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Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

OFFICE OF SECRETARY
DOCKETING
BRANCH

ATTN: Docketing and Service Branch

RE: Draft Radiological Criteria for Decommissioning

Thank you for this opportunity to comment on the NRC staff draft of the proposed amendment to 10 CFR Part 20 to provide specific radiological criteria for the decommissioning of soils and structures. The NRC should be commended on the enhanced participatory process for developing these criteria, including this opportunity for early public review and comment. The staff draft proposal has many positive features, but also some potentially serious flaws. The conceptual approach appears to be reasonable and potentially flexible, but the cost-benefit analyses used to select the numerical values for the dose limit and ALARA goal appear to be based on some questionable assumptions, which may limit this flexibility in practice.

- The approach of establishing both a dose limit and a goal of reducing radiation exposures as low as reasonably achievable (ALARA) can promote protectiveness in a cost-effective manner. However, the specification of a numerical criterion for the ALARA goal appears incompatible with objective site-specific ALARA determinations: perhaps a better approach might be to specify a "floor" for the ALARA analysis rather than a goal.
- The requirement for enhanced public participation in the application of the ALARA process is also very positive. There is an explicit requirement that the ALARA analysis must consider "all significant risks to humans and the environment resulting from the decommissioning process (including transportation and disposal of radioactive wastes generated in the process)". This requirement for minimizing total risk is of critical importance, but appears to be in conflict with the stated goal of returning each site to background conditions; the rule should clearly state that the minimization of total risk must take precedence over the goal of returning each site to background radiation levels.
- The approach correctly recognizes that decommissioning every facility to unrestricted release criteria is impractical, and formally modifies the definition of decommissioning to include restricted release situations. The specification of explicit criteria for evaluating restricted release decisions to ensure protectiveness, and the heavy emphasis on public participation through a Site Specific Advisory Board (SSAB) are also positive features. The rule, or associated guidance, should further specify that only plausible future use scenarios should be considered in evaluating compliance with the unrestricted release criteria, again utilizing appropriate public participation.

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- The approach includes important provisions for site-specific considerations for special environmental, socioeconomic, or cultural factors (e.g., sensitive ecosystems, religiously or culturally significant lands impacted by a decommissioning action), which might alter the generic cost-benefit analysis. The approach correctly emphasizes public participation in such decisions through a SSAB. Again, these provisions may conflict with the general goal of returning the site to background radiation levels, and the precedence of such special considerations over the generic goal should be clearly stated.
- The goal of restoring sites to background radiation levels is noble in appearance but impractical in implementation and without strong technical basis. A cynical observer might conclude that this alternative was selected to engender easy public acceptance, despite its apparent conflict with the cost-effectiveness considerations of ALARA - in particular, this goal may be incompatible with the requirement for the ALARA analysis to consider risks associated with implementation of the decommissioning actions as well as risks from exposure to residual contamination. While the provisions in the staff draft noted above for site-specific selection of higher decommissioning criteria based on restricted land use, implementation risks, and special environmental, socioeconomic and cultural considerations are very positive, experience would indicate that it may be very difficult to gain approval for such site-specific criteria, and the stated goal of returning the site to background conditions would serve as an excessively powerful downward ratchet, which may overshadow more legitimate ALARA considerations.
- The proposed dose limit of 15 mrem/y is consistent with the recent revisions to 40 CFR 191 and similar to the limit of 25 mrem/y previously promulgated in multiple regulations (e.g., 10 CFR 61, 40 CFR 190 & 192, etc.) for a single exposure source. In fact, consistency with these existing standards, and with the upper end of the EPA Superfund risk range, is stated to be one of the key factors in NRC's selection of the proposed dose limit. Whereas the primary dose limit to the public of 100 mrem/y from all sources and pathways has been accepted throughout the regulatory community as a consensus standard, the continuing lack of consensus regarding the appropriate dose limit for a single exposure source is very troubling. The promulgation of different dose limits in various regulations may indicate to the public that these limits have greater significance and precision than is actually the case - in fact, compliance determinations are typically conducted using prospective mathematical modeling methods which cannot distinguish between 25 mrem/y and 15 mrem/y in any meaningful way. NRC and the overall regulatory community need to "get their act together" and settle on the appropriate limit.
- The goal for decommissioning a site is to reduce the concentration of each radionuclide to a level which is "indistinguishable from background"; this goal would be considered to be met if the cumulative total effective dose equivalent (TEDE) to the average member of the critical population group does not exceed 3 mrem/y. This value was selected because "variations of this magnitude are barely distinguishable from the dose from background radiation", and it is "well within the variability of natural background radiation across the U.S. and also within those variations experiences seasonally at particular sites." Selection of the 3 mrem/y criterion was also based on cost-benefit studies in the GEIS which indicate that "the general trend for typical NRC licensed

facilities is for remediation costs to rise rapidly when attempting to reduce doses from residual radioactivity in the vicinity of 3 mrem/y. However, ... there is not a commensurate reduction in risk." These GEIS analyses appear highly questionable for the following reasons:

- The conclusion that there is no significant increase in worker and transportation-related risks and in decontamination/transportation/disposal costs as a function of decreasing criterion appears to be inconsistent with previous experience in remediating radiologically contaminated sites. This finding is valid only if there is no significant increase in waste volume resulting from the decreasing residual criteria, which would seldom be the case. Overall, the results of this cost analysis do not appear plausible for many types of facilities.
- It appears that the NRC estimates of waste volume assume that soil is contaminated to a very shallow depth only, regardless of the residual criteria used. Thus the lack of correlation between residual criteria and waste volumes/decommissioning costs appears to be an artifact of this assumption, at least for facilities which have significant areas of soil contamination. This assumption is inconsistent with experience and available site characterization data at many sites. Clearly, the assumptions used in the cost-benefit analysis require much greater scrutiny.

In summary, the "Draft Radiological Criteria for Decommissioning" contains many positive elements and appears to provide a good conceptual approach. In particular, the provisions for consideration of restricted land use, enhanced public participation, and consideration of worker as well as public risks are very important. Weaknesses in the staff draft proposal relate primarily to the inadequate technical basis for establishing the numerical criteria, and potential problems in the implementation of several important provisions. The derivation of the specific numerical criteria appears to be based on several questionable assumptions - e.g., the estimates of both cost and worker/transportation risks used in the NRC analyses for the proposed criteria appear to be much too low for many types of contaminated sites. The unavailability of the GEIS and other supporting analyses precludes more detailed analysis of the assumptions and analyses underlying the draft criteria, but there are clearly some "red flags" requiring additional scrutiny. Also, a stronger emphasis on optimization of the overall benefit of any decommissioning action (i.e., total risk reduction) in the most cost-effective manner, and reduced focus on achieving a generic dose goal, is recommended.

Thank you again for this opportunity to comment on this very important activity.

Sincerely yours,

Donald E. Dunning

March 11, 1994

Note to: Emile Julian
Chief, Docketing and Services Branch

From: Chris Daily
RES, DRA, RPHEB

Subject: Docketing of Comments on the Staff Draft Rule

Enclosed for docketing is a comment letter related to the NRC Staff's draft rule on Radiological Criteria for Decommissioning. This letter was received on our electronic bulletin board on 3/11/94 at 15:11 pm. The user logged on at time of receipt of the comment was Donald E. Dunning, 11536 Gates Mill Drive, Knoxville, TN 37922, 615-576-5730. Please send a copy of the docketed comment to Jim Malare (mail stop NLS-139) for his records.

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