NUCLEAR REGULATORY COMMISSION

10 CFR Parts 20, 30, 40, 50, 51, 70 and 72

RIN 3150–AD65

Radiological Criteria for License Termination

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations regarding decommissioning of licensed facilities to provide specific radiological criteria for the decommissioning of lands and structures. The final rule is intended to provide a clear and consistent regulatory basis for determining the extent to which lands and structures can be considered to be decommissioned. The final rule will result in more efficient and consistent licensing actions related to the numerous and complex site decommissioning activities anticipated in the future.

EFFECTIVE DATE: This regulation becomes effective on August 20, 1997. However, licensees may defer rule implementation until August 20, 1998.

FOR FURTHER INFORMATION CONTACT: Cheryl A. Trottier, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: (301) 415–6232, e-mail CAT1@nrc.gov; Frank Cardile, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: (301) 415–6185; e-mail FPC@nrc.gov; Dr. Carl Feldman, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: (301) 415–6194, e-mail CXF@nrc.gov; or Christine M. Daily, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: (301) 415–6026, e-mail CXD@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

The Nuclear Regulatory Commission is amending its regulations regarding decommissioning of licensed facilities to provide specific radiological criteria for the decommissioning of lands and structures. This action is necessary to ensure that decommissioning will be carried out without undue impact on public health and safety and the environment.

These criteria apply to the decommissioning of licensed facilities and facilities subject to the NRC's jurisdiction. The Commission will apply these criteria in determining the adequacy of remediation of residual radioactivity resulting from the possession or use of source, byproduct, and special nuclear material. The criteria apply to decommissioning of nuclear facilities that operate through their normal lifetime and to those that may be shut down prematurely.

The intent of this rulemaking is to provide a clear and consistent regulatory basis for determining the extent to which lands and structures must be remediated before decommissioning of a site can be considered complete and the license terminated. The Commission believes that inclusion of criteria in the regulations will result in more efficient and consistent licensing actions related to the numerous and frequently complex site remediation activities anticipated in the future. The Commission has reassessed residual contamination levels contained in existing guidance based on changes in basic radiation protection standards, improvements in remediation and radiation detection technologies, decommissioning experience, public comments received on rule drafts and public comments presented at workshops held as part of the rulemaking effort and public comments received on the proposed rule.

The NRC has previously applied site release criteria for decommissioning on a site-specific basis using existing guidance. Although site-specific situations will still occur, the Commission believes that codifying radiological criteria for decommissioning in the regulations will allow the NRC to more effectively carry out its function of protecting public health and the environment at decommissioned sites by providing for more efficient use of NRC and licensee resources, consistent application across all types of licenses, and a predictable basis for decommissioning planning.

II. Background

On August 22, 1994 (59 FR 43200), the NRC published a proposed rule for comment in the **Federal Register** to amend 10 CFR part 20 of its regulations ''Standards for Protection Against Radiation'' to include radiological criteria for license termination. The public comment period closed on January 20, 1995. Comments received on the proposed rule were summarized in NUREG/CR–6353. A workshop was held on December 6–8, 1994, to solicit additional comments related to site-specific advisory boards as described in the proposed rule. Comments received during that workshop were summarized in NUREG/CR 6307 [1]. A workshop was also held on September 29, 1995, to specifically discuss methods for implementing the rule. Additionally, communication with the public on the proposed rule was maintained through the Electronic Bulletin Board system.

III. Overview of Public Comments

Over 100 organizations and individuals submitted comments on the proposed rule. The commenters represented a variety of interests. Comments were received from Federal and State agencies, electric utility licensees, material and fuel cycle licensees, citizen and environmental groups, industry groups, native American organizations, and individuals. The commenters offered from 1 to over 50 specific comments and represented a diversity of views. The commenters addressed a wide range of issues concerning all parts of the rule. The reaction to the rule in general and to specific provisions of the rule was varied. Viewpoints were expressed both in support of and in disagreement with nearly every provision of the rule.

IV. Summary of Public Comments, Responses to Comments, and Changes From Proposed Rule

The following sections describe the principal public comments received on the proposed rule (organized according to the major subject areas and sections of the proposed rule), present NRC responses to those comments, and explain principal changes to the proposed rule (where they occur) in response to those comments. The comments are organized according to the following major subject areas and sections of the proposed rule and are presented in the following subsections:

(a) Overall license termination approach (unrestricted use, restricted use, exemptions, and alternate criteria), and specific issues on criteria for unrestricted use (including total effective dose equivalent (TEDE), as low as is reasonably achievable (ALARA), objective of decommissioning, average member of critical group);

(b) Specific issues on criteria for restricted use (bases for using restricted use, reliance on institutional controls, 1 mSv (100 mrem) TEDE cap, engineered barriers, financial assurance);

(c) Specific issues on exemptions and alternate criteria for license termination (facilities with large volumes of low level wastes, uranium and thorium mills, exemptions);

(d) Groundwater protection criteria (use of Environmental Protection Agency (EPA) drinking water standards of 40 CFR 141 in NRC's regulation);

(e) Public participation (means of notification, site-specific advisory boards (SSABs));

(f) Other procedural and technical issues (state compatibility, grandfathering, finality, minimization of contamination, readily removable residual radioactivity, radon, calculation of TEDE over 1000 years to demonstrate compliance with dose standard); and

(g) Other comments (definitions, regulatory guidance; timeliness rule; wastes; recycle; rulemaking process).

The comments received from both public comment and the workshops have been factored into the Commission's decisionmaking on the final rule and into the technical basis for guidance documents implementing the final rule. The description of changes to the final rule made as a result of the comments in each of the major subject areas follows each comment/response section.

A. Overall License Termination Approach and Criteria for Unrestricted Use (Proposed Rule §§ 20.1402 and 20.1404)

A.1 Proposed Rule Content

The proposed rule (§ 20.1402(d)) presented an overall approach for license termination involving either of two basic methods, i.e., unrestricted use or restricted use of sites after license termination. The proposed rule indicated that unrestricted use was generally preferred, but that restricted use was also permitted because it was recognized that there may be cases where achieving unrestricted use would not be reasonable.

Specific requirements for use of each of these two basic methods were presented in the proposed rule. The preamble to the proposed rule also indicated that there may be certain licensees that would seek exemptions from the decommissioning criteria of the proposed rule, although it did not codify this exemption path.

Section IV.A.2 reviews in detail the development of unrestricted use criteria; and, in doing so it also indicates, in general, how the overall approach for license termination has been reexamined to consider public comments. Specific issues and requirements regarding other areas, specifically restricted use, exemptions, and alternate criteria, are discussed in more detail in Sections IV.B and IV.C of this preamble.

Section 20.1402(a) of the proposed rule indicated that the objective of decommissioning is to reduce residual radioactivity in structures, soils, groundwater, and other media at the site so that the concentration of each radionuclide that could contribute to residual radioactivity is indistinguishable from the background radiation concentration for that nuclide. Section 20.1402(a) further noted that, as a practical matter, it would be extremely difficult to demonstrate that such an objective had been met and that a site release limit for unrestricted use was being proposed.

Section 20.1404 of the proposed rule indicated that a site would be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in TEDE to an average member of the critical group of 0.15 mSv/y (15 mrem/y) and has been reduced to levels that are ALARA.

Section 20.1402(d) of the proposed rule indicated that release for unrestricted use of a facility is the preferred approach but that the alternative of release for restricted use would also be allowed if its use were justified (see Section IV.B).

A.2 Criteria for Unrestricted Use, Including TEDE, ALARA, and Decommissioning Objective

A.2.1 Comments. Some commenters (including EPA) agreed that 0.15 mSv/y (15 mrem/y) is an acceptable criterion because it is attainable, provides a margin of safety, and isn't unjustifiably costly. The Department of Energy (DOE) agreed that 0.15 mSv/y (15 mrem/y) could be acceptable if reasonable scenarios were considered although it preferred 0.25 mSv or 0.3 mSv/y (25 or 30 mrem/y) with ALARA. However, most commenters did not agree with the

[1] Copies of NUREGS may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013–7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is also available for inspection and/or copying at the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

0.15 mSv/y (15 mrem/y) criterion. Some opposed 0.15 mSv/y (15 mrem/y) as being too high and preferred alternatives that reduced the contamination level to lower levels, including preexisting background. The majority of commenters opposed 0.15 mSv/y (15 mrem/y) as being too low and gave alternatives that generally included increasing the limit to 0.25, 0.3, 0.5, or 1 mSv/y (25, 30, 50, or 100 mrem/y) with further reduction based on ALARA. The categories of reasons given by commenters opposing 0.15 mSv/y (15 mrem/y) as either too high or too low included potential health impacts or the lack of demonstrable health effects at these levels, consistency with national and international standards, effect of multiple sources, consistency with other NRC/EPA regulations, analysis of costs vs. benefits, ability to measure, effect on disposal capacity, effect on sites with naturally occurring radioactive material (NORM), and responsibility for cleanup of sites.

The proposed rule indicated that licensees would be expected to demonstrate that doses are ALARA below the proposed 0.15 mSv/y (15 mrem/y) dose criterion. Some commenters endorsed ALARA analyses in specific cases to determine if doses should be reduced below 0.15 mSv/y (15 mrem/y) and recommended that a value of 0.03 (or less) mSv/y (3 (or less) mrem/y) be the ALARA objective. Some of these commenters also requested that the NRC explicitly mandate that technical and economic analyses be performed. Other commenters indicated that ALARA principles and analyses should not be required to determine if cleanup should be performed to reduce doses below 0.15 mSv/y (15 mrem/y) because the costs are large in comparison with the small reduction in risk. Several commenters indicated, alternatively, that ALARA should be allowed above 0.15 mSv/y (15 mrem/y) and that the rule should allow ALARA analyses to be used to permit a licensee to release its site at a value higher than 0.15 mSv/y (15 mrem/y) (up to 1 mSv/y (100 mrem/y)) if ALARA calculations support this alternative. Another commenter disagreed and recommended that ALARA analyses be applied only to demonstrate if additional cleanup is required below 0.15 mSv/y (15 mrem/y). Some commenters stated that guidance should be provided describing how ALARA should be achieved, how doses would be quantified, how models and parameters would be selected, what $/person-rem value would be used, how nonradiological risks would be considered, how net risks would be evaluated, how flexibility would be incorporated, what degree of simplification of complex models would be incorporated, and what final criteria would be used.

The proposed rule also contained, in § 20.1402(a), a decommissioning objective of reducing residual radioactivity to levels that are indistinguishable from background. Section 20.1402(a) further noted that such an objective may be difficult to meet as a practical matter. Many commenters opposed establishment of the decommissioning objective because it is arbitrary, serves no purpose for industrial sites, is costly and a waste of resources, is unlikely to be achieved, and cannot be measured. Some commenters supported establishing the proposed objective because it is reasonable from a health standpoint. Others suggested alternative objectives such as ALARA or using a dose that is indistinguishable from the variation in background.

A.2.2 Response. The preamble to the proposed rule described three broad considerations as providing the overall rationale for the proposed rule's approach to license termination. The first two considerations were related to health and safety, i.e., level of risk and need for a constraint or margin of safety below the 1 mSv/y (100 mrem/y) public dose limit of 10 CFR part 20 to account for the potential effect of multiple sources of radiation exposure. The third consideration was related to practicality and reasonableness of costs. The preamble to the proposed rule noted that the risk implied by use of the proposed 0.15 mSv/y (15 mrem/y) dose is comparable to other standards and practices of EPA and NRC for areas of unrestricted access in the vicinity of facilities, and that the proposed 0.15 mSv/y (15 mrem/y) standard provides a substantial margin of safety (constraint) for a single source below the 1 mSv/y (100 mrem/y) public dose limit in 10 CFR part 20 to account for the potential exposure of a member of the public to other sources. This ''constraint'' approach was noted as being consistent with generic constraint recommendations made by national and international scientific bodies such as the International Commission on Radiation Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP). Requirements related to ALARA, the decommissioning objective, and restricted use were included in the rule based on the NRC staff analysis in the Draft Generic Environmental Impact Statement (GEIS) (NUREG–1496) that showed that the costs of reducing exposures to, or in some cases below, a 0.15 mSv/y (15 mrem/y) criterion would not generally be unduly burdensome for most licensees, although in those cases where the costs would present an unreasonable burden, release of the site with restrictions placed on its use would provide an alternative means for achieving the same level of protection. Achieving levels of less than 0.15 mSv/y (15 mrem/y), including achieving the decommissioning objective, was generally seen as not cost-effective because increasingly larger volumes of concrete and soil would have to be removed at a greater net risk due to deaths from transportation accidents and because more difficult survey measurements would have to be made with little net benefit in dose reduction.

The NRC considered alternatives suggested in public comments and reexamined the rationale of the proposed rule. A summary of that reexamination, along with a description of particular comments on the rationale, is contained in the following subsections.

A.2.2.1 Level of risk and consistency with other EPA/NRC standards. Some commenters criticized the health risk associated with a 0.15 mSv/y (15 mrem/y) limit as too high thereby providing inadequate public protection. In particular, they objected to the NRC's reliance on ICRP and NCRP because recent research (including findings in the aftermath of the 1986 Chernobyl accident and in the 1990 report on Biological Effects of Ionizing Radiation (the BEIR V report)) showed risks to be higher than ICRP or NCRP indicated, or suggested other sources for limits, including a British standard and a National Academy of Sciences statement on radiation safety. Commenters also indicated that 0.15 mSv/y (15 mrem/y) was too high because it is higher than other NRC or EPA standards such as those for operating reactors.

The majority of commenters criticized 0.15 mSv/y (15 mrem/y) as too low for reasons which included that it is far below the level at which health effects have been observed in studies, that the risks associated with other EPA and NRC standards (including 10 CFR parts 20, 60 and 61, 40 CFR parts 190 and 191, and EPA's radon action level) are higher, and that it is based on the linear non-threshold theory which is not appropriate for setting such standards. These commenters also criticized the relationship of the risks implied by this rule to those implied by standards for chemical hazards.

In general, many commenters stated that the NRC should work closely with

the EPA in developing its decommissioning regulations to assure that there are no conflicting or duplicate requirements and that the acceptable risk levels and associated requirements developed by the two agencies are compatible or the same. DOE noted that a nonuniform approach could significantly impact the DOE environmental restoration program and that NRC/EPA regulations will have an impact beyond NRC licensees. There was some commenter disagreement as to whether EPA or NRC should take the lead in issuance of exposure standards. In its comments on the NRC's proposed rulemaking, the EPA supported the 0.15 mSv/y (15 mrem/y) limit.

In response, the NRC has considered recent information and recommendations in ICRP Publication 60 and NCRP No. 116. These documents are developed by recognized experts in the fields of radiation protection and health effects and contain reviews of current significant research in radiation health effects. The NCRP is a nonprofit corporation chartered by the U.S. Congress to develop and disseminate information and recommendations about protection against radiation and to cooperate with the ICRP and other national and international organizations with regard to these recommendations. The ICRP has continued to update and revise its estimates of health effects of radiation since its inception in 1928. In its deliberations, ICRP maintains relationships with United Nations health and labor organizations.

In addition, the NRC evaluated the proposed Federal Radiation Protection Guidance for Exposure of the General Public (FRG) as published for comment on December 23, 1994 (59 FR 66414), in which the EPA, under its charter, made recommendations to the President of the United States concerning recommended practices for protection of the public and workers from exposure to radiation.

Recent recommendations contained in ICRP 60, NCRP No. 116, and the proposed FRG are essentially similar. Use of these sources for formulating basic radiation protection standards is consistent with NRC's general approach regarding risk decisions as is noted in the preamble to issuance of 10 CFR part 20 on May 21, 1991 (56 FR 23360). The NRC considers it reasonable and appropriate to use the findings of these bodies in developing criteria for license termination to apply to its licensees.

The ICRP and NCRP and EPA have reviewed current, significant studies made by other health research bodies, such as the National Academy of Sciences-National Research Council's Committee on the Biological Effects of Ionizing Radiation (BEIR) and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), and have developed recommendations regarding limitations on exposure to radiation. In particular, the BEIR Committee conducted major reviews of the scientific data on health risks of low levels of ionizing radiation in 1972, 1980, 1988, and 1990, and similar reviews were published by UNSCEAR in 1977, 1982, 1986, and 1988. As noted in the proposed FRG, these studies have provided more certainty about radiation risks at high doses and dose rates. Using that information and assumptions of linearity with low dose/dose rate reduction factors, BEIR V contains updated risk factors.

Concerning recent information from the Chernobyl accident noted by a commenter, there are still ongoing studies of the effects of the accident. A report published by the principal international organization studying health effects from the accident, the Organization for Economic Co-operation and Development (OECD), entitled ''Chernobyl: Ten Years On; Radiological and Health Impact,'' summarized the findings regarding health impacts by noting that scientific and medical observation of the population has not revealed any increase in cancers or other radiation induced disease that could be attributable to the Chernobyl accident. The only area where an increase was noted was for thyroid cancer. However, these effects most likely resulted from the release of short-lived radioiodine from the accident and the affinity of the thyroid gland for iodine. Similar effects would not be applicable in decommissioning because radioactive iodine is not expected to be a significant contaminant. The report further notes that, while studies continue on long term effects, it is unlikely that the exposure to contaminants in the environment will lead to discernible radiation effects in the general population. Thus, this research does not appear to indicate that the findings of the ICRP and NCRP will be shown to underestimate risks.

Specifically with regard to the risk level, some of the commenters stated that the risk of fatal cancers from 0.15 mSv/y (15 mrem/y) is too high in comparison with risk goals in the range 1×10^{-4} to 1×10^{-6} used by EPA in Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulations. Other commenters disagreed and stated that precedents from earlier NRC rulemakings support a level of risk significantly greater than that and more appropriately in a range of 1×10^{-2} to 1×10^{-3} (e.g., the level of lifetime risk corresponding to the 1 mSv/y (100 mrem/y) public dose limit of 10 CFR Part 20, that is NRC's basic standard for public safety, is about 1.5×10^{-3}). Several of these commenters also criticized 0.15 mSv/y (15 mrem/y) as too low because the linear non-threshold model overestimates the risk and should not be used in the analysis. In response to comments on the risk level, constant exposure over a 30-year time period to dose levels of about 0.15–0.25 mSv/y (15–25 mrem/y), results in an estimated lifetime risk of fatal cancer of about 2.3×10^{-4} to 3.8×10^{-4} which is at the upper end of the acceptable risk range suggested by EPA in their comments on NRC's proposed rule but lower than that in NRC's public dose limits.[2] These estimates are based on use of the linear non-threshold model for calculating risk estimates. In response to specific comments on use of the linear non-threshold model in estimating risk, use of the linear non-threshold model for estimating incremental health effects per radiation dose incurred is considered a reasonable assumption for regulatory purposes by international and national scientific bodies such as ICRP and NCRP. The principal international and national radiological protection criteria, including the NRC's, are based on this assumption as a measure of conservatism. NRC's policy regarding use of the linear non-threshold model was stated in the preamble to the issuance of 10 CFR part 20 (56 FR 23360; May 21, 1991) noting that the assumptions regarding a linear non-threshold dose effect model are appropriate for formulating radiation protection standards. Although this matter continues to be the subject of further consideration at this time, there is not sufficient evidence to convince the NRC to alter its policy as part of this rulemaking.

To provide some perspective on the conservatism of considering dose criteria in the range of 0.15–0.25 mSv/

[2] The risks are estimated assuming a risk coefficient of 5×10^{-4} per rem and a 30-year lifetime exposure that is used by EPA in estimating risk from contaminated sites based on the assumption that it is unlikely that an individual will continue to live or work in the same area for more than 30 years. Such an estimate is seen as providing a conservative estimate of potential risk because land use patterns are generally such that persons living at or near a site will not continuously receive the limiting dose, and, for most of the facilities covered by this rule, the TEDE is controlled by relatively short-lived nuclides of half-lives of 30 years or less for which the effect of radioactive decay will, over time, reduce the risk significantly (e.g., at reactors where much of the contamination is from Co-60 with a half-life of 5.3 years).

y (15–25 mrem/y), it should be noted that, as described in the Final GEIS (NUREG–1496) prepared in support of this rulemaking, these levels are small when compared to the average level of natural background radiation in the United States (about 3 mSv/y (300 mrem/y)) and the variation of this natural background across the United States. In addition, although as noted above NRC is not altering its policy regarding use of the linear non-threshold model as part of this rulemaking, there is uncertainty associated with estimating risks at such dose levels. This uncertainty occurs because evidence of radiation dose health effects has only been observed at high dose levels (200 mSv (20,000 mrem) and above) and significant uncertainty in risk estimation is introduced when extrapolating to the very low dose levels being considered in this rulemaking. The health effects resulting from even a dose of 1 mSv (100 mrem) are uncertain. The BEIR Committee stated in its 1990 report (BEIR V) that ''Studies of populations chronically exposed to low-level radiation, such as those residing in regions of elevated natural background radiation, have not shown consistent or conclusive evidence of an associated increase in the risk of cancer.''

The risk associated with a dose criterion in the range of about 0.15–0.25 mSv/y (15–25 mrem/y) is generally consistent with the risk levels permitted in the performance objectives for low-level waste facilities in 10 CFR 61.41, and for fuel cycle facilities and for spent fuel and high level waste in EPA's 40 CFR 190 and 191. In addition, doses in the range of 0.15–0.25 mSv/y (15–25 mrem/y) are comparable to current NRC practices for decommissioning of reactors and certain materials facilities and fuel cycle facilities. Specifically, reactors have been decommissioned in accordance with Regulatory Guide 1.86 and with an NRC license termination letter to Stanford University (April 21, 1982, Docket No. 50–141). Materials facilities have been released in accordance with the levels for external radiation for beta/gamma exposure in NRC's Policy and Guidance Directive FC 83–23. In addition, a dose criterion in the range of 0.15–0.25 mSv/y (15–25 mrem/y) is generally at the low end of the range of values estimated for Option 1 of the 1981 Branch Technical Position (BTP) for sites with uranium and thorium and used for Ra-226 in 10 CFR 40, Appendix A, for uranium mill contamination.

