or more decay products on dust filtered from the air. For purposes of the regulations in this part, the limit prescribed here will be considered to be met if the measured radioactivity of one or more decay products (for example, RaC') does not exceed that which would result from the occurrence, at the time of sampling, of  $1\times10^{-7}$  microcuries, per milliller of air, of  $Rn^{-2}$  and each of its short-lived decay products, RaA, PaB, RaC, and RaC'. For this purpose, due allowance shall be made for chances in the radioactivity of the measured decay products from time of sampling through the period of measurement.

(c) Natural uranium and matural thorium. Natural uranium and natural thorium occur as mixtures of isotopes of the respective elements. In the case of uranium or of thorium, the number of microcuries shall be determined by dividing the total rate, in dpm, of alpha emissions from the mixture by 2.2×10° dpm per p c.

120.6 Interpretations. Except as speclically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

1 20.7 Communications. All communications and reports concerning the regulations in this part, and applications filed under them, should be accressed to the Atomic Energy Commission, 1901 Constitution Avenue NW., Washington 25, D. C., Attention: Division of Civilian Application.

#### PERMISSIBLE DOSIS, LEVELS, AND CONCENTRATIONS

1 20.101 Exposure of individuals in restricted arces—(a) Exposure to rediation. (1) Except as provided in subparagraph (2) of this paragraph, no licenses shall possess, use, or transfer licensed material in such a manner as to cause any individual in a restricted area to receive in any period of seven consecutive days from radioactive material and other sources of radiation in the license's possession a date in excess of the limits specified in Appendix A of this para.

(2) A licensee may permit an individual in a restricted area to receive a dose in excess of the limits established in oupparagraph (1) of this paragraph: Prowided, (i) That the date during any, period of 7 consecutive days does not exceed three times the limits specified in Appendix A of this part, and (ii) that the dose during any period of 13 consecutive weeks does not exteen 10 times the limits specified in Appendix A of this part.

(b) No licensee shall possess, use or and o

transfer licensed material in such a manfinto air-or water in unrestricted areas as mer as to cause any individual in a mstricted area to be exposed to airborne tivities. Such applications 'snould inradicactive material postessed by the 2censes in an average concentration in age concentrations and anticipated averexcess of the limits specified in Appendix pancy times for each unrestricted area B. Table I, of this part. mvolved. The Commission will approve

The limits given in Appendix R Table I of this part, are based upon exposure to the concentrations specified for ferty hours in any period of seven consecutive days. In any such period where the number of hours of exposure is less than forty, the limits specified in the table may be increased proportionstely. In any such period, where the number of hours of exposure is greater than forty, the limits specified in the table shall be decreased proportionately.

(c) Esposure of miners. No license shall possess, use, or transfer licensed material in such a manner as to cause any individual under 15 years of age within a restricted area to receive in any period of seven consecutive days from adloactive material and other sources of radiation in the licensee's possession a dose in excess of 10 percent of the limits specified in Appendix A of this part, or to be exposed to atroorne radioactive material possessed by the licensee in a concentration in excess of the limits spedfied in Appendix B. Table II, of this part For purposes of this paragraph, concen-trations may be averaged over periods not greater than a week.

1 20.102 Permissible levels of redie-. tion in unrestricted areas. (a) There may be included in any application for a license or for amendment of a licence proposed limits upon levels of radiation in unrestricted areas resulting from the applicant's possession or use of radioactive material and other sources of radiation. Such applications should include information as to anticipated average radiation levels and anticipated occupancy times for each unrestricted area involved. The Commission will approve the proposed limits if the applicant demonstrates that the proposed limits are not fikely to cause any individual to receive a dose in any period of seven conaccutive days in excess of 10 percent of the limits specified in Appendix A of this part.

(b) Except as authorized by the Commission pursuant to paragraph (a) of this section, no licensee shall possess, ura or transfer licensed material in such a manner as to create in any unrestricted area from radioactive material and other sources of radiation in his possession:

(1) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dog in excess of two millirems in any one hour, or

(2) Radiation levels which, if an isdividual were continuously present in the area, could result in his receiving a dome in excess of 100 millirems in any seven consecutive days.

1 20.103 Concentrations in effuents to unrestricted cress. (a) There may be included in any application for a license er for amenament of a license proposed limits upon concentrations of licensed and other radioactive material released

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Into air-or water in unrestricted areas as a result of the applicant's proposed activities. Such applications 'should include information as to anticipated averace concentrations and anticipated occupancy times for each unrestricted area involved. The Commission will approve the proposed limits if the applicant demonstrates that it is not likely that any individual will be explored to concentrations in excess of the limits specified in Appendix B. Table II, of this part. For purposes of this partgraph, concentrations may be averaged over periods not greater than one year.

(b) Except as authorized by the Commission pursuant to § 20202 or paragraph (a) of this section, no licensed shall possess, use, or transfer licensed material in such a manner as to release into air or water in any unrestricted area any concentration of radioactive material in excess of the limits specified in Appendix B. Table II of this part. For purposes of this paragraph, concentrations may be averaged over periods not greater than one year.

(c) For purposes of this section, determinations as to the concentration of redicactive material shall be made with respect to the point where such material leaves the restricted area. Where the redicactive material leaves the restricted area in a stack, tube, pipe, or similar conduct, the determination may be made with respect to the point where the material leaves such conduct.

(d) The provisions of this section do not apply to disposal of radioactive materul into sanitary severage systems (see } 20.002).

1 20.104 Medical diagnosis, therapy, and research. Nothing in the regulations in this part shall be interpreted as limiting the intentional exposure of patients to radiation for the purpose of medical diagnosis or medical therapy.

§ 10.105 Measures to be taken after excession exposures. In the event that any individual in a restricted area reterves a cose or is exposed to concentrations of radioactive material in excess of the permissible limits established in § 20.101, the licensee shall limit the weekly dose or exposure of the individual to 10 percent of such permissible limit until such time as the average weekly dose or exposure to the individual for the period beginning with the week in which the excessive dose or exposure occurred is less than the permissible limit established in § 20.101.

#### PRECAUTIONATY PROCEDURES

1 20.201 Surveys. (2) As used in the regulations in this part, "survey' means an evaluation of the regulation handra's indicate to the production, use, release, dispetal, or presence of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of regulation or concentrations. When appropriate of regulation or concentrations is realized as a set of regulation includes a physical survey of the location of materials and equipment, and measurements of levels of regulation or concentrations is realized in the present.

(b) Zach licensee shall make or enuce to be made such surveys as may be necessary for him to comply with the segula-

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# tions in this part.

1 20,202 Personnet monitoring. (a) Each licensee shall supply appropriato personnel monitoring equipment to, and, shall require the use of such equipment by:

(1) Each individual who enters a restricted area under such circumstances that he receives, or is likely to receive, a dose in excess of 25 percent of the limits specified in Appendix A of this part:

(2) Each individual who enters a high radiation area.

(b) As used in this part,

(1) "Personnel monitoring equipment" means devices designed to be worn or carried by an individual for the purpose of measuring the dose received (e. z., film badges, pocket chambers, pocket dosimeters, film rings, etc.);

(2) "Radiation area" means any area, accessible to personnel, in which there exists radiation, originating in whole or in part within licensed material, at such levels that a major portion of the body could receive in any one hour a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 150 millirem;

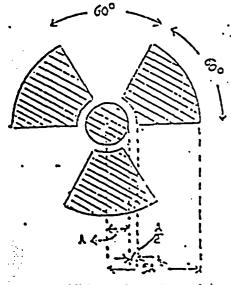
(3) "High radiation area" means any area, accessible to personnel, in which there exists radiation originating in whole or in part within licensed material at such levels that a major portion of the body could receive in any one hour a dose in excess of 100 millirem.

§ 20.203 Contion signs, labels, c id signals. (a) (1) Except as otherwise suthorized by the Commission, symbols prescribed by this section shall use the conventional radiation caution colors (magenta or purple on yellow background). The symbol prescribed by this section is the conventional three-bladed design:

RADIATION STREET

1. Cross-hatched area '- to be magenta or purple.

2. Background is to be yellow.



(2) In addition to the contents of sizns and labels prescribed in this section. licensees may provide on or near such

signs and labels any additional information and the words: tion which may be appropriate in aiding individuals to minimize exposure to radiation or to radioactive material.

(b) Rediction crees. Each radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

## CAUTION I RADIATION AREA

(c) High rediation erces. (1) Each high radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution (symbol and the words:

## CAUTION A RIGH RADIATION AREA

(2) Each high radiation area shall be equipped with a control device which shall either cause the level of radiation to be reduced below that at which an individual might receive a dose of 160 millirem in one hour upon entry into the area or shall energine a conspicueus visible or audible alarm signal in such a manner that the individual entering and the licensee or a supervisor of the activity are made aware of the entry. In the case of a high radiation area established for a period of 20 days or less, such control device is not required.

(d) Airborne radioactivity creas. (1) As used in the regulations in this part, "airporne radioactivity area" means (1) any room, enclosure, or operating area in which airporne radicactive materials. composed wholly or partly of licensed . material, exist in concentrations in excess of the amounts specified in Appendix B, Table I. Column 1 of this part; or (!!) any room, enclosure, or operating area in which airborne radioactive material composed wholly or partly of licensed material exists in concentrations which, averaged over the number of hours in any week during which individuals are In the area, exceed 25 percent of the amounts specified in Appendix B. Table L Column 1 of this part.

(2) Each airborne radioactivity area shall be conspicuously posted with a sign or signs beating the radiation caution symbol and the words:

#### CAUTION

## · AIRBORNE RADIOACTIVITY AREA

(e) Additional requirements. (1) Each area or room in which licensed material is used or stored and which contains any radicactive material (other than natural uranium or thorium) in an amount exceeding 10 times the quantity of such material specified in Appendix C of this part shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

#### CAUTION

#### RADIOACTIVE MATERIAL(S)

(2) Each area or room in which natural uranium or thorium is used or stored in an amount exceeding onehundred times the quantity specified in Appendix C of this part shall be conspicuously posted with a sign or signs bearing the radiation caution symbol

\*Or "Danger".

## CAUTION . RADIOACTIVE MATERIALISI

(f) Containers. (1) Each container in thich is transported, stored, or used a grantity of any licensed material (other than natural uranium or thorium) greater than the quantity of such material specified in Angendix C of the part shall bear a durable, clearly visible fabel bearing the radiation caution symbol and the words:

## CYALION

# RADIOACTIVE MATERIAL

(2) Each container in which natural branium 'or therium is transported, stored, or used in a quantity greater than ten times the quantity specified in Appendix C of this part shall bear a durable, clearly visible label bearing the radiation caution symbol and the words:

## CAUTTON

## RADIOACTIVE MATERIAL

(2) Notwithstanding the provisions of subparagraphs (1) and (2) a label shall not be required:

(i) If the concentration of the material in the container does not extend that specified in Appendix B. Table I. Column 2 of this part, or

(h) For laboratory containers, such as beatters, flasks, and test tubes, used transiently in laboratory procedures, when the user is present.

