

ENVIRONMENTAL COALITION ON NUCLEAR POWER

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March 8, 1994

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Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
ATTN: Docketing and Service Branch

RE: Proposed Federal Register Notice
Staff Draft: Radiological Criteria
for Decommissioning

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

Request for Extension of
Comment Period

Dear Madam or Sir:

The following comments on the Staff Draft Radiological Criteria for Decommissioning, dated 1/26/1994, are submitted in response to a 1/27/1994 request from the Chief of the Radiation and Health Effects Branch of the Office of Nuclear Regulatory Research, and on behalf of the Environmental Coalition on Nuclear Power, a Pennsylvania-based not-for-profit public-interest organization founded in 1970. The commenter was a participant in the NRC's Enhanced Rule-making on Residual Radioactivity (ERORR) workshops in the spring of 1993.

First, because of the disruptive severity of weather in the Northeast in the past six weeks since release of this document, and because of the long-term importance of health and safety at issue, we respectfully request that the Commission extend the comment period on this draft for an additional 30 days. Other members of the public who participated in the NRC's ERORR workshops may also have been hampered by the inclement weather from preparing comments on the Staff Draft. The Commission had emphasized its desire for active public participation in development of decommissioning criteria; the NRC should now provide the additional time needed for comment.

These proposed decommissioning criteria would apply to all NRC licensees remediating residual radioactivity caused by possession or use of source, by-product, and special nuclear material, with exception of disposal of "low-" and high-level radioactive waste, uranium mill tailings, and any sites with an NRC-approved decommissioning plan prior to promulgation of this proposed rule.

Because this rule will be followed by a permanent withdrawal of regulatory control, and because radiological contamination at licensed sites may include some very long-lived radioactive materials and wastes to which human beings very far in the future would be exposed and from which they may suffer injury, it is imperative that the NRC now set the most restrictive standards, criteria, and regulations for the final remediation of these facilities and sites and for surrounding offsite areas that may be or become contaminated by radioactivity associated with the activities of the licensee.

In a February 1991 Draft Report, "Sites Contaminated and Potentially Contaminated with Radioactivity in the United States," summarized in "Data Compiled by Majority Staff United States Senate Committee on Governmental Affairs" April 1992, based also on NRC "Site Decontamination Management Program" (SECY-90-121), March 29, 1990, the Environmental Protection Agency (EPA) estimated that more than 45,000 such sites already exist or may become contaminated from the presence of radioactive materials or activities. However great the total number of locations or acres, the plain fact is that many nuclear industry and weapons facilities have been licensed by, and operated by, agencies of the Federal government; and the Federal government is responsible for requiring and assuring the full clean-up of all those sites and of any other areas which are or may become contaminated in consequence of those licenses and activities.

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Decommissioning and cleanup of radioactively contaminated sites at termination of NRC-licensed operational life is thus more than an implied contract between the regulatory agency and the public it serves. It's a contractual obligation between government and governed that is every bit as valid and binding as is the contractual license between regulator and licensee. Indeed, responsibility of the regulatory agency to assure full decontamination of a site and facility for which it has issued an operating license far transcends present time and persons. Among the statutes and statements of Congressional intent that oblige the Federal regulatory agency that issues an operating license to require also remediation of a contaminated site are the 1954 Atomic Energy Act, as amended, 1969 National Environmental Policy Act, 1976 Resource Conservation and Recovery Act, and 1991 Pollution Prevention Act. Moral and Constitutional responsibility of government to the governed mandates it.

Where comments refer to pagination, it is the 1/26/1994 Staff Draft Criteria typed version sent by Dr. Cool. Comments start with Draft Revision of 10 CFR Part 20 Proposed by the NRC Staff, "Part 20 - Radiological Criteria of Decommissioning," commencing at pages 58-77. Comments follow on the remainder of the document, pages 1-57. There is much redundancy in this document. To save time and space (and reading for NRC Staff) we ask that comments be considered to apply also to repetitive sections of the Draft.