A.2.2.2 Effect of multiple sources and margin of safety below 1 mSv/y (100 mrem/y). Some commenters suggested that 0.15 mSv/y (15 mrem/y) is too low and indicated that the NRC limit was inconsistent with ICRP and NCRP especially with regard to considerations of multiple sources of exposure, and that it would be unusual for an individual to be exposed to multiple sources approaching the 1 mSv/y (100 mrem/y) limit. These commenters suggested that 25–30 percent of 1 mSv (100 mrem) is an adequate margin to account for multiple sources.

In response, and by way of background, it is noted that the NCRP in its publication No. 116 (Chapter 15) recommends that, for continuous exposure, the effective dose to members of the public not exceed 1 mSv/y (100 mrem/y) from all man-made sources, other than medical and not including natural background sources. Similarly, ICRP, in Table 6 of ICRP Publication 60, recommends a limit of 1 mSv/y (100 mrem/y) as the dose limit for the public, and recommendation No. 3 of the draft EPA Federal Radiation Protection Guidance (FRG) indicates that the combined radiation doses incurred in any single year from all sources of exposure (excluding medical and natural background) should not normally exceed 1 mSv (100 mrem) and that continued or chronic exposure of an individual over substantial portions of a lifetime at or near 1 mSv/y (100 mrem/y) should be avoided. Consistent with these bodies, the NRC issued 10 CFR part 20 (56 FR 23360) in 1991 that established a public dose limit of 1 mSv/y (100 mrem/y) in 10 CFR 20.1301.

These national and international bodies also note and agree that, although the limit for the public dose should be 1 mSv/y (100 mrem/y) from all man-made sources combined, it would seem appropriate that the amount that a person would receive from a single source should be further reduced to be a fraction of the limit to account for the possibility that an individual may be exposed to more than one source of man-made radioactivity, thus limiting the potential that an individual would receive a dose at the public dose limit. Recommendations from these bodies, as well as from the NRC's Advisory Committee on Nuclear Waste (ACNW), regarding what the fraction from a source should be are:

(a) NCRP No. 116, Chapter 15, notes that no single source or set of sources under one's control should result in an individual being exposed to more than 0.25 mSv/y (25 mrem/y). This fraction was presented as a simple alternative to having a site operator (where a site could expose individuals to levels greater than 0.25 mSv/y (25 mrem/y)) investigate all man-made exposures that an individual at the site would be exposed to so as to demonstrate that the total dose does not exceed 1 mSv/y (100 mrem/y). The clear implication in this simple alternative is that, if individual sources are constrained to 0.25 mSv/y (25 mrem/y), NCRP believes it likely, given the low potential for multiple exposures, that the public dose limits will be met. Further reductions considering ALARA would still be considered by NCRP No. 116.

(b) ICRP 60, Section 5.5.1, in discussing the principles of constraints and limits, notes that it is appropriate to select dose constraints applied to each source to allow for contributions from other sources so as to maintain doses below the 1 mSv/y (100 mrem/y) limit. ICRP 60 does not contain numerical guidance on dose constraints for particular practices, but notes that cumulative exposures to individuals from existing sources near 1 mSv/y (100 mrem/y) are rarely a problem primarily because of the widespread use of source-related dose constraints.

Further explanation of the fundamental concepts of ICRP 60 are contained in the paper, ''The ICRP Principles of Radiological Protection and Their Application to Setting Limits and Constraints for the Public from Radiation Sources,'' by Professor Roger Clarke, Chairman of the ICRP (January 12, 1995; a copy is available in the file for this rulemaking in the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC). The paper notes that the constraint approach derives from the optimization principle of radiation protection in which, for any source, individual doses should be ALARA and also be constrained by restrictions on doses to individuals (i.e., dose constraints). The paper further notes that a constraint is an individual related criterion applied to a single source to ensure that the overall dose limits are not exceeded, and that a dose constraint would therefore be set at a fraction of the dose limit as a boundary on the optimization of that source. Based on the principles presented in the paper, the constraint recommended in the paper for a decommissioned site is 0.3 mSv/y (30 mrem/y) and that further optimization through the ALARA principle is appropriate. As is the case for NCRP No. 116, the implication of the paper and ICRP 60 is that the constraint level is a boundary on the dose from this source and is sufficient to assure that members of the public are not exposed to levels in excess of the public dose limit. The rationale for this is expressed in Section 5.5.1 of ICRP 60 where it is noted that the critical group

is not normally exposed to the constraint level from more than one source although it may be exposed to some dose level less than the constraint level from more than one source.

(c) The proposed FRG in recommendation No. 4 indicates that individual sources should have ''authorized limits'' set at a fraction of the 1 mSv/y (100 mrem/y) limit for all sources combined. The draft FRG notes that the basis for this recommendation is the various categories of activities using radiation that can lead to exposure to members of the public, and also notes the need for broad assumptions about future activities involving radiation use.

The draft FRG does not recommend a level for any one source although it does note that setting such a fraction will necessarily be a broad judgment based on a general observation of the characteristics of existing activities, projections for continuing those activities in the future, and the potential for other uses in the future that can be identified now. Thus, the draft FRG notes that, in the case of authorized limits for broad categories of sources, the judgments will often necessarily be broad and may lead to somewhat higher values, with further implementation of the ALARA process left to management of individual sources within a category. The draft FRG does not indicate how this judgment is to be made although it cites authorized standards for certain sources that currently exist, including 40 CFR part 190 for the nuclear fuel cycle, Appendix I to 10 CFR part 50 for power reactors, 10 CFR part 61, and 40 CFR part 141. All of these set authorized fractions at 25 percent or less of the 1 mSv/y (100 mrem/y) public dose limit. NRC, in its comments on EPA's draft FRG, questioned what was the appropriate fraction of the public dose limit in 10 CFR part 20 that should be used in setting constraints that would become ''authorized'' limits.

(d) In its review of how the principles and recommendations of the ICRP, NCRP, and FRG are relevant to the proposed NRC rule, NRC's Advisory Committee on Nuclear Waste (ACNW) noted that 0.15 mSv/y (15 mrem/y) represented an unnecessarily conservative fraction of the 1 mSv/y (100 mrem/y) annual limit. The ACNW agreed that the need to partition the annual recommended dose limit among several sources to which a person is likely to be exposed appears justifiable and noted that no explicit guidance from the various national and international bodies on this subject exists. ACNW stated that a constraint of 25 percent or 30 percent of the 1 mSv/y (100 mrem/y) limit appears more justified and appropriate based on the likelihood that no more than 3 or 4 separate regulated sources will affect the critical group at any instance. ACNW further noted that the selection of 0.15 mSv/y (15 mrem/y), that represents about 1⁄7 of the annual limit, assumes that a person will encounter a simultaneous dose from seven different regulated sources and that this appears to them to be unjustified, particularly because the ALARA principle accompanies all such NRC regulatory actions.

The recommendations of the previously cited organizations can be summarized as suggesting that a constraint value should be set as part of the process of optimizing the dose from a particular source and that this constraint value should be set as a boundary value below which further optimization or ALARA principles should be employed. The recommendations also appear to suggest that setting a source constraint of 25–33 percent of the annual dose limit of 1 mSv/y (100 mrem/y) is appropriate and adequate to ensure that the dose limit is met, and do not tend to lend support to 0.15 mSv/y (15 mrem/y) as the appropriate fraction to which to constrain the dose from an individual source because it is not likely that a critical group will be exposed to as many as seven sources. Thus, the recommendations appear to indicate that the constraint value should be set using a more reasonable approach.

In discussing the bases for the 0.15 mSv/y (15 mrem/y) dose criterion in the proposed rule, the Commission noted in the preamble (at 59 FR 43219; August 22, 1994) that 0.15 mSv/y (15 mrem/y) would provide a ''substantial'' margin of safety and be appropriate for decommissioned facilities. As part of its review of the public comments, the Commission considered the recommendations of the standards-setting bodies previously cited. Further, in making a judgment on the appropriate value of the fraction, the Commission also considered principles of optimization, numbers and types of sources, potential for exposure of critical groups to more than one source at the constraint value, and assumptions regarding the manner in which a critical group would be exposed. NRC reviewed the assumptions of the Draft and Final GEIS regarding exposure pathways and also NUREG/CR–5512 upon which the Draft and Final GEIS are based. NUREG/CR–5512 provides an analysis of exposure pathways for critical groups at decommissioned facilities. The principal limiting scenarios include: (a) Full time residence and farming at a decommissioned site, (b) exposure while working in a decommissioned building, and (c) renovation of a newly decommissioned building. These principal limiting exposure scenarios are intended to overestimate dose and also tend to be somewhat mutually exclusive; i.e., a person living near a decommissioned nuclear facility would only receive a dose near the constraint level if his living pattern includes full-time residency and farming at the site. This living pattern would make it difficult for the member of this critical group to also be a member of the critical group from other licensed or decommissioned sources. Conversely, a person having less residency than a full time farmer (e.g., apartment dweller, homeowner who works away from the site) might receive doses from other sources but would receive less than the constraint value from the decommissioned site because the exposure time and the number of pathways would be reduced. Thus, given the assumptions regarding living patterns made in evaluating compliance with the constraint level, it is difficult to envision an individual receiving levels approaching constraint levels from more than one licensed or decommissioned source. It is also likely that individuals at a decommissioned site will actually be exposed to doses substantially below the constraint level because of ALARA considerations and because of the nature of the cleanup process itself, i.e., the process of scabbling of concrete removes a layer of concrete which likely contains a large fraction of the remaining radioactivity, and the process of soil excavation is a gross removal process that is also likely to remove large fractions of the radioactivity. For example, the Final GEIS indicates that, for the reference cases analyzed, removal of a layer of concrete by scabbling will result in doses at levels from 2 to more than 10 times lower than a constraint value. In addition to consideration of decommissioned sources, it is also difficult to envision that an individual could come in contact with more than a few other sources as part of normal living patterns. For example, the NCRP in NCRP No. 93, ''Ionizing Radiation Exposure of the Population of the United States,'' September 1987, reviewed likely radiation exposures to the public from consumer products, air emissions, and fuel cycle facilities (including nuclear power plants) and found that, in general, exposure to the public is a small fraction of 1 mSv/y (a few mrem/y). Recent experience on

nuclear power plant emissions and dose commitments (NUREG/CR–2850) tends to support the conclusions of NCRP No. 93 about power plant exposures.

NRC's generic evaluation of uses of and doses from various sources, including decommissioned sources, supplemented by the recommendations of the standards setting bodies and advisory committee noted above, suggests that the substantial added margin of safety provided by the 0.15 mSv/y (15 mrem/y) value may be too restrictive for its intended purpose of constraining doses from this category of sources in establishing an appropriate boundary constraint. Rather, the evaluation leads NRC to conclude that 25 percent of the public dose limit is a sufficient and ample fraction to use as the limitation for decommissioned sources.

Thus, the Commission concludes that a generic dose constraint or limitation for decommissioning sources of 0.25 mSv/y (25 mrem/y) for unrestricted release of a site is reasonable from the standpoint of providing a sufficient and ample margin of safety for protection of public health and safety. It is recognized that this conclusion reflects a judgment regarding the likelihood of individuals being exposed to multiple sources with cumulative doses approaching 1 mSv/y (100 mrem/y) rather than an analysis based on probability distributions for such exposures. However, considering the kinds of occupancy time typically assumed for the average member of the critical group at a site, it is highly unlikely that individuals could realistically be expected to experience exposures to other sources with a cumulative effect approaching 1 mSv/y (100 mrem/y).

A.2.2.3 Cost and practicality of standard. Comments received on cost and practicality were analyzed to determine whether such an analysis can provide additional information related to the criteria of this rule. This analysis includes how, and to what level, ALARA efforts should be made, how the proposed decommissioning objective of returning a site to background should be applied, and what provisions should there be (e.g., restricted use) for sites where it is unreasonable or unwise to attain the unrestricted dose criterion.

Some commenters criticized the proposed rule for including considerations of cost-effectiveness, objecting to using cost in decisionmaking. Other commenters criticized the rule because, although they favored use of cost-benefit analyses in decisionmaking, they believed that the cost-benefit analysis in the draft GEIS and draft Regulatory Analysis (RA) was inadequate to justify a 0.15 mSv/y (15 mrem/y) dose criterion because it used an improper approach (i.e., combining the building and soil analysis). They also believed that it underestimated the amount of contamination at reference facilities, as well as the costs of remediation and final site closeout surveys.

The Commission considered the concerns of commenters who criticized inclusion of cost as a consideration in decisionmaking. NRC methods and policy regarding cost considerations are stated in NUREG/BR–0058, Rev. 2, and call for preparation of an appropriate regulatory analysis in support of regulatory decisions. NUREG/BR–0058 does note that costs cannot be considered for regulatory actions necessary to ensure adequate protection of the health and safety of the public; however, it further notes that costs can be a factor in those cases where there may be more than one way to reach a level of adequate protection. Thus, the analysis in the GEIS and RA was prepared in support of the rulemaking to provide additional information to decisionmakers about the rule criteria being considered.

The Commission has also considered the concerns of those commenters that criticized the analysis of costs and risks as incomplete and inadequate and reviewed information submitted in support of those comments. In general, some of the major comments suggested, and provided data on, the following:

(a) Additional data from actual decommissionings should be included that would consider variations in site contamination characteristics, including the concentration and volume of contamination and the profile of the contamination with depth;

(b) Reevaluation of remediation and survey costs should be conducted, including consideration of variation in waste burial charges, remediation methods, and survey procedures;

(c) Separate analyses of the cost-effectiveness of soil removal and building removal should be performed. A commenter illustrated that separate analyses would clarify differences between costs and impacts of cleanup of soils and structures that were not obvious in the Draft GEIS. Commenters also suggested deleting the ''knee-in-curve'' approach as not clearly illustrating the information regarding costs and impacts for cleanup of both soils and structures; and

(d) Potential alternative uses of the site lands and facilities should be considered to provide a higher level of realism in the dose estimates. These alternative uses can result in variations in direct exposure and ingestion pathways and in the number of persons exposed and thus the collective exposure and net health effects.

Based on the comments and information received, additional information has been added to the GEIS. Data on contamination submitted by the commenters were reviewed, compared with other existing data, including that in the Draft GEIS, and incorporated into the Final GEIS as appropriate. The Final GEIS thus considers additional soil contamination data as well as soil and building contamination comparable to that in the draft GEIS. It also considers the range of disposal costs and survey methods and costs presented in the Draft GEIS, as well as those suggested in the comments. The Commission agrees with the commenters that consideration of soil and buildings separately can provide added information. Thus the Final GEIS has used the analysis of the Draft GEIS, that contained the data for performing separate analyses, and has presented the data more clearly in revised tables. In addition, the ''knee-in-curve'' figures, that provided general information about behavior of costs and impacts associated with cleanup, have been replaced with a simpler set of tables similar to the presentation in the Draft Regulatory Analysis, in Tables 6.1 and 6.2. In response to comments suggesting that the Final GEIS consider more realistic post decommissioning uses, the Final GEIS considers a range of possible uses, including residential farming, denser residential use, industrial/office use, and higher building occupancy rates.

Given the range of possible parameters, scenarios, and site-specific situations, the Final GEIS concludes, in a manner similar to the Draft GEIS, that there is a wide range of cost-benefit results among the different facilities and within facility types and that there is no unique algorithm that decisively produces an ALARA result for all facilities. Despite these difficulties, the Final GEIS and RA provide the following results that can be helpful for gaining insight in making decisions regarding ALARA, the decommissioning objective, and whether restricted use should be permitted:

(a) *Achieving, as an objective of ALARA, reduction to preexisting background.* The objective of returning a site to preexisting background conditions is consistent with the concept of returning a site to the radiological condition that existed before its use. However, the question of whether this objective, as a goal of ALARA, should be codified by rule depends on a variety of factors,

including cost, practicality (e.g., measurability) of achieving the objective, and the type of facility involved.

As noted in Section 7.3.1 of the Draft GEIS, decommissioning is expected to be relatively easy for a certain class of non-fuel-cycle nuclear facilities (i.e., those that use either sealed radioactive sources or small amounts of short-lived nuclides), because there is usually no residual radioactive contamination to be cleaned up and disposed of, or, if there is any, it should be localized or it can be quickly reduced to low levels by radioactive decay. Decommissioning operations will generally consist of disposing of a sealed source or allowing licensed short-lived nuclides to decay in storage, submitting Form NRC–314, and demonstrating (either through radiation survey or other means such as calculation of reduction of the contamination level by radioactive decay) compliance with the requirements for license termination. Because contamination at these facilities is expected to be negligible or to decay to negligible levels in a short time, achieving an objective of returning these facilities to background would not appear to be an unreasonable objective of ALARA.

However, in general, for those nuclear facilities where contamination exists in soils and/or structures, the Final GEIS analysis shows, in a manner similar to the Draft GEIS, that achieving an ALARA decommissioning objective of ''return to a preexisting background'' is not reasonable as it may result in net detriment or because cost cannot be justified because detriments and costs associated with remediation and surveys tend to increase significantly at low levels, while risk reduction from radiation exposure from criteria near background is marginal.

(b) *ALARA analysis for soil contamination.* Soil contamination can exist onsite at nuclear facilities because of a variety of reasons including spills or leaks, deposition from airborne effluents, or burial or placement of system byproducts or other waste materials in onsite soils. The level of soil contamination for the large majority of NRC-licensed facilities (>6000) is either zero or minimal (it is expected that the large majority of Agreement State licensees would have similar contamination). Certain facilities (e.g., power reactors, fuel facilities, industrial facilities) may have greater soil contamination, and certain of these facilities have been identified as having extensive soil contamination (albeit generally at relatively low levels) and have been placed in the Site Decommissioning Management Plan (SDMP) (see NUREG–1444, October 1993). These sites warrant specific NRC attention regarding their decommissioning.

For the generic scenarios considered, the results of the Final GEIS evaluation indicate that there is a wide range of possible cost-benefit ratios. Nevertheless, there appears to be a strong indication that removing and transporting soil to waste burial facilities to achieve exposure levels at the site at or below a 0.25 mSv/y (25 mrem/y) unrestricted use dose criterion is generally not cost-effective when evaluated using NRC's regulatory analysis framework presented in NUREG/BR–0058 and NUREG–1530. Further, even for a range of cleanup levels at or above a 0.25 mSv/y (25 mrem/y) criterion, there can also be cases where costs are unreasonable in comparison to benefits realized.

(c) *ALARA analysis for structures containing contamination.* Building floors and walls at nuclear facilities can be contaminated for a variety of reasons, including system leaks, spills, tracking, and activation. The large majority of NRC licensed facilities have zero or limited building contamination. Generally, contamination does not penetrate the surface of concrete and can be readily removed by water jets or concrete scabbling. If the building is reused for some new industrial, office, or other use after license termination, persons can be in direct contact with the decommissioned floors and walls.

For the range of generic situations considered, the results of the Final GEIS evaluation indicate that there is a wide range of possible cost-benefit ratios. It appears that cleanup of concrete to levels at or below 0.25 mSv/y (25 mrem/y) can be cost effective, depending on the number of individuals projected to be occupying a building, when using the decisionmaking guidelines of NUREG/CR–0058 and NUREG–1530.

A.2.3 Conclusions regarding overall approach to license termination and unrestricted dose criterion. Based on the above discussion, the Commission has concluded that the overall license termination approach of this final rule should include:

- An unrestricted use dose criterion of 0.25 mSv/y (25 mrem/y) applicable on a generic basis without site-specific analysis;
- Considerations regarding ALARA, including the decommissioning objective;
- A tiered approach of unrestricted use and allowing restricted use if certain provisions are met; and
- Codifying alternate criteria in the rule to alleviate the need for exemptions in certain difficult site-specific circumstances.

The reasons for these conclusions are discussed in the following subsections.

A.2.3.1 An unrestricted use dose criterion of 0.25 mSv/y (25 mrem/y) applicable on a generic basis without site-specific analysis. For the reasons described above, the Commission is establishing a dose of 0.25 mSv/y (25 mrem/y) as an acceptable criterion for release of any site for unrestricted use without further analysis of the potential for exposures from other man-made sources excluding medical. The Commission concludes that a generic dose constraint or limitation for decommissioning sources of 0.25 mSv/y (25 mrem/y) for unrestricted use of a site appears reasonable from the standpoint of providing a sufficient and ample margin of safety in protection of public health and safety. This conclusion reflects the Commission's judgment that the likelihood of individuals being exposed to multiple sources with cumulative doses approaching 1 mSv/y (100 mrem/y) is quite small. This conclusion is based on consideration of the kinds of occupancy times generally expected for the average member of the critical group at typical decommissioned sites and the low probability that individuals could realistically be expected to experience significant exposures to other sources, particularly with a cumulative effect approaching 1 mSv/y (100 mrem/y). In view of these perspectives, the Commission believes that a generic dose criterion of 0.25 mSv/y (25 mrem/y) provides a sufficient and ample, although not necessary, margin to protect the public.

A.2.3.2 Considerations regarding ALARA, including the decommissioning objective. The ICRP, NCRP, and draft FRG all suggest that, in addition to setting a constraint value for an individual source, achievement of exposures that are ALARA should continue to be considered as a means of optimization. For this reason and because the generic analysis of the Final GEIS tends to indicate that achieving doses below 0.25 mSv/y (25 mrem/y) may be ALARA for some cases, the rule continues to require an ALARA evaluation below the unrestricted dose criterion.

It would be useful if the analyses in the Final GEIS could have arrived at a value of ALARA for all facilities or classes of facilities so that no further estimate of ALARA would be needed in site-specific cases. However, it was not feasible for the Commission to use the

results of the Final GEIS to determine a generic optimum ALARA dose because of the variety of possible scenarios, assumptions, parameters, and site-specific conditions that could exist. Nevertheless, the Final GEIS does contain information about certain trends in impacts and costs of decommissioning that can be useful in preparation of regulatory guidance supporting site-specific ALARA provisions. In particular, it is clear from the Final GEIS that removal of soil to achieve dose levels below the 0.25 mSv/y (25 mrem/y) dose criterion is generally unlikely to be cost-effective, whereas it may be for concrete in certain cases. It is also clear that removal of soil or concrete to ''pre-existing background'' levels is generally not cost effective.