(4) Where containers, are-used for storage, the labels required in this parapart shall state also the quantities and bands of radioactive materials in the containers and the date of measurement of the quantities.

120.204 Exceptions from posting recurrements. Notwithstanding the provisions of 3 20.203.

(a) A room or area is not required to be posted with a caution sign because of the presence of a scaled source provided the radiation level twelve inches from the surface of the source container or bousing does not exceed five millirem perhour.

(b) Rooms or other areas in hospitals are not required to be posted with caution wirns because of the presence of patients containing byproduct material provided that there are personnel in attendance who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in encous of the limits established in the regulations in this part.

(c) Caution signs are not required to be posted 11 areas or rooms containing radioactive materials for periods of Karthan eight hours provided that (1) the materials are constantly attended during such periods by an individual who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive materials in evcuts of the limits established in the remuhtions in this part and. (2) such area or foom is subject to the licensys's control.

120.205 Ecomptions for radioacsite materials packaged for shipment. Radioactive materials packaged and labelid In accordance with regulations of the Interstate Commerce Commission shall be exempt from the labeling and posting requirements of 1 20.203 during thip-ment, provided that the inside containers are labeled in accordance with the provisions of \$ 20.203 (f).

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\$ 20.208 Instruction of personnel. All individuals working in or frequenting any portion of a restricted area shall be informed of the occurrence of radioactivo materials or of raciation in such portion, and shall be instructed in the hazards of excessive exposure to such materials or radiation and in precautions or procedures to minimize exposure.

\$ 20,207 Storage of licensed material. Licensed materials stored in an unrestricted area shall be secured against unauthorized removal from the place of storage.

#### WASTE DISTOSAL

1 20.201 General requirement. No llcensee shall dispose of licensed material except:

(1) By transfer to an authorized reelplent as provided in the regulations in Part 30, 40, or 70 of this chapter, whichever may be applicable; or

(2). As authorized pursuant to \$ 20.202; or

(3) As provided in 120.200 or § 20.304. applicable respectively to the disposal of licensed material by release into sanitary sewerage systems or burial in soil, or in [ 20.103 (Concentrations in Effuents to Unrestricted Areas).

\$ 29.302 Method for obtaining ap-provel of proposed disposal procedures. Any licenses or applicant for a license may apply to the Commission for 2pproval of proposed precedures to dispose of licensed material in a manner not otherwise authorized in the regulations in this chapter. Each application should include a description of the licensed material and any other radioactive material involved, including the quantities and kinds of such material and the levels of radioactivity involved, and the proposed manner and condi-tions of disposal. The application should also include an analysis and evaluation of pertinent information as to the nature of the environment, including topo-graphical, geological, meteorological, and hydrological characteristics; usage of ground and surface waters in the general area; the nature and location of

other potentially affected facilities; and procedures to be observed to minimize the risk of unexpected or hazardous exposures.

1 20.203 Disposal by release into sanifary sewerage systems. No licensee shall discharge licensed material into a sanitary sewerage system unless:

(a) It is readily soluble or dispersible In water: and

(b) The quantity of any licensed, er other radioactive material released into the system, by the licensee in any one day does not exceed the larger of subparagraphs (1) or (2) of this paragraph:

(1) The quantity which, if diluted by the average daily quantity of sewage released into the sewer by the licensee,

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will result in an average concentration equal to the limits specified in Appendix B. Table I. Column 2 of this part; or

(2) Ten times the quantity of such material specified in Appendix C of this

part: and (c) The quantity of any licensed or other radioactive material released in any one month. If diluted by the average monthly quantity of water released by the licensee, will not result in an average concentration exceeding the light specified in Appendix D, Table I, Column 2 of this part; and

(d) The gross quantity of licensed and other radioactive material released into the sewerage system by the licensee does not exceed one curie per year.

Excreta from individuals undergoing medical diagnosis or therapy with radioactive material shall be exempt from any limitations contained in this section.

1 20.004 Disposed by buriel in soil. No licensee shall dispose of licensed material by burial in soil unless:

(a) The total quantity of licensed and other radioactive materials buried at any one location and time does not exceed, at the time of burial, 1,000 times the amount specified in Appendix C of this part; and (b) Burial is at a minimum depth of

four feet; and (c) Successive burials are separated by

distances of at least six feet and not more than 12 burials are made in any year.

# ALCORDS, REPORTS, AND NOTIFICATION

3 20.401 Records of surveys, rediation monitoring, and disposal, (a) Each licensee shall maintain records showing the radiation exposures of all individuals subject to personnel monitoring control under § 20,202 of the regulations in this part.

(b) Each licensee shall maintain records showing the name of each individual exposed to radiation pursuant to 120.101 (a) (2) and the weekly dose of each such individual for the 13 consecutive weeks of highest cumulative weekly dose.

(c) Each licensee shall maintain records in the same units used in the appendices to this part, showing the results of surveys required by § 20.201 (b), and disposals made under 11 20.202, 20.203, and 20.304.

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## PERSONALE WEEKLT DOSE

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\$ 20.402 Reports of the/t or loss of licensed material. Each licensee shall report promptly to the Commission, after its occurrence becomes known to the licensee, any loss or theft of licensed material in such quantities and under such circumstances that it appears to the licensee that a substantial hazard may result to persons in unrestricted areas.

## EXCEPTIONS AND ADDITIONAL REQUIREMENTS

1 20.501 Applications for ecomptions. The Commission may, upon explication by any licensee or upon its own initiative. grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not result in undue hazard to life or property.

1 20.502 Additionalrequirements. The Commission may, by rule, regulation, or order, impose upon any licensee such requirements. In addition to those cstablished in the regulations in this part. as it deems appropriate or necessary to protect health or to minimize danger to life or property.

#### INFORCESSINT

§ 20.601 Visictions. An injunction or other court order may be obtained prohibiting any violation of any provision of the act or any regulation or order issued thereunder. Any person who willfully violates any provision of the LCC or any regulation or order issued thereunder may be guilty of a crime and, upon con-tiction, may be punished by fine or imprisonment or both, as provided by law.

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Nore: The record keeping and reporting re-quirements contained herein have been approved by the Dureau of the Budget in accordance with the Federal Reports Act of 1942.

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Dated at Washington, D. C., this 16th day of January 1957.

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For the Atomic Energy Commission, . •

K. E. Freids, General Manager.

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The denominator in each of the above ration was obtained by multiplying the drugs in the table by 1000 as provided in \$ 20,004.

(7. R. Doc. 57-511; Filed, Jan. 25, 1957; 12:00 p. m.)

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(b) For skim milk in producer milk used to produce condensed skim milk. and for milk or skim milk transferred or diverted as Clair TI milk to a nonposi plant location with the marketing area from the plant or from the marketing area within the marketing area, at the rate specified in prograph (a) of this section, less 10 tents.

<u>Chinest in the constant</u>

Signed at Washington. D.C., on August 6 1250 G. R. Gesnitk. Acting Debuty Animistrator, Reculatory Programs. IFR. Doc. 68-2536; Filed. Aug. 2. 1987;

# ATOMIC ENERGY CONTINUSSION 1 10 CFR Part 201 STANDARDS FOR PROTECTION AGAINST RADIATION

# Microcurie Amounts of Byproduct Material

Concurrently with publication of this notice the Atomic Energy Commission is publishing a notice of proposed rule making to amend 19 CFR Part 20, "Rules of General Applicability to Licensing of Byproduct Material," 10 CFR Part 31, "General Licenses for Certain Quantities of Byproduct Material and Byproduct Material Contauned in Certain Items;" 10 CFR Part 32, "Specific Licenses to Manufacture, Distribute, cr Import Exempted and Generally Licensed Items Containing Byproduct Material," and 10 CFR Part 35, "Human Uses of Byproduct Material," These proposed amendments to 10 CFR Part 32 would establish (a) criteria for the issuance of specific licenses for the manufacture, processing, production, packaging, repackaging, import, or transfer of the proposed exempt quantities of byproduct material, and (b) certain license conditions for these speeific licenses.

elfic licences. Appendix C. 10 CFR Part 20, currently consists of a list of radioisotopes in which the kinds and quantities of bypreduct material are identical to these generally licensed "not as a scaled source" 55 11 31.4 and 31.100. Schedule A. 10 CFR Part 31. The list of quantities in Ap-pendix C, 10 CYP. Part 20, is referred to in providing exceptions from labeling re-guirements pursuant to 3 20.203 and in specifying quantities of byp.oducts matorial which may be disposed by release Into sanitary sewerage systems pursuant to \$ 20.303(b) (2) or by burial in soil pursuant to 1 20.304. For the purposes of these sections, the quantities of bypreduct material in the present Appendix C may be modified to conform with the quantities proposed in theynew \$ 30.71. Schedule B, 10 CIR Part 30, without undue risk to the health and safety of employees or the public.

Accordingly the proposed amondment to 10 CFR Part 20. "Standards for Protection against Radiation." which foilows would conform the microcuric amounts

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of byproduct material listed in Appendix C. 10 CFR Part 20, with the quantities proposed in the new 100 71, Schedule D. 10 CFR Part 30. Americium 241, wille not included in 1 20.71. Schedule B. would be aidded 19 Antordiy C. 12 GFP. Part 22. and the quantities inted in Appendix C. for radium 225, uramum 233, 231, 235, and plutonium 239 would be reduced to values more consistent with the toxicity of those nuclides and with the criteria used to derive the every substitutes. The quantines listed for natura, un main and natural thorium would not be reduced because of the low specific activity of those source materials and the attendant low risk of human intake of the materials. The last entry of Appendix C. 10 CER Part 20, now provides a quantity for "Un-Identified radioactive materials or any of the above in unknown minitures." The proposed amendment would provide two listings, one for unlisted alpha emitting radionuclides or mixtures of alpha emitters of unknown composition, and one for any radionuclides, other than alpha enutting radionuclides, not listed in Appendix C or mixtures of beta emitters of unknown composition.

Pursuant to the Atomic Energy Act of 1934, as amended, and section 533 of title 5 of the United States Code, notice is hereby given that adoption of the following amendment to 10 CFR Part 20 is contemplated. All interested persons who desire to submit written comments or suggestions for consideration in connection with the proposed amendment should send them to the Secretary, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Branch, within sixty (60) days after publication of this notice in the FEDERAL RESISTER. Comments received after that period will be considered if it is practicable to do so, but assurance of consideration cannot be given except as to comments filed within the period specified. Copies of the comments on the proposed rule may be examined at the Commission's Public Decument Room at 1717 H Street NW., Washington, D.C.