DRAFT REVISION OF 10 CFR PART 20 PROPOSED BY THE NRC STAFF:

PART 20 - RADIOLOGICAL CRITERIA FOR DECOMMISSIONING

Subpart A

20.1003 Definitions

Comment 1. Background radiation: In our opinion, the use of the term "background radiation" as here defined is misleading if not deceptive for several reasons.

- a) It alters the widely accepted definition of "background radiation" that has meant "naturally-occurring background radiation" as previously in use by the Commission and in common parlance to a new definition that includes man-made sources and that will change with increases over time of more additions of radioactivity to the biosystem from both intentional permitted and accidental releases.
- b) It excludes some forms or sources of radiation: radon as a decay product of source or special nuclear material, and radiation from source, by-product, or special nuclear materials (SNM) regulated by the Commission.

Recommendation: The NRC should define "background radiation" in terms of "naturally-occurring background," since this term is used in the Criteria as a reference level against which to measure the acceptability of decontamination levels achieved by a licensee. If the new definition is used, it must explain (1) the differences from the prior term, (2) the reason(s) for the exclusions, and (3) if, when, and under what circumstances the excluded categories may enter "background." For example, by this definition any radioactive material that escapes from NRC regulation (e.g., via deregulation? loss? redefinition? exemption?) would apparently not be considered part of "background radiation."

The NRC should clarify how this term may be used for comparative purposes, i.e. the comparison between a Total Effective Dose Equivalent (TEDE) of 3, 15, or 100 millirem/year and a "background" radiation exposure of 300-400 mrem/yr. vs. a "naturally-occurring background" dose of only 100-200 mrem/year.

Comment 2. Critical Group: This new term is not clearly defined in terms of the numbers of people in the "group," their presence at or distance from a facility or area containing residual radioactivity, measurements or durations of their exposures, etc. Its components (members) are then used to set a presumably quantitative figure for some "average" dose to an individual that is deemed to be an "acceptable" exposure or some "average individual" whose permissible exposure is derived from the unknown doses to the unknown number and character of members of the "Critical Group" over unknown time and distance. Since no maximum exposure standard is set for any individual in the Critical Group, both "average" and "maximum" figures could prove to be unacceptable doses -- if they could be correctly ascertained. There is no specificity here, hence no meaning. All decommissioning determinations based on so nebulous a concept will in turn be meaningless and, we strongly suspect, open to easy legal challenge.

Recommendation: NRC should delete the term "Critical Group," the concept of an acceptable dose to an "average member," and the use of permissible exposures based on the "Critical Group" concept for decommissioning.

Comment 3. Decommission: This term is here defined too broadly.

Recommendation: "Decommission" should be defined only as "remove a facility or site safely from service and reduce residual radioactivity to the level of pre-existing naturally-occurring background radiation." It should not in its definition include either "release for unrestricted or restricted use" or "termination of license." The latter actions should be determined separately by the Commission based upon completion and completeness of decontamination.

Comment 4. Readily Removable: By excluding from clean-up the decontamination activities that involve generation of "large volumes of radioactive waste requiring subsequent disposal or produce chemical wastes that are expected to adversely affect public health or the environment" the NRC is apparently limiting decommissioning to little more than swabbing down the decks. This kind of distinction can be expected to be utilized by licensees to avoid the higher decontamination costs associated with any actions beyond "non-destructive, common, housekeeping techniques." Can't even the detergent be dispensed with because it may produce a chemical waste that might damage the environment?

Recommendation: The NRC should require complete cleanup of a licensed site or facility. "Readily removable" techniques (scrubbing up) are only a first step in the process. This term -- or the concept that it embodies of only minimal or partial decontamination -- is not needed nor is it appropriate.

Comment 5. Residual Radioactivity: As worded here, this term excludes offsite residual radioactivity resulting from licensee activities. Does not an NRC licensee have responsibility for the decontamination of any areas or structures that have become contaminated in consequence of the licensee's activities or of activities under licensee's control? That troublesome term "background radiation" is used in this definition: how is that going to be determined and where?

(Onsite? Offsite? Using the alleged "average" 360 mrem/year? Omitting radon from source material and special nuclear material [SNM]? Omitting radiation from source, byproduct, or SNM regulated by the Commission?)