Thus, for those facilities where soil or building contamination exists, it would be extremely difficult to demonstrate that an objective of return to background had been achieved. Therefore it is concluded, as was previously done in the proposed rule, that for these sites use of the unrestricted dose criterion with appropriate ALARA considerations would be appropriate. For restricted use, the Final GEIS suggests that although removal of soil to achieve dose levels below 0.25 mSv/y (25 mrem/y) may not be cost-effective, other simple and less costly measures to restrict the use of the site such as fencing or barrier plantings may be cost-effective and should be considered as part of the ALARA process. For groundwater contamination, as discussed later in Section IV.D, ALARA considerations should consider the situation where populations use groundwater plumes from a facility as drinking water.

In actual situations, it is likely that, even if no specific analysis of ALARA were required for soil and concrete removal, the actual dose will be reduced to below 0.25 mSv/y (25 mrem/y) because of the nature of the removal process. For example, the process of scabbling of concrete removes a layer of concrete that likely contains a large fraction of the remaining radioactivity, and the process of soil excavation is a gross removal process that also is likely to remove large fractions of the radioactivity.

To clarify the concept of ALARA, the regulatory guidance to be prepared will refer to the existing requirements of §§ 20.1003 and 20.1101 where ALARA is defined to include considerations of the state of technology, economics of improvement in relation to the state of technology, economics of improvements in relation to benefits to the public health and safety, and other societal and socio-economic considerations. Although preparation of guidance is in a preliminary stage, it is anticipated that this guidance would likely indicate that ALARA during decommissioning should include typical good practice efforts (e.g., floor and wall washing, removal of readily removable radioactivity in buildings or in soil areas), as well as ALARA analyses for buildings to levels less than 0.25 mSv/y (25 mrem/y) based on the number of individuals projected to be occupying the building, but that an ALARA analysis below 0.25 mSv/y (25 mrem/y) for soil removal would not need to be done. It is expected that use of the dose criterion of the final rule and the regulatory guidance on ALARA would achieve consistency with current practices where it is cost-effective to do so.

The Commission also believes that, in any ALARA analysis conducted to support decisions about site cleanup, all reasonably expected benefits and detriments resulting from the cleanup activities should be taken into consideration in balancing costs and benefits. An example of such a detriment would be transportation deaths that might occur as contaminated waste is transported away from the site.

A.2.3.3 Tiered approach of unrestricted use and allowing restricted use if certain provisions are met. It appears reasonable to retain the basic structure presented in the proposed rule and allow for both unrestricted and restricted use of sites. Allowance of restricted use is appropriate because there can be situations where restricting site use can provide protection of public health and safety by reducing the TEDE to 0.25 mSv/y (25 mrem/y) in a more reasonable and cost-effective manner than unrestricted use. This protection is afforded by limiting the time period that an individual spends onsite or by restricting agricultural or drinking water use. For many facilities, the time period needed for restrictions can be fairly short; i.e., long enough to allow radioactive decay to reduce radioactivity to levels that permit release for unrestricted use. For example, at reactors, manufacturing facilities, or broad scope licensees, where the principal contaminants can have half-lives of 5–30 years (e.g., Co-60, Cs-137), restricting site use for about 10–60 years can result in achieving unrestricted use levels. Thus, it continues to be appropriate to allow restricted use if accompanied by provisions that ensure the restrictions remain in place to achieve a dose of 0.25 mSv/y (25 mrem/y). Considerations for assuring that restrictions remain in place and that public health and safety is protected are discussed further in Section IV.B. In addition, because restricting site use can affect the local community, Sections IV.B and IV.E indicate that licensees should seek advice from such affected parties and, in seeking that advice, provide for: (1) Participation by representatives of a broad cross section of community interests, (2) an opportunity for a comprehensive, collective discussion on the issues, and (3) a publicly available summary of the results of all such discussions.

A.2.3.4 Codifying alternate site-specific criteria in the rule to alleviate the need for exemptions in special circumstances. The preamble to the proposed rule recognized that there could be certain difficult sites presenting unique decommissioning problems where licensees would seek exemptions from the rule's requirements. However, as noted in Section IV.C below, because the Commission finds that it would be preferable to deal with those facilities under the aegis of a rule rather than as exemptions, the Commission has included in its final rule a provision under which the Commission may terminate a license using alternate criteria in certain specific cases. In allowing such a provision, it is nevertheless the Commission's judgment that: (1) It is generally preferable for sites to reduce doses to 0.25 mSv/y (25 mrem/y) due to the uncertainty over the number of sources where nuclides may be present for a long time-frame; (2) the large majority of sites can reduce doses to less than 0.25 mSv/y (25 mrem/y) through restricting site use; and (3) permitting large numbers of licensees to propose alternate criteria is not advisable because it would be contrary to one of the goals of this rulemaking to achieve more efficient and consistent licensing actions. Therefore, the Commission has limited the conditions under which a licensee could apply for alternate criteria and expects that its use would be rare. A licensee proposing to terminate a license at a site-specific level above 0.25 mSv/y (25 mrem/y) would be required to:

(a) Provide assurance that public health and safety would continue to be protected by means of a complete and comprehensive analysis of possible sources of exposure so that it is unlikely that the dose from all potential man-made sources combined, other than medical, would exceed the 1 mSv/y (100 mrem/y) public dose limit of 10 CFR part 20;

(b) Employ, to the extent practical, restrictions on site use for minimizing exposures at the site using the provisions for restricted use outlined in Section IV.B, below; and

(c) Reduce doses to ALARA levels.

(d) Seek advice from affected parties regarding this approach and, in seeking such advice, provide for: (1) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning, (2) an opportunity for a comprehensive, collective discussion on the issues, and (3) a publicly available summary of the results of all such discussions, and

(e) Obtain the specific approval of the Commission. The Commission will make its decision on allowing use of alternate criteria in specific cases only after consideration of the NRC staff's recommendations that will address any comments provided by the Environmental Protection Agency and any public comments submitted regarding the decommissioning or license termination plan.

A description of these circumstances and potential resolutions on a site-specific basis, short of exempting a facility from this rule, appears in Section IV.C.

If license termination still cannot be met even under alternate criteria, it may be necessary for the site (or a portion thereof) to be kept under license in order to ensure that exposures to the public are appropriately monitored. The evaluation of the maintenance of a site or a portion thereof under a continued license is outside the scope of this rulemaking because this rule contains provisions addressing radiological criteria that apply to termination of a license.

A.2.4 Summary of rule revisions on unrestricted use and plans for implementation. The final rule has been modified to indicate that the dose criterion for unrestricted use is 0.25 mSv/y (25 mrem/y). Requirements that a licensee consider how the ALARA requirements of 10 CFR part 20 can be applied to achieve a dose below the dose criterion have been retained.

Regulatory guidance is planned on how to meet these existing ALARA requirements. In addition, to assist in implementing the dose criterion, regulatory guidance will also be issued to provide clear guidance to licensees on how to demonstrate compliance with the dose criterion by using either:

(a) Screening analyses that use relatively simple approaches for demonstrating compliance; or

(b) Site-specific modeling for more complex sites and contamination. Regulatory guidance will also be issued to provide clear guidance on statistical tests and survey methods available to licensees for demonstrating compliance.

The Commission is retaining the distinguishable from background provision in the final rule to allow release of sites when residual contamination, if any, cannot be distinguished from background on a statistical basis using proper survey techniques. In particular, at the levels of the dose criterion, concentrations of uranium and thorium in soil are extremely low and may not be distinguishable from background on a statistical basis even when using proper survey techniques.

A.3 General Comments on the Dose Criterion

A.3.1 Comments. Comments were received on the 0.15 mSv/y (15 mrem/y) dose criterion that questioned its effect on disposal capacity, the relationship to naturally occurring radioactive material (NORM), and the issue of fixing the responsibility for cleanup.

A.3.2 Response. Some commenters were concerned about the effect of 0.15 mSv/y (15 mrem/y) criterion on disposal capacity. As noted in Section IV.A.2.2, several of the assumptions, models, and approaches in the GEIS and Regulatory Analysis have been revised to include additional data and alternate waste disposal costs. A complete discussion of these revisions and analysis of disposal capacity is in the Final GEIS and the Regulatory Analysis.

Some commenters questioned the relationship of this rule to NORM. In response, the criteria of this rule apply to residual radioactivity from activities under a licensee's control and not to naturally occurring background radiation. Issues related to NRC-licensed sites containing materials that occur in nature are discussed in Sections IV.B and IV.C.

There is a wide variety of sites containing NORM subject to EPA jurisdiction and not licensed by the NRC. The extent to which criteria in this rule would apply to these sites would be based on a separate evaluation although certain aspects of the rule, for example control of sites with restrictions imposed, could be similar. For further discussion, see also Section IV.G.6.

With regard to responsibility for cleanup, several commenters stated that the 0.15 mSv/y (15 mrem/y) limit is too high because licensees should have to clean up contamination that they created. Because these are final licensing actions before releasing the site to the public, they stated that only a lower criterion such as return to background would adequately protect the public. In response, the NRC agrees with the need to fix responsibility for decommissioning of licensed sites. The planning and financial assurance requirements adopted June 27, 1988 (53 FR 24018), recognized the responsibility of licensees to plan for the cleanup of their sites and to provide adequate financial assurance for that cleanup. Similarly in this regulation, licensees are not permitted to release a facility for unrestricted or restricted public use unless the dose criteria stipulated in the rule have been satisfied. As noted in the Final GEIS, further cleanup to levels such as background is not generally reasonable because it results in very little additional health benefit with very large costs incurred and could result in an increase in the overall risk associated with cleanup of a particular site when all factors (e.g., estimated fatalities due to transportation accidents during transport of radioactive wastes) are considered. Therefore, for the reasons discussed in Section IV.A.2.2, the criteria in the final rule are considered appropriate to protect public health and safety and to permit release of the sites and termination of license.

A.4 Average Member of the Critical Group

A.4.1 Comment. Some commenters agreed with provisions of the rule that would apply the dose limit to an average member of the critical group rather than to the ''reasonably maximally exposed (RME) individual'' because it is consistent with ICRP and provides an appropriate protection standard. Other commenters objected to use of ''an average member of the critical group.'' These commenters favored applying the dose limit to the most exposed person rather than to an average person. They asserted that this would be consistent with the approach used for other licensed activities and environmental protection.

A.4.2 Response. Section 20.1003 of the proposed rule defined the term ''critical group'' as the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances. For example, if a site were released for unrestricted use, the critical group would be the group of individuals reasonably expected to be the most highly exposed considering all reasonable potential future uses of the site. As noted in the preamble to the proposed rule (at 59 FR 43218; August 22, 1994), NUREG/CR– 5512 defines the critical group as an individual or relatively homogeneously exposed

group expected to receive the highest exposure within the assumptions of a particular scenario and the dosimetric methods of 10 CFR part 20. The average member of the critical group is an individual who is assumed to represent the most likely exposure scenario based on prudently conservative exposure assumptions and parameter values within model calculations. For example, the critical group for the building occupancy scenario can be the group of regular employees working in a building that has been decontaminated. If a site were converted to residential use, the critical group could be persons whose occupations involve resident farming at the site, not an average of all residents on the site.

Although the terms ''critical group'' and ''average member'' are new terms in NRC regulations, they are consistent with ICRP practice of defining and using a critical group when assessing individual public dose from low levels of radioactivity similar to those expected from a decommissioned site. ICRP recommends that such analyses should consider exposure to individuals representative of those expected to receive the highest dose using cautious but reasonable assumptions. This approach has been adopted in the proposed FRG and is also consistent with the recommendations of the National Academy of Sciences on the Yucca Mountain Standards (August 1995).

A.4.3 Summary of rule revisions. Based on this discussion, the proposed rule has not been changed.

B. Criteria for Restricted Use (Proposed Rule §§ 20.1402(d) and 20.1405)

B.1 Proposed Rule Content

As described in the proposed rulemaking and restated in Section IV.A.2.2, there are potential situations under which termination of a license under restricted conditions could be used in the decommissioning of a site. Proposed § 20.1405 indicated that a site would be considered acceptable for license termination under restricted conditions if the licensee:

(1) Made provisions for institutional controls that provide reasonable assurance that the TEDE to the average member of the critical group would not exceed the unrestricted use dose criterion;

(2) Reduced residual radioactivity at the site so that, if the controls were no longer in effect, there is reasonable assurance that the TEDE would not exceed 1 mSv/y (100 mrem/y);

(3) Demonstrated that complying with the unrestricted use dose criterion would be prohibitively expensive, result in net public or environmental harm, or not be technically achievable;

(4) Obtained advice on the restrictions from the affected community by convening a site-specific advisory board, and;

(5) Provided financial assurance to ensure the controls remain in place.

B.2 Comments on Acceptability of Restricted Use for Decommissioned Sites

A variety of comments was received on the restricted use option. The major comment categories are listed below. Although the comment categories address somewhat separate issues, they are listed and answered together to develop a unified response on the issue of restricted use.

B.2.1 The general concept of restricted use. Some commenters agreed with the proposal to permit restricted use of decommissioned sites because it may be financially impractical to reach unrestricted levels, especially if health and safety considerations do not warrant it and because restricted release allows realistic land uses to be considered. Some commenters opposed the concept of any planned restricted release of decommissioned sites because of concerns over the durability and effectiveness of institutional controls, and because license termination should be a final action with full licensee responsibility for site disposition and cleanup costs previously considered.

B.2.2 The need for licensees to demonstrate that restricted use is appropriate for their sites. In allowing restricted use, the proposed rule would have required licensees to demonstrate the appropriateness of restricting site use for their particular situation by showing that it would be ''prohibitively expensive,'' ''technically unachievable,'' or cause ''net public or environmental harm'' to achieve unrestricted use (proposed § 20.1405(a)). Some commenters supported the restricted use of sites but indicated that the proposed requirements for demonstrating its appropriateness were unreasonably restrictive. These commenters stated that the provisions in proposed § 20.1405(a) were structured so narrowly that few sites would be able to qualify for license termination under restricted conditions. Commenters stated that these terms should be explained, deleted, or replaced with a less onerous requirement allowing restricted use if justified by an ALARA analysis or if there were continued ownership and industrial use of the site.

B.2.3 The durability of institutional controls. Several commenters opposed or expressed concern about the ability of institutional controls to provide needed protection of public health and safety at decommissioned sites because they cannot be enforced indefinitely into the future and can be struck down or become ineffective. Other commenters favored reliance on more flexible institutional controls and recommended that the rule should not assume that they will eventually fail. Approaches for using institutional controls were suggested including Federal Government ownership of sites or legislative solutions for complex sites similar to the National Waste Policy Act (NWPA) of 1982.

B.2.4 The 1 mSv/y (100 mrem/y) cap if institutional controls fail. Some commenters stated that the proposed 1 mSv/y (100 mrem/y) restriction is unreasonably low when used to assess the worst case scenario. They recommended that the rule should not stipulate that a licensee must assume that all institutional controls will eventually fail. Alternatively, they recommended that a 5 mSv/y (500 mrem/y) backup limit be allowed if restrictions such as institutional controls or engineered features fail. The commenters believed that a 5 mSv/y (500 mrem/y) limit is consistent with other regulations, since residential use of an industrial site is unlikely, and failure of controls is speculative. Several commenters objected to the last sentence of proposed § 20.1405(d), that stated that licensees may not assume any benefits from an earthen cover, other earthen barriers, or engineered controls in complying with the 1 mSv/y (100 mrem/y) cap unless specifically authorized by the Commission and recommended that the sentence be deleted. Some commenters recommended that the rule specify the extent to which licensees may take credit for engineered barriers. Other commenters stated that 1 mSv/y (100 mrem/y) is too high and that a lower value (e.g., 0.15, 0.3, 0.5, 0.75 mSv/y (15, 30, 50, or 75 mrem/y)) should be applied because institutional controls are uncertain, concerns over health effects would exist, and doses in excess of 40 CFR Part 190 are unreasonable. Some commenters agreed with establishing a maximum TEDE of 1 mSv/y (100 mrem/y) in the event institutional controls are no longer in effect.

B.2.5 Financial assurance for restricted use. Some commenters questioned the need for financial assurance provisions and suggested that more flexibility be provided for

licensees. Other commenters questioned whether the financial assurance provisions were adequate. One commenter stated that there should be more detail on financial assurance provided in the rule.

B.3 Response

B.3.1 The general concept of restricted use. Current NRC regulations pertaining to decommissioning, issued on June 27, 1988 (53 FR 24018), do not contain provisions for release of a facility for restricted use but limit a licensee's options in decommissioning to release of a facility for unrestricted use. Experience with decommissioning of facilities since 1988 has indicated that for certain facilities, achieving unrestricted use might not be appropriate because there may be net public or environmental harm in achieving unrestricted use, or because expected future use of the site would likely preclude unrestricted use, or because the cost of site cleanup and waste disposal to achieve unrestricted use is excessive compared to achieving the same dose criterion by restricting use of the site and eliminating exposure pathways. The input received from the rulemaking workshops held from January through May 1993 confirmed this experience and indicated that restricted use of a facility, if properly designed and if proper controls were in place, was a reasonable means for terminating licenses at certain facilities.

Current NRC-licensed sites that might request restricted use are largely industrial sites. It is reasonable for them to remain industrial because of their locations and previous siting considerations. Nevertheless, there may be instances where, if a site had high cultural value, such considerations would be presented as part of the public input that is part of the process of restricted use (see Section IV.E) and could be considered as a socioeconomic effect under the ALARA process.

The proposed rule thus provided for both unrestricted and restricted use of sites. Both the Draft and Final GEIS provide discussions of the environmental impact of decommissioning for the reference sites and of the costs related to decommissioning. From this it may be concluded that release of certain facilities for restricted use is an appropriate option assuming the presence of the specific provisions described below to ensure that appropriate controls are in place so that the restrictions on use remain in effect.

B.3.2 The need for licensees to demonstrate that restricted use is appropriate for their sites. As described in Section IV.B.3.1, the proposed rule allowed restricted use because release of a site under restricted conditions can be an appropriate method of decommissioning from both health and safety, and cost-benefit bases, especially for certain facilities with soil contamination. Nevertheless it did so under the philosophy (stated in § 20.1402(d)) that, in general, termination of a license for unrestricted use is preferable because it requires no additional precautions or limitations on use of the site after licensing control ceases, in particular for those sites with long-lived nuclides. In addition, there may be societal or economic benefits related to future value of the unrestricted use of the land to the community. Thus, § 20.1405(a) of the proposed rule stated the provisions the NRC would consider in evaluating a request for termination of a site under restricted conditions, including that it is ''prohibitively expensive'' or there is ''net public or environmental harm'' in achieving unrestricted release.

The Commission continues to believe that unrestricted use is generally preferable for the reasons noted. However, the NRC has reexamined the provisions for allowing restricted use because of the potential benefits. In explaining the provision of ''prohibitive'' cost, the proposed rule noted (at 59 FR 43220) that costs to achieve unrestricted use may be ''excessive,'' indicating that this means there may be situations where removal and disposal of large quantities of material is simply ''not reasonable'' from a cost standpoint. Consistent with this, the proposed rule noted in § 20.1402(d) that the Commission expected licensees to make every reasonable effort to achieve unrestricted release. The specific cost that would be considered excessive, not reasonable, or prohibitive was not included in the proposed rule. This value depends on costs of unrestricted and restricted use, and on an evaluation of these alternatives using the regulatory analysis framework presented in NUREG/BR–0058 and NUREG–1530. NUREG/BR–0058 provides a decisionmaking tool for deciding between regulatory alternatives. As noted in the discussion below, restricted use with appropriate institutional controls (accompanied by sufficient provisions for ensuring their effectiveness) can provide protection of public health and safety because the dose level will be reduced to the same 0.25 mSv/y (25 mrem/y) criterion as for unrestricted use. Thus, use of the guidelines in NUREG/BR–0058 is appropriate for determining whether restricted use should be permitted. Therefore, the Commission has modified the rule to incorporate an ALARA standard rather than prohibitive costs as the basis for selecting restricted use. To support a request for restricted use, a licensee would perform an ALARA analysis of the risks and benefits of all viable alternatives and include consideration of any detriments. This could include estimated fatalities from transportation accidents that might occur as the result of transport of wastes from cleanup activities, and societal and socioeconomic considerations such as the potential value to the community of unrestricted use of the land.

The proposed rule also noted that because the net public or environmental damage through removal, transport, and disposal of materials could be larger than the benefit in dose reduction at the site, it may be more reasonable for the material to remain onsite. The Final GEIS illustrates when it may be inappropriate, when considering such relative impacts, to completely remediate a site to an unrestricted level that assumes activities such as farming or residence, and then, as would be the case for a number of currently licensed sites, actually employ a commercial or industrial use that would eliminate significant pathways of exposure. Specific examples include reactors or other materials facilities where the dose is controlled by relatively short-lived nuclides (e.g., Co-60 and Cs-137 with half-lives of 5.3 and 30 years, respectively) that will decay to unrestricted dose levels in a finite time period of institutional control (e.g., about 10–60 years). For these facilities, there may be net public or environmental harm from removing and transporting soil to achieve unrestricted use compared to restricting use for a period of time associated with a reasonable decay period (see the Final GEIS, Chapter 6). Thus, the consideration of potential detriments from cleanup activities and the possibility of net harm have been retained in the final rule. Both terms, net public harm and net environmental harm, are retained in the final rule to indicate that a licensee's evaluation should consider the radiological and nonradiological impacts of decommissioning on persons who may be impacted, as well as the potential impact on ecological systems from decommissioning activities.

B.3.3 The durability of institutional controls. As described in Sections IV.B.3.1 and IV.B.3.2, use of restrictions that employ institutional controls appears appropriate in specific

situations. However, an important question raised in the public comments relates to the durability of institutional controls, i.e., whether the controls provide reasonable assurance that the exposure will be limited to the dose criterion in the rule over the periods in question.