Appendix C of 10° CFR Part 20 is amended to read as follows:

Staterial 211	crocuries
Americium 241	_ 0.01
Azumony 102	- 100
Antimony 124	
Antimony 105	- 10
Arsenie TJ	
Arcaic 74	- 10
Artenie 76	- 10
Amenic Thereasessesses	
Banum 131	_ 10
Binum 140	- 10
Buzuth 210	- 1
	_ 10
Cutruum 109	_ 10
Cudatium 115m	
Catazian 115	<b>100</b> ·
Calcium 45	10
Calcium 47	_ 10
C1:500 14	1.000
Cenum HILLESS	100
Cartum 143	
Certura 144	1
Cesium 131	
Cestum 124m	100
Calum 134	1
Conturn 123	
Cestura 130	
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	Europiuin	122 1377			1
	Luropium	153			1 10
	Sucrine	12		1.0	
	Cadollaius	m 153			:0
	Gadoltanu	n 157		1	50
	Gallium 73	2			10
	Germanu	m 71	********	1	<u>∞</u>
	Gold 132	***********		1	00 00
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	Nobium 32		********	1	0
	Nichium 3	5	******	1	3
	Nicolum 2	5			0
	Cizilum 1	9327		10	10 20
	Csmlum 1	91		10	
	Ormium 13	3		10	:0
	Palladium			:0	
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	Platizum	192		10	
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nenium	100	1 10
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LATING	133	10
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natura	47	10
	14	10
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ee 110m	1	1
PP 111.		100
lum 24		- 10
mtium	13	10
Kulum		1
ntlum		.1
nuum		10
	92	20
	5	100
italum	182	10
hnetiun	3 26	10
hnetiun	97-3	:00
hnetium	3 97	120
metium	19755	100
anedus	99	10
urium	125m	:0
urium	127m	10
urium	127	100
urium	10222	. 10
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urium	13151	10
urium	132	10
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llium 2	00	100
llium 2	21	100
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llum 2	34-Uranium 225	.01
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89		10
fam		100
69		1.000
10111-0	93	10
mium	85	10
mium	97	10
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	radionuclides. not it mixtures of beta emitter	
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erst: For purposes of 11 00.203 and 6, where there is involved a combination stopes in known amounts the limit for combination should be derived as fol-

Determine for each isotope in the instica, the ratio between the quanresent in the combination and the limit wise established for the specific isotop i not in combination. The sum of such i for all isotopes in the combination not exceed "1" it.e. "unity"). Example: purposes of 100004. If a particular i contains 20,000 ac of Aut" and 500,000 O", it may also include not more than

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a 200 se of De. This limit was determined as follows:

20,000 pe A 10<sup>111</sup> 202,000 pe C<sup>11</sup> 200 pe I<sup>111</sup> 100,000 pe 1,000 pe 1,000 pe 1,000 pe

The denominator in each of the above ratios was obtained by multiplying the figure in the table by 1,000 as provided in 1 20204. (See, 161, 68 Stat. 948; 42 .S.C. 2201)

Dated at Washington, D.C., this 30th day of July 1963.

For the Atomic Energy Commission.

W. B. McCool, Secretary.

[F.R. Doc. 68-9532: Filed, Aug. 9, 1963; 8:45 a.m.]

# L 10 CFR Peris 30, 31, 32, 35 1 BYPRODUCT MATERIAL

## Exemption of Small Quantities

The Atomic Energy Commission is considering an amendment to 10 CFR.Part 30 of its regulations, as set forth below. which would exempt from licensing requirements the receipt, possession, use. transfer, ownership, or acquisition of small quantities of bypreduct material and would revoke the general license for small quanticles of byproduct material currently set forth in 11 51.4 and 31.100. Schedule A, 10 CFR Part 31. Conforming amendments would also be made to the title and to 11 31.1 and 31.2(b) of 10 CFP. Part 31. Proposed amendments to 10 CFR Part 32 would establish (2) criteria for the issuance of specific licenses for the manufacture. processing. production, packaging, repackaging, import, or transfer of the proposed exempt quantities of byproduct material, and (b) certain license conditions for these specific licenses. A proposed antendment to 10 CFR Part 33 would classify that the proposed exemps quantities of byproduce material are not for use in humans. Coneurrently with publication of this notice the Commission is publishing proposed amendments of 10 CFR Part 20. "Standards for Protection Against Radiation". to conform the hyproduct material portions of Appendix C, 10 CFR Part 29, 50 the quantities proposed for exemption in \$\$ 30.18 and 30.71. Schedule B. 19 CFR Part 30, to add americium 241, and to change certain other quantities listed in Appendix C.

At the present time the Commission's regulations provide in 131.4. 10 CFR Part 31, a general license for the transfer. receipt, acquisition, ownership, possession, use, and import of certain quantities of hyproduct material as set cut in 3 St. 100, Schedule A. That schedule was last modified in 1956. Since that time additional radioisotopes have become availabie, and new estimates of relative hazard have been made. With the development of tracer methods and more sensitive instrumentation, small quantities of byproduct material have fained wider use. They are used increasingly as teaching aids and their research applications are expanding. It appears that use of small

quantilies of byproduct material would be facilitated by the proposed exemption in 10 CFR Part 30. J 20.18 set forth below, and that a degree of radiological safety comparable to that provided under the present general license can be achieved by imposing appropriate controls on the producer, importer, packager, repackager, or transferor of such quantilies. The existing general license would no longer be necessary and would be reveked.

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The proposed amendinent to 10 CFP. Part 30 would add a new 1 20.71, Schedule B. of exempt quantities which revises and enlarges the schedule of radioisotopes in present | 31.150. Schedule A. Generally Licensed Quantities. 1. WO Jane enteria were used in correcting the quanti-tles. Since initialation is considered the most likely route of entry into the body. the quantity that would be inhaled by a standard man exposed for 1 year at the bighest average concentration permitted In air (by 10 CFR Part 20) for members of the general public was computed. If the radioisoscepe emits gamma radiation. the quantity that, from a point source, movid produce a radiation level of 1 millirgenizen per hour at a distance of 10 The continieters was also computed. analler of these two quantities was then legarithmically rounced to the measest decade. In nucrocuries, and entered in \$ 20.71. Schedule B. In the case of the radionuclide krypton 35, the quantity was set at 100 microcuries to limit the exter-<u>në dose tatë due to het</u>

J..... Schedule A. ..... Par 11. presently specifies, for each mdioisotope listed, a cenerally licensed quantity "as a sepled source", and a quantity "as a sepled source", an quantity "not as a scaled source" . ..... mest cases the two quantities do not differ. but in one-third of the cases the quantity "as a scaled source" is larger by a factor of 10. In the proposed schedule of quantities to be exempted no allowance is made for scaling. The quantities are generally larger than the quantities of the same radioisotopos listed in the present schedule of generally licensed punnticies "not as a realed source" 57 factors that average about nine. For three radioisotopes-lodine 131. manganere 56 and thailium 201-and far: byproduct materials not specifically identified. the "not as a scaled source" quantities have been reduced by factors ranging from five to 10. The proposed quantities for seven radicisatopes-cerium 144. cobai: 50, curopium 134, poicnium 210. ruthenium 106. strontium 32. and strentium SO-would be equal to those quantities presently authorized Tot as a sealed source", but lower thanthe present "as a sealed source" values by a factor of 10. Two of these-cobalt 60 and strentium 90-have found considerabie use in sealed reference or calibration sources containing quantities higher than those proposed for exemption. The quantities for the radionuclides would be reduced to maintain a consistent relative degree of safety between the cuanthes of individual radionuclides under the exemption in accord with the enteria used to arrive at the quantities. Specific

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comment on the preposed quantity limits for those radionuclides for which the quantities would be reduced is requested to aid the Commission in judging the degree to which the proposed reduction in the individual quantities of these radionuclides might affect present uses.

The proposed amendments to 10 CFR Part 32 would establish, under Subpart , requirements for the issuance of specific licenses to persons who manufacture, process, produce, package, repackage, import, or transfer hyproduct material for commercial distribution to persons exempt pursuant to 1 20.13, 19 CFR Part 30, or equivalent regulations of an agreement State.1

Persons holding an AEC byproduct naterial license or an agreement State Ucense for-manufacture, processing, or production of byproduct material would be authorized to make transfers, on a noncommercial basis, of exemps quantities of hyproduct material possessed under the license. This provision is dosigned to accommodate the occasional transfers between laboratories of small quantities of byproduct material in tissue samples, bioasay samples, tagged compounds, counting standards, stc., which involve a neglitible risk.

It is considered highly mulkely that the provisions of the proposed exemption, any individual would inhale or mgest more than a very small fraction of any radioactive material teing used or that any individual would receive excessive deses of external radiation.

The Commission is considering a finding that exemption from licensing requirements for the receipt, possession, use, transfer, ownership, and acquisition of the specified quantities of byproquet material, under the conditions set out in the proposed amendments, will not constitute an unreasonable risk to the common defense and scennity and to the health and safety of the public.

Pursuant to Part 130, persons in agreement States who import the exempt quantities of byproduct material or who manufacture, process, or produce such quantities, for transfer on a commercial basis, would be subject to the Commission's licensing and regulatory authority. An agreement State producer, packager, repackager, or importer of hyproduct material who intends to distribute guantitles of byproduce material to exempt users, would be required to file an application with the Commission for a speeine license authorizing the import or transfer of such quantities. The application should meet the criteria of \$ 32.13 of 10 CFR Part 32.

Pursuant to the Atomic Energy Act of 1954, as amended, and section 333 of ulle 5 of the United States Code, notice is hereby given that adoption of the fol-

A State to, which the Commission has transferred certain regulatory authority over pursuant to section 274 of the Atomic Energy Act of 1954, as amended,

lowing amendments to 10 CFR Parts 20. 31, 32, and 35 is contemplated. All interested persons who desire to submit a written comments or successions for consideration in connection with the proposed amendments should send them to the Sceretary, U.S. Atomic Energy Commission, Washington, D.C. 20343; At-tention: Chief, Public Proceedines Branch, within sixty (60) days after publication of this notice in the Fronzal itzeistra. Comments received after that period will be considered if it is practicable to do so, but assurance of consideration cannot be given except as to comments fied within the period specifled. Capies of coniments on the proposed rule may be examined at the Commission's Public Document Recin 21 1717 H Street NW., Washington, D.C.

# PART 20-RULES OF GENERAL AP-PLICABILITY TO LICENSING OF BYFROEUCT MATERIAL

1. A new { 30.13 is added to 10 CPP. Part 30 to read as follows:

§ 30.10 Exempt quantities.

(1) Except as provided in paragraphs (c) and (d) of this section, any person is exempt from the requirements for a license set forth in section 31 of the Act and from the regulations in Parts 20-34 of this chapter is the extent that such person receives, possesses, mes, transfers, owns, or acquires bypreduce material ia Individual quantities each of which coes not exceed the applicable quantity set forth in 1 30.71 Senedule 3.

(b) Any person who possesses bypredues material received or acquired prior to (date) under the general license then provided in 101.4 of this chapter is exempt from the resurranents for a license set forth in section 31 of the Act and from the regulations in Parts 20-34 of this chapter to the extent that such gerson possesses. Uses, transfers, or owns such byproduct material.

(c) This section does not authorize the production, parkaging, repackaging, or import of byproduct material, for purposes of commercial distribution, or the incorporation of byproduct insterial into products intended for commercial distribution.

