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Comments on Draft Radiological Criteria for Decommissioning of the Nuclear Regulatory Commission, 10 CFR Part 20, dated January 26, 1994

Arjun Makhijani, Ph.D. and Bret Leslie, Ph.D.

The Nuclear Regulatory Commission (NRC) has developed draft standards for decommissioning based on its evaluation of comments received during its enhanced participatory procedures it developed for drafting this rule. The NRC and the Environmental Protection Agency (EPA) had announced during these participatory meetings that they are coordinating their respective efforts on clean-up and decommissioning standards.

We applaud the NRC and the EPA for being determined to collaborate in this way on this vital issue of importance to public health and environmental protection. We also feel that the NRC's initiative of sending out a draft to the participants for comments on the larger issues of principle, prior to publishing the rule in the Federal Register, was in keeping with the spirit of participation of the process that has so far been conducted.

The following are our comments on the proposed draft rule. As requested, we are keeping our comments to larger issues at this time and will make more detailed comments at later stages of the rule-making.

1. Average Versus Maximum Exposure

The draft NRC rule proposes 15 millirem per year to the average member of the critically exposed group. This could allow individual members of that group to get far higher exposures. The NRC does not even incorporate, so far as we can see, a limit of 100 millirem per year to the maximally exposed individual in 10 CFR Part 20. Further, the NRC does not limit the size of this critical group. Indeed, there would be not practical way to so in many or most situations.

There was an unfortunate lack of consideration on the part of the NRC of the rule on clean-up that the EPA is preparing. The NRC suggests a dose limit for releasing a site for unrestricted use of 15 millirem per year. This standard would apply to the average member of the critical group.

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EPA's limit is based on 30 years of exposure to the maximally exposed individual.¹ The EPA limit is a much better starting point than the NRC suggested limit of 15 millirem per year to the average member of the critically exposed group. It must be borne in mind that the context of these clean-up regulations is that there will be residual radioactivity for exceedingly long periods at many sites, making actual doses, land use and water use practically impossible to predict. Further, the contamination was created without an effective democratic process, so that the people being exposed and harmed did not give their consent to the exposure, and in many or most cases did not derive any direct benefits from the polluting activities.

The failure of the NRC to even cite the ongoing EPA work is a shocking lapse in coordination that the NRC should remedy. It should use the EPA concept of the maximally exposed individual, a risk-based limit, and an explicit dose conversion factor as the starting point for its draft rule.

We believe that the standard should be based on limiting risk to the maximally exposed individual and not to an average exposure to members of some population group. We are reserving judgment on the 15 millirem per year proposed limit for unrestricted use at this time. It may well be possible to do better than this.

As will be evident from what follows, we believe that any residual risk to the communities today and to generations far into the future must be accompanied by safeguards that neither the NRC draft regulation nor the EPA has incorporated.

2. Keeping Exposures as Low As Reasonably Achievable - The ALARA Goal

The qualitative aspects of NRC's first ALARA goal are good. We agree that it is good to have as a goal that residual radioactivity should be indistinguishable from background, if by this the NRC means that there should be essentially no residual radioactivity, so far as can be determined by prevailing reasonable means of measurement and sampling protocols.

The principle of setting an ALARA goal is a good one, because it allows for technological change and performance better than that specified in the standard. The proposed ALARA goal of 3 millirem exposure per year is below the implied EPA risk limit and is commendable in that regard, provided it is interpreted as a minimum and not an average goal.

However, the NRC needs to establish this ALARA goal more clearly. The variation in background radiation is itself highly variable from site to site. Some sites may have uniform background radiation, such as urban areas at sea level. Others, may have variation greater than 3 millirem per year. How does the NRC propose to deal with this variation? It may be possible to set more stringent goals in some areas. Will that be permitted? Where will the resources for this come from?

¹ The EPA uses a risk coefficient of $6 \cdot 10^{-7}$ cancer incidence per millirem exposure. The EPA accounted the risk for 30 years to the maximally exposed individual. Thus annual exposure can be calculated for the maximally exposed individual for a specified level of risk (e.g. for a risk of $1 \cdot 10^{-4}$ the annual dose would be 5.56 millirem).