Recommendation: NRC must clarify in definition that "residual radioactivity" includes both onsite and offsite radioactivity that results from activities under the licensee's control. For a comparable situation of a facility with long life, Pennsylvania uses a "rebuttable presumption" in its low-level waste law to establish licensee's legal responsibility for offsite contamination but also provide means for a licensee to demonstrate its innocence of causation. In decommissioning, if a licensee has remediated fully to the level of pre-existing naturally-occurring background, the burden of demonstrating innocence with respect to delayed discovery of additional contamination on or near a site would be lessened or removed.

Comment 6. Site Specific Advisory Board (SSAB): This proposal, as defined here, is naive, foolish, and/or, frankly, downright insulting to the public. In our state, we observe the functioning of such an "Advisory Committee" "constituted by the licensee (contractor in our case) to provide advice to the licensee (contractor)." It is an apologist body, chosen by the contractor for the contractor's purposes, answerable to the contractor, entirely controlled by the contractor. It does not, and is not intended to, benefit the public interest.

Recommendation: Any advisory group to oversee plans for decommissioning should be selected or elected by the affected citizenry and/or appointed by a truly independent entity and be answerable to the public. Perhaps a committee formed by both means would be best. It must be composed of persons who do not have any vested interest in the licensee, but the breadth of its composition should be specified to attempt to assure that a variety of public concerns and expertise are represented. Either do this properly or drop it.

Subpart E. Radiological Criteria for Decommissioning
20.1401 Scope

Comment 7. At 20.1401 (a): Decommissioning criteria should be applied to all facilities, sites, and offsite areas containing residual radioactivity that is attributable to the presence or operations of a licensee for which the Commission proposes to terminate a license or maintain a license for restricted use or unrestricted use.

Recommendation: The most restrictive standards (whether set by Federal or State or Municipal agencies) should be applied to all decommissioned facilities and sites: return to the level of pre-existing, naturally-occurring background.

Comment 8. 20.1401 (b) If the NRC allows lesser decommissioning standards or criteria to be applied by licensees who apply early, setting off a "rush to plan," it will have performed yet another disgraceful disservice to the citizens it is bound by statute to protect and serve. However, the criteria put forth here are very far from being acceptable.

Recommendation: No licensee should be exempted from carrying out the most restrictive decommissioning criteria, standards, and enforcement that the

Commission can set under existing laws. No licensee should be permitted to begin or conduct decommissioning activities (including the removal of radioactive equipment, waste, or other materials from its site under the guise of operations-related activities) until and unless the Commission has approved a completed site/facility/area decommissioning/decontamination plan. Any decommissioning activities that have already been started or completed must be subjected to review under the most restrictive criteria that the law allows.

Comment 9. 20.1401 (c) The term "significant public or environmental harm" gives the NRC too great a latitude to declare that remaining radioactivity that may later be discovered inside or outside a facility, or on or off a site, is "insignificant."

Recommendation: The NRC should retain control over all licensees that have failed to complete decontamination to the level of pre-existing naturally-occurring background radiation. No license should be terminated until this completion of decommissioning has been independently reviewed and then approved by the NRC. Even then, license termination should be conditional, with all liability remaining with the licensee in the event that residual radioactivity appears subsequently.

20.1402 Concepts

Comment 10. As we have argued previously in other comments and testimony to the Commission, to EPA and DOE, and in the ERORR workshop last April, and as the 1990 NAS BEIR V Report concludes, there is no threshold of safe exposure to ionizing radiation. The explanation by D.W. Boardman, M.D., Radiation Impact, Center for Atomic Radiation Studies, pre-print, 1992, which has been submitted to the NRC previously, is repeated here:

Even at low levels...ionizing radiation exposure affects all living matter, and can cause not only cancer, leukemia, and birth defects. Many ill-effects have been newly identified and are as yet poorly defined and understood. Diagnosis is difficult, partly because no two people will have the same dose or injury, partly because access to official records and pertinent scientific literature is restricted [and] because specific radiobiologic effects can not be reproduced in the laboratory.