(d) No person may, for purposes of commercial distribution. iniport or transfer bypreduct material in the individual quantities set forth in § 20.71 Schedule B. knowing or having reason to believe that such quantities or approaues material will be transferred to persons exempt under this section or equivalent regulations of an agreement State, except in accordance with a license issued under § 32.18 of this chapter, which license states that the hyproduct material may be transferred by the licensee to persons exempt under this section or the equivalent regulations of an acreement State.

Directive date of these amendments.

2. A new 1 30.71 is added to 10 CFR Part 30-to read as follows:

Dyproduct Muterial         Microcuries           Antimony 122 (Sh 123)         100           Antimony 123 (Sb 123)         10           Artenic 73 (As 73)         100           Artenic 73 (As 73)         10           Calcum 121 (2s 13)         10           Calcum 123 (Ca 13)         10           Calcum 13 (Ca 14)         10           Calcum 13 (Ca 13)         10           Calcum 13 (Ca 13)         10           Cenum 14 (Ca 14)         10           Cenum 13 (Ca 13)         100           Cenum 13 (Ca 13)         100           Cenum 13 (Ca 13)         10           Ce	\$ 30.71	Selicit	ule B.	•		٠	•
Antimony 122 (Sh 123)       100         Antimony 123 (Sb 123)       10         Antimony 123 (Sb 123)       10         Arenic 73 (As 73)       10         Arenic 74 (As 71)       10         Arenic 73 (As 73)       10         Arenic 74 (As 71)       10         Darum 123 (Cd 133)       10         Calcium 123 (Cd 133)       10         Calcium 13 (Cd 13)       10         Calcium 13 (Cd 13)       10         Caron 13 (Cd 13)       10				ia t	Mer	~~v~	(~1
Antimoory 123 (3b 123)       10         Antimoory 123 (3b 123)       100         Arrenic 73 (As 72)       100         Arrenic 74 (As 71)       100         Arrenic 76 (As 72)       10         Darnum 121 (2s 121)       10         Darnum 121 (2s 121)       10         Distrutt 210 (El 120)       1         Dordne 82 (Er 23)       10         Calmium 125 (Cd 125)       10         Calmium 125 (Cd 115)       10         Calmium 125 (Cd 115)       10         Calmium 125 (Cd 115)       10         Calmium 126 (Cd 13)       10         Calmium 121 (Cd 13)       100         Carnum 121 (Cd 13)       100	Antiniony	170 19	Sh 122				~ •
Arsenic 73 (As 73)       100         Arsenic 74 (As 75)       10         Arsenic 76 (As 75)       10         Bartum 121 (Ba 131)       10         Darnum 120 (Ba 131)       10         Darnum 121 (Ba 131)       10         Darnum 120 (Ba 131)       10         Darnum 121 (Ca 131)       10         Calcium 115 (Cd 115)       10         Calcium 115 (Cd 115)       10         Calcium 13 (Cd 115)       100         Calcium 13 (Cd 131)       100         Calcium 13 (Cd 131)       100         Carum 131 (Cd 131)       100         Cerum 132 (Cd 131)       10         Cerum 133 (Cd 131)       10         Cerum 131 (Cd 131)       10         Cerum 132 (Cd 131)       10         Cerum 133 (Cd 131)       10         Cerum 134 (Cd 131)       10         Cerum 135 (Cd 131)       10         Cerum 137 (Cd 131)       10         Cher	Antimony	121 13	55 121	)			
Arrenic 76 (Az 72)       10         Darmum (21 (Da 13))       10         Darmum (21 (Da 13))       10         Dismuti 21 (Da 13)       10         Dismuti 21 (Da 13)       10         Cadmum (13 (Cd 13))       10         Cadmum (13 (Cd 13))       10         Cadmum (13 (Cd 13))       10         Calcum (13 (Cd 13))       10         Calcum (13 (Cd 13))       10         Carbon (4 (C 14))       10         Carbon (3 (Cd 13))       10         Carbon (3 (Cd 13))       10         Carbon (3 (Cd 13))       10         Cenum (31 (Cd 13))       10         Chernic (3 (Cd 13))       10         Chernic (3 (Cd 13))       10         Cherni (32 (Cd 13))	Autonony	125 (3	56 122	1			
Arrenic 76 (Az 72)       10         Darmum (21 (Da 13))       10         Darmum (21 (Da 13))       10         Dismuti 21 (Da 13)       10         Dismuti 21 (Da 13)       10         Cadmum (13 (Cd 13))       10         Cadmum (13 (Cd 13))       10         Cadmum (13 (Cd 13))       10         Calcum (13 (Cd 13))       10         Calcum (13 (Cd 13))       10         Carbon (4 (C 14))       10         Carbon (3 (Cd 13))       10         Carbon (3 (Cd 13))       10         Carbon (3 (Cd 13))       10         Cenum (31 (Cd 13))       10         Chernic (3 (Cd 13))       10         Chernic (3 (Cd 13))       10         Cherni (32 (Cd 13))	Arsenic 73	172	73)				
Arrente TT (A. TT)       10         Darnum (2) (23 10)       10         Distructi 210 (E1 20)       1         Distructi 210 (E1 20)       10         Cadmium (15) (C1 13)       10         Caterum (3) (C1 13)       10         Caterum (3) (C1 13)       10         Cenum (3) (C1 13)	Artenie 74	144	711 40.	*******			
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Drowine 22 (Dr 32)         10           Cadminian 125 (Cd 135)         10           Cadminian 135 (Cd 115)         10           Calcium 15 (Cd 115)         10           Calcium 15 (Cd 115)         10           Calcium 15 (Cd 115)         10           Caron 14 (Cd 14)         12           Cerum 151 (Cd 115)         100           Cerum 151 (Cd 115)         100           Cerum 151 (Cd 131)         100           Cerum 153 (Cd 137)         10           Cerum 151 (Cd 137)         10           Cerum 152 (Cd 137)         10           Cerum 153 (Cd 137)         10           Cerum 154 (Cd 14)         10           Cerum 155 (Cd 137)         10           Cerum 155 (Cd 138)         10           Cerum 154 (Cf 14)         10           Cyper 64 (Cd 14)         10           Cyper 74 (Cd 14)         10           Cyper 74 (Cd 153)         10	Battum 141	(31	1101				
Clammum 125 (Cd 113)       10         Clammum 125 (Cd 113)       10         Calcum 45 (Ca 45)       10         Calcum 45 (Ca 45)       10         Carbon 14 (C 14)       12         Cernum 131 (Ce 14)       10         Cernum 131 (Ce 14)       10         Cernum 131 (Ce 14)       100         Cernum 131 (Ce 13)       10         Chernum 123 (Ce 13)       10         Chernum 124 (2) (12)       10         Chernum 123 (Ce 13)       10         Cernum 124 (2) (12)       10         Cernum 125 (2	Elsmuth 2	10 / E1	2:0).	*******			
Claimium 115 (Cd 113m)       10         Calcium 45 (Cd 45)       10         Calcium 45 (Cd 45)       10         Carbon 14 (C 14)       12         Carbon 14 (C 14)       12         Cenum 131 (C 14)       12         Cenum 131 (C 14)       12         Cenum 131 (C 131)       100         Cenum 121 (C 131)       100         Cenum 123 (C 131)       100         Cenum 123 (C 133)       10         Cenum 124 (C 131)       10         Cenum 125 (C 135)       10         Cenum 127 (C 131)       10         Chennium 31 (C 131)       10         Chennium 32 (C 131)       10         Chennium 33 (C 131)	Cadaution		51 12		•••		·
CALCHUM 13: 1/24 451	Caumium	115m	ICd	115m)		:0	
Carbon 14 (C 44)       12         Carbon 14 (C 14)       13         Certum 131 (C 14)       13         Centum 131 (C 14)       10         Centum 131 (C 14)       10         Centum 131 (C 14)       10         Centum 131 (C 13)       10         Carbon 14 (C 14)       10         Carbon 15 (C 13)       10         Centum 131 (C 13)       10         Carbon 127 (C 13)       10         Carbon 13 (C 13)       10         Carbon 14 (C 14)       10         Carbon 15 (C 13)       10         Carbon 12 (C 13)       10	Chennum	115 10	Cd 115	1		100	
Garbon 14 (C 14)       1.000         Genum 131 (Ce 141)       100         Genum 131 (Ce 141)       1.000         Genum 131 (Ce 131)       1.000         Genum 133 (Ce 133)       10         Genum 133 (Ce 133)       10         Genum 135 (Ge 135)       10         Genum 137 (Ce 137)       10         Cobatt 10 (Co 138)       10         Genum 137 (Ce 137)       10         Dyspectat 116 (Fe 171)       10         Dyspectat 115 (Fe 131)       10         Fureptum 112 (Fe 131)       10         Fureptum 112 (Ge 71)       10         Gardatiana 123 (Cd 133)       10         Gardatiana 124 (Fe 131)       10 <t< td=""><td>Calcium 1</td><td>1.53</td><td>151</td><td></td><td></td><td></td><td></td></t<>	Calcium 1	1.53	151				
Gernum 141 (Ge 141)       100         Gernum 144 (Ge 143)       1         Genum 124 m (G 124)       1         Genum 124 m (G 124)       10         Genum 124 (G 124)       10         Genum 126 (G 126)       10         Chorne 13 (G 124)       10         Dyper G (C 144)       10         Chronn 111 (G 141)       10         Fureptum 112 (G 17)       10         Fureptum 112 (G 127)       10         Contaringm 71 (G 121)       10         Galathmen 123 (G 123)       10         Galathmen 124 (K 123) <td< td=""><td>Carbon 14</td><td>10.11</td><td><b>1</b>.)</td><td></td><td></td><td>.000</td><td>•</td></td<>	Carbon 14	10.11	<b>1</b> .)			.000	•
Certum 143 (Ce 143)       1         Cestum 121 (Ci 131)       1.200         Cestum 123 (Ci 131)       1.200         Cestum 123 (Ci 123)       10         Cestum 123 (Ci 123)       10         Cestum 127 (Ci 127)       10         Cestum 127 (Ci 137)       10         Cestum 127 (Ci 137)       10         Chlorine 126 (Ci 23)       10         Chlorine 126 (Ci 24)       10         Chlorine 126 (Ci 24)       10         Cabalt 126 (Ci 34)       10         Cabalt 126 (Ci 34)       10         Cabalt 136 (Ci 34)       10         Cabalt 137 (Ci 137)       10         Dystroment 137 (Ci 137)       10         Cabalt 137 (Ci 131)       10         Europutch 132 (Ci 131)       10         Europutch 132 (Ci 133)       10         Cataltinen 132 (Ci 133)       10 <tr< td=""><td>Ceraum 14</td><td>1 100</td><td>141).</td><td>· • • • • • • • • • • • • • • • • • • •</td><td></td><td></td><td></td></tr<>	Ceraum 14	1 100	141).	· • • • • • • • • • • • • • • • • • • •			
Cesium 121 (Cs 121)       1.000         Cesium 123 (Cs 124)       10         Cesium 123 (Cs 124)       10         Cesium 125 (Cs 125)       10         Cesium 126 (Cs 126)       10         Cesium 127 (Cs 137)       10         Chlorna 26 (Cl 26)       10         Cabat: 50 (Cs 63)       10         Cabat: 60 (Cs 60)       10         Cabat: 60 (Cs 60)       10         Cabat: 60 (Cs 60)       10         Capper 64 (Cl 54)       10         Dyprotrum 122 (Cf 13)       10         Caronin 171 (Fr 171)       100         Caronin 172 (Gf 72)       10         Caronin 123 (Cd 153)       10         Caronin 124 (Fr 131)       10         Caronin 125 (Gd 153)       10         Caronin 126 (Gf 12)       10         Caronin 127 (Gf 72)       10         Caronin 127 (Gf 72)       10         Caronin 127 (Gf 72)       10         Caronin 126 (Cf 12)       10         Caron	Cenum 14	3 (Ce	:43).	******		100	