For many types of decommissioned sites released under restricted conditions where potential doses to an individual are caused by relatively short-lived nuclides, the radiation exposure that could potentially be received were controls to fail will gradually decrease to below the unrestricted dose criterion so the restrictions on use would no longer be necessary. Examples of facilities with nuclides of this type include reactors or materials facilities for which the principal dose contributing nuclides after decommissioning are Co-60 or Cs-137 (half-lives 5.3 and 30 years, respectively), or other similarly short-lived nuclides. The Commission has considered the effectiveness of institutional controls for up to 100 years in similar contexts such as low-level waste disposal sites. Because decommissioned facilities will have minimal contamination compared to large volumes buried at low-level disposal sites, the Commission believes that institutional controls using relatively simple deed restrictions can provide reasonable assurance that the TEDE will be below the 0.25 mSv/y (25 mrem/y) dose criterion with restrictions in place.

In a limited number of cases, in particular those involving large quantities of uranium and thorium contamination, the presence of long-lived nuclides at decommissioned sites will continue the potential for radiation exposure beyond the 100-year period. More stringent institutional controls will be required in these situations, such as legally enforceable deed restrictions and/or controls backed up by State and local government control or ownership, engineered barriers, and Federal ownership, as appropriate. Federal control is authorized under Section 151(b) of the National Waste Policy Act (NWPA). Requiring absolute proof that such controls would endure over long periods of time would be difficult, and the Commission does not intend to require this of licensees. Rather, institutional controls should be established by the licensee with the objective of lasting 1000 years to be consistent with the time-frame used for calculations (and discussed in Section IV.F.7). Having done this, the licensee would be expected to demonstrate that the institutional controls could reasonably be expected to be effective into the foreseeable future.

To provide added assurance that the public will be protected, the final rule incorporates provisions (§ 20.1405(c)) for financial assurance to ensure that the controls remain in place and are effective over the period needed. With these provisions, the Commission believes that the use of reliable institutional controls is appropriate and that these controls will provide a high level of assurance that doses will not exceed the dose criterion for unrestricted use.

Although the Commission believes that failure of active and passive institutional controls with the appropriate provisions in place will be rare, it recognizes that it is not possible to preclude the failure of controls. Therefore, in the proposed rule, the Commission included a requirement that remediation be conducted so that there would be a maximum value (''cap'') on the TEDE from residual radioactivity if the institutional controls were no longer effective in limiting the possible scenarios or pathways of exposure. The cap included in the proposed rule was 1 mSv/y (100 mrem/y), which is the public dose limit codified in 10 CFR part 20. Public comments on the proposed rule suggested other values for the cap, both higher than and lower than the proposed value. The analysis of those comments, and their potential effect on the institutional controls used, is discussed in Section IV.B.3.4.

The Commission believes, based on the discussion in this section on the viability of controls and on the provisions for financial assurance and for a ''cap,'' described in Sections IV.B.3.4 and IV.B.3.5, that the provision for restricted use and institutional controls will provide a high level of assurance that public health and safety will be protected. Licensees seeking restricted use will be required to demonstrate, to NRC's satisfaction, that the institutional controls they propose are comparable to those discussed above, are legally enforceable, and are backed by financial assurance. Licensees will also be required to demonstrate that the cap will be met. The Commission believes that the provision for restricted use should be retained in the final rule.

B.3.4 The 1 mSv/y (100 mrem/y) cap if institutional controls fail. A ''cap'' of 1 mSv/y (100 mrem/y), corresponding to the public dose limit, was proposed in § 20.1405(d) of the proposed rule. Various possible ''cap'' values were suggested by the commenters, both lower than (e.g., values such as 0.15, 0.3, or 0.85 Sv/y (15, 30, or 85 mrem/y)) or higher than the proposed cap.

The Commission has reviewed the comments suggesting that the specific cap value be set at levels other than 1 mSv/y (100 mrem/y). The rationale for setting the cap at 1 mSv/y (100 mrem/y) presented in the proposed rule (at 59 FR 43221) was that the value of the cap coincides with NRC's public dose limit of 10 CFR Part 20. This value was premised on the assumption that circumstances could develop in which the restrictions might no longer be effective in limiting the exposure scenarios or pathways. Although this occurrence need not be assumed for planning purposes, a safety net is needed to prevent exposures in excess of the public dose limits. A cap using the public dose limits would provide an additional level of protection in the unlikely event that restrictions were not effective. Although, as noted in Section IV.A.2, the Commission has used a fraction of the public dose limit in setting the 0.25 mSv/y (25 mrem/y) dose limit for decommissioning, it indicated in the proposed rule that, in the case of the ''cap'' or ''safety net,'' it did not believe that fractionation, i.e., setting a cap value less than 1 mSv/y (100 mrem/y), would be necessary because:

(a) The 1 mSv/y (100 mrem/y) cap is less than values suggested in the proposed FRG for members of the public in unusual circumstances and less than values used for other types of facilities where some type of institutional control is used;

(b) The Commission believes that failure of all site restrictions at decommissioned sites is a highly unlikely event; and

(c) Radioactive decay for relatively short-lived nuclides (e.g., Co-60 and Cs-137), that are the principal dose contributing contaminants at the large majority of NRC licensed facilities, will actually reduce the dose level over a period of time for most sites that will provide an additional margin of safety equivalent to fractionation of the limit.

The rationale for setting a cap value at 1 mSv/y (100 mrem/y) continues to appear appropriate. In addition, setting a cap at a lower value does not appear warranted because: (1) It appears arbitrary to assume that the same person would be an average member of the critical group both near a facility where there was failure of controls and near another decommissioned facility; and (2) the failure of restrictions would be infrequent and therefore it is likely that the overall lifetime risk to the critical group would still be maintained at levels comparable to unrestricted use

while providing a more cost-effective use of resources.

Although the Commission did not fractionate the cap, it did include in the proposed rule, and continues to include in the final rule, a provision that would require exposures to be below the cap to a degree that is ALARA. The purpose of this requirement is that licensees would not simply leave behind contamination corresponding to the value of the cap but would evaluate the level below the cap that is cost effective and reduce the contamination to that level. This will provide a requirement that will effectively fractionate the doses and result in doses not dissimilar from those suggested by the commenters if it is cost-effective to do so. This approach is consistent with the current requirements in 10 CFR part 20.

Based on its experience with sites with difficult contamination issues, in particular those sites treated in NRC's SDMP, and as described in the Final GEIS, the Commission anticipates that there may be sites where compliance with the 1 mSv/y (100 mrem/y) cap could cause impacts resulting from cleanup to that level (e.g., estimated industrial or traffic fatalities associated with removing or transporting waste) that exceed the benefits of averting radiation exposure (thus causing a net detriment to public health or the environment) or that diminish the net benefit to where costs of cleanup would be prohibitive compared to the net benefit. Although the NRC recognizes that it is always the licensee's responsibility to clean up the contamination that it has caused, the appropriate course of action should not result in net public or environmental harm from a cleanup, and it is not clear that it is beneficial if resources are spent in a manner prohibitive in relation to other benefits which could be achieved, or if a licensee is put into a financial position where it cannot continue to perform the cleanup safely.

Although a cap higher than 1 mSv/y (100 mrem/y) would result in using a value in excess of the public dose limit in § 20.1301(a), existing requirements in § 20.1301(c) permit levels up to values of 5 mSv/y (500 mrem/y), provided that a licensee would apply to the Commission for permission to operate at that level, submit reasons why it is necessary, and indicate procedures to maintain doses ALARA. The proposed FRG, Recommendation No. 4, states that the dose from all sources should not exceed 1 mSv/y (100 mrem/y) although it may be exceeded temporarily in unusual situations that are not expected to recur.

Based on this existing requirement, the Commission has incorporated a specific provision in the final rule under which a licensee could propose exceeding the 1 mSv/y (100 mrem/y) cap in unusual site-specific circumstances if, in addition to the normal provisions of restricted use, it also met the following additional stringent provisions:

(a) A licensee would have to demonstrate that it cannot meet the 1 mSv/y (100 mrem/y) cap because of net public or environmental harm or prohibitive costs by means of a site-specific evaluation of the issues associated with complying with the 1 mSv/y (100 mrem/y) cap. The NRC expects that only a very few facilities (e.g., sites with soil contaminated with naturally occurring radionuclides in small radioactivity levels but large volumes, certain SDMP sites) could provide sufficient rationale for seeking a higher cap. Although the proposed rule contained a reference to the use of prohibitive cost, it did not quantify or define these costs beyond noting that they would be excessive or unreasonable. The Commission believes it appropriate to consider a prohibitive cost to be one that would be an order of magnitude greater than that contained as part of the decisionmaking guidelines in NUREG/BR–0058, although a lower factor may be appropriate in specific situations when a licensee could become financially incapable of carrying out decommissioning safely;

(b) Under these circumstances, the licensee would be required to reduce contamination so doses would be no greater than the 5 mSv/y (500 mrem/y) value currently contained in § 20.1301(a). Also, the actual dose level to which the licensee would have to clean the site would be less than that value based on an ALARA evaluation of the site. This provision is consistent with existing requirements in § 20.1301(c) that permit levels up to values of 5 mSv/y (500 mrem/y) for specific cases;

(c) Durable institutional controls must be in place. These controls could include significant engineered barriers and/or State, local, or Federal Government control of sites or maintenance of site deed restrictions so that site access is controlled. Under Section 151(b) of the NWPA of 1982, the DOE has already been authorized to take possession of waste disposal sites in certain situations. A similar provision in Section 151(c) was used as the vehicle to transfer custody of the Amax site from Amax to DOE;

(d) A licensee would make provisions for a verification of the continued effectiveness of institutional controls at the site every 5 years after license termination to ensure that the institutional controls are in place and the restrictions are working, and that there is financial assurance to reestablish controls if the recheck indicates otherwise. This 5-year recheck is consistent with 10 CFR Part 20 and also with the FRG, Recommendation No. 4, that states that in some unusual situations the 1 mSv/y (100 mrem/y) may be exceeded temporarily in situations that are not anticipated to recur. It is also consistent with the approach for institutional controls used in CERCLA that allows for release of sites without a cap providing there is continuous checking on the status of the controls.

The NRC would retain the authority to take appropriate action in those unusual situations when both the 5 mSv/y (500 mrem/y) cap was in effect and the controls had failed. This action might include oversight of actions needed to reinstate the controls and any necessary cleanup and/or monitoring actions.

B.3.5 Financial assurance. As a second provision for ensuring that the institutional controls provide protection of public health and safety, financial assurance requirements were included to ensure that funds will be available to enable an independent third party, including a governmental custodian of a site, to implement and ensure continued effectiveness of institutional controls. Some commenters questioned whether these provisions were necessary while others questioned whether they went far enough. In response, the Commission continues to believe the proposed provisions are reasonable and adequate for their purpose. The provisions are consistent with financial assurance requirements currently in 10 CFR Parts 30, 40, 50, 61, 70, and 72 which call for financial assurance to provide funds for decommissioning in cases when licensees might otherwise be financially unable to remediate a site. Reference to an independent third party is necessary in the regulations because after the license is terminated, the licensee may no longer be the party ensuring the effectiveness of the controls. Because the purpose of this provision is to provide broad requirements for financial assurance necessary to ensure that the controls continue to limit the dose, more specific details are not included in the rule. The level of detail in the rule is similar to that in other similar NRC regulations on financial assurance. As requested by a commenter, the funding provisions include a trust fund (or similar funding mechanism) for

surveillance and enforcement of the institutional controls. The financial assurance requirements must be in place before the license is terminated and be flexible enough to allow for the necessary site-specific details.

B.4 Summary of Rule Revisions on Restricted Use

Based on the discussions above, restricted use has been retained in the final rule. Based on its analyses in the Final GEIS and its experiences with actual decommissioned sites, the Commission recognizes that, although unrestricted use is generally preferred, restricted use (when properly designed in accordance with the rule's provisions discussed in Section IV.B.3) can provide a cost-effective alternative to unrestricted use for some facilities and maintain the dose to the average member of the pertinent critical group at the same level. Thus, the Commission has replaced the prohibitively expensive provision for justifying restricted use with a reasonable cost provision. The net harm provision remains the same. The general cap value has been retained at 1 mSv/y (100 mrem/y) as has the requirement that licensees reduce the actual level of contamination to levels as far below the cap as is ALARA, where appropriate. The rule has been modified to allow for exceeding the 1 mSv/y (100 mrem/y) cap in site-specific situations and under specific provisions. No change has been made to the financial assurance provisions of the rule.

A number of comments were also received on public participation aspects of restricting site use. The final rule will require that licensees proposing to decommission by restricting use of a site shall seek advice from individuals and institutions in the community who may be affected by the decommissioning and that, in seeking that advice, the licensee shall provide for: (1) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning; (2) an opportunity for a comprehensive, collective discussion on the issues by the participants represented; and (3) a publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues. The details of the comments received and the rationale for the public participation aspects of the final rule are discussed in Section IV.E.

C. Alternate Criteria for License Termination

C.1 Codifying Provisions for Certain Facilities That the Proposed Rule Suggested Exempting

C.1.1 Proposed rule content. The preamble to the proposed rule noted that there were several existing licensed sites where public health and the environment may best be protected by use of alternate criteria, although these situations were not codified in the proposed rule; rather, it was thought that these facilities might seek exemptions (under § 20.2301) from the criteria of this rule.

C.1.2 Comments. Some commenters recommended that the rule should not apply to any facility that possesses large volumes of low-level contaminated wastes (including SDMP sites) and should provide a specific exemption or exemption procedures for the ''tens'' of existing facilities for which application of the proposed criteria is inappropriate and too restrictive. Commenters suggested that guidance is needed on sites that should be turned over to the Federal Government after license termination and sites that should be kept under license. Commenters also recommended that NRC ask Congress to amend the NWPA of 1982 to allow Federal ownership of extensively contaminated sites. Other commenters objected to exempting facilities from the proposed radiological criteria and stated that the rule should cover all decommissioning cases.

C.1.3 Response. For the very large majority of NRC-licensed sites, the Commission believes that the 0.25 mSv/y (25 mrem/y) unrestricted and restricted use dose criterion in the rule is an appropriate and achievable criterion for decommissioning.

However the Commission is concerned about the possible presence of certain difficult sites presenting unique decommissioning problems. Licensees of these sites who would have sought exemptions to the proposed rule's criteria would have had to follow processes similar to the other facilities covered by the rule. In addition, licensing efficiency, consistency of application of requirements, and oversight of these facilities can best be achieved by codifying application of criteria to all facilities. Therefore, the Commission believes that it is preferable to codify provisions for these facilities under the aegis of the rule rather than requiring licensees to seek an exemption process outside the rule as was contemplated in the proposed rulemaking.

In addition, as discussed in Section IV.A, the Commission has concluded that for any site where the 0.25 mSv/y (25 mrem/y) dose criterion is met, there will be a very low likelihood that individuals who use the site will be exposed to multiple man-made sources combined, excluding medical, with cumulative doses approaching 1 mSv/y (100 mrem/y). Thus, the discussion in Section IV.A of this notice establishes this level as a sufficient and ample, but not necessary, margin of safety.

Based on these considerations, the Commission has included in the final rule a provision under which the Commission may terminate a license using alternate criteria in its final rule. The Commission expects the use of alternate criteria to be confined to rare situations. Therefore, for the reasons previously listed in Section A.2.3.4, the Commission has limited the conditions under which a licensee would apply to the NRC for, or be granted use of, alternate criteria to unusual site-specific circumstances subject to the following provisions:

(a) A licensee must provide assurance that, for the site under consideration, it is unlikely that the dose to an average member of the critical group for that site from all potential man-made sources combined, other than medical, would exceed the 1 mSv/y (100 mrem/y) public dose limit of 10 CFR Part 20. The Commission envisions that a licensee proposing to use alternate criteria will have to provide a complete and comprehensive analysis that would build upon generic considerations such as those discussed in Section IV.A.2, and also include site-specific considerations. To guide the Commission in its review of such analyses, the NRC is continuing to develop generic information on the potential for exposure to radioactivity from various sources, including decommissioned sources, to supplement currently available knowledge, and is planning to make this information publicly available through publication of a NUREG report. Site-specific factors that the Commission might review in such cases could include soil and aquifer characteristics, the nature of the critical groups likely to use the site, the detailed nature of the contamination patterns at the site, and the characteristics of residual radionuclides remaining at the site, including considerations related to whether the nuclides are long-lived or short-lived;

(b) A licensee will employ, to the extent practical, restrictions on site use for minimizing exposure at the site using the provisions for restricted use

outlined in IV.B, above, and in § 20.1403;

(c) A licensee will indicate that a comprehensive analysis had been performed of the risks and benefits of all viable alternatives and consideration of any detriments, such as transportation fatalities that might occur as the result of cleanup activities, to reduce the residual radioactivity at the site to levels that are ALARA;

(d) A licensee will seek advice from affected parties regarding this approach. In seeking such advice, the licensee will provide for: (1) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning; (2) an opportunity for a comprehensive, collective discussion on the issues by the participants represented; and (3) a publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues (the rationale for these public participation aspects are discussed in more detail in Section IV.E); and

(e) A licensee will obtain the specific approval of the Commission for the use of alternate criteria. The Commission will make its decision after consideration of the NRC staff's recommendations that will address any comments provided by the Environmental Protection Agency and any public comments submitted regarding the decommissioning or license termination plan.

If the license termination conditions under alternate criteria cannot be met, it may be necessary for the site (or portion thereof) to be kept under license to ensure that exposures to the public are appropriately monitored. The evaluation of maintenance of a site or a portion of that site under continued license is outside the scope of this rulemaking because this rule contains provisions, including radiological criteria, that apply to termination of a license.

With regard to the comment on the NWPA, it should be noted that Section 151(b) of the NWPA already authorizes ownership by the U.S. Department of Energy, if NRC makes certain determinations. Therefore, no further legislation is needed to grant this authority. The rule language has been clarified to ensure that this authority may be implemented by NRC and DOE.

C.1.4 Summary of revisions to rule on codifying provisions for certain facilities. The rule has been modified to include the use of alternate criteria in specialized circumstances and under the provisions described above.

C.2 Exclusion of Uranium/Thorium Mills Proposed in § 20.1401(a)

C.2.1 Proposed rule content. The proposed rule stated that, for uranium mills, the criteria of the rule apply to the facility but do not apply to the disposal of uranium mill tailings or to soil cleanup. The proposed rule referred to 10 CFR Part 40, Appendix A, where criteria already exist (§ 20.1401(a)).

C.2.2 Comments. Comments on the proposed rule generally agreed with the exclusion for disposal of mill tailings and soil cleanup. Commenters also recommended that the rule exempt conventional thorium and uranium mill facilities and in situ leach (ISL) (specifically uranium solution extraction) facilities from the scope of coverage because they stated that the decommissioning of these sites is covered by Appendix A to 10 CFR part 40 and 40 CFR part 192.

C.2.3 Response. Currently, there are regulations applicable to remediation of both inactive tailings sites, including vicinity properties, and active uranium and thorium mills. Under the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, as amended, EPA has the authority to set cleanup standards for uranium mills and, based on that authority, issued regulations in 40 CFR part 192 which contain remediation criteria for these facilities. NRC's regulations in 10 CFR part 40, Appendix A, apply to the decommissioning of its licensed facilities and conform to EPA's standards for uranium mills. At ISLs, the decommissioning activities are similar to those at uranium mills and consist mainly of the cleanup of byproduct material as defined in Section 11e.(2) of the Atomic Energy Act of 1954, as amended.

Thus, applicable cleanup standards already exist for soil cleanup of radium in 10 CFR part 40, Appendix A, Criterion 6(6). Radium is the main contaminant at mills in the large areas (20–400 hectares (50 to 1000 acres) for uranium mills) where windblown contamination from the tailings pile has occurred, and at ISLs (in holding ponds). These standards require that the concentration of radium in those large areas not exceed the background level by more than 0.19 Bq/gm (5 pCi/gm) in the first 15 cm (6 inches) of soil, and 0.56 Bq/gm (15 pCi/gm) for every 15 cm (6 inches) below the first 15 cm (6 inches). Cleanup of radium to these concentrations would generally result in doses higher than the unrestricted use dose criterion of this rulemaking, although, in actual practice, cleanup of uranium mill tailings results in radium levels lower than the 10 CFR part 40 standards, and radium is usually removed to background levels during cleanup of uranium and thorium to the levels in existing NRC guidance documents.

However, in other mill and ISL site areas proximate to locations where radium contamination exists (e.g., under the mill building, in a yellow cake storage area, under/around an ore pad, and at ISLs in soils where spray irrigation has occurred as a means of disposal), uranium or thorium would be the radionuclide of concern. A difficulty in applying 10 CFR part 40, Appendix A, as a standard for uranium and thorium, is that it does not have any cleanup standards for soil contamination from radionuclides other than radium. Application of the decommissioning dose criterion of the final rule to these areas (while retaining the 10 CFR 40, Appendix A, standard for radium) would result in a situation where the cleanup standard of that small portion of the mill site would be lower than the standard for the large windblown tailings areas where radium is the nuclide of concern. This would result in situations of differing criteria being applied across essentially the same areas and would be a problem for contamination existing both in uranium mill soils and buildings.

The Commission has considered the most appropriate means to address requirements for cleanup at uranium and thorium mills and ISLs (collectively referred to as UR facilities) for unrestricted release of the site other than tailings disposal and reclamation subject to the requirements of 10 CFR part 40, Appendix A. One way would be to include criteria for UR facilities as part of this rulemaking. However, as noted above, there are complexities associated with decommissioning of these unique facilities which could cause practical problems in applying the standards of this rulemaking to UR facilities. Therefore, the Commission has decided to exclude UR facilities from the scope of this rulemaking.

To allow for full consideration by the Commission and affected parties of the issues associated with decommissioning UR facilities and of the regulatory options listed above, the Commission is publishing a separate notice in this **Federal Register** reopening the comment period to specifically request additional comment on the regulatory options for decommissioning criteria for UR facilities. The Commission is not reopening the comment period for any other issue discussed in this **Federal**

Register notice. In the interim, the Commission will continue its current practices for decommissioning UR facilities.

C.2.4 Summary of rule revisions for uranium/thorium mills. The Commission is excluding uranium/thorium mills from the scope of this rulemaking and is publishing a separate notice requesting additional comment on the specific standard for license termination of UR facilities.