Ionizing radiation targets only a part of any one of the billions of atoms in a single cell; its energy is dispersed unevenly among many atoms of any of the approximately 75 trillion cells in the human body. No two people, or even comparable DNA segments of any two cells, can receive the same dose of ionizing radiation. (at p. 7)

As we have also noted elsewhere, the 1990 BEIR V Report of the National Research Council Committee on the Biological Effects of Ionizing Radiation, Health Effects of Exposure to Low Levels of Ionizing Radiation, concluded that there is no safe threshold of exposure to ionizing radiation:

In spite of evidence that molecular lesions which give rise to somatic and genetic damage can be repaired to a considerable degree, the new data do not contradict the hypothesis, at least with respect to cancer induction and hereditary genetic effects, that the frequency of

such effects increases with low-level radiation as a linear, nonthreshold function of the dose. (at p.4)

The NRC's predecessor, the AEC itself, in its public information series, Understanding the Atom, in 1966 had stated clearly that all exposures carry the risk of mutational damage that may result in adverse somatic or genetic consequences (I. Asimov and T. Dobzhansky, "The Genetic Effects of Radiation").

But, with respect to exposure limits for a decommissioned site to be released from regulatory control and licensee accountability for unrestricted (or tenuously restricted) use for all time to come, it is the findings of Russian and Belarussian radiation biologists and physicians in the aftermath of Chernobyl that are particularly pertinent to these criteria. They report that chronic low-dose exposures from low levels of residual radioactivity, via ingestion and inhalation pathways (contaminated food, water, and dust particles) appear to result in impairment of immunological system functions, especially in young children. Belarussian physicians observe that the immunodysfunctions, in turn, increase susceptibility to infections and to a wide range of the "normal" diseases of childhood (which in turn tend to be more severe, last longer, and recur more often), plus, in addition to increases in leukemia and formerly rare childhood thyroid cancers, marked increases in the incidence of allergies, respiratory ailments, childhood diabetes, and a variety of respiratory, gastrointestinal, and endocrine disorders, chronic fatigue, lack of stamina, and failure to thrive. (V. Nesterenko, E. Burlakova, et al., Chernobyl Catastrophe, 1993, 4 volumes in Russian; personal interviews, 1991, 1993)

The information above has been presented by this commenter to the NRC, EPA, and DOE in various forms and fora; it was obtained from interviews with Russian, Belarussian, and Ukrainian medical personnel, radiation biologists, nuclear physicists and chemists, and other scientists, as well as from personal observations and interviews in hospitals and zones of residual contamination. It has also been reported in the New York Times and in other publications, and is stated by Mr. William Dornsife, Director of the Pennsylvania Bureau of Radiation Protection, following his discussions with members of the Belarussian Parliament and Academy of Sciences in October 1993. He is quoted here in part:

Since 1988 significant increases in thyroid cancers have occurred (about a factor of ten increase by 1992. Other types of cancers are also beginning to increase. IAEA reports have projected that increased cancers would not appear for at least 10 years.

There appears to be compelling evidence that thyroid dysfunction and other effects may be causing physiological changes that are affecting immunities to other diseases. There is also data on chromosomal aberrations that may indicate future genetic impacts....

There appears to be convincing evidence that the Belarussians do have a severe problem.... [We are missing an ideal opportunity to study the health and environmental impacts of a severe radioactive contamination event that would significantly add to our knowledge and ability to regulate and deal more effectively with radiation issues.

(forthcoming, March 1994, Conference of Radiation Control Directors Newsletter)

Recommendation: For sites that will have far-reaching future impacts on human health and genetic integrity, the NRC must go beyond the limitations of the revised 10 CFR Part 20 to recognize and protect against the greater and different effects of chronic low-dose radiation exposures. Comparable with our state requirements for a regional compact "low"-level waste facility, the only suitable goal for decommissioning is what has been characterized as the "zero goal," which in this instance should be considered to be "return to pre-existing, naturally-occurring background." For the reasons stated above, that goal must also be the *limit* of exposure to a present or future member of the public.