Cesturn 121 (Cs 123)       163.21         Cesturn 123 (Cs 123)       10         Cesturn 123 (Cs 123)       10         Cesturn 123 (Cs 123)       10         Chlorne 26 (Ct 23)       10         Chlorne 26 (Ct 23)       10         Cesturn 121 (Cs 131)       10         Chlorne 26 (Ct 23)       10         Cestat 121 (Cs 131)       10         Futurn 122 (Cs 121)       10         Futurn 123 (Cd 123)       10         Cestat 123 (Cd 123)       10	Cenum li	4 100	1441.				
Cesturn 123 (Cd 123)       10         Cesturn 125 (Cd 123)       10         Cesturn 125 (Cd 135)       10         Cesturn 125 (Cd 135)       10         Chronne 13 (Cd 131)       10         Chronne 13 (Cd 131)       10         Chronne 13 (Cd 131)       10         Caturn 131 (Cd 131)       10         Caturn 131 (Cd 131)       10         Caturn 131 (Cd 131)       10         Caturn 132 (Cd 131)       10         Dyspecturn 132 (Cd 133)       10         Caturn 132 (Cd 133)       10         Caturn 132 (Cd 133)       10         Caturn 133 (Cd 133)       10         Caturn 134 (Cd 131)       10         Caturn 135 (Cd 133)       10         Caturn 135 (Cd 133)       10         Caturn 135 (Cd 133)       10         Caturn 136 (Cd 131)       10         Caturn 137 (Ca 72)       10			131).	*******	I.		
Cesium 125 (Cs 123)       10         Cesium 127 (Cs 137)       10         Chlorine 13 (Cs 131)       10         Cabiti 20 (Cs 20)       10         Cabiti 20 (Cs 20)       10         Capper 64 (Cs 44)       10         Dyprestum 123 (Cg 13)       10         Dyprestum 124 (S 20) (SG)       10         Europhum 132 (G 133)       10         Europhum 132 (G 133)       10         Catathnum 133 (G 133)       10         Catathnum 134 (G 123)       10         Catathnum 135 (G 133)       10         Catathnum 137 (G 172)       10         Catathnum 137 (G 172) <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>~ -</td>							~ -
Gentum 127 (Cs 137)       10         Chierna 26 (Ci 26)       10         Chierna 23 (Ci 23)       10         Cateria 24 (Ca 44)       100         Cateria 25 (Ci 23)       10         Cateria 26 (Ca 44)       100         Dyspectum 160 (Dy 160)       100         Dyspectum 161 (De 160 (Dy 160)       100         Encourse 16 (Fr 171)       100         Europhum 152 (De 160 (Dy 160 (Dr 171))       100         Europhum 152 (De 161 (D) (De 160 (Dr 171))       100         Europhum 152 (Ci 133)       10         Europhum 152 (Ci 133)       10         Europhum 152 (Ci 133)       10         Fucene 13 (F 13)       10         Catelinnum 153 (Cd 133)       10         Catelinnum 153 (Cd 133)       10         Catelinnum 153 (Cd 133)       100         Cateria 17 (Ca 72)       100	Cestura 135	101	25)			10	
Chlorine 13 (CC 23)       10         Chronium 31 (CC 31)       10         Cobalt 25m (C3 33m)       10         Cobalt 25m (C3 43)       10         Dyspectrum 166 (Dy 156)       100         Encount 171 (Fr 171)       100         Europhin 172 (Fr 173)       100         Europhin 172 (Fr 173)       10         Cotalither 172 (Ga 72)       10         Cotalither 172 (Ga 72)       10         Cotalither 172 (Ga 72)       100         Cotalither 123 (Cd 153)       100         Cotalither 124 (Fr 131)       100         Cotalith	Cestum 120	(C3 :	36)				
Chronitum 31 (Cr 31)	Conum 13		·37).				
Chronitum 31 (Cr 31)	Clicrine 1	8 /C:	231			:0	
Condit 13 (Co 13)       10         Cobdit 30 (Co 43)       10         Dynamic Go (Co 43)       100         Encode 112 (Co 13)       100         Europolum 112 (2 h (Eu 132) 13 pr)       100         Europolum 112 (2 h (Eu 134)       100         Europolum 112 (2 h (Eu 134)       100         Europolum 112 (2 h (Eu 134)       100         Gadedinami 123 (Cd 133)       100         Gadedinami 123 (Cd 133)       100         Gadedinami 123 (Cd 135)       100         Gadedinami 123 (Cd 135)       100         Gadedinami 123 (Cd 131)       100         Maining 124 (Er 131)       100         Indinami 136 (Er 131)       100	Chronsum	5: 10	: 51).			, ເວັ້າ	
Cabai: 30 (Ca Ga)       1         Capper G4 (Ca f4)       100         Dyspressum (G + Dy 155)       100         Dyspressum (G + Dy 155)       100         Encome 120 (Fr 171)       100         Europhum 120 (Fr 171)       100         Catlam 120 (G 123)       100         Gadathann 123 (Cd 123)       100         Gadathan 124 (Fr 121)       100         Gadathan 126 (Fr 120)       100         Gadathan 126 (Fr 123)       100         Induan 126 (Fr 123)       100 <t< td=""><td>Cabalt 22m</td><td>· Ca l</td><td>13m).</td><td></td><td></td><td>10</td><td></td></t<>	Cabalt 22m	· Ca l	13m).			10	
Capper G4 (C.1 54)       100         Dysprestum 153 - Dy 155)       100         Dysprestum 152 (Fr 152)       100         Erbium 151 (Fr 171)       100         Europium 152 (Fr 152)       100         Europium 152 (Fr 153)       100         Europium 152 (Fr 153)       100         Europium 155 (Fr 153)       100         Europium 155 (Fr 153)       100         Europium 155 (Fr 153)       100         Gaddinium 153 (Gd 153)       100         Gaddinium 153 (Gd 153)       100         Gaddinium 153 (Gd 153)       100         Gaddinium 155 (Gd 154)       100         Gaddinium 153 (Gd 153)       100         Gaddinium 164 (Fr 166)       100         Gadd 154 (Au 192)       100         Mathum 166 (Kau 166)       100         Mydropen 3 (H 21       100         Innuum 155 (Fr 153)       100         Innuum 155 (Fr 153)       100         Indune 153 (F 153)       100         Indune 153 (F 153)       100         Indune 153 (F 153)       100         Indune 155 (F 153)<	Canalt 13	C3 18	1				
Dynamics (S. Dy (SS)	Cabarr 10		)] }	********			
Dyspressum 166 .Dy 166)	- Evioratium	1 : CS +	Dv 125	)			
Innum 100 (Fr 171)       100         Expluen 131 (Fr 171)       100         Europhum 120 (2 h flu (42 h flu))       100         Europhum 120 (2 h flu (42 h flu))       100         Europhum 120 (2 h flu) (32 h flu)       100         Europhum 120 (2 h flu) (32 h flu)       100         Europhum 120 (2 h flu) (31 h flu)       100         Europhum 120 (Cd 133)       100         Gaddhimm 120 (Cd 134)       100         Gadohimm 120 (Cd 134)       100         Gadohimm 120 (Cd 134)       100         Gadohimm 121 (Ce fl)       100         Gald 134 (Au 120)       100         Mainum 113 (Ar 113)       100         Innum 113 (I 131)       100         Indime 123 (I 133)       100         Indime 131 (I 131)       100         Indime 131 (I 131)       100	Dyapresses	: ::::	·DY :	:56)		1:00	
Europhum 112 13 pr (Eu 132 13 pr)       1         Europhum 113 (Eu 134)       10         Futorine 114 (Eu 134)       10         Futorine 114 (F 134)       10         Gaddinaum 113 (Cd 134)       10         Catherine 114 (F 134)       10         Gaddinaum 113 (Cd 134)       10         Catherine 114 (F 134)       100         Gaddinaum 113 (Cd 134)       100         Gaddinaum 114 (F 134)       100         Gald 134 (Au 194)       100         Mathum 114 (F 131)       100         Mathum 115 (F 131)       100         Mathum 115 (F 131)       100         Indum 115 (F 131)       100         Indum 115 (F 133)       100         Indum 115 (F 133)       11         Indum 115 (F 133)       11         Indum 115 (F 133)       10         Indum 115 (F 133)       11         Indum 115 (F 133)       10         Indum 125 (F 133)       10         Indum 127 (F 133)       10         Indum 127 (F 133)       10      <	Innum 19	2 12:	:52).				
Europhum 112 13 pr (Eu 132 13 pr)       1         Europhum 113 (Eu 134)       10         Futorine 114 (Eu 134)       10         Futorine 114 (F 134)       10         Gaddinaum 113 (Cd 134)       10         Catherine 114 (F 134)       10         Gaddinaum 113 (Cd 134)       10         Catherine 114 (F 134)       100         Gaddinaum 113 (Cd 134)       100         Gaddinaum 114 (F 134)       100         Gald 134 (Au 194)       100         Mathum 114 (F 131)       100         Mathum 115 (F 131)       100         Mathum 115 (F 131)       100         Indum 115 (F 131)       100         Indum 115 (F 133)       100         Indum 115 (F 133)       11         Indum 115 (F 133)       11         Indum 115 (F 133)       10         Indum 115 (F 133)       11         Indum 115 (F 133)       10         Indum 125 (F 133)       10         Indum 127 (F 133)       10         Indum 127 (F 133)       10      <	Surphane 1	1 0.7	1711.	162 0 2 14		102	
Lerop.unt 124 (Tr 134)	Europtuin I	12:13	r: (Lu	:32 :3 :::			
Future.ne 13 (F 13)       1.000         Gatification 153 (Cd 153)       10         Gatofication 153 (Cd 153)       10         Catification 72 (Ca 72)       10         Gatofication 72 (Ca 72)       100         Mathematication 72 (Ca 72)       100         Mathematication 72 (Ca 72)       100         Mathematication 72 (Ca 72)       100         Indumatication 72 (Ca 72)       100         Indumatication 72 (Ca 72)       100         Indumatication 72 (Ca 72)       10         Indumatication 73 (Ca 72)       10         Indiana 120 (Ca 72)       10         Indiana 123 (Ca 123)       10         Indiana 123 (Ca 123)<	Yarop.uzi	234 (J	E:: 134	1		:	
Galdingen 133 (Cd 133)       10         Galdingen 135 (Gd 134)       10         Galdingen 12 (Ga 72)       10         Galdingen 72 (Ga 72)       100         Galdingen 126 (H 131)       100         Mydropen 3 (H 2)       100         Inclum 113 (H 121)       10         Indine 123 (H 123)       10	Europua	115 - 1	E 153	1		10	
Galedinium 139 (Gl 139)       100         Califum 72 (Ga 72)       100         Cerninum 71 (Ge 71)       100         Gold 139 (Au 190)       100         Mathum 141 (Mf 131)       100         Mathum 141 (Mf 131)       100         Mathum 143 (Mf 133)       100         Innuum 143 (Mf 133)       100         Innuum 143 (Mf 133)       100         Indine 123 (I 123)       10         Iddine 123 (I 123)       10         Iddine 123 (I 123)       10         Iddine 123 (I 123)       100         Iddine 123 (I 123)       100         Indine 124 (I 124)       100	Gadalanen	1 113	iCd 1	23)	è,	100	