C.3 Other Exemptions

C.3.1 Comments. Commenters suggested certain other exemptions be specifically provided for in the rule including:

(1) Licensees that possess and hold only sealed sources or limited quantities; and

(2) Radioactive waste materials disposed of in accordance with NRC regulations in formerly used §§ 20.302 and 20.304 because ALARA was applied on a site-specific basis for these facilities.

Other commenters disagreed and stated that all such waste must be decommissioned. In addition, there were commenters who stated that exemption procedures should be spelled out.

C.3.2 Response. No exemption from the rule for sealed source or limited quantity users is necessary. Under provisions of 10 CFR Parts 30, 40, and 70, §§ 30.36(c)(1)(v), 40.42(c)(1)(v), and 70.38(c)(1)(v), the licensee could provide assurance that building or soil contamination has never occurred or demonstrate that the level of radioactive material contamination in the facility conforms with screening criteria.

With regard to burials, as discussed in the preamble to the proposed rule, the determination of whether the licensee meets the radiological criteria of the final rule includes consideration of all residual radioactivity at the site, including burials made in conformance with 10 CFR part 20 (both existing § 20.2002 and formerly used §§ 20.302 and 20.304). This is consistent with prior Commission statements made in the preamble to the 1988 rulemaking on general requirements for decommissioning (53 FR 24018; June 27, 1988) and in promulgation of the final rule on timeliness of decommissioning (59 FR 36026; July 15, 1994). More recent past burials (1981 to present) were frequently made in conformance with guidelines defined in ''Onsite Disposal of Radioactive Waste,'' NUREG–1101, Volumes 1 through 3. This guidance was based on a maximum annual whole body or critical organ dose of 0.25 mSv (25 mrem). Although numerically similar to the existing low-level waste disposal criteria in 10 CFR part 61, the Commission believes that, as a whole, the regulations applicable to low-level waste disposal sites are much more restrictive than those applicable to onsite burials. The pathway parameters on which NUREG–1101 is based may not be comparable to those used to define the rule's unrestricted release criteria. Nevertheless, case-by-case analysis of the potential radiological impacts could indicate that leaving the burials in place could be consistent with unrestricted or restricted release of the affected site. For past burials that have involved long-lived nuclides, site-specific modeling may also justify leaving these burials in place. Thus, the Commission sees no reason to specifically exempt these burials from consideration under this final rule but would continue to require an analysis of site-specific overall impacts and costs in deciding whether or not exhumation of previous buried waste is necessary for specific sites. In addition, the general exemption provisions of 10 CFR part 20 are available to consider unique past burials on a case-by-case basis.

With regard to specific provisions in the rule for exemptions, the Commission is not convinced that a significant number of exemptions to the unrestricted or restricted use provisions of the final rule will be necessary. The Commission believes that the options in this rule for release under alternate criteria and the flexibility contained in the rule including the use of realistic site-specific screening and modeling provide licensees with sufficient latitude.

D. Groundwater Protection Criteria (Proposed Rule § 20.1403)

D.1 Proposed Rule Content

The proposed rule (§ 20.1403(d)) indicated that a licensee must demonstrate a reasonable expectation that residual radioactivity from the site will not cause the level of radioactivity in groundwater that is a current or potential source of drinking water to exceed the limits specified in 40 CFR part 141. This groundwater requirement would have been in addition to the proposed dose criterion for unrestricted use and was included as part of the proposed rule on EPA's recommendation. The preamble to the proposed rule solicited responses to three specific questions on this proposal, including whether a separate standard was appropriate as a supplement to an overall radiological dose criterion that applies to all exposure pathways.

D.2 Use of EPA Drinking Water Standards in NRC Rule

D.2.1 Comments. A number of commenters disagreed with the inclusion of a separate groundwater requirement. In response to the specific questions asked, many of these commenters stated that a separate requirement for groundwater was not necessary if the rule included an all-pathways standard. A commenter also noted that application of Maximum Contaminant Levels (MCLs) to groundwater was inappropriate because the MCLs of EPA's drinking water standards were based on outdated dosimetry (ICRP2) and were applicable to public water systems rather than to groundwater directly. Other commenters supported establishing a separate groundwater requirement as being consistent with the EPA standard.

D.2.2 Response. As noted in Section IV.D.1, the NRC's proposed rule included separate requirements for groundwater protection. The NRC staff has reviewed the public comments on its proposed rule, including the EPA comments supporting the separate requirement, has reviewed the bases and rationale for a separate groundwater standard, and has conducted further technical analyses of groundwater protection in the Final GEIS.

As described in some detail in Section IV.A.2.2, there were three broad considerations that provided the overall rationale for the proposed rule's contents. The first two considerations were related to the health and safety aspects, and the third was related to cost and practicality aspects. As was done in Section IV.A.2.2, regarding the establishment of unrestricted and restricted dose criteria, this section reexamines these three considerations in the context of determining appropriate groundwater cleanup requirements for decommissioning.

With regard to the first two considerations, as described in Section IV.A.2.2, above, this final rule contains acceptable criteria (including the dose criterion for unrestricted use, and provisions for ALARA, restricted use, and alternate site-specific criteria) to protect the public from radiation from all of the pathways that they could be exposed to from a decommissioned facility (e.g., direct exposure to radiation, ingestion of food, inhalation of dust, and drinking water). The bases used in selecting the dose criterion for this final rule are stated in Section IV.A.2.

The dose criterion codified in § 20.1402 of this final rule limits the amount of radiation that a person can

potentially receive from all possible sources at a decommissioned facility. Therefore, it is an ''all-pathways'' standard. Examples of these pathways include:

(a) Direct exposure to radiation from material on the soil surface;

(b) Eating food grown in the soil and eating fish from surface waters;

(c) Inhalation of dust from soil surfaces; and

(d) Drinking water obtained from the groundwater.

Because equivalent doses received through any pathways of exposure would involve equivalent risks to the person exposed, NRC concludes the following with regard to the need to set a separate standard for groundwater:

(a) There is no reason from the standpoint of protection of public health and safety to have a separate, lower dose criterion for one of the pathways (e.g., drinking water) as long as, when combined, the dose from all the pathways doesn't exceed the total dose standard established in the rule;

(b) A standard imposed on a single pathway, such as drinking water, may have been appropriate in the past for site cleanups when a dose-based standard for decommissioning did not exist. It may also be appropriate for chemical contamination when no total limit on exposure exists. However, NRC's final rule on decommissioning would issue an overall TEDE criterion for all radionuclides combined and for all pathways of exposure combined, including drinking water, thus removing the need for a single-pathway standard for groundwater. This is a more uniform method for protecting public health and safety than was contained in NRC's proposed rule that set separate requirements using the MCLs contained in 40 CFR part 141. This is because the MCL requirements do not cover all radionuclides and do not provide a consistent risk standard for different radionuclides as will be provided by adoption of a single dose criterion in the final rule. In addition, the MCLs are based on a modeling approach that has not been updated to reflect current understandings of the uptake and doses resulting from ingestion of radionuclides through drinking water.

The Commission agrees with the commenters that exposures from drinking contaminated groundwater need to be controlled; with the EPA's groundwater protection principles contained in the document ''Protecting the Nation's Groundwater: EPA Strategy for the 1990's,'' 212–1024 (July 1991); and with the EPA position that the environmental integrity of the nation's groundwater resources needs to be protected. Nonetheless, it is the Commission's position that protection of public health and safety is fully afforded by limiting exposure to persons from all potential sources of radioactive material by means of a TEDE at a decommissioned facility. There is, therefore, no compelling reason to impose a separate limit on dose from the drinking water pathway, and the rule has been modified to delete a separate groundwater standard. To make clear NRC's concern over the importance of protecting this resource as a source of potential public exposure, the rule has also been modified to include a direct reference to the groundwater pathway in the all-pathways unrestricted use dose criterion in § 20.1402.

In actual situations, based on typical operational practices of most nuclear facilities and on the behavior of radionuclides in the environment for the very large majority of sites, concentrations of radionuclides in the groundwater will be well below the dose criterion of this final rule and would be either below or only marginally above the MCLs codified in 40 CFR Part 141 as referenced in the proposed NRC rule. For example, because the large majority of NRC licensees either use sealed sources or have very short-lived radionuclides, it is highly unlikely that contamination from these facilities would reach the groundwater. Even for facilities like reactors or certain industrial facilities, whose major contaminants are relatively short-lived nuclides like Co-60 or Cs-137, the migration of these nuclides through soil is so slow that it precludes groundwater contamination of any significance. In addition, it is not anticipated that decommissioned nuclear facilities will be located near enough to public water treatment facilities so that treatment facilities would be affected by the potential groundwater contamination from decommissioned facilities.

As further described in Section IV.A.2, the Commission is basing its decision on analyses in the Final GEIS, that consider cost and practicality factors, to provide additional information regarding decisions on issues such as achieving ALARA levels below the dose criterion of § 20.1402 and allowing restricted use. These analyses also consider how these issues relate to groundwater cleanup, including how, and to what level, ALARA efforts should be made, and if, and in what manner, restrictions on use should be considered. The analysis of impacts to populations and the cost of remediating those impacts is particularly important for groundwater because this resource can be used in a variety of public uses away from the site being decommissioned. The Final GEIS draws from NRC's experience and the public comments regarding contaminated sites. In particular, considerations with regard to groundwater remediation include potential remediation methods such as removal of soil to preclude prospective contamination, pump and treat processes for the cleanup of existing groundwater contamination, and the supply of alternate sources of drinking water, as well as a consideration of administrative costs associated with predicting and measuring levels of contaminated groundwater.

Because of the range of possible parameters, scenarios, and site-specific situations, Section IV.A.2 notes that the analyses in the Final GEIS indicate that there is a wide range of cost-benefit results and there is no unique algorithm that is a decisive ALARA result for all facilities. This finding is especially true for groundwater contamination where the behavior of radionuclides in soil and in the aquifer is highly site-specific; much more so than in concrete. The results of the overall considerations of Section IV.A.2 for all pathways would be applicable to the groundwater component. As pointed out in Section IV.A.2.3.2, it is intended that the regulatory guidance to be developed to support the final rule will provide guidance on these considerations. Although preparation of this guidance is in a preliminary stage, it is anticipated that this guidance would likely indicate that reducing doses to values less than the dose criterion of 0.25 mSv (25 mrem/y) is generally not likely to be cost-effective when evaluated using NRC's regulatory analysis framework presented in NUREG/BR–0058 and NUREG–1530, although there may be ALARA considerations for sites with a relatively large population obtaining all their drinking water from the site plume.

D.2.3 Summary of rule revisions on groundwater and plans for implementation. Based on the above, the Commission concludes that application of a separate groundwater protection limit, in addition to the all pathways dose limit, is not necessary or justified and has deleted this requirement from its final rule.

As noted above, regulatory guidance to be prepared in support of the final rule will likely describe site-specific conditions under which an ALARA analysis could identify the need to consider reducing the dose below the unrestricted use dose criterion (e.g., large existing population deriving its

drinking water from a downstream supply using a downstream plume).

E. Public Participation (Proposed Rule §§ 20.1406 and 20.1407)

E.1 Proposed Rule Content

The proposed rule included a general requirement in § 20.1406(a) that upon receipt of a decommissioning plan or proposal for restricted use from a licensee, the NRC must notify and solicit comments from local and State governments and Indian nations in the vicinity of the site and publish a notice in a forum that is readily accessible to persons in the site vicinity to solicit comments from affected parties.

The proposed rule also contained additional requirements, in §§ 20.1406(b) and 20.1407, for decommissionings when the licensee does not propose to achieve unrestricted release (i.e., instead restrict site use after license termination). In those cases, the licensee would be required to convene a site-specific advisory board (SSAB) for the purpose of obtaining advice from affected parties on the decommissioning. The Commission envisioned that the advice obtained would address issues as to whether:

(a) There are ways to achieve unrestricted release that would not be prohibitively expensive or cause net public or environmental harm;

(b) Institutional controls proposed by the licensee will provide reasonable assurance that the TEDE does not exceed the dose criterion, will be enforceable, and will not impose an undue burden on affected parties; and

(c) There is sufficient financial assurance to maintain the institutional controls.

Public comments received on the general requirements related to notification and solicitation are discussed in Section IV.E.2. Comments received on the additional requirements on public participation for restricted use are discussed in Section IV.E.3.

E.2 General Requirements on Notification and Solicitation of Comments (Proposed Rule § 20.1406(a))

E.2.1 Comments. Several commenters supported the public notification requirements in proposed § 20.1406(a). Other commenters stated that the proposed notification requirements exceeded requirements of the Administrative Procedures Act (APA) and that NRC has not demonstrated a health and safety need for these requirements. Suggestions for public participation offered by some commenters included that the public not only be informed but be able to participate effectively in all decommissioning cases, not just those related to SSABs. Other specific comments addressed the type and timing of the notification, meetings to be held, who should bear the cost of public participation, the availability of licensee documents, NRC's role, and the need for exemptions.

E.2.2 Response. A variety of comments have been provided on this issue during all phases of this rulemaking from the earliest workshops through comments on the NRC staff draft rule (February 2, 1994; 59 FR 4868) and the proposed rule, and in a workshop on public participation aspects of the rule held in December 1994. Comments provided in these forums have been similar to those noted above. A common theme of the December 1994 workshop was that there are many approaches for involving the public in the decommissioning process. Participants generally favored exploration of site-specific alternatives as opposed to generally mandated processes, like SSABs. Many commenters suggested that there was merit to having a public participation plan developed by the licensee in cooperation with interested parties so the public's participation could be tailored to the needs of the community and the licensee.

The Commission agrees that public participation can be an important component for informing and involving the public. The Commission recognizes the potential benefit for all decommissionings and site releases of significant community concern to keep the public informed and educated about the status of decommissioning at a particular site and to elicit public concerns about the decommissioning process at that site. Based on the comments received and on a consideration of current Commission practices, the general provisions in § 20.1405 that provide for notification of the public and government entities and solicitation of comment have not been modified although a specific reference to notifying and soliciting comments from the EPA has been added to § 20.1405. The reason that the general provisions of § 20.1405(a) have not been modified in response to the public comments received is because existing Commission policies and practices, coupled with the provisions of this rule and a recent rulemaking on power reactor decommissioning, appear reasonable by providing for public participation in the decommissioning and site release process. Specifically in the case of power reactors, as is noted in the preamble to the separate final rule entitled ''Decommissioning of Nuclear Power Reactors'' that was published on July 29, 1996 (61 FR 39278), the Commission has held public meetings and informal hearings for plants undergoing decommissioning, even though limited formal requirements exist for this type of involvement. To codify those activities, that rule requires a public meeting to be held at the time of submittal of a reactor licensee's Post-Shutdown Decommissioning Activities Report (PSDAR) and requires that this meeting be noticed in a local public forum and held in the vicinity of the facility. The PSDAR must also be made available for public review and comment. In addition, a licensee is required to hold a public meeting on the License Termination Plan (LTP), that for power reactors now replaces the decommissioning plan, in the vicinity of the facility following notice of the meeting in a local public forum. The LTP is also required to be made available for public comment with full hearing rights under Subpart G or L of 10 CFR 2.1201, depending on the disposition of the spent fuel.

Similarly, for materials facilities involving significant decommissioning efforts, the Commission has implemented efforts to inform and involve the public in the process. These efforts were intended to provide early and meaningful opportunities for public involvement in the decommissioning process. For example, the NRC staff has initiated public information meetings at the Parks Township shallow land disposal area and the Sequoyah Fuels Corporation facility and conducted public information roundtables at various sites. Stakeholder representatives are routinely invited to participate in roundtable discussions and information exchanges on the status and issues associated with the decommissioning project. These initiatives are consistent with the NRC staff's public responsiveness plan in NUREG/BR–0199. Where appropriate, the Commission plans to use these public involvement mechanisms and other public information meetings and involvement efforts, such as community information boards, at other facilities in the future on a site-specific basis to address specific needs that exist in affected communities.

Based on these considerations, current practices and procedures and existing rule provisions are appropriate to provide for public participation in the decommissioning and license termination process and to provide sufficient flexibility to accommodate different situations, and therefore the general requirements of § 20.1405 on

notification and solicitation of comments have been retained. Sections 20.1405 (a) and (b) provide for the notification of specific government entities and the public in the vicinity of the site when a licensee submits a LTP or decommissioning plan for any of the license termination approaches described in Section IV.A.2.3 or specifically proposes to use restricted use (see Section IV.B) or alternate criteria (see Section IV.C). The NRC will review public comments gathered by the licensee prior to final NRC actions on the licensee's request for license termination. A specific reference has been added in § 20.1405(a) to provide for specific notification and solicitation of comment from EPA where the licensee proposes to use alternate criteria. To the extent that EPA has an interest in commenting on proposed decommissionings other than those under alternate criteria, EPA comments would be considered under the general notice and comment provisions of § 20.1405.

Specific additional requirements for public participation in cases where restricted use or alternate criteria are proposed by a licensee are discussed further in Section IV.E.3.

E.2.3 Summary of rule revisions on general requirements on public participation and notifications. No overall changes were made to the provisions for public notification in the final rule, except to include specific reference to notifying and soliciting comments from the EPA where the licensee proposes to use alternate criteria for license termination.

E.3 Additional Requirements on Public Participation (Including Those for Restricted Use, for Alternate Criteria, and for Use of SSABs) (Proposed Rule § 20.1406(b))

E.3.1 Comments. Comments were specifically submitted on the requirement in § 20.1406(b) for the use of SSABs. These comments were submitted both in response to the proposed rule, as well as in connection with the NRC workshop on SSABs held on December 6–8, 1994 (see NUREG/CR–6307 for a summary of the workshop).

Some commenters supported the proposed requirement in § 20.1406(b) that would require licensees to convene a SSAB for restricted release of a site. Other commenters objected to the use of a SSAB in each case involving a restricted release of a site. These commenters expressed concern that use of SSABs was inconsistent with the timeliness rule or that exemptions or other relief from the timeliness rule would be needed; that a need for SSABs has not been demonstrated; and that SSABs are inconsistent with Federal Advisory Committee Act, Administrative Procedures Act, and Atomic Energy Act requirements. Commenters suggested alternatives to mandatory SSABs, such as addressing the need for a board in a public participation plan or providing more flexibility in deciding when to use SSABs. Some commenters indicated that use of SSABs should be extended to the unrestricted use of sites.

E.3.2 Response. One of the major issues raised by the comments and in the workshop discussions on the SSAB was the advisability of mandating a specific public involvement mechanism such as a SSAB as opposed to establishing broad performance criteria that would allow the licensee flexibility in selecting the appropriate public involvement mechanism for a particular site. There was general agreement that flexibility was always desirable, in establishing meaningful performance criteria. However, it should be emphasized that some of those who supported the use of performance criteria did so only in the context of the expansion of the scope of licensee public involvement requirements, including an SSAB, to cover facilities beyond the restricted use category. An additional issue of concern to commenters was whether it was more appropriate for the licensee to establish the SSAB, as contemplated by the proposed rule, or whether the Commission should establish the SSAB. The resolution of this issue depends not only on the objectives that the Commission believes will be served by an SSAB, but also on what the Commission's broader responsibilities are in the public involvement area. This, in turn, relates to another issue raised by the commenters: the scope and duration of a SSAB's responsibilities.

In proposing a requirement for obtaining advice from affected parties on restricted use, the Commission's objective is to involve diverse community interests directly with the licensee in the development of the LTP or decommissioning plan for a proposed restricted use decommissioning. Community concerns, as well as community-based knowledge on the appropriate selection of institutional controls, risk issues, and economic development, can be potentially useful in the development of the LTP or decommissioning plan. For Commission and licensee resources to be used efficiently, the Commission believes that this type of information should be considered and incorporated as appropriate into the LTP or decommissioning plan before the plan is submitted to the NRC for review. The licensee is the appropriate entity to accomplish this.

In considering a requirement to convene a SSAB or similar group, the Commission has considered alternatives regarding the most effective way to ensure that the licensee considers the diversity of views in the community. Small group discussions can be a more effective mechanism than written comments or large public meetings for articulating the exact nature of community concerns, determining how much agreement or disagreement there is on a particular issue, and facilitating the development of acceptable solutions to issues. Also, the type of close interaction resulting from a small group discussion could serve the licensee well in developing a credible relationship with the community in which it is operating.

Use of public participation methods is consistent with a variety of initiatives being undertaken both within NRC and at other Federal agencies regarding stakeholder involvement in the decommissioning process. Examples of community involvement at NRC-licensed sites being decommissioned under the SDMP are described above in Section IV.E.2.2. Similarly, several Federal agencies (including EPA, DOE, the Department of Defense (DOD)) that make up the Federal Facilities Environmental Restoration Dialogue Committee, in their evaluation of the cleanup of Federal facilities, have prepared a set of ''Principles for Environmental Cleanup of Federal Facilities,'' dated August 2, 1995. Principle No. 14 notes the need for agencies to provide for involvement of public stakeholders from affected communities in facility cleanup decisionmaking. It also notes that rather than being an impediment, meaningful stakeholder involvement has, in many instances, resulted in significant cleanup cost reductions.

The Commission envisions that a process for obtaining advice from affected interests would provide the opportunity for public involvement in the important issues related to restricted use of a site similar to those described in Section IV.E.2.2. In particular, one of the important issues would likely be the unavailability of the site for full unrestricted public use. In its deliberations on the rule, the Commission has envisioned that the following should occur:

(1) The licensee would present information to, and seek advice from, affected parties on the provisions for

limiting the dose to meet the criteria in the rule (e.g., limiting use to commercial/industrial use with elimination of the resident pathway), how the restrictions would be enforced (e.g., use of deed restrictions, engineered barriers, State or Federal control or ownership), the effect on the community, and the adequacy of the level of financial assurance (e.g., sufficient funds for maintenance of the deed or of fencing). In seeking such advice, a broad cross section of the affected parties in the community would be involved and there would be opportunity for a comprehensive discussion of the issues by those parties. The information presented would be similar to that which the rule would require the licensee to prepare and submit to NRC to demonstrate the appropriateness and safety aspects of the restrictions on site use.