Comment 11. Worse, at p. 71 of the 1/26/1994 Draft, the Staff states, "The Commission expects to make every reasonable effort to reduce residual radioactivity to levels which will allow unrestricted release of the site," but then goes on to recite ways that a license can be terminated without keeping doses to the public below 15 mrem/year TEDE. These are not acceptable. Licensee is allowed to demonstrate that reductions are too expensive or technically not easy or would harm the public or environment; that institutional controls can solve the problem of a calculated 15 mrem/yr. or greater TEDE to an "average member" of an "appropriate critical group;" that someone else will assume financial liability and responsibility for future control and maintenance; that the TEDE won't be above 100 mrem/yr. (essentially a doubling of naturally-occurring background radiation levels in much of the United States) if restrictions fail. Also at p. 71, the Commission reserves the option of "terminating a license under circumstances where the TEDE to the average member of the critical group from residual radioactivity would exceed 100 mrem...per year if the site were to be released for unrestricted use." There is no limit here on the maximum dose for the maximally exposed member of the critical group from which the average member is derived. There is no benefit whatsoever for any person exposed at a supposedly decommissioned site where the annual radiation dose may equal or exceed that received from naturally-occurring background sources. None of this will do!

Recommendation: In view of the information provided in Comment 10 above, the adoption by the Commission of these provisions at page 71 would truly be arbitrary and capricious and contrary to the protection of public health, safety, welfare, and the environment required of the NRC under the statutes cited at page 2 above. The NRC must delete the entire page 71 of this section.

20.1403 General Provisions

Comment 12. 20.1403 (a): The highest dose may not occur during the first 1000 years post-decommissioning. This time period is woefully insufficient for protection of the public for the reasons cited in comments above.

Recommendation: NRC decommissioning requirements must account for the full duration of the hazardous life of all radioactive isotopes encountered at a site, facility, or offsite area that is a candidate for decommissioning and license termination. Licensee estimates of expected dose may be expected to be self-serving for licensees that do not want to have to pay the full costs of full decontamination of a site, facility, or offsite area that licensees have caused to become contaminated. It is the NRC's obligation to require that they do so.

Comment 13. 20.1403 (b) The term "significant" is susceptible to manipulation to suit the purposes of the licensee. This provision also is designed, at licensee request during ERORR workshops, to allow licensee to trade off offsite hazards of transportation, possible storage, and disposal against the hazards of residual radioactivity at the site, facility or offsite area that a licensee is supposed to be decontaminating. This section further weakens cleanup.

Recommendation: This provision should be deleted. The purpose of the decontamination is to clean up a site as part of decommissioning, and that is the responsibility of the licensee. It is also the licensee's responsibility to assure that the materials and wastes that result from the cleanup activities are carefully and safely transported and disposed of.

Comment 14. 20.1403 (c) "Readily removable" here rears its deceptive head. What this section says is that, if decontamination takes more than some soap and water, residual radioactivity won't have to be removed from, or disposed of at, the site. It is a license to leave behind a dirty, dangerous site. This provision, too, is arbitrary, capricious, and contrary to the statutes cited at page 2 of these comments.

Recommendation: Delete this provision. All residual radioactivity must be recovered in the course of decontamination; that's what decontamination means.

20.1404 Radiological Criteria for Unrestricted Release

Comment 15. 20.1404 (a) (1) The goal of decommissioning is to clean up a radioactively contaminated site, facility, or offsite area. It would seem that the NRC should consider that all radionuclides detected at the site resultant from the operation of a facility can contribute to residual radioactivity. Some may be of higher concentrations, toxicity, and duration than others, but all are contributors to future potential injury to members of the public from a decommissioned site for which license termination has been granted.

Recommendation: The phrase "indistinguishable from the background concentration" must not be taken by the NRC to mean that such a level of concentration in addition to the background concentration is permissible.

Comment 16. 20.1404 (a) (2) See all comments above pertaining to health effects and TEDE to an "average" member of the "critical group."

Recommendation: At the least, it might be argued that this goal should be the Commission's upper limit of exposure for the maximally exposed individual under any circumstances. We still, however, support and recommend that the NRC adopt as its goal and limit of exposure the return to the pre-existing naturally-occurring background level for a licensed site.