Cernitizium 71 (Ge 71)       100         Gold 133 (Au 180)       100         Gold 133 (Au 190)       100         Mainum 121 (Mf 131)       100         Mainum 126 (Ho 166)       100         Mydrogen 3 (H 2)       100         Inclum 126 (Ho 166)       100         Inclum 126 (Ho 166)       100         Inclum 126 (Ho 165)       100         Inclum 126 (I 123)       100         Indine 125 (I 125)       11         Iodine 125 (I 125)       11         Iodine 127 (I 123)       10         Iodine 127 (I 123)       100         Iodine 128 (I 123)       100         Iodine 129 (I 123)       100         Iodine 120 (I 123)       100         Iod	Gadolinium	: :35 (	I D U : 3	÷)			
Gold 133 (Au 38)       100         Gold 139 (Au 199)       100         Mathium 144 (M2 131)       10         Mathium 146 (M3 166)       100         Mathium 1166 (M3 167)       100         Mathium 126 (M3 167)       100         Mathium 127 (M3 167)       100         Mathium 128 (M3 167)       100         Mathium 12	Callina: 71	1G1	72)				
Gold 199 (Au 199)       100         Mathum 121 (Mf 131)       10         Mathum 121 (Mf 131)       10         Mydregen 3 (M 2)       100         Inclum 113m (2 111m)       10         Inclum 113 (I 131)       10         Iodine 120 (I 120)       1         Iodine 120 (I 120)       10         Iodine 120 (I 120)<	Gale 133		18 71). 181				
Hafmum 12: (H: 13:)       13         Holmum 166 (Ho 166)       100         Nydergen 3 (H 2)       100         Indum 113m (In 113m)       100         Indum 113m (In 113m)       100         Indum 113m (In 113m)       100         Indum 113 (In 113)       100         Indum 120 (I 120)       1         Iodine 120 (I 120)       1         Iodine 120 (I 120)       10         Iodine 120 (I 120)       10         Iodine 120 (I 120)       10         Iodine 120 (I 120)       100         Iodine 120 (I 120)       10         Iodine 120 (I	Gald :: )	Au :	221				
Mystrigen 3 (M 31       1.000         Inclum 113m (In 113m)       120         Inclum 113m (In 113m)       120         Inclum 113m (In 113m)       120         Inclum 113m (In 113m)       100         Inclum 113m (In 113m)       100         Inclum 113 (In 113)       11         Inclum 120 (I 120)       11         Inclum 121 (I 121)       10         Inclum 122 (I 122)       11         Inclum 122 (I 122)       12         Inclum 122 (I 122)       10         Inclum 122 (I 123)       100         Inclum 123 (I 123)       100         Inclum 124 (I 124)       100         Inclum 135 (I I 13)       100         Inclum 140 (I 14 140)       10         Inclum 140 (I 14 140)       10         Inclum 151 (II 157)       10	Mafather 1.	12 122	1211				
initian issin (in issen)       io         innuum iss (in iss)       io         iodine iss (i iss)       i         iodine iss (i is iss)       i         iodine iss (i is iss)       i         ion iss (i is iss)       i	Hoinium 1	C6 (H	o 168)		-	100	
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1 cdime 123 / [ 123]       1         1 cdime 123 / [ 123]       1         1 cdime 123 ([ 121]       1         1 cdime 123 ([ 122]       10         1 cdime 123 ([ 123]       10         1 cdime 124 ([ 123]       10         1 cdime 124 ([ 123]       10         1 cdime 124 ([ 123]       10         1 cdime 125 ([ 123]       10         1 cdime 135 ([ 123]       10         1 cdime 136 ([ 123]       10         1 cdime 137 ([ 123]       10         1 cdime 136 ([ 12] (23]       10	Indian 11	Sin ()	in 115	E1)		100	
12dime 123 #1 (25)       1         Iodime 123 #1 (21)       1         Iodime 123 #1 (21)       10         Iodime 124 #1 (21)       10         Iodime 125 #1 (23)       100         Iodime 125 #1 (25)       100         Iodime 125 #1 (25)       100         Iodime 124 #17 (24)       100         Inclume 124 #17 (24)       100         Inclume 134 #17 (24)       100         Inclume 134 #17 (24)       100         Inclume 134 #17 (24)       100         Inclume 135 #17 (24)       100         Inclume 137 #17 (24)       100         Inclume 134 #17 #17 #17 #17 #17 #17 #17 #17 #17 #17		112 1 /* ***	:3}	********			
Iceline 122 (1 122)       10         Iceline 122 (1 122)       10         Iceline 123 (1 123)       10         Iceline 123 (1 123)       10         Iceline 123 (1 123)       10         Iceline 124 (2 124)       10         Iceline 125 (1 123)       10         Iceline 124 (2 124)       10         Iceline 125 (1 123)       10         Iceline 125 (1 124)       10         Iceline 135 (1 125)       100         Iceline 137 (1 125)       10         Iceline 132 (1 125)       10         Iceline 123 (1 125)       10         Iceline 124 (1 125)       10         Iceline 125 (1 125)       10         Iceline 125 (1 125)       10 <t< td=""><td>lacine 123</td><td>12 :25</td><td>1</td><td></td><td></td><td></td><td></td></t<>	lacine 123	12 :25	1				
Iceline 122 (1 122)       10         Iceline 122 (1 122)       10         Iceline 123 (1 123)       10         Iceline 123 (1 123)       10         Iceline 123 (1 123)       10         Iceline 124 (2 124)       10         Iceline 125 (1 123)       10         Iceline 124 (2 124)       10         Iceline 125 (1 123)       10         Iceline 125 (1 124)       10         Iceline 135 (1 125)       100         Iceline 137 (1 125)       10         Iceline 132 (1 125)       10         Iceline 123 (1 125)       10         Iceline 124 (1 125)       10         Iceline 125 (1 125)       10         Iceline 125 (1 125)       10 <t< td=""><td>Iodine 129</td><td>11:20</td><td>)</td><td></td><td></td><td></td><td>1,</td></t<>	Iodine 129	11:20	)				1,
Lotine 134 (1 124)       100         Iodine 135 (1 125)       10         Indium 102 (1: 124)       10         Indium 102 (1: 124)       10         Indium 102 (1: 124)       100         Indium 103 (1: 124)       100         Indium 104 (1: 124)       100         Indium 105 (1: 124)       100         Indium 106 (1: 120)       100         Indium 107 (1: 151)       100         Lanthianum 140 (1: 140)       10         Lanthianum 140 (1: 140)       10         Lanthianum 140 (1: 151)       10         Linganese 12 (1: 152)       10         Linganese 12 (1: 152)       10         Linganese 12 (1: 152)       10         Linganese 13 (1: 152)       10         Medynderum 127 (1: 157)       10         Medynderum 127 (1: 157)       10         Medynderum 127 (1: 157)       10         Medyndum 147 (1: 151)       10         Neodyntum 147 (1: 141)       10         Nicket 150 (Ni 12)       10						.:	
Lotine 134 (1 124)       100         Iodine 135 (1 125)       10         Indium 102 (1: 124)       10         Indium 102 (1: 124)       10         Indium 102 (1: 124)       100         Indium 103 (1: 124)       100         Indium 104 (1: 124)       100         Indium 105 (1: 124)       100         Indium 106 (1: 120)       100         Indium 107 (1: 151)       100         Lanthianum 140 (1: 140)       10         Lanthianum 140 (1: 140)       10         Lanthianum 140 (1: 151)       10         Linganese 12 (1: 152)       10         Linganese 12 (1: 152)       10         Linganese 12 (1: 152)       10         Linganese 13 (1: 152)       10         Medynderum 127 (1: 157)       10         Medynderum 127 (1: 157)       10         Medynderum 127 (1: 157)       10         Medyndum 147 (1: 151)       10         Neodyntum 147 (1: 141)       10         Nicket 150 (Ni 12)       10	Tytine 102		: • • • • • • • • • • • • • • • • • • •	********			
Indium 132 (fr 132)       10         Indium 134 (fr 134)       100         Indium 134 (fr 134)       100         Indium 134 (fr 134)       100         Indium 130 (fe 13)       100         Indium 130 (fe 13)       100         Krypten 23 (ff 53)       100         Krypten 23 (ff 53)       100         Lanthaum 140 (fa 140)       10         Lanthaum 140 (fa 141)       10         Mercury 107 (ff 12)       10         Mercury 107 (ff 20)       10         Modyndum 147 (for 141)       100         Neodyndum 140 (fd 140)       100         Nickel 50 (fd 12)       100	Icame 134		247				
Indium 132 (fr 132)       10         Indium 134 (fr 134)       100         Indium 134 (fr 134)       100         Indium 134 (fr 134)       100         Indium 130 (fe 13)       100         Indium 130 (fe 13)       100         Krypten 23 (ff 53)       100         Krypten 23 (ff 53)       100         Lanthaum 140 (fa 140)       10         Lanthaum 140 (fa 141)       10         Mercury 107 (ff 12)       10         Mercury 107 (ff 20)       10         Modyndum 147 (for 141)       100         Neodyndum 140 (fd 140)       100         Nickel 50 (fd 12)       100	Icdine 135	+I I	:5)			:0	
100       100         101       100         102       100         103       100         104       100         105       100         105       100         105       100         105       100         105       100         106       100         107       100         108       100         109       100         100       100         100       100         100       100         101       100         102       100         103       100         104       100         105       100         106       100         107       110         108       100         109       100         100       100         100       100         100       100         100       100         100       100         100       100         100       100         100       100         100       100         100       1	Tard trees 13		:221				• •
Kerpton 23 (Re 53)		4 147	124).	********			. '
Kerpton 23 (Re 53)	len 30 d	Fe 19	******				
Krypten uf (Kr 57)       10.         Landhanum 140 (La 140)       10         Lutethum 177, (Lu 177)       10         Lutethum 177, (Lu 177)       10         Langanese 54 (Lin 52)       10         Linganese 54 (Lin 54)       10         Linganese 54 (Lin 54)       10         Linganese 54 (Lin 54)       10         Linganese 54 (Lin 56)       10         Mercury 107m (Hg 107m)       10         Mercury 107 (Hg 107)	. Kryp 22 a 23	1127	55)			100	-
212mganese 34 (21m 34)         10           212mganese 36 (21m 36)         10	Second 17	180.5					
212mganese 34 (21m 34)         10           212mganese 36 (21m 36)         10				10)		:0 ~:	
212mganese 34 (21m 34)         10           212mganese 36 (21m 36)         10	Manganese	32 .3	in 52				
Minganese 30 (Min 361       10         Mercury 107m (Hig 107m)       100         Mercury 107 (Hig 107m)       100         Mercury 107 (Hig 203)       100		34 (21)	n 341 -			:0	
sheke JJ (it JJ)						:0	1
sheke JJ (it JJ)	Mergury 13	17 7 4129	1271	*********		100 -	
sheke JJ (it JJ)	Mercuty 12	1 (11;	203).			10	Ĩ
sheke JJ (it JJ)	Molybdenu:	n <u>59</u>	:No		-	100	
sheke JJ (it JJ)	Nextrainen	147 141	(88.1) (88.1)	173		ICU ·	
	Nickel 50 (	51 25	,		-	100 /	
	•.				2.55	•	, er j