As an example, in the specific case where the nuclides involved are relatively short-lived (e.g., Co-60 and Cs-137), as discussed in Section IV.B.3, calculations could demonstrate that it is preferable to restrict use of the site for a finite time period to allow for radioactive decay than it is to ship large quantities of soil. These calculations would also show the length of time that the restrictions would need to remain in force to allow for radioactive decay to reduce residual levels below the unrestricted dose criterion. In addition, these calculations could show that restricting the site to industrial use through deed restrictions during this time period would eliminate or decrease certain pathways and limit the dose to less than the 0.25 mSv/y (25 mrem/y) dose criteria in the rule. Finally, such an analysis could indicate that continued use of the site for an industrial purpose similar to its currently existing use should not adversely impact the community. Consideration of community advice on appropriate institutional controls for controlling access to the site during this decay period would provide the licensee with useful information in developing the necessary institutional controls. As part of the process of public participation, the licensee would make public a summary of the advice received and the results of the discussions on that advice.

For more complex cases where large volumes of uranium/thorium contamination would remain under a form of restricted use, the long-lived nature of these nuclides would result in the restrictions having to remain in force in the community for a long period of time. The information presented by the licensee would be similar to that for shorter-lived nuclides, including the rationale for how use of restrictions can eliminate exposure pathways (e.g., for uranium, elimination of the resident farmer pathway greatly reduces the dose because most of the dose received from uranium is through the agricultural pathway); the nature of the institutional controls expected to restrict use over extended time periods (e.g., deed restrictions, engineered barriers such as fencing, restricted cells, etc., and/or government control of the restricted area); and other special provisions such as periodic rechecks of the restricted area and the continued effectiveness of institutional controls (see Section IV.B.3). As discussed previously in Section IV.E.2.2, because community involvement already exists either formally or informally at a number of complex sites, this provision would not change the situation at these sites significantly.

(2) Following solicitation of advice from affected parties, the licensee will include the recommendations from these parties in the LTP or decommissioning plan and indicate how those recommendations were addressed along with the technical basis for addressing them. The technical basis for dealing with the recommendations would presumably derive from the presentation made to the affected parties described above and is the type of analysis that would be necessary to demonstrate to the NRC the acceptability of restricted use provisions.

Based on the above, it appears reasonable to retain the requirement for sites to seek advice from individuals and institutions in the community who may be affected by the decommissioning where restricted use is proposed. In retaining this requirement, the Commission has decided to modify the rule to include general provisions that require that such advice be sought on the fundamental performance objective of institutional controls, namely that they function to provide reasonable assurance that the TEDE does not exceed the dose criteria of the rule, that they are enforceable, and that they will not impose undue burdens on the local community. This general provision replaces the specific reference contained in the proposed rule (§ 20.1406(b)) that advice must be obtained by convening a SSAB. The rationale for this modification derives from the discussion above on site flexibility, protecting public health and safety, and ensuring community involvement. Specifically, it is anticipated that these requirements will contain the beneficial provisions of ensuring timely and meaningful opportunity for advice from affected parties to be considered and will allow licensees additional flexibility in determining the best methods for obtaining that advice based on site-specific considerations. For example, there may be situations where the creation of a SSAB may not be appropriate as in cases where an existing organization is already in place to assume this role, or where it is clear that the community is willing to rely on local government institutions to interact with the licensee. Appropriate mechanisms for seeking advice from affected parties could include a public meeting or series of meetings, a specific process for obtaining written or computerized public comment by internet or web-site means, or by convening small groups such as a SSAB. Any of these processes would result in an opportunity for a comprehensive, collective discussion of the issues by the affected parties. All of these approaches have been used in prior decommissionings.

To ensure that there will continue to be significant opportunity for public involvement in the decommissioning process, the modified final rule has retained the principal objectives of an SSAB from § 20.1407 of the proposed rule, namely that a licensee seeking community advice on the proposed restricted use will provide for: (1) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning; (2) an opportunity for a comprehensive, collective discussion on the issues by the participants represented; and (3) a publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues.

Advice sought from affected parties in the manner noted above would be considered in development of the LTP or decommissioning plan, and the NRC will review public comments gathered by the licensee prior to final NRC action on the licensee's request for license termination.

As discussed in Section IV.C, the Commission included requirements for consideration of alternate criteria for certain difficult sites because inclusion of such requirements is preferable to having these facilities apply for exemptions. To ensure that there is full public participation in any decision regarding such sites, licensees will be required to seek advice regarding this approach from affected parties in the same manner as described above for restricted use and described in detail in

Section IV.C.3. In addition, use of alternate criteria will only be considered by the Commission after review of the NRC staff's recommendations that fully address any comments provided by the public and EPA regarding the decommissioning or license termination plan.

E.3.3 Summary of rule revisions on SSABs. Specific text referring to SSABs has been replaced with a requirement that licensees seek community involvement and advice on any plans for restricted use or alternate criteria for decommissioning through a variety of methods. This requirement includes provisions for specifically how that advice is to be sought and documented in the LTP or decommissioning plan. Regulatory guidance is planned which will include criteria for establishing and using the processes for seeking such advice, including establishing SSABs, and for delineating those situations in which an SSAB may not be appropriate. The guidance will discuss that the expected starting point in providing an opportunity for public involvement is the establishment of an SSAB; however, the provisions of the rule provide licensees the flexibility to use other approaches where appropriate.

E.4 Specific Questions on Functioning of SSABs

E.4.1 Comments. A number of comments were received on the functioning of SSABs including their responsibilities, membership, independence and support, meetings, and results.

(1) Some commenters recommended that SSABs should be given responsibilities beyond those specified in proposed § 20.1407(a). Other commenters stated that the rule should restrict SSAB activities to a specific mission which is advisory only and nontechnical.

(2) With regard to membership in SSABs, a number of comments recommended specifically how the SSAB and its membership should be constituted. Some commenters stated that many of the proposed SSAB issues that are listed appear to require specialized expertise that members of the general public might not have. Some commenters questioned whether NRC and other Government agencies should be prohibited from participating in SSABs because of conflict of interest questions. Other commenters stated that the NRC should be officially represented on the SSAB.

(3) With regard to independence of and support for SSABs, some comments received stated that an SSAB should be selected and operated independently of the licensee. One commenter stated that the SSAB would be unique as presently proposed because it does not appear to be accountable to its employer. Comments were received regarding how SSAB costs would be contained and how they would be paid, including costs of technical consultants to the SSAB or independent SSAB labs and experts.

(4) With regard to SSAB meetings and records, comments were provided concerning frequency, advertisement and openness of meetings, and access to licensee official documents, both those that are part of the public docket and those that contain proprietary or other confidential information;

(5) With regard to use of SSAB results, comments were received concerning the actions expected to be taken by the licensee and the NRC on the advice or comments of the SSAB. These actions include a licensee's analysis of SSAB recommendations, the need to obtain the SSAB's consensus on aspects of the decommissioning plan, and the effect on time restraints of submitting a decommissioning plan reconciling SSAB advice.

E.4.2 Response. Based on the discussion in Section IV.E.3.2 regarding the need to explore site-specific alternatives as opposed to generally mandated SSABs, the rule contains broad provisions for obtaining community advice and recommendations through such bodies. The purpose of the requirements on public involvement is to obtain meaningful public input into preparation of the plan for decommissioning the site when restrictions on future use or proposals for alternate criteria are planned. To allow for flexibility, Section IV.E.3.2 indicates that the final rule has been modified to establish general requirements for obtaining such advice while retaining the principal objectives of an SSAB from § 20.1407(b)–(f) of the proposed rule. The details, such as specific issues of size, membership, responsibilities, administration, meetings, and records requested in these comments are more appropriately contained in regulatory guidance. With regard to issues of funding public involvement, reasonable efforts towards obtaining advice from affected parties should be undertaken by the licensee, such as sponsoring and holding community meetings and distributing information at those meetings regarding the rationale for and nature of the restricted use. Examples of these meetings are those held for reactor facilities and those held for several SDMP sites, for example the Cushing site.

E.4.3 Summary of rule revisions on functioning of SSABs. As noted in Sections E.3.2 and E.4.2 above, the principal objectives of SSABs have been retained in § 20.1403(d) which replaces the detailed provisions in proposed § 20.1407 (b) through (f) of the proposed rule. The guidance that the NRC develops to implement the final rule will include additional guidance on seeking advice from affected parties, including establishing and using SSABs.

F. Other Procedural and Technical Issues

F.1 State and NRC Compatibility

F.1.1 Comments. Some commenters stated that States should have the authority to demand stricter radiation protection standards than the Federal Government. Some commenters recommended that States not be allowed to set less strict conditions. Other commenters stated that radiological criteria should be an area of strict compatibility and States should not be permitted to impose more stringent standards. Specific comments raised included questions as to which standard would apply if there was a conflict, whether a State would need NRC approval to require more strict standards, application of ALARA provisions, who should pay for costs if more strict State standards are applied, exemptions, and grandfathering provisions similar to those in Section IV.F.2.

F.1.2 Response. The proposed rule did not propose a compatibility determination because the Commission was in the process of developing a compatibility policy. Instead, comments were requested on compatibility and the comments received were divided on this issue.

The current compatibility policy categorizes rules into four ''divisions.'' Division 1 rules are those that Agreement States must adopt, essentially verbatim, into their regulations. These rules include provisions that form the basic language of radiation protection and include technical definitions and basic radiation protection standards such as public dose limits, occupational exposure limits and effluent release limits. Division 2 rules address basic principles of radiation safety and regulatory functions. Although Agreement States must address these principles in their regulations, the use of language identical to that in NRC rules is not necessary if the underlying principles are the same. Also, the Agreement States

may adopt requirements more stringent than NRC rules.

Because the dose criterion in the rule is not a ''standard'' in the sense of the public dose limits of 10 CFR part 20 but is a constraint within the public dose limit that provides a sufficient and ample margin of safety below the limit, it is reasonable that the rule would be a Division 2 level of compatibility under the current policy. This means the Agreement States would be required to adopt the regulation but would have significant flexibility in language, and would be allowed to adopt more stringent requirements.

The Commission has not yet approved a new final policy on compatibility that revises the current policy, although it is currently considering the implementing procedures for this policy (SECY–96–213 dated October 3, 1996). Until the new policy becomes effective, NRC will continue to apply the current Agreement State compatibility policy.

F.2. Grandfathering Sites With Previously Approved Plans (Proposed Rule 20.1401(b))

F.2.1 Proposed rule contents. Section 20.1401(b) of the proposed rule indicated that the criteria do not apply to sites already covered by a decommissioning plan approved by the Commission before the effective date of the final rule and in accordance with the criteria identified in the SDMP Action Plan of April 16, 1992 (57 FR 13389).

F.2.2 Comments. Some commenters supported the provision of grandfathering sites covered by a decommissioning plan approved by the Commission (and suggested extending it to plans under review) because it is consistent with previous NRC statements in the SDMP Action Plan. Some commenters suggested that criteria other than those in the SDMP Action Plan should also be used for grandfathering. Other commenters opposed grandfathering because criteria used in those cases would be different than those in the rule.

Commenters recommended that the rule address how the criteria would apply to portions of sites. Some commenters recommended that the grandfathering provision cover an NRC-approved decommissioning plan even if it is for a portion of a site.

F.2.3 Response. The Commission continues to believe that sites being decommissioned under previously approved decommissioning plans should be grandfathered from the provisions of the final rule. Similarly provisions should apply to licensees whose decommissioning plans are in the final stages of preparation or of NRC review. From a health and safety perspective, the NRC believes the criteria identified in the SDMP Action Plan are reasonably consistent with the final rule's dose criteria. The contamination levels defined in the SDMP Action Plan are within the range of measurable values that could be derived through the site-specific screening and modeling approaches defined in guidance supporting this final rule. The Commission believes the grandfathering approach will facilitate the timeliness of decommissioning and ensure licensees that resources spent to develop and implement a decommissioning plan are justified.

With regard to criteria other than the SDMP Action Plan, the grandfathering provision in the proposed rule was conditioned on the license being terminated in accordance with the criteria identified in the SDMP Action Plan, because those criteria are consistent with the final rule. However, the grandfathering provision does not extend to any former decommissioning actions in general because that would not provide assurance that such actions were adequate to protect the public. As part of its overall upgrading of its oversight of decommissioning actions, NRC has conducted a systematic review of a large number of license terminations to identify sites with significant contamination and has identified a number of sites warranting additional NRC attention. Broadening the grandfathering exclusion in the rule would not be consistent with the objectives of this comprehensive agency review and is not supported by existing information and experience.

The NRC staff anticipates that grandfathering would occur as follows:

(1) Licensees would have up to 12 months after the effective date of the rule to submit sufficient LTPs or decommissioning plans (if required) in accordance with the SDMP Action Plan criteria;

(2) The NRC staff would have up to 24 months after the effective date of the rule to approve those plans;

(3) Any plan submitted after 12 months or approved after 24 months of the effective date would have to be consistent with the new rule; and

(4) There would be provisions for day-for-day extension if an EIS is required in the submittal; i.e., if development of an EIS is required before NRC can reach a decision regarding the decommissioning, then the 12-month window for submitting an LTP or decommissioning plan would be extended by the same number of days required for the Commission to issue a record of decision.

In submitting the decommissioning plan for the licensed activities that are to cease on portions of sites, the licensee must identify the areas associated with the ceased operations. These areas must be remediated to achieve acceptable radiological criteria for release, either those in the final rule or previous acceptance criteria that would achieve comparable protection as the criteria in the final rule. The area for continuing licensed operations could continue to contain radioactivity above the radiological criteria. When the continuing operations cease, the radiological criteria of the final rule would then be required to be met for the portion of the site for which operations had most recently ceased. The decision on grandfathering previously released portions of the site depends on whether the criteria previously used are still acceptable (e.g., part of the SDMP Action Plan) and whether it can be demonstrated that these areas have not been affected by the continued operations. NRC intends to develop comprehensive guidance on how licensees should address previously released portions of licensed sites in demonstrating compliance with the dose criteria.

Not all licensees are required to submit decommissioning plans, and instead, may submit appropriate documentation including a report of the results of the radiation survey of the premises (see for example, 10 CFR 30.36). Because the rationale discussed above applies in general to all facilities, these grandfathering provisions apply to all licensees, independent of the type of documentation for license termination that has received NRC approval.

An aspect of grandfathering is those sites that were not previously licensed but are discovered to have radioactivity levels that are licensable or are in excess of the levels presented here as appropriate for unrestricted site use. These cases have arisen as part of the SDMP and are described in NUREG–1444. It is intended that the criteria of this rule will also apply, as appropriate, to residual radioactivity at sites that were not previously licensed.

F.2.4 Summary of rule revisions on grandfathering. The final rule has retained the grandfathering provision. However, it has been modified to include facilities whose plans are in the final stages of decommissioning plan preparation and decision.

F.3 Finality of Decommissioning and Future Site Reopening (Proposed Rule § 20.1401(c))

F.3.1 Proposed rule contents. Proposed § 20.1401(c) stated that after a site has been decommissioned and the license terminated in accord with the criteria of the proposed rule, the Commission will require additional cleanup only if, based on new information, it determined that residual radioactivity remaining at the site could result in significant public risk.

F.3.2 Comments. Some commenters stated that decommissioning a nuclear facility and releasing a site should be accomplished as a final regulatory action unless new information indicates there is a significant health and safety risk and net benefit to future cleanup. These commenters cited financial reasonableness, the low risk associated with the criteria, and the incentive to complete decommissioning. Other commenters stated that they did not agree that these actions should be final and that the site should be cleaned up to account for mistakes, discovery of contamination, or new health findings. It was noted that the terms ''significant public risk'' and ''new information'' used in proposed § 20.1401(c) needed to be explained and appropriately defined.

F.3.3 Response. The wording of final § 20.1401(c) states that the Commission will require additional cleanup only if, based on new information, it determines that residual radioactivity remaining at the site could result in significant public risk. The low level of estimated risk associated with the final rule's dose criteria, coupled with the conservatisms in the methodologies that convert these dose criteria to levels of measurable contamination in the environment, should minimize the likelihood that new information, including errors during the decommissioning processes, would significantly impact the protection of public health and safety or the environment.

The Commission believes the fundamental reason for requiring additional cleanup would hinge on the public risk associated with the remaining radioactivity at the site. The existence of additional contamination or noncompliance with the decommissioning plan at a level in excess of the dose criteria but less than the public dose limits in 10 CFR Part 20 would not, by themselves, be sufficient to invalidate the finality provision. Therefore, the wording of § 20.1401(c) captures the fundamental issue.

The Commission believes the terms ''significant public risk'' and ''new information,'' as used in § 20.1401(c), do not require specific definition or clarification. The reason lies in the fact that under the provisions of the rule, a licensee is allowed to demonstrate compliance with the dose criteria through use of several screening and modeling approaches. Each approach has a degree of conservatism associated with the relationship of the measurable level of a contaminant in the environment to the final rule's dose criterion. Because of the surveys required of the licensee and confirmatory surveys routinely performed by NRC, the chances of previously unidentified contamination being discovered would be expected to be small. Also, contamination that would pose a significant public risk above the levels implied by the dose criterion is expected to be smaller still.

Another possibility is that ongoing studies will lead to the conclusion that an increased risk associated with a given exposure to radiation exists. Although such an increase can occur as indicated by the continuing studies of Japanese atomic bomb survivors, the Commission believes that demographic studies of populations exposed to differing background exposure levels provide a defensible bound on the magnitude of any increase in the dose to risk conversion factor. Taken alone, any such increase would not be expected to affect finality decisions.

Thus, because any challenge to finality is likely to involve some unexpected combination of factors, the Commission believes that attempting to specifically define what constitutes ''new information'' or ''significant public risk'' is ill-advised because the determination would be made on a case-by-case basis.

As noted in Sections IV.A and IV.D, there are issues that have been raised by EPA regarding the acceptability of the unrestricted dose criterion as well as the inclusion of a separate groundwater standard. These issues were raised during the public comment period as well as during a public meeting held April 21, 1997 to explore differences between NRC and EPA on certain issues in the final rule. As noted in those sections, EPA has indicated that it preferred a 0.15 mSv/y (15 mrem/y) TEDE dose criterion for unrestricted use and inclusion of a separate groundwater standard as were proposed in NRC's proposed rule. At the April 21, 1997 meeting, EPA also indicated that it had concerns with inclusion of alternate criteria and with certain public participation aspects of the rule. For the reasons described in some detail in Sections IV.A, IV.C, IV.D, and IV.E, the Commission has included in the final rule a 0.25 mSv/y (25 mrem/y) dose criterion which would apply to all exposure pathways including groundwater, an alternate criteria provision for certain difficult cases to reduce the need for requests for exemptions, and provisions for substantive participation by the public, including EPA.

As described in some detail in Sections IV.A–IV.E, the Commission believes that the overall approach to license termination in this final rule (that includes unrestricted and restricted use dose criteria, alternate criteria, and ALARA considerations) protects public health and safety, and that the approach to drinking water protection in the final rule provides an appropriate and more consistent level of protection of public health and safety than use of MCLs. In addition, as is further described in those sections, it is anticipated that in the large majority of situations the combination of ALARA considerations, the nature of the concrete and soil removal processes, the use of restrictions on site use where appropriate, and the effects of radionuclide decay and transport mechanisms in the environment will result in the large majority of NRC licensees meeting the criteria preferred by EPA. Those sections also clearly indicate that alternate criteria will be confined to rare situations and require specific Commission approval of the license termination in those cases. In addition, the Commission believes that the provisions of the final rule as described in Section IV.E provide for a substantive level of public involvement in the decommissioning process.

Thus the Commission believes that the criteria of this final rule provides protection comparable to that preferred by EPA and that therefore it would be reasonable for EPA to find NRC's rule sufficiently protective.

Licensees should be aware that if they terminate a license using the criteria of this rule, there is some potential that the license termination may be revisited as part of an EPA proceeding, although such an action would not seem reasonable for the same reasons that site cleanups noted above would not be revisited, i.e., it is not believed that significant public risk would be determined to exist.

F.3.4 Summary of rule revisions on finality. Based on this discussion, the rule has not been changed with regard to the finality issue.

F.4 Minimization of Contamination (Proposed Rule §§ 20.1401(d) and 20.1408)

F.4.1 Proposed rule contents. Proposed § 20.1401(d) indicated that applicants for licenses, other than renewals, would be required to describe in the application process how facility design and procedures for operation will minimize contamination of the facility and the environment, facilitate eventual decommissioning, and minimize the generation of radioactive waste.

F.4.2 Comments. Some commenters recommended that the requirements for describing facility design and procedures for waste minimization should apply to all license applicants and not only to applicants for new licenses. One commenter recommended that the rule remain as proposed and not apply to renewal licenses.

F.4.3 Response. The intent of this provision is to emphasize to a license applicant the importance, in an early stage of planning, for facilities to be designed and operated in a way that would minimize the amount of radioactive contamination generated at the site during its operating lifetime and would minimize the generation of radioactive waste during decontamination. Applicants and existing licensees, including those making license renewals, are already required by 10 CFR part 20 to have radiation protection programs aimed towards reducing exposure and minimizing waste. In particular, § 20.1101(a) requires development and implementation of a radiation protection plan commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the provisions of 10 CFR part 20. Section 20.1101(b) requires licensees to use, to the extent practicable, procedures and engineered controls to achieve public doses that are ALARA. In addition, lessons learned and documented in reports such as NUREG–1444 have focused attention on the need to minimize and control waste generation during operations as part of development of the required radiation protection plans. Furthermore, the financial assurance requirements issued in the January 27, 1988 (53 FR 24018), rule on planning for decommissioning require licensees to provide adequate funding for decommissioning. These funding requirements create great incentive to minimize contamination and the amount of funds set aside and expended on cleanup.

Thus, current requirements require both applicants and existing licensees, including renewals, to minimize contamination. Specific minimization requirements contained in the proposed rule are directed towards those making application for a new license because it is more likely that consideration of design and operational aspects that would reduce dose and minimize waste can be cost-effective at that time compared to such considerations during the license renewal stage where the existing design and previous operations may be major constraints. The Commission continues to believe that the emphasis should continue to be directed at such new designs and, therefore, the requirement for minimization has been retained as proposed.

F.4.4 Summary of rule revisions on minimization of contamination. The requirement in the proposed rule for imposition of the requirement on applicants for new licenses has been retained in the final rule in § 20.1406 but has not been further extended.