Comment 17. The wording here gives several "outs" for a licensee: "distinguishable from background," "average member," "critical group," "as close to," and "reasonably achievable."

Recommendation: Require licensee to meet the goal, and make that goal the return to pre-existing naturally-occurring background.

20.1405 Criteria for License Termination Under Restricted Conditions

Comment 18. We find the acceptable provisions here to be unacceptable. The licensee has an obligation under the AEA and certainly under NEPA to clean up his mess, not to walk away from it. For agencies that are ostensibly attempting to develop "public involvement" in decision-making, this kind of draft regulation gives the lie to any claims of sincerity. See comments above. How does the radiation recipient some generations hence take a defunct utility or other nuclear licensee to court? The time to decontaminate in full is while the NRC license is in force. As the entire history of the nuclear energy industry has demonstrated, the financial assurances are never right; it always costs more. The mechanisms provided are not adequate assurance to the public that would be adversely affected that their interests will be protected in any way. The use of 100 mrem/yr. to the person receiving maximum exposure (itself subject to a five-fold increase) from an operating facility today under Part 20 is indefensible. To permit doses equal to or greater than 100 mrem/yr to future persons just because a licensee doesn't choose to pay the cost of complete decontamination today is unconscionable, as well as arbitrary and capricious.

Recommendation: The NRC must require all licensees to decontaminate sites, facilities, and any offsite contaminated areas fully and completely to return to pre-existing naturally-occurring background radiation levels. Delete this section and do not allow license termination until and unless this goal has been wholly met.

20.1406 Notification and Public Participation

Comment 19. 20.1406 (a) It should not be discretionary for the Commission to "deem" notice to be in the public interest.

Recommendation: Change "or" in line 3 to "and."

Comment 20. 20.1406 (b) As described in comments above, the SSAB is not an acceptable mechanism for public participation; it is by definition a creature of the licensee. See Comment 6 and Recommendation above.

Recommendation: No licensee should be permitted to propose not to meet conditions for unrestricted release. Any advisory group must be fully independent of the licensee and responsible only to the public.

20.1407 Site Specific Advisory Board

Comment 21 and Recommendation: Delete this entire section. Start over. See Comments 6 and 20.

20.1408 Minimization of Contamination

Comment 22. 20.1408 (a): This provision is directed toward applicants for licenses for new reactors. There should be none.

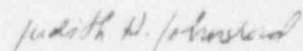
Recommendation: Delete this section.

Comment 23. 20.1408 (b) and (c): We can support this provision, but only if "minimize generation or [sic; "of"?] waste" does not mean use of incineration, treatment that transfers waste responsibility, deregulation, recycle, or any other method that adds to the burden of background radiation. Our State Advisory Committee finds, for example, that one utility's boast of waste minimization was based on having sent c. 95% of their dry active wastes to the SEG incinerator. We now find radioactively contaminated sewage sludge in landfills. NRC pursues BRC through other regulatory mechanisms. The principal goal of this entire regulatory process must be to prevent release of radioactivity into the biosystem from any source. Source reduction in the form of curtailment and cessation of waste generation should be the mandatory goal of NRC.

Final Summary Comment: Many public-spirited environmentalists and others gave generously of their time, money (many taking days off without pay from their jobs), their expertise and energies to participate in good faith in NRC's ERORR workshops. This document produced by the Commission is insulting to them and to the public. It is an added demonstration that the Nuclear Regulatory Commission is untrustworthy. We are deeply, bitterly disappointed in the NRC Staff and the Commissioners for having developed these unacceptable criteria for decommissioning.

It is evident that the Nuclear Regulatory Commission should be totally reorganized by an Executive Order of the President with a complete change of mission and all personnel, or should be legislatively abolished altogether as part of major amending of the Atomic Energy Act and this nation's Nuclear Energy Policy. This will be our recommendation to the President and the Congress -- unless, of course, the Commission chooses to heed the recommendations of members of the public, rather than the industry it's supposed to regulate, in revising these criteria to decommission and decontaminate nuclear facilities, sites, and any contaminated surrounding areas.

Sincerely,



Judith H. Johnsonrud, Ph.D.
Director