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TESTIMONY OF

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at

U.S. ENVIRONMENTAL PROTECTION AGENCY HEARINGS

on

PROPOSED NEW FEDERAL RADIATION PROTECTION

GUIDANCE FOR OCCUPATIONAL EXPOSURES

April 20, 1981

My name is Thomas B. Cochran. I am a Senior Staff Scientist at the Natural Resources Defense Council, on whose behalf I am testifying. I wish to begin my testimony on a positive note. I do this with some trepidation for in today's political climate endorsements by environmental groups are likely to impede positive regulatory reforms.

In most respects EPA's proposed Federal Radiation Protection Guidance for Occupational Exposure (46 Fed. Reg. 7836-44, Jan. 23, 1981) and the accompanying Background Report (EPA 520/4-81-003, Jan. 16, 1981) are laudable contributions in a continuing effort to improve occupational safety and public health. The most important contributions by EPA are:

1. A reduction in the maximum permissible lifetime occupational dose to an individual from 235 rem to 100 rem (Recommendation 4.f.).

2. A reduction in the maximum permissible annual occupational dose from 12 rem to 5 rem (Recommendation 3).

3. A rejection by EPA of the proposal by ICRP and others to increase radioactivity intake factors currently in use (Recommendation 5).

With regard to this last proposal, I am aware that there are some who would like to see EPA water down or even eliminate this proposed recommendation, thereby allowing agencies to <u>increase</u> worker exposures in some circumstances. To do so would be in violation of the ALARA principle,* a fundamental tenet

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* To reduce risks to levels that are As Low As Reasonably Achievable (Background Report, p. 80).

of radiation protection and would be interpreted by the public as evidence that Federal regulators are willing to sacrifice worker protection to benefit the nuclear industries. It is worth noting that the nuclear industries have demonstrated that they can operate quite satisfactorily under the existing standards. They do not need to be relaxed.

Without wishing to detract from the positive contributions, I now turn to three aspects of the EPA's proposed guidance, the accompanying report, and procedure that are indefensible.

1. The process by which EPA is proposing to recommend to the President a change in the Federal Radiation Protection Guidance for Occupational Exposures is unlawful.

While EPA notes in passing (46 Fed. Reg. 7843) that NRDC petitioned both NRC and EPA in 1975 to revise occupational dose standards, the Notice of Hearings does not mention the issues raised by NRDC nor does it treat the evidence which we submitted. The Federal Register Notice is clearly inadequate to alert the interested public to the substance of NRDC's position or to stimulate public comment on the concerns which formed the basis of our petition. Most unfortunately, the Federal Register Notice makes no mention whatever of NRDC's Request for Reconsideration of November 4, 1977, and of EPA's action granting that request on the basis of the new information we presented.

Briefly, NRDC submitted the Mancuso, Stewart, and Kneale work indicating that exposure to low levels of radiation may induce somatic effects greater than those which would be predicted from linear extrapolation of health effects at higher exposure levels, as for example in the BEIR Reports I and III. In addition, we asked EPA to consider

the work of Bross and Natarajan suggesting the existence of a subgroup of persons with greatly increased susceptibility to radiation-induced leukemia. NRDC believes that these studies must be explicitly considered by EPA and that they strongly indicate the need for greater reductions than those currently proposed.

If EPA wishes to use this proceeding to resolve the NRDC petition -- and we strongly urge you to do so -- we believe that the Agency must supplement this Notice to explicitly address the issues raised by NRDC and to invite comment on them.

2. EPA has failed to follow its own admonition to other agencies (in its Recommendation 5b) that agencies should not relax existing regulatory standards.

EPA has failed its own test by increasing the maximum permissible dose for organs other than the bone, skin, and thyroid from 15 rem/year to 30 rem/year (Recommendation 3B). Again, by relaxing these organ dose limits, EPA is inviting public criticism that it is acting in the nuclear industries' interest rather than protecting worker health.

3. The maximum permissible lifetime dose recommended by EPA is still unnecessarily high and does not provide adequately for the protection of workers and the public.

EPA calls for 100 rem maximum permissible lifetime dose to an individual. While this represents a reduction from the 5(N-18) rem/year standard by a factor of about 2.35, this is neither the best approach for lowering the lifetime dose limit, nor is the new proposed limit (100 rem) sufficiently low.