F.5 Provisions for Readily Removable Residual Radioactivity

F.5.1 Proposed rule contents. Proposed § 20.1403(c) indicated that licensees are to take reasonable steps to remove all readily removable residual radioactivity from the site.

F.5.2 Comments. Some commenters recommended either deletion, modification, or clarification of the provision for readily removable residual radioactivity.

F.5.3 Response. The provision for removal of ''readily removable'' residual radioactivity was intended to provide guidance on what materials should be removed even if the removal would have little effect on dose. The intent of this provision is to define the basic remedies that are a matter of ''good practice'' such as common housekeeping techniques (e.g., washing with moderate amounts of detergent and water) that do not generate large volumes of radioactive waste requiring subsequent disposal. As noted in the preamble to the proposed rule, removal of this material is considered a necessary and reasonable step toward ensuring that doses to the public from residual radioactivity are ALARA. These considerations should be considered as part of an ALARA evaluation for planning decommissioning activities in a licensee's radiation protection program as required by § 20.1101(b).

F.5.4 Summary of rule revisions for readily removable radioactivity. Because there is no purpose in duplicating an already existing requirement for ALARA, the specific provision regarding ''readily removable'' has been deleted from the final rule.

F.6 Separate Standard for Radon

F.6.1 Proposed rule contents. Proposed § 20.1404(a) did not contain a separate standard for radon.

F.6.2 Comments. Some commenters indicated that the rule should specifically include reference to radon whereas other commenters stated that the rule should not include standards for radon or expressed concerns about the complications introduced by these considerations and the fact that background radon levels are so high.

F.6.3 Response. Radon is a radioactive gas formed by the radioactive decay of radium. Radium is a member of the naturally-occurring uranium-238 radioactive decay chain. Radionuclides from this decay chain are found in natural background in various concentrations in most soils and rocks. Estimation of radon dose is a consideration for this rulemaking only at those very few facilities which have been contaminated with radium as a result of licensed activities.

Following the approach taken in the proposed rule, this final rule includes radiological criteria for residual radioactivity that is distinguishable from background. Because of natural transport of radon gas in outdoor areas due to diffusion and air currents, doses from exposure to radon in outside areas due to radium in the soil are negligible. Within buildings, wide variation in local concentrations of naturally occurring indoor radon, well in excess of the 0.25 mSv/y (25 mrem/y) dose criterion discussed in Section IV.A, have been observed in all regions of the United States. The dominant factor in determining indoor radon levels are the design features of any structures at a site where radium is present in the soil. Certain structural features, including energy saving measures that reduce air exchange with the outside, can have the effect of trapping radon gas within a building, thus allowing buildup of radon to elevated levels. In addition, indoor radon levels can vary significantly over time due to seasonal changes and the rate of air flow in rooms.

Another variable in radon levels is introduced by the use of radon mitigation techniques in buildings which can have the effect of reducing radon levels by deliberate venting of the gas to outside areas. In many parts of the country, local building codes have been enacted for the purpose of reducing radon levels in homes, in particular in areas where there are high levels of naturally occurring radium and radon.

The variations in radon levels described above make it very difficult to distinguish between naturally occurring radon and radon resulting from licensed material. In addition, it is impractical to predict prospective doses from exposure to indoor radon due to problems in predicting the design features of future building construction. Because of these variations and the limitation of measurement techniques, the Commission believes that it is not practical for licensees to distinguish between radon from licensed activities at a dose comparable to a 0.25 mSv/y (25 mrem/y) dose criterion and radon which occurs naturally. Therefore, in implementing the final rule, licensees will not be expected to demonstrate that radon from licensed activities is indistinguishable from background on a site-specific basis. Instead this may be considered to have been demonstrated on a generic basis when radium, the principal precursor to radon, meets the requirements for unrestricted release, without including doses from the radon pathway.

In some instances it may not be reasonable to achieve levels of residual concentrations of radon precursors within the limit for unrestricted use. As discussed in Section IV.B for cases such as these, restricting site use by use of institutional controls could be considered by a licensee as a means to limit the doses from precursors by limiting access to the site. Under the restricted use provisions of the rule, these doses are required to be further reduced based on ALARA principles. In developing guidance on the application of ALARA in such cases, the Commission will also consider the practicality of requiring as part of controls the use of radon mitigation techniques in existing or future structures.

F.6.4 Summary of rule revisions. No change to the final rule has been made.

F.7 Calculation of TEDE Over 1000 Years to Demonstrate Compliance With Dose Standard (Proposed Rule § 20.1403(a))

F.7.1 Proposed rule contents. Proposed § 20.1403(a) stated that when calculating the TEDE, the licensee shall base estimates on the TEDE expected within the first 1000 years after decommissioning.

F.7.2 Comments. Some commenters objected to the proposed 1000-year time frame for calculating dose and wanted it lengthened to better predict health effects over the hazardous life of each isotope. Other commenters wanted the proposed 1000-year time frame shortened because it is inconsistent with 10 CFR part 40, Appendix A, and 10 CFR part 61 that use times of 200–500 years.

F.7.3 Response. As previously discussed in the preamble to the proposed rule, the Commission believes use of 1000 years in its calculation of maximum dose is reasonable based on the nature of the levels of radioactivity at decommissioned sites and the potential for changes in the physical characteristics at the site over long periods of time. Unlike analyses of situations where large quantities of long-lived radioactive material may be involved (e.g., a high-level waste repository) and where distant future calculations may provide some insight into consequences, in the analysis for decommissioning, where the consequences of exposure to residual radioactivity at levels near background are small and peak doses for radionuclides of interest in decommissioning occur within 1000 years, long term modeling thousands of years into the future of doses that are near background may be virtually meaningless. In 10 CFR part 40, Appendix A makes reference to both a 200-year and 1000-year time frame. 10 CFR part 61 references the design of a physical barrier rather than a calculation of exposure.

F.7.4 Summary of rule revisions. This provision has been retained in § 20.1401(d) of the final rule.

G. Other Comments

G.1 Definitions (Proposed Rule § 20.1003)

G.1.1 Comments. There were comments on several definitions in § 20.1003 of the proposed rule including the following:

(1) With regard to the definition of background radiation, several commenters opposed defining ''background radiation'' in terms of currently existing levels and proposed defining it at the level existing when human beings and other organisms evolved; i.e., man-made sources of radiation should not be considered to be a part of ''background radiation.'' One commenter suggested that the term ''naturally occurring radioactive material,'' that is used in the definition of ''background radiation,'' should also be defined. This commenter also suggested that the word ''like,'' that precedes ''Chernobyl,'' should be replaced with the words ''such as'' to clearly indicate that an example is being provided.

(2) With regard to the definition of decommissioning, several commenters recommended that license termination not be specified in the definition of decommissioning because it is a separate issue from decommissioning. Some commenters stated that licenses should be terminated only when sites are given unrestricted release and that restricted use should not be permitted or included in the definition.

(3) Other comments were also received requesting clarification of other definitions contained in the rule, including inclusion of radon in the definition of background and the definitions of critical group, restricted use, release of portions of sites, indistinguishable from background, readily removable radioactivity, and SSABs.

G.1.2 Response. The only modification that the proposed rule made to the existing definition of background in 10 CFR part 20 was the inclusion of the phrase ''or from past nuclear accidents like Chernobyl that contribute to background radiation and are not under the control of the licensee.'' The reason for this modification was to further clarify the existing requirement regarding sources of radiation and radionuclides that can be excluded from licensee evaluation. After review of the comments, the Commission continues to believe that the inclusion in background of global fallout from weapons testing and accidents such as Chernobyl is appropriate. No compelling reason was presented that would indicate that remediation should include material over that the licensee has no control and that is present at comparable levels in the environment both on and offsite.

The existing definition of decommissioning in 10 CFR parts 30, 40, 50, 70, and 72 was incorporated into the regulations on June 27, 1988 (53 FR 24018). The Commission continues to believe that ''decommissioning'' is a term for a process which ultimately leads to termination of an NRC license for unrestricted use. The only change to the existing definition made by the proposed rule would be adding ''release of property under restricted conditions'' to the process of termination of the license. In response to commenters who disagreed with permitting restricted use, Section IV.B contains a detailed review of issues on acceptability of restricted use. Based on that review, the final rule continues to permit restricted use. Therefore, the definition in the proposed rule is not changed.

The remaining comments on definitions reflect specific technical concerns regarding use of the terms rather than the definition itself. These concerns are discussed in detail in the responses to the technical issues

addressed in Sections IV.A through IV.F.

G.1.3 Summary of rule revisions. The only change to § 20.1003 is a change in the wording of the definition of background to replace the word ''like'' with the words ''such as'' before ''Chernobyl'' as suggested by a commenter.

G.2 Need for Regulatory Guidance

G.2.1 Comments. Commenters requested that additional regulatory guidance be provided on a number of subjects including decommissioning planning for sites and portions of sites, methods for demonstrating compliance with the dose criteria and with ALARA, means for complying with restricted use provisions (including SSAB operations), and contents of a public participation plan. Specific comments were received regarding need for guidance on modeling (including methods for translating contamination levels to dose) and surveys (including measurement of contamination at low levels), and clarification of several terms.

G.2.2 Response. Regulatory guidance is being developed in the areas requested. Regulatory guidance being prepared on dose calculations and surveys for radiological criteria for decommissioning describes acceptable survey methods that licensees can use. This guidance describes methods that licensees can use to convert site contamination to dose for the purpose of compliance with the rule criteria and for estimating ALARA. The guidance is the further development of NUREG–1500 issued with the proposed rule and presents an approach for assessing dose coupled with the ability to incorporate site-specific parameters. Further guidance on public participation and restricted use is also being considered to support this rule.

G.3 Need for Flexibility

G.3.1 Comments. Commenters indicated that it is important to provide flexibility in compliance with rule requirements by use of site-specific conditions, ALARA, and exemptions in implementation of the criteria.

G.3.2 Response. Use of site-specific conditions, especially in calculation of acceptable contamination levels based on site-specific parameters, contamination levels and volumes, and usage of the site, is permitted in complying with the regulations. This will be discussed more fully in the regulatory guidance. Furthermore, the final rule provides for establishing alternate license termination criteria based on site-specific considerations.

G.4 Consistency With NRC's Timeliness Rule

G.4.1 Comments. Some commenters indicated that the rule is inconsistent with NRC's timeliness rule (59 FR 36026; July 15, 1994).

G.4.2 Response. The timeliness rule requires licensees to notify the Commission promptly when a decision is made to permanently cease principal activities or whenever principal activities have ceased for 24 months. Further, it requires licensees to complete decommissioning within 24 months. The Commission may approve an alternate schedule to complete decommissioning provided sufficient justification is provided by the licensee.

Although this rule includes options for license termination or transfer to another entity, licensees will still be expected to initiate and complete decommissioning in a timely manner. If a licensee intends to use the restricted release option, the licensee is expected to promptly assess its site characteristics, submit a decommissioning plan if required, provide financial assurance, and include appropriate public participation in its decisionmaking. Because the requirements allow licensees 12 months to submit this information to the Commission, sufficient time should be available. The Commission may grant additional time if the licensee demonstrates that the relief is not detrimental to the public health and safety and is in the public interest. If a licensee is unable to demonstrate that release of a site would not prevent a member of the public from receiving a dose in excess of the public dose limit, the site would not be released but would be transferred to a Government entity or maintained under license. These cases are expected to be rare and will be handled on a case-by-case basis.

G.5 Comments From Power Reactor Decommissioning Rulemaking

G.5.1 Comments. Comments were received on the power reactor decommissioning rule that was recently finalized and published on July 29, 1996 (61 FR 39278), requesting that the Commission consider the elimination of the environmental review requirement at the license termination stage (§ 50.82(a)(9)(ii)(G) and § 51.53(b)) for decommissioning to unrestricted release conditions. In response, the Commission indicated that it would consider these comments in the rulemaking on radiological criteria for decommissioning.

G.5.2 Response. The Commission has considered the elimination of the supplemental environmental review requirement for a licensee that intends to decommission to unrestricted release conditions as required in this final rule and has decided to continue to retain this requirement. The Commission considers this necessary for any particular site to determine if the generic analysis encompasses the range of environmental impacts at that particular site. The rationale for retaining this requirement was explained in the preamble to the proposed rule and has not changed.

G.6 Mixed Waste, Hazardous Waste, and Naturally Occurring and Accelerator-Produced Radioactive Material

G.6.1 Comments. Some commenters stated that the rule should address the cleanup of sites with mixed wastes. Other commenters recommended that NRC should not regulate any nonradioactive hazardous material beyond its authority. There was disagreement over whether NRC's approval of a licensee's decommissioning activities should be dependent on the licensee fulfilling other agencies' obligations, especially where accelerator produced materials may exist. Some commenters stated that the rule criteria are incompatible with naturally occurring and accelerator-produced radioactive material (NARM).

G.6.2 Response. The final rule on radiological criteria for decommissioning applies to residual radioactivity from all licensed and unlicensed sources used by the licensee but excludes background radiation. As such, the NRC or Agreement State, whether acting as the lead or cooperating agency in working with the licensee to ensure appropriate remediation of a contaminated site, would not release a site from its license unless the rule's radiological criteria were met.

NRC responsibility for license termination at a site with hazardous or mixed waste onsite is principally to determine that the radiological component of the mixed waste (e.g., contaminated soil) complies with the rule's radiological criteria. Other regulatory agencies are responsible for control of the hazardous constituents and must be notified and accept responsibility for appropriate management of the released site. The same approach would be followed in potentially releasing a site with groundwater contamination exceeding applicable maximum contaminant levels of nonradiological substances. Note that under the Uranium and Mill Tailings Recovery and Control Act

(UMTRCA), NRC is responsible for the regulation of certain nonradioactive hazardous materials.

With regard to NARM, NRC's legislative and regulatory authority extends to those materials and facilities under the Atomic Energy Act of 1954, as amended, and not to accelerator produced materials or naturally occurring radioactive material, except as it is defined as source material in 10 CFR part 40.4. Section IV.A, notes that, although some commenters questioned the relationship of this rule to NARM, the criteria of this rule apply to residual radioactivity from activities under a licensee's control and not to background radiation (that includes radiation from naturally occurring radioactive material (NORM)). There are a wide variety of sites containing NORM subject to EPA jurisdiction and not licensed by the NRC. The extent to which the criteria in this rule would apply to these sites would be based on a separate evaluation. However, the considerations and analyses done for this rulemaking in the Final GEIS and regulatory analysis regarding large fuel cycle and non-fuel-cycle facilities containing large quantities of naturally occurring nuclides such as uranium and thorium are appropriate for certain NORM sites, and the broad provisions of the rule (such as control of sites with restrictions imposed, use of alternate cap values, use of alternate criteria, and public participation aspects) may be useful in considerations regarding NORM sites.

G.7 Recycle

G.7.1 Comments. Commenters recommended that recycling of equipment or materials be addressed in more depth in the final rule. Several commenters stated that recycling of contaminated materials that results in increased exposures to members of the public is unacceptable. Other commenters favored establishment of criteria for recycled materials.

G.7.2 Response. The proposed rule did not specifically address the recycle of material or equipment decontaminated as a result of the decommissioning process. The Commission has a separate consideration underway of the issues related to cases when the licensee proposes to intentionally release material containing residual radioactivity that could become available for reuse or recycle.

Because current NRC regulations do not contain explicit radiological criteria for release of equipment and materials, release from licensed facilities is currently determined by NRC on a case-by-case basis using existing guidance and practices. Current practices include radiation surveys to document the absence of licensed radioactive material, general guidance for reactors contained in Regulatory Guide 1.86 or similar guidance issued for materials facilities, and site-specific technical specifications and license conditions. Although these criteria were not originally derived for the case of recycle, they have been applied for many years in a wide variety of contexts.

Continuation of the case-by-case procedure in the future may not be practical because of increased quantities of material expected from larger facility decommissionings. Also, interest in recycling slightly contaminated material is growing both in the United States and in other countries as a means of conserving resources by limiting the amount of new raw materials that are necessary to produce new products and equipment and by reducing the costs of disposing of large volumes of slightly contaminated material that may pose very small risks to the general public. Codifying criteria would allow NRC to more effectively deal with these issues. Regulatory action separate from this decommissioning action by NRC, that would provide clear, consistent criteria in this area, is being considered. Specifically, the NRC is cooperating with the EPA in developing the technical basis for a recycle rulemaking. At present, the EPA is developing its plans for such a rulemaking. The NRC will determine what course of action it will take regarding rulemaking related to recycle after consideration of EPA plans. Full opportunity for early public involvement and comment regarding that regulatory action is anticipated. Because of this background, no revision to this decommissioning rule to consider recycling is being made.

G.8 The Rulemaking Process

G.8.1 Comments. Several commenters expressed satisfaction with the enhanced rulemaking process undertaken by the NRC for the decommissioning rule. Of those commenters who opposed the proposed decommissioning standards for not being sufficiently restrictive, some were critical of the rulemaking process and suggested that the NRC had ignored their earlier participation. Other commenters expressed dissatisfaction with the proposed standards because they are overly restrictive. The DOE stated that it supported the NRC effort to issue the rule and the joint efforts of the EPA and the NRC to coordinate their respective rulemaking proceedings.

G.8.2 Response. The NRC has conducted what it considers to be an extensive effort at enhancing participation in the early stages of this rulemaking process through a series of workshops and environmental impact statement scoping meetings for affected interests that solicited public comment with regard to radiological criteria for decommissioning. The extent of these meetings was discussed in the preamble to the proposed rule.

The workshops and the scoping meetings were not designed to seek ''consensus'' in the sense that there is agreement on how each issue should be resolved, but rather to ensure that, with informed discussion, relevant issues have been identified and information exchanged on these issues.

Subsequent to the workshops and scoping meetings, the Commission developed the policies and requirements that were deemed appropriate for a rule on radiological criteria for decommissioning. Information and concepts developed in the workshops were factored into this process. For example, a number of themes from the workshops, such as consideration of restricted use options, increased public participation in the site decommissioning process, and a desire to return sites to levels indistinguishable from background, were considered during the rulemaking. The Commission also considered the approaches of scientific bodies such as the ICRP and NCRP, precedents of its other rulemakings with regard to radiation protection such as 10 CFR part 20, input from EPA regarding appropriate risk levels, technical input from NRC contractors regarding capability to measure at low radiation levels, and the costs and impacts of achieving alternate levels.

Preliminary conclusions regarding this effort were contained in the NRC staff's draft rule (59 FR 4868, February 2, 1994) that was sent to Agreement States, workshop participants, and other interested parties. The intent of this informal comment period in advance of a proposed rule was to provide an opportunity for interested parties to comment on the adequacy of the draft criteria.

Resolution of comments from the workshops and from circulation of the NRC staff draft was discussed in the preamble of the proposed rule published on August 22, 1994 (59 FR 43200). The preamble indicates the evolution of the NRC's approach to this rulemaking as a result of the workshops and the other activities noted above.

Clearly, there are a number of specific areas which remain difficult to resolve or on which to reach a ''consensus.'' These areas include the precise level of

permissible radiological criteria for decommissioning, restricted use as a means for terminating a license, and the extent of public participation. It is the NRC's consideration that the rulemaking process has allowed an airing of differing opinions with regard to these as well as other issues.

V. Agreement State Compatibility

The Commission has determined that this rule will be a Division 2 matter of compatibility. For the discussion on the basis for this determination, see Section IV.F.1.

VI. Relationship Between the Generic Environmental Impact Statement and Site-Specific Decommissioning Actions

The Generic Environmental Impact Statement (GEIS) prepared by the Commission on this rulemaking evaluates the environmental impacts associated with the remediation of several types of NRC-licensed facilities to a range of residual radioactivity levels. The Commission believes that the generic analysis will encompass the impacts that will occur in most Commission decisions to decommission an individual site where the licensee proposes to release the site for unrestricted use. Therefore, the Commission plans to rely on the GEIS to satisfy its obligations under the National Environmental Policy Act regarding individual decommissioning decisions that meet the 0.25 mSv/y (25 mrem/y) criterion for unrestricted use. However, the Commission will still initiate an environmental assessment regarding any particular site, for which a categorical exclusion is not applicable, to determine if the generic analysis encompasses the range of environmental impacts at that particular site.

The rule also provides for the termination of the license and the release of a site under restricted use conditions if the licensee can demonstrate that land use restrictions or other types of institutional controls will provide reasonable assurance that the 0.25 mSv/y (25 mrem/y) limit can be met. The types of controls and their contribution to providing reasonable assurance that the 0.25 mSv/y (25 mrem/y) limit can be met for a particular site will differ for each site in this category. Similarly, the rule also provides that termination of the license under alternate criteria will be considered by the Commission in certain site-specific situations that would also differ for each site in this category. Therefore, the environmental impacts for these cases cannot be analyzed on a generic basis and the Commission will conduct an independent environmental review for each site-specific decommissioning decision where land use restrictions or institutional controls are relied on by the licensee or where alternate criteria are proposed.

The GEIS indicates that the decommissioning for certain classes of licensees (e.g., licensees using only sealed sources) will not individually or cumulatively have a significant effect on the human environment. Therefore, the Commission is amending § 51.22 of the Commission's regulations to specify that the decommissioning of these types of licenses are actions eligible for categorical exclusion from the Commission's environmental review process.

VII. Final Generic Environmental Impact Statement: Availability

As required by the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR part 51, the NRC has prepared a final generic environmental impact statement (NUREG–1496) on this proposed rule.

The final generic environmental impact statement is available for inspection in the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the final generic environmental impact statement (NUREG–1496) may be obtained by written request or telefax (301–415–2260) from: Office of Administration, Attention: Distribution and Services Section, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

Background documents on the rulemaking, including the text of the final rule, the final GEIS, and the regulatory analysis, are also available for downloading and viewing on the NRC Enhanced Participatory Rulemaking on Radiological Criteria for Decommissioning Electronic Bulletin Board, 1–800–880–6091 (see 58 FR 37760 (July 13, 1993)). The bulletin board may be accessed using a personal computer, a modem, and most commonly available communications software packages. The communications software should have parity set to none, data bits to 8, and stop bits to 1 (N,8,1) and use ANSI or VT–100 terminal emulation. For more information call Ms. Christine Daily, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Phone (301) 415–6026; FAX (301) 415–5385.