33, NO. 154-SATURDAY, AUGUST 10, 1948

	r mini	111
Byproduct Stat	(7146	Xlerocuries
Mekel 63 (NI 63)	• • • • • • • • • • • • •	100
Niobium 93m (ND 93).	m)	10
Mioblum 97 (Nu 97)		
- Oumlum 185 (Oz 185).		10
Oumlum 191m (Os 1 Oumlum 191 (Os 191		
Ourslam 193 (Os 103	1	100
Palladium 103 (Pd 1)	03)	100
Paladium 100 (Pd 10) Phosphorus 32 (P 32)	1	10
Patinum 191 (Pt 10 Piatinum 193m (Pt 1	1)	- 100
Pisunum 193m (Pt 1 Pisunum 193 (Pt 193	93m)	100
Platinum 197m (Pt ;	27m)	100
PlaUnum 197 (Pt 197 Polonium 210 (Po 210	)	100
. Potassium 42 (N 42).		
Preseodymium 142 () Preseodymium 143 ()	P <del>r</del> 1421	100
Promethium 147 (Pm	147)	10
Promethium 149 (Pm	. 579)	10
Rhenlum 136 (Re 186 Rhenlum 138 (Re 1	**********	100
Shodium 103m (Ilh	:(3m)	
Rhodium 105 (Rh 1	251	100
Rubidium 86 (Rb 86) Rubidium 87 (Rb 87		10
Ruthenium 97 (Ru Ruthenium 103 (Ru	97)	100
Ruthenium 103 (Ru	1031	:0
Ruthenlum ICS (Au Ruthenlum 106 (Ru	100)	
Bamarium 151 (Sm :	51)	10
Bamarium 153 (5m : Beandium 46 (5c 46)	32)	100
. Scandium 47 (Sc 47)		100
Scandium 43 (Sc 48) Scienium 73 (Se 73)		
Billeon 31 (51 31).		100
Bilver 105 (Ag 105)		10
Buver 111 (Ag 111).		100
Buiver 111 (Ar 111). Section 21 (ML 201.		10
Strontium 85 (Sr 55 Strontium 89 (Sr 89	)	10
- Stroutium 90 (Sr 90)		1
Birontium 91 (Sr 91 Birontium 92 (Sr 92	}	10 10
- Sulphur 35 (5 35)		:00
Tentalum 182 (Ta 15 Technetium 96 (Tc	2)	10
Technetium 97m (To Technetium 97 (To	27m)	100
Technetium 97 (To Technetium 99m (To	97)	100
Technetium 99 (To	221	10
Tellurium 125m (Te Tellurium 127m (Te	125:21)	
Tellurium 127 (Te 12	12.61) 7)	10
Tellurium 127 (Te 12 Tellurium 129m (Te	123701	10
Tellurium 129 (Te I Tellurium 131m (Te	131m)	1CO
Tellurium 132 (Te 13	2)	10
Terblum 160 (To 160	)	10 -
Thaillum 201 (T. 20:	)	
Thaillum 202 (T. 202	1	100
Thullum 170 (Tm 17	)	10
Thullum 171 (7m 17	1)	10
Tin 113 (Sn 113)	*********	
Tungaten 181 (W 181		- 10
Tuncien 185 (W 185	)	10
Vanadium 48 (V 48)	***********	10
Exenou 131m (Ne 13)	TT.) •••••••	
Xenon 135 (Xe 125).	**********	100
Titerblum 175 (TD 1	73)	100 10.01
EXitium 91 (T 91)_	******	10
Tellurium 129 (Te 1 Tellurium 131m (Te Tellurium 131m (Te Tellurium 132 (Te 13 Troblum 160 (TS 160 Thallium 200 (Ti 200 Thallium 201 (Ti 201 Thallium 201 (Ti 201 Thallium 202 (Ti 202 Thallium 202 (Ti 202 Thallium 170 (Ti 17 Thulium 171 (Ti 17 Tin 113 (Sn 113) Tungsten 181 (W 181 Tungsten 185 (W 185 Tungsten 195) Yenon 133 (Xe 123). Xenon 133 (Xe 123). Yittium 90 (T 90)		100
Titrium 93 (Y 23)		100
Yilrium 92 (Y 92) Yilrium 93 (Y 93) Zine 63 (Za 63) Zine 69m (Za 60m		- 10
E CINE WILL LER FOR	1	
RANAS STORE IN CO		الموجد المجارية والمتك

# PROPOSED RULE MAKING

**Syproduct** Material Zuronium 95 (Zr 95)...... Any byproduct material not listed above other than alpha emitting

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10.01-

byproduct material

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Nore: An exempt quantity of any radionuclide may be composed of fractional guantitles contained in one or more packages or containers, provided the suin of such frac-Hogal quantities does not exceed the mantity specified for that radionuclide in [ 30.71, Schedule B. For two or more radionuclides. the exempt quantity for the combination is determined as follows: For each radionuelide, determine the ratio of the quantity desured to the quantity specified in [ 20.7]. Schedule 3, for that nuclice. The sum of the ratios of all radionuclides shall not exceed unity.

PART 31-GENERAL LICENSES FOR BYPRODUCT MATERIAL CON-TAINED IN CERTAIN ITEMS

3. The title of 10 CFP. Part 31 is revised to read as set forth above. 4. Section 31.2(b) of 10 CFP. Part 31

is amended to read as follows:

\$ 31.2 Terms and conditions.

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(b) Persons who transfer, receive, acquire, own, possess, use, or import items pursuant to the general licenses provided In 1 31.3:

(1) Shall not effect an increase in the radioactivity of said items by adding other radicactive material thereto, by combining byproduct material from two or more such items, or by altering them In any other manufer so as to increase thereby the rate or radiation therefrom:

(2) Shall not administer externally or Internaliy, or direct the administration of, said itenis to a human being for any purpose, including, but not limited to. diagnostic, therapeutic, and research purposes:

(3) Shall not add, or direct the addition of said items to any food, beverage, cosmetic, drug, or other product designed for ingestion or inhalation by, or application to, a human being;

(4) Shall not include said itents in any device, instrument, apparatus (including component parts and accessories thereto) intended for use in diagnosis, treatment, or prevention of disease in human beings or animals or otherwise intended to affect the structure or any function of the body of human beings or animals.

35 31.4, 31.100 [Revoked]

5. Sections 31.4 and 31.100 of 10 CFR Part 31 are revoked.

PART J2-SPECIFIC LICENSES TO MANUFACTURE. DISTRIBUTE, OR IMPORT EXEMPTED AND GEN-ERALLY LICENSED ITEMS CONTAIN-ING BYPRODUCT MATERIAL

6. New 11 32.18, 32.19 and 32.20 are added to 10 CFR Fart 32 to read as follows: 5

#### Microcurter 5 32.18 Manufarture, distribution and transfer of exempt quantities of byproduct materials requirements for license.

An application for a specific license to manufacture, process, produce, package. repackage, Import, or transfer quantities of byproduct material for commercial distribution to persons exempt pursuant to 1 30.18 of this chapter or the equivalent regulations of an agreement State will be approved if:

(a) The applicant satisfies the general requirements specified in 1 30.33 of this chapter: Provided, however, That the reguirements of 1 20.33(a) (2) and (3) do not apply to an application for a license to transfer byproduct material manufactured, processed, produced, packaged, or repackaged pursuant to a license issued by an agreement State: (b) The byproduct material is not

contained in any food, beverage, cosmetic, drug, or other commodity designed for ingestion or initalation by, or application to, a human being, or incorporated into any commodity or product Intended for continercial distribution; and

(c) The applicant submits copies of prototype labels and brochures and the Commission approves such labels and brechures.

\$ 32.19 Sames conditions of licenses.

Each license issued under 1 32.18 is subject to the following conditions:

(A) Each quantity of hyproduct ma-terral set forth in \$ 20.71 Schedule 2 of -:: this chapter shall be separately and in-dividually packared. Not more than 10 such packared exempt quantities shall be contained in any outer package for transfer to persons exempt pursuant to 1 30.13 of this chapter. The outer package shail be such that the dose rate at the external surface of the package does not exceed 0.5 million per hour.

(b) The immediate container of each quantity or separately packaged fractional quantity of byproduct material shall hear a durabic, legible label winch (1) identifies the radioisotope and the quantity of radioactivity. (2) states that the contents are exempt from AEC or Agreement State licensing requirements, and (3) bears the words "Radioactive Material-Net fer Human Use or for Addition to Foods, Ecverazes, Cosmetics, Drups, or Medicinals-Exempt Quantities Should Not De Combined-Introdue. tion Into Preducts Manufactured for Commercial Distribution is Prohibited." The label, or an accompanying brachure, shall also set forth appropriate adeisional radiation safety precautions and instructions relating to the handling, use, storage, and disposal of the radioactive material.

(c) Not more than 10 quantities set forth in 1 30.71 Schedule B of this chapter shall be sold or transferred in any single transaction.

£32.20 Sanies records and material transfer reports

Each person licenser under 332.13 shall maintain records identifying by

name and address, each person to whom byproduct material is transferred for use under 1 30.18 of this chapter or the equivalent regulations of an agreement State, and stating the kinds and quantitles of byproduct material transferred. and shall file an annual report with the Director, Division of Materials Licensing. U.S. Atomic Energy Commission, Washington, D.C. 20543, stating the kinds and total quantities of each byproduct material transferred to such exempt persons. Each report shall cover the calendar year and shall be filed within thirty (30) days after the end of the  $\zeta$ calendar year.