The EPA has used several "tricks" that tend to minimize the risk of radiation exposure when comparing the radiation exposure risks against other occupational hazards. These are:

a. In all comparisons, EPA fails to combine the genetic and somatic risks, rather only compares somatic risks with risk of accidental death (or reduced life expectancy) by other industries (cf., Figure 11, p. 96, and Figure 12, p. 98).

b. In some comparisons, EPA averages in unexposed workers to make the mean worker exposure appear lower (cf., Figure 11, p. 6).

c. In all comparisons, EPA fails to combine the radiation risks with non-radiation risks to the radiation workers before comparing the risks to radiation workers with risks to other occupational groups.

d. Finally, EPA does not include the uranium miners among the radiation workers. Although EPA states that the standards for protecting uranium miners will be considered in a separate proceeding, as surely as I stand here these will be pegged to the occupational exposure standard (5 rem/year).

Taking these factors into consideration, it is more appropriate to set the standard for maximum permissible somatic risk against the average risk for all industries (Figure 12) rather than the average for mining and quarrying, construction, and agriculture, the three highest risk industries listed by EPA. In this regard, in NRDC's petitions to the EPA and NRC, we call for a reduction in the genetic risk by a factor of 10

and a reduction in the somatic risk by a factor of 6.

It is perhaps worth noting that even the ICRP considers 5 rem/year to be a lower boundary of a region that is totally unacceptable. Statement by Bo Lindell, Chairman, ICRP, at NCRP Annual Meeting, April 8, 1981. A reduction only by a factor of 2.35 from a totally unacceptable level is not good enough, if only because we can do much better at no significant cost penalty.

EPA claims that in order to achieve "a significant lowering of potential lifetime risk [below that associated with 100 rem] . . . it appears that some beneficial activities would be prohibited, that a significant increase in collective dose would occur, or that unreasonable costs would be incurred in certain subcategories of the work force" (Background Report, EPA 520/4-81-003, p. 89). This is not true. To my knowledge, none of the studies examined by EPA consider the option recommended by NRDC in its 1975 petitions to EPA and NRC, that is to reduce the genetic and somatic risks, not by uniformly reducing the maximum permissible dose to all workers (below 5 rem/year), but by establishing a simple age-specific formula that would limit the exposure of younger workers -- those in the genetically significant age group -- to a level lower than that for older workers.

This approach is not new. All radiation protection bodies incorporate the concept of age-specific dose limits by giving special treatment to individuals less than 18 years of age. Furthermore, both the ICRP and NCRP and now EPA have recommended that special treatment be given to pregnant and fertile females.

The EPA proposal currently establishes 18 years as the minimum age allowed for exposures in Range B (0.1 - 0.3 RPG) and (0.3 - 1.0 RPG) under Recommendation 4, the Minimum Radiation Protection Requirements, although this age limit is actually established by Recommendation 7. It is obvious that this minimum age limit for exposures ranges B and C could be increased without eliminating useful activities, increasing the collective does, or incurring unreasonable costs. The only question is what cutoff age(s) is(are) optimal.

From Figure 13 (Background Report, p. 101), and to the extent that the relative and absolute risk models accurately portray age-specific risks, one sees that a more equitable distribution of somatic risk is to reduce the permissible dose to younger workers relative to older workers. From Figure 2 and the discussion on the following page (Background Report, pp. 21-22), one can infer that there are ample older workers to perform the small percentage of tasks associated with higher exposures.

NRDC in its petitions to EPA and NRC did not specify the cutoff age; however, we examined the risk reduction associated with limiting workers under 45 years of age to 0.5 rem, while allowing older workers to receive on average 1.5 rem/year. These limits reduce the genetic risk by 10 and the somatic risk by 6 using BEIR I data and the linear relative risk model.

Increasing the age limit, where annual exposure doses are permitted to be greater than 0.5 rem, from 18 years to 25, 30, 35, 40, or 45 years, will surely reduce individual genetic risks

and probably reduce individual somatic risks (cf., Figure 13). At a minimum, it is incumbent upon the EPA to select the highest value for this cutoff that will not result in an increase in the collective dose or substantially reduce the societal net benefits associated with the activities involved.

In closing, we should be reminded that the EPA recognizes ALARA as a fundamental tenet of radiation protection. The EPA, however, in setting forth its own recommendations, and in its failure to even consider the NRDC proposal, has failed to follow this ALARA admonition.