VIII. Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). These requirements were approved by the Office of Management and Budget, approval number 3150–0014.

The public reporting burden for this collection of information is estimated to average 31.6 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments on any aspect of this collection of information, including suggestions for reducing the burden, to the Information and Records Management Branch (T–6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, or by Internet electronic mail to BJS1@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB–10202, (3150–0011 and 3150–0093), Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

IX. Regulatory Analysis

The Commission has prepared a regulatory analysis on this final regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The analysis is available for inspection in the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the analysis may be obtained by written request from the Radiation Protection and Health Effects Branch (RPHEB) Secretary, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Background documents on the rulemaking, including the text of the final rule, the final GEIS, and the regulatory analysis are also available for downloading and viewing on the NRC Enhanced Participatory Rulemaking on Radiological Criteria for Decommissioning Electronic Bulletin Board (see Section VII, above).

X. Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule, if adopted, will not have a significant economic impact upon a substantial number of small entities. Although the final rule would cover all 22,000

licensees regulated by the NRC and Agreement States, small entities covered by this rule are primarily licensees that possess and use only materials with short half-lives or materials only in sealed sources. Decommissioning efforts for these licensees are simple and require only that sealed sources are properly disposed of or that short-lived materials are allowed to decay. Complete details of the cost analysis are contained in the regulatory analysis.

XI. Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this final rule and therefore, a backfit analysis is not required for this final rule because these amendments do not involve reactor operations and therefore do not involve any provisions that would impose backfits as defined in 10 CFR 50.109(a)(1).

XII. Small Business Regulatory Enforcement Fairness Act

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is not a ''major'' rule and has verified this determination with the Office of Information and Regulatory Affairs, Office of Management and Budget.

List of Subjects

10 CFR Part 20

Byproduct material, Criminal penalties, Licensed material, Nuclear materials, Nuclear power plants and reactors, Occupational and public dose limits, Occupational safety and health, Packaging and containers, Permissible doses, Radiation protection, Reporting and recordkeeping requirements, Respiratory protection, Special nuclear material, Source material, Surveys and monitoring, Waste treatment and disposal.

10 CFR Part 30

Byproduct material, Criminal penalties, Government contracts, Intergovernmental relations, Isotopes, Nuclear materials, Radiation protection, Reporting and recordkeeping requirements.

10 CFR Part 40

Criminal penalties, Government contracts, Hazardous materials transportation, Nuclear materials, Reporting and recordkeeping requirements, Source material, Uranium.

10 CFR Part 50

Antitrust, Classified information, Criminal penalties, Fire protection, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

10 CFR Part 51

Administrative practice and procedure, Environmental impact statements, Environmental regulations, assessments and reports, NEPA procedures, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements.

10 CFR Part 70

Criminal penalties, Hazardous materials transportation, Material control and accounting, Nuclear materials, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

10 CFR Part 72

Manpower training programs, Nuclear materials, Occupational safety and health, Reporting and recordkeeping requirements, Security measures, Spent fuel.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 552 and 553; the NRC is adopting the following amendments to 10 CFR parts 20, 30, 40, 50, 51, 70, and 72.

PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION

1. The authority citation for part 20 continues to read as follows:

Authority: Secs. 53, 63, 65, 81, 103, 104, 161, 182, 186, 68 stat. 930, 933, 935, 936, 937, 948, 953, 955, as amended (2 U.S.C. 2073, 2093, 2095, 2111, 2133, 2134, 2201, 2232, 2236), secs. 201, as amended, 202, 206, 88 stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

2. In § 20.1003, the definition of *Background radiation* is revised and new definitions *Critical Group, Decommission, Distinguishable from background,* and *Residual radioactivity* are added in alphabetical order to read as follows:

§ 20.1003 Definitions.

* * * * *

Background radiation means radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. ''*Background radiation*'' does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

* * * * *

Critical Group means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

* * * * *

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and termination of the license.

* * * * *

Distinguishable from background means that the detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide in the vicinity of the site or, in the case of structures, in similar materials using adequate measurement technology, survey, and statistical techniques.

* * * * *

Residual radioactivity means radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 10 CFR part 20.

* * * * *

3. In § 20.1009, paragraph (b) is revised to read as follows:

§ 20.1009 Information collection requirements: OMB approval.

* * * * *

(b) The approved information collection requirements contained in this part appear in §§ 20.1003, 20.1101, 20.1202, 20.1203, 20.1204, 20.1206, 20.1208, 20.1301, 20.1302, 20.1403, 20.1404, 20.1406, 20.1501, 20.1601, 20.1703, 20.1901, 20.1902, 20.1904, 20.1905, 20.1906, 20.2002, 20.2004, 20.2006, 20.2102, 20.2103, 20.2104, 20.2105, 20.2106, 20.2107, 20.2108,

20.2110, 20.2201, 20.2202, 20.2203, 20.2204, 20.2205, 20.2206, 20.2301, and Appendices F and G to 10 CFR Part 20.

* * * * *

4. A new subpart E entitled ''Radiological Criteria for License Termination,'' is added to 10 CFR part 20 to read as follows:

Subpart E—Radiological Criteria for License Termination

Sec.

§ 20.1401 General provisions and scope.

(a) The criteria in this subpart apply to the decommissioning of facilities licensed under parts 30, 40, 50, 60, 61, 70, and 72 of this chapter, as well as other facilities subject to the Commission's jurisdiction under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended. For high-level and low-level waste disposal facilities (10 CFR parts 60 and 61), the criteria apply only to ancillary surface facilities that support radioactive waste disposal activities. The criteria do not apply to uranium and thorium recovery facilities already subject to appendix A to 10 CFR part 40 or to uranium solution extraction facilities.

(b) The criteria in this subpart do not apply to sites which:

(1) Have been decommissioned prior to the effective date of the rule in accordance with criteria identified in the Site Decommissioning Management Plan (SDMP) Action Plan of April 16, 1992 (57 FR 13389);

(2) Have previously submitted and received Commission approval on a license termination plan (LTP) or decommissioning plan that is compatible with the SDMP Action Plan criteria; or

(3) Submit a sufficient LTP or decommissioning plan before August 20, 1998 and such LTP or decommissioning plan is approved by the Commission before August 20, 1999 and in accordance with the criteria identified in the SDMP Action Plan, except that if an EIS is required in the submittal, there will be a provision for day-for-day extension.

(c) After a site has been decommissioned and the license terminated in accordance with the criteria in this subpart, the Commission will require additional cleanup only if, based on new information, it determines that the criteria of this subpart were not met and residual radioactivity remaining at the site could result in significant threat to public health and safety.

(d) When calculating TEDE to the average member of the critical group the licensee shall determine the peak annual TEDE dose expected within the first 1000 years after decommissioning.

§ 20.1402 Radiological criteria for unrestricted use.

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). Determination of the levels which are ALARA must take into account consideration of any detriments, such as deaths from transportation accidents, expected to potentially result from decontamination and waste disposal.

§ 20.1403 Criteria for license termination under restricted conditions.

A site will be considered acceptable for license termination under restricted conditions if:

(a) The licensee can demonstrate that further reductions in residual radioactivity necessary to comply with the provisions of § 20.1402 would result in net public or environmental harm or were not being made because the residual levels associated with restricted conditions are ALARA. Determination of the levels which are ALARA must take into account consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal;

(b) The licensee has made provisions for legally enforceable institutional controls that provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) per year;

(c) The licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site. Acceptable financial assurance mechanisms are—

(1) Funds placed into an account segregated from the licensee's assets and outside the licensee's administrative control as described in § 30.35(f)(1) of this chapter;

(2) Surety method, insurance, or other guarantee method as described in § 30.35(f)(2) of this chapter;

(3) A statement of intent in the case of Federal, State, or local Government licensees, as described in § 30.35(f)(4) of this chapter; or

(4) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(d) The licensee has submitted a decommissioning plan or License Termination Plan (LTP) to the Commission indicating the licensee's intent to decommission in accordance with §§ 30.36(d), 40.42(d), 50.82 (a) and (b), 70.38(d), or 72.54 of this chapter, and specifying that the licensee intends to decommission by restricting use of the site. The licensee shall document in the LTP or decommissioning plan how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and incorporated, as appropriate, following analysis of that advice.

(1) Licensees proposing to decommission by restricting use of the site shall seek advice from such affected parties regarding the following matters concerning the proposed decommissioning—

(i) Whether provisions for institutional controls proposed by the licensee;

(A) Will provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) TEDE per year;

(B) Will be enforceable; and

(C) Will not impose undue burdens on the local community or other affected parties.

(ii) Whether the licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site;

(2) In seeking advice on the issues identified in § 20.1403(d)(1), the licensee shall provide for:

(i) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

(ii) An opportunity for a comprehensive, collective discussion on

the issues by the participants represented; and

(iii) A publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues; and

(e) Residual radioactivity at the site has been reduced so that if the institutional controls were no longer in effect, there is reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group is as low as reasonably achievable and would not exceed either—

(1) 100 mrem (1 mSv) per year; or

(2) 500 mrem (5 mSv) per year provided the licensee—

(i) Demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/y (1 mSv/y) value of paragraph (e)(1) of this section are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm;

(ii) Makes provisions for durable institutional controls;

(iii) Provides sufficient financial assurance to enable a responsible government entity or independent third party, including a governmental custodian of a site, both to carry out periodic rechecks of the site no less frequently than every 5 years to assure that the institutional controls remain in place as necessary to meet the criteria of § 20.1403(b) and to assume and carry out responsibilities for any necessary control and maintenance of those controls. Acceptable financial assurance mechanisms are those in paragraph (c) of this section.

§ 20.1404 Alternate criteria for license termination.

(a) The Commission may terminate a license using alternate criteria greater than the dose criterion of §§ 20.1402, 20.1403(b), and 20.1403(d)(1)(i)(A), if the licensee—

(1) Provides assurance that public health and safety would continue to be protected, and that it is unlikely that the dose from all man-made sources combined, other than medical, would be more than the 1 mSv/y (100 mrem/y) limit of subpart D, by submitting an analysis of possible sources of exposure;

(2) Has employed to the extent practical restrictions on site use according to the provisions of § 20.1403 in minimizing exposures at the site; and

(3) Reduces doses to ALARA levels, taking into consideration any detriments such as traffic accidents expected to potentially result from decontamination and waste disposal.

(4) Has submitted a decommissioning plan or License Termination Plan (LTP) to the Commission indicating the licensee's intent to decommission in accordance with §§ 30.36(d), 40.42(d), 50.82 (a) and (b), 70.38(d), or 72.54 of this chapter, and specifying that the licensee proposes to decommission by use of alternate criteria. The licensee shall document in the decommissioning plan or LTP how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and addressed, as appropriate, following analysis of that advice. In seeking such advice, the licensee shall provide for:

(i) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;

(ii) An opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

(iii) A publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues.

(b) The use of alternate criteria to terminate a license requires the approval of the Commission after consideration of the NRC staff's recommendations that will address any comments provided by the Environmental Protection Agency and any public comments submitted pursuant to § 20.1405.

§ 20.1405 Public notification and public participation.

Upon the receipt of an LTP or decommissioning plan from the licensee, or a proposal by the licensee for release of a site pursuant to §§ 20.1403 or 20.1404, or whenever the Commission deems such notice to be in the public interest, the Commission shall:

(a) Notify and solicit comments from:

(1) local and State governments in the vicinity of the site and any Indian Nation or other indigenous people that have treaty or statutory rights that could be affected by the decommissioning; and

(2) the Environmental Protection Agency for cases where the licensee proposes to release a site pursuant to § 20.1404.

(b) Publish a notice in the **Federal Register** and in a forum, such as local newspapers, letters to State or local organizations, or other appropriate forum, that is readily accessible to individuals in the vicinity of the site, and solicit comments from affected parties.

§ 20.1406 Minimization of contamination.

Applicants for licenses, other than renewals, after August 20, 1997, shall describe in the application how facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste.

5. In § 20.2402, paragraph (b) is revised to read as follows:

§ 20.2402 Criminal penalties.

* * * * *

(b) The regulations in §§ 20.1001 through 20.2402 that are not issued under Sections 161b, 161i, or 161o for the purposes of Section 223 are as follows: §§ 20.1001, 20.1002, 20.1003, 20.1004, 20.1005, 20.1006, 20.1007, 20.1008, 20.1009, 20.1405, 20.1704, 20.1903, 20.1905, 20.2002, 20.2007, 20.2301, 20.2302, 20.2401, and 20.2402.

PART 30—RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL

6. The authority citation for part 30 continues to read as follows:

Authority: Secs. 81, 82, 161, 182, 183, 186, 68 Stat. 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat 444, as amended (42 U.S.C. 2111, 2112, 2201, 2232, 2233, 2236, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 30.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102–486, sec. 2902, 106 Stat 3123 (2 U.S.C. 5851). Section 30.34(b) also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 30.61 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

7. In § 30.4, the definition of *Decommission* is revised to read as follows:

§ 30.4 Definitions.

* * * * *

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and termination of the license.

* * * * *

8. In § 30.35, paragraph (f)(5) is added and paragraph (g)(3)(iv) is revised to read as follows:

§ 30.35 Financial assurance and recordkeeping for decommissioning.

* * * * *

(f) * * *

(5) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(g) * * *

(3) * * *

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning in 10 CFR part 20, subpart E, or apply for approval for disposal under 10 CFR 20.2002.

* * * * *

9. In § 30.36, the introductory text of paragraph (j)(2) and paragraph (k)(3) are revised to read as follows:

§ 30.36 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

* * * * *

(j) * * *

(2) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates in some other manner that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E. The licensee shall, as appropriate—

* * * * *

(k) * * *

(3)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

* * * * *

PART 40—DOMESTIC LICENSING OF SOURCE MATERIAL

10. The authority citation for part 40 continues to read as follows:

Authority: Secs. 62, 63, 64, 65, 81, 161, 182, 183, 186, 68 Stat. 932, 933, 935, 948, 953, 954, 955, as amended, secs. 11e(2), 83, 84, Pub. L. 95–604, 92 Stat. 3033, as amended, 3039, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2014(e)(2), 2092, 2093, 2094, 2095, 2111, 2113, 2114, 2201, 2232, 2233, 2236, 2282); sec. 274, Pub. L. 86–373, 73 Stat. 688 (42 U.S.C. 2021); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); sec. 275, 92 Stat. 3021, as amended by Pub. L. 97–415, 96 Stat. 2067 (42 U.S.C. 2022).

Section 40.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102–486, sec. 2902, 106 Stat. 3123, (42 U.S.C. 5851). Section 40.31(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 40.46 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 40.71 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

11. In § 40.4, the definition of *Decommission* is revised to read as follows:

§ 40.4 Definitions.

* * * * *

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and termination of the license.

* * * * *

12. In § 40.36, paragraph (e)(5) is added and paragraph (f)(3)(iv) is revised to read as follows:

§ 40.36 Financial assurance and recordkeeping for decommissioning.

* * * * *

(e) * * *

(5) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(f) * * *

(3) * * *

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning in 10 CFR part 20, subpart E, or apply for approval for disposal under 10 CFR 20.2002.

* * * * *

13. In § 40.42, the introductory text of paragraph (j)(2) and paragraph (k)(3) are revised to read as follows:

§ 40.42 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

* * * * *

(j) * * *

(2) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates in some other manner that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E. The licensee shall, as appropriate—

* * * * *

(k) * * *

(3)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

* * * * *

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

14. The authority citation for part 50 continues to read as follows:

Authority: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 50.7 is also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102–486, sec. 2902, 106 Stat. 3123 (42 U.S.C. 5851). Section 50.10 also issued under secs. 101, 185, 68 Stat. 936, 955, as amended (42 U.S.C. 2131, 2235); sec. 102, Pub. L. 91–190, 82 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(dd), and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91–190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50–81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

15. In § 50.2, the definition of *Decommission* is revised to read as follows:

§ 50.2 Definitions.

* * * * *

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and termination of the license.

* * * * *

16. In § 50.82, paragraphs (a)(11)(ii) and (b)(6)(ii) are revised to read as follows:

§ 50.82 Termination of license.

* * * * *

(a) * * *

(11) * * *

(ii) The terminal radiation survey and associated documentation demonstrates that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

(b) * * *

(6) * * *

(ii) The terminal radiation survey and associated documentation demonstrate that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

* * * * *

PART 51—ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS

17. The authority citation for part 51 continues to read as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); secs. 201, as amended, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

Subpart A also issued under National Environmental Policy Act of 1969, secs. 102, 104, 105, 83 Stat. 853–854, as amended (42 U.S.C. 4332, 4334, 4335); and Pub. L. 95–604, Title II, 92 Stat. 3033–3041; and sec. 193, Pub. L. 101–575, 104 Stat. 2835 (42 U.S.C. 2243). Sections 51.20, 51.30, 51.60, 51.61, 51.80, and 51.97 also issued under secs. 135, 141, Pub. L. 97–425, 96 Stat. 2232, 2241, and sec. 148, Pub. L. 100–203, 101 Stat. 1330–223 (42 U.S.C. 10155, 10161, 10168). Section 51.22 also issued under sec. 274, 73 Stat. 688, as amended by 92 Stat. 3036–3038 (42 U.S.C. 2021) and under Nuclear Waste Policy Act of 1982, sec. 121, 96 Stat. 2228 (42 U.S.C. 10141). Sections 51.43, 51.67, and 51.109 also issued under Nuclear Waste Policy Act of 1982, sec. 114(f), 96 Stat. 2216, as amended (42 U.S.C. 10134(f)).

18. In § 51.22, paragraph (c)(20) is added to read as follows:

§ 51.22 Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review.

* * * * *

(c) * * *

(20) Decommissioning of sites where licensed operations have been limited to the use of—

(i) Small quantities of short-lived radioactive materials; or

(ii) Radioactive materials in sealed sources, provided there is no evidence of leakage of radioactive material from these sealed sources.

* * * * *

PART 70—DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

19. The authority citation for part 70 continues to read as follows:

Authority: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846).

Sections 70.1(c) and 70.20a(b) also issued under secs. 135, 141, Pub. L. 97–425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161). Section 70.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102–486 sec. 2902, 106 Stat. 3123 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93–377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

20. In § 70.4, the definition of *Decommission* is revised to read as follows:

§ 70.4 Definitions.

* * * * *

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and termination of the license.

* * * * *

21. In § 70.25, paragraph (f)(5) is added and paragraph (g)(3)(iv) is revised to read as follows:

§ 70.25 Financial assurance and recordkeeping for decommissioning.

* * * * *

(f) * * *

(5) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(g) * * *

(3) * * *

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning in 10 CFR part 20, subpart E, or apply for approval for disposal under 10 CFR 20.2002.

* * * * *

22. In § 70.38, the introductory text of paragraph (j)(2) and paragraph (k)(3) are revised to read as follows:

§ 70.38 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

* * * * *

(j) * * *

(2) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates in some other manner that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E. The licensee shall, as appropriate—

* * * * *

(k) * * *

(3)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

* * * * *

PART 72—LICENSING REQUIREMENTS FOR THE INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

23. The authority citation for part 72 continues to read as follows:

Authority: Secs. 51, 53, 57, 62, 63, 65, 69, 81, 161, 182, 183, 184, 186, 187, 189, 68 Stat. 929, 930, 932, 933, 934, 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2201, 2232, 2233, 2234, 2236, 2237, 2238, 2282); sec. 274, Pub. L. 86–373, 73 Stat. 688, as amended (42 U.S.C. 2021); sec. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); Pub. L. 95–601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102–486, sec. 2902, 106 Stat. 3123 (42 U.S.C. 5851); sec. 102, Pub. L. 91–190, 83 Stat. 853 (42 U.S.C. 4332). Secs. 131, 132, 133, 135, 137, 141, Pub. L. 97–425, 96 Stat. 2229, 2230, 2232, 2241, sec. 148, Pub. L. 100–203, 101 Stat. 1330–235 (42 U.S.C. 10151, 10152, 10153, 10155, 10157, 10161, 10168).

Section 72.44(g) also issued under secs. 142(b) and 148 (c), (d), Pub. L. 100–203, 101

Stat. 1330–232, 1330–236 (42 U.S.C. 10162(b), 10168 (c), (d)). Section 72.46 also issued under sec. 189, 68 Stat. 955 (42 U.S.C. 2239); sec. 134, Pub. L. 97–425, 96 Stat. 2230 (42 U.S.C. 10154). Section 72.96(d) also issued under sec. 145(g), Pub. L. 100–203, 101 Stat. 1330–235 (42 U.S.C. 10165(g)). Subpart J also issued under secs. 2(2), 2(15), 2(19), 117(a), 141(h), Pub. L. 97–425, 96 Stat. 2202, 2203, 2204, 2222, 2244, (42 U.S.C. 10101, 10137(a), 10161(h)). Subparts K and L are also issued under sec. 133, 98 Stat. 2230 (42 U.S.C. 10153) and Sec. 218(a) 96 Stat. 2252 (42 U.S.C. 10198).

24. In § 72.3, the definition of *Decommission* is revised to read as follows:

§ 72.3 Definitions.

* * * * *

Decommission means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits—

(1) Release of the property for unrestricted use and termination of the license; or

(2) Release of the property under restricted conditions and termination of the license.

* * * * *

25. In § 72.30, paragraph (c)(6) is added to read as follows:

§ 72.30 Financial assurance and recordkeeping for decommissioning.

* * * * *

(c) * * *

(6) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

* * * * *

26. In § 72.54, the introductory text of paragraph (l)(2) and paragraph (m)(2) are revised to read as follows:

§ 72.54 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

* * * * *

(l) * * *

(2) Conduct a radiation survey of the premises where the licensed activities were conducted and submit a report of the results of this survey, unless the licensee demonstrates in some other manner that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E. The licensee shall, as appropriate—

(m) * * *

(2)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release in accordance with the criteria for decommissioning in 10 CFR part 20, subpart E.

* * * * *

Dated at Rockville, Maryland, this 1st day of July 1997.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Secretary of the Commission.

[FR Doc. 97–17752 Filed 7–18–97; 8:45 am]

BILLING CODE 7590–01–P