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# PART 35-HUMAN USES OF BYPRODUCT MATERIAL

7. Section 35.2 of 10 CFR Part 35 is smended to read as follows:

§ 35.2 License requirements.

No person subject to the regulations in this chapter shall receive, possess, use, or transfer byproduct material for any human use except in accordance with a specific or general license issued pursuant to the regulations in this part and Parts 30, and 32 or 33 of this chapter.

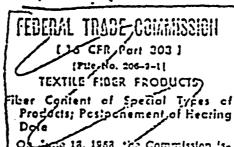
(500, 81, 68 Stat. 935; 42 U.S.C. 2111; sec. 161, 68 Stat. 944; 42 7.5.C. 2001)

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Dated at Washington, D.C., this 20th day of July 1968.

For the Atomic Energy Commission. W. B. McCoot. Secretary.

[FR. Doe. 68-0633: Flied. Aug. 9. 1568;. 8:45 a.m.]



Oberne 18, 1963, in Commission issued a notice of proposed rule making selating to a proposed amendment of Part 203, rules and requiring under the Textile Pieter Projects Identification act, to specify the manier and form act disclosing the required fiber content isformation of taxtule fiber products which contain two or more chemically distinct components within are combined of or prior to the time of fiber formaton and which if separately extruded pould fallswithin existing definitions of extile fibers as-Set forth in the rules and regulations under the Textile Fiber Products Identification for notice as published in the Fiberal Recistra on June 20, 1963. On application of certain interparties and for good cause shown date for presentation of oral views, a ments. and data postponed to Sep: Wr 11, 1964

Intersited parties may participat submitting in writing on or before . symbol. 11, 1953, their view sigume or other pertinent does to the For-Trade Commission. Wishington, 2030, or the may be given orally such time at 10 mm, e.d., at the : Bellenig, 11th Street and Pennsyly. Avenue NVL in the city of Wishin. District of Columbian Any partwist to submit further views, arguments data in response to that submitted r result of this notice or at the heat may do so in writing at any time wit 45 days after such hearing is close.

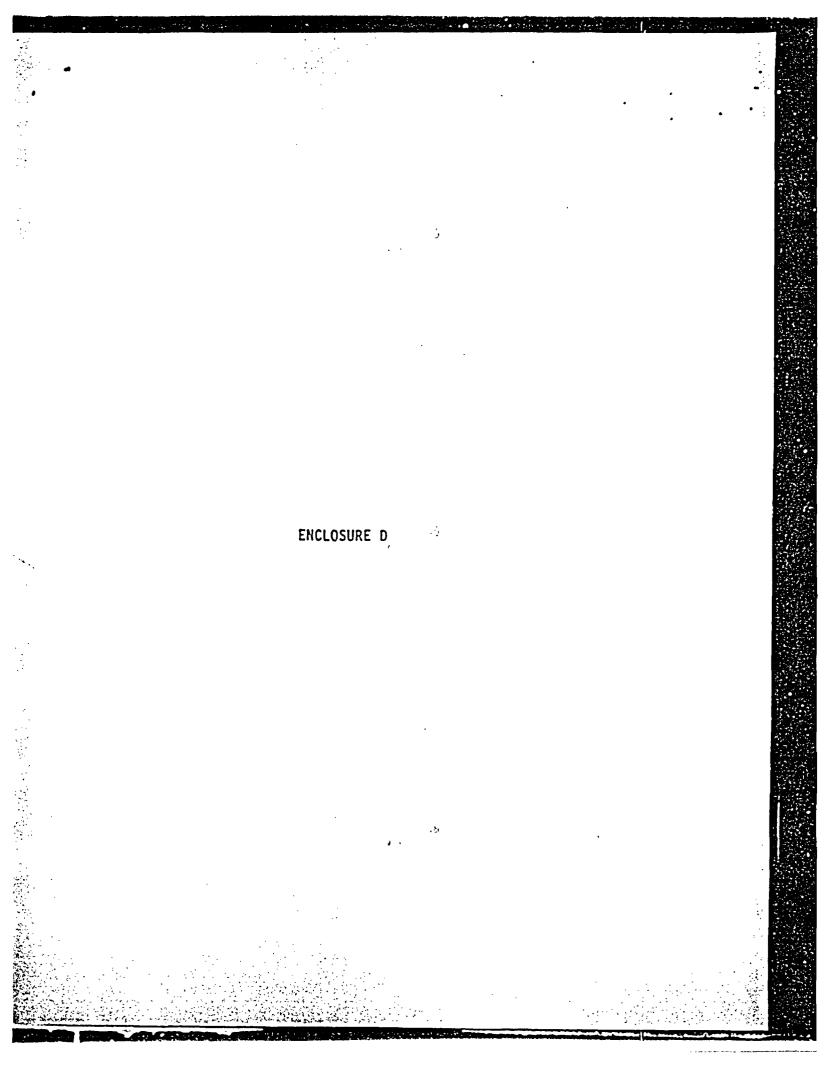
Such action is taken pursuant to authority given to the PCE eral Tri Commission under-section A(c) of ' Textile Fiber Products Identification. (72 Star-1717; 13 U.S.C. 70) to mi such Thes and regulations, including establishment of generic names of mi ufactured fibers, under and in pursuar of the terms of this Act as may be nec: stry and proper for administration z: enforcement.

Issued: August 8, 1568. By the Commission. (SEAL) Jostin W. SATA, Secretary,

[7.R. Doc. 05-9649; 7:16d. Aug. 9, 156 8:50 am.]

2 States and Proved

FIDERAL REGISTER, VOL. 33, NO. 156-SATURDAY, AUGUST 10, 1968



# Enclosure "D" - Proposed Federal Register Notice

# NUCLEAR REGULATORY COMMISSION

[10 CFR Part 20]

STANDARDS FOR PROTECTION AGAINST RADIATION

Burial of Small Quantities of Radionuclides

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Proposed Rule

SUMMARY: The Nuclear Regulatory Commission is considering amending its regulations to require Commission approval prior to burial of small quantities of radionuclides. The proposed amendments would contribute to the protection of the public health by encouraging the shipment of small quantities of radioactive waste to licensed burial grounds and ty improving the NRC's available data regarding amounts and locations of radioactive materials buried elsewhere. The amendments would not affect material already buried, or generally licensed and exempt material.

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DATES: Comment period expires

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# ADDRESSES:

(1) Written COMMENTS should be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C.
20555, Attention: Docketing and Service Branch. (2) FOR FURTHER INFORMATION CONTACT: Mr. John W. Hickey, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (phone: 301-443-5966).

# SUPPLEMENTARY INFORMATION:

Notice is hereby given that the Nuclear Regulatory Commission proposes to amend the regulations in 10 CFR Part 20, "Standards for Protection Against Radiation," to revise the provisions for disposal of small quantities of licensed radioactive material by burial in soil.

Section 20.304, 10 CFR Part 20, currently provides that no licensee shall dispose of licensed material by burial in soil unless: (a) the total quantity of licensed and other radioactive materials buried at any one location and time does not exceed, at the time of burial, 1,000 times the amount specified in Appendix C of Part 20; (b) burial is at a minimum depth of four feet; and (c) successive burials are separated by distances of at least six feet and not more than 12 burials are made in any year. Section 20.302 of 10 CFR Part 20 specifies the method for obtaining approval of proposed burials other than those allowed by § 20.304

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Representatives of several State agencies have expressed concern to the Commission over the practice of allowing licensees to bury small quantities of radionuclides without notification or prior approval of the Commission or its Agreement States. These State representatives suggest that the risk of allowing such burials may be unacceptable.

The Commission would like to obtain public comments before making a decision on whether to allow continued disposal of radioactive material under § 20.304 without prior regulatory review. The proposed amendments would limit burials to two circumstances: (1) where the licensee has obtained prior Commission approval as provided in 10 CFR § 20.302, or (2) where the licensee transfers such material to authorized recipients (e.g., licensed burial grounds). The effect of the proposed amendments may be to contribute to the protection of public health by encouraging the shipment of even small quantities of waste to licensed burial grounds and by improving the NRC's available data regarding amounts and locations of radioactive materials buried elsewhere.

Examples of public comments which would be particularly helpful to the Commission are: information on the numbers of burials currently being conducted pursuant to § 20.304, the quantities and types of radionuclides buried, estimates of the potential risk to the public health from such burials, and estimates of the costs to licensees if § 20.304 were deleted.

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If, after consideration of the factors relating to this matter including comments or suggestions submitted in response to this notice of proposed rule making, the Commission decides to promulgate the rule in effective form, a period of three (3) months would be provided for licensees currently conducting disposal by burial in soil pursuant to § 20.304 to make alternative disposal arrangements or to comply with the provisions of § 20.302.

These amendments would not require any action concerning material already buried under the present provisions of § 20.304.

It is not the intent of the proposed amendments to change procedures regarding the disposal of materials or products transferred to persons exempt or generally licensed.

The proposed amendments constitute a procedural change which is not likely to have a substantial impact on the method or number of burials of radionuclides. Information available to the Commission indicates that only a few licensees would be affected by the amendments. However, it is possible that as a result of Commission review of individual burial proposals or as a result of increased shipments to licensed burial grounds, the potential environmental impact will be reduced. Therefore, the Commission has determined that an environmental impact statement pursuant to the National Environmental Policy Act of 1969 need not be prepared in connection with the promulgation of these amendments, because their adoption will not significantly affect the quality of the human environment.

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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, notice is hereby given that adoption of the following amendments to 10 CFR Part 20 are contemplated. All interested persons who desire to submit written comments or suggestions for consideration in connection with the proposed rule should send them to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch, by \_\_\_\_\_\_\_\*

1. Section 20.304, <u>Disposal by burial in soil</u>, is deleted.

2. Paragraph 20.301(c) is amended to read as follows:

§ 20.301 General requirement.

No licensee shall dispose of licensed material except:

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(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. Paragraph 20.401(b) and subparagraph (3) of paragraph 20.401(c) are amended to read as follows:

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

A date will be inserted allowing 60 days for public comment.

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(b) Each licensee shall maintain records in the same units used in this part, showing the results of surveys required by § 20.201(b), monitoring required by §§ 20.205(b) and 20.205(c), and disposals made under §§ 20.302, 20.303, and deleted 20.304.<sup>1</sup>

(c) \* \* \*

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

4. A footnote is added to section 20.401 to read as follows:

<sup>1</sup>Section 20.304 provided for burial of small quantities of licensed materials in soil. Notice of its deletion appears in (Federal Register page and date to be inserted).

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

# Appendix C

Note: For purposes of § 20.203, 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

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when not in combination. The sum of such ratios for all the isotopes in the combination may not exceed "1" (i.e., "unity").

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

Dated at \_\_\_\_\_ this \_\_\_\_ day of \_\_\_\_\_

For the Nuclear Regulatory Commission.

Secretary of the Commission

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