3. Nonradioactive Hazardous Materials

Many sites and facilities are contaminated with non-radioactive hazardous materials. Decommissioning in such cases involves both radioactive and non-radioactive materials. Differing regulations, timetables, site characterization, treatment, and disposal options for these contaminants can mean far higher expense and far less satisfactory clean-up. Regulations for decommissioning should explicitly discuss how overall goals to minimize risk from both sources of contamination will be taken into account. Further coordination of the entire process through to license termination between the EPA and the NRC should be made an integral part of the decommissioning regulation.

4. Termination of License

The termination of a license merely because of model calculations indicating that doses would be below 15 millirem per year or some other limit would be inappropriate. What if someone finds out that the calculations were wrong? What if the model turns out to be an inaccurate predictor of dose? What if risk per unit of dose is shown to be higher than that we now assume?

We believe that whenever there is demonstrable residual contamination, then the community, including local governments, schools, citizens groups, and site specific advisory boards, have the right to be empowered enough to continually monitor and evaluate their situation. Two things are necessary for this to be accomplished.

First, all relevant documents should be made public before license termination. This should include all internal corporate documents relating to or potentially bearing on existing contamination, previous releases of radioactivity, dumping on and off site, and so on. If a licensee wants relief from future liability, then all information of what the licensee has done in the past must be put on the table as a precondition.

Second, a licensee should be required to provide to the community resources to:

- o evaluate past contamination and exposures;
- o perform continuing environmental monitoring;
- o disseminate information and documents about monitoring results, past exposures and contamination;
- o perform community education about the interpretation of monitoring results, documents, and analyses.

Creating such a fund should be essential part of the process of terminating the license. The size of the fund could depend on the size and character of the residual radioactive and non-radioactive hazardous contamination of land, remaining structures, surface waters, river beds, and groundwater, as well as the total amount of radioactivity and non-radioactive hazardous materials left in disposal areas on site. If there is off-site disposal, then a similar fund should be created in

the off-site disposal area. In no event should the licensee have any direct or indirect control of, or interest in, such a fund.

5. SDMP (Site Decommissioning Management Plan) Sites

The SDMP sites where there is an approved decommissioning plan should be re-evaluated according to the new regulations. Permitted doses under the Branch Technical Position are in some cases far higher not only than the proposed NRC limit of 15 millirem per year, but also higher than the 10 CFR Part 20 limit of 100 millirem per year. This is unacceptable. It is not proper to release licensees from all liability without carefully considering the inequitable situation that will arise as a result of the adoption of more stringent regulations. Moreover, if the NRC actually approves decommissioning plans based on the Branch Technical Position and related documents for the existing SDMP list, many of the most highly contaminated sites of its licensees will not have to follow the more stringent proposed rules.

The public participation processes for SDMP plans leave a great deal to be desired, to say the least. The proposed regulation should redress this situation far more substantively than is done in the draft rule.

The creation of a community fund along the lines discussed above is even more critical for SDMP sites. The NRC should also make its standards for accepting decommissioning plans far more stringent and make possible far more public participation in the review and approval of SDMP decommissioning plans.

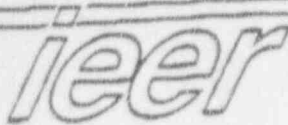
One approach to avoiding many of these problems for those SDMP sites for which plans are not yet approved is for the NRC to incorporate a 15 millirem per year maximum individual dose limit, with a 3 millirem per year ALARA goal, as an interim guide in evaluating all decommissioning plans prior to the promulgation of the new NRC rule.

6. Dose-Risk Relationship

The NRC does not state what would happen if the dose/risk relationship changes. It should carefully explore this subject, in relation to decommissioning processes going on, completed or not yet started at the time of the change.

7. Contingencies

The NRC proposes that if doses for unrestricted use upon decommissioning are calculated to be in the 15 to 100 millirem per year range then restrictions should bring these doses down below 15 millirem per year. However, the draft regulation does not state what would happen if the 100 millirem per year criterion for unrestricted use cannot be met. The NRC should specify that there will be no termination of license and that there will be financial penalties attached to a failure to meet standards. Further, in addition to the proposed fund for considering and enforcing restrictions, some penalties should be imposed by way of compensation to the community whenever there are restrictions on site use in an approved decommissioning plan.



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TOTAL # OF PAGES (including cover): 5

Dear Chip,

I very much appreciate your offer to hand carry these comments to the Secretary of the Commission. A copy has also been faxed to Don Cool.

With best wishes,

Arjun Makhijani