



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON NUCLEAR WASTE  
WASHINGTON, D. C. 20555

December 30, 1988

The Honorable Lando W. Zech, Jr.  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: COMMENTS ON ADVANCE NOTICE OF THE DEVELOPMENT OF A COMMISSION POLICY ON EXEMPTIONS FROM REGULATORY CONTROL FOR PRACTICES WHOSE PUBLIC HEALTH AND SAFETY IMPACTS ARE BELOW REGULATORY CONCERN

During the fifth meeting of the Advisory Committee on Nuclear Waste, December 21, 1988, we discussed the "Advance Notice of the Development of a Commission Policy on Exemptions From Regulatory Control for Practices Whose Public Health and Safety Impacts Are Below Regulatory Concern." This subject was also discussed with you and your fellow Commissioners during our meeting with you on October 27, 1988. We had previously submitted several written reports on this matter to you.

The purpose of this report is to provide you with our responses to the several questions on which the proposed Policy Statement requested comments and to offer our comments on selected positions and/or premises outlined in the Policy Statement.

1. Justification of Practices

In establishing its exemption policy, should the Commission exclude certain practices for which there appears to be no reasonable justification? In considering proposals for exemptions, should the Commission evaluate the social acceptability of practices?

Response

The ACNW believes that practices for which there appears to be no reasonable justification, particularly those that are considered to be of a "frivolous" nature, should be excluded from exemption. We concur with the staff in the examples that they cited for this category. At the same time, however, we would urge that the Commission recognize that what may be considered to be unjustified by one group may not be similarly regarded by others. We continue to believe that the Commission should exercise considerable care in reaching judgments on this matter.

2. Dose Limits and Criteria

The Commission specifically seeks comment on the need for establishing a collective dose limit in addition to an individual dose

criterion. If such a collective dose criterion is needed, what is the basis for this need? If the Commission decides that a collective dose criterion is needed, what approaches allowing truncation of individual dose in calculation of collective dose or weighting factors for components of collective dose would be appropriate? What alternatives should be considered for assessing societal impact?

### Response

#### a. Collective Dose Criterion

We continue to believe that a collective dose exemption level (or criterion) is necessary, but we also recognize that some flexibility should be allowed in setting that criterion. It is important to recall that annual doses to individual members of the public arising from an exempted practice will be estimated by use of models and assumed scenarios. These models will not be, and probably cannot be, validated. As a result, dose estimates derived through the application of such models will contain potentially important uncertainties. Further, exemption from controls also increases the range of possible exposure scenarios that can take place. This will add to the uncertain nature of the calculations. Although we are aware that estimates of collective population doses and determination of compliance are plagued by the same kinds of uncertainties, the additional constraints imposed by collective dose exemption levels should provide some further assurance of the continued acceptability of a practice that has been exempted.

We believe that the magnitude of the collective dose criterion should depend on the associated dose rate to individual members of the public. As one possible approach, the Commission might consider that, for sources, practices, and/or devices that result in a dose rate as high as 10 mrem per year to individual members of the public, the collective dose criterion should be no greater than several hundred person-rem per year. For activities that result in dose rates well below 1 mrem per year, a collective dose criterion of several thousand person-rem per year might be considered.

#### b. Truncation of Collective Dose

Although a number of groups (such as the National Council on Radiation Protection and Measurements) have proposed individual dose rates (for example, 1 mrem per year or less) at which collective dose calculations should be truncated, we believe that such an approach would be strongly opposed by many groups within the public. We recommend that those responsible for calculating the impacts associated with a given practice being considered for exemption be required not only to provide an estimate of the total collective dose but also to provide data on the number of people within each

dose rate range. Following this practice, all interested parties would be provided with detailed information on the contribution to the total collective dose by population groups in all dose rate ranges, including those in the extremely low ranges, and the Commission could take this information into consideration in deciding whether to exempt the practice. We believe the collective dose exemption approach suggested above will be helpful in making such judgments.

c. Alternatives for Assessing Societal Impacts

The Committee is not able to comment on the issues surrounding the social acceptability of a practice under consideration for exemption. We urge the Commission to proceed into this area with caution owing to the extensive and potentially unproductive polemics that could easily be generated.

3. Role of the As Low As Reasonably Achievable (ALARA) Criterion

In the Advance Notice of the Commission Policy, the NRC staff stated that, "If the dose is less than the below regulatory concern criteria, then the risk from a practice would be considered to be ALARA without further analysis."

Response

We believe that this statement is confusing and that it does not represent the approach that the NRC staff has indicated that it intends to follow.

In all cases, the staff has indicated that no practice would be exempted without a careful review of all details of its proposed application, that all practices will have to be justified, and that the proposed licensee will have to demonstrate that the given practice incorporates good radiation protection principles. For those practices that are exempted, there will be periodic, subsequent reviews to assure that they are properly implemented and that they do not result in dose rates to individual members of the public in excess of what was predicted.

Rather than characterize the exempted practice in terms of the ALARA criterion, we believe it would be better simply to say that the practice satisfies NRC radiation protection criteria, and its impacts have been found to be so small that the Commission has deemed it acceptable for the practice to be used or for the device or source to be released to the general public.

4. Designation of Exemption Levels

In discussions on this aspect of the Policy Statement, questions have been raised on several occasions on the individual dose rates

that would be considered to be acceptable for exempted practices, sources, and devices. Although the Commission did not explicitly request comments on this matter, the Committee desires to offer the following remarks.

### Response

First, it is important to note that there are practices, sources, and/or devices that result in exposure to the public for which exemptions have already been granted. These include consumer products, such as luminous dial watches exempted by the U.S. Nuclear Regulatory Commission, as well as items such as television sets that have been exempted by the U.S. Department of Health and Human Services. In addition, exposures resulting from the transportation of radioactive materials have been exempted through regulations of the U.S. Department of Transportation. In fact, according to studies of the National Council on Radiation Protection and Measurements (NCRP Report No. 95, December 1987), the average dose rate to individual members of the U.S. public arising from the use of consumer products (involving both radioactive materials and radiation generating machines) is currently at a level of 10 mrem per year. In short, this is not a new field.

Second, although the Policy Statement implies that some practices that could result in dose rates of as much as 100 mrem per year might be considered for exemption, we believe it is important to note that 100 mrem per year is the long-term dose limit for members of the public as recommended by the National Council on Radiation Protection and Measurements and the International Commission on Radiological Protection. It is also the limit recommended for members of the public in the revision being proposed by the NRC to Title 10, Part 20, of the Code of Federal Regulations, "Standards for Protection Against Radiation." A dose rate for individual members of the public approaching 100 mrem per year should not be viewed as an exemption level; rather, sources and practices that have the potential for causing dose rates in this range would have to be regulated. We foresee no conditions under which such sources, practices, or devices can be considered for exemption.

In terms of the exemption of practices, sources, and/or devices, it is our opinion that the limiting dose rate for individual members of the public as a result of exposures from all such exemptions should not exceed a value in the range of a few tens of mrem per year. Following this approach, and assuming that each person has the potentiality of being exposed to more than one such practice or source, then the exemption level per practice should be in the range of, at most, 1 to 10 mrem per year. We note that, in developing an exemption policy, the Commission is deciding how much of the 100 mrem per year dose limit for members of the public should be allocated to exempted practices, sources, and/or devices.

Since other government agencies have similar responsibilities, all such efforts should be well coordinated, and the total dose rate from all exempted practices must be well below (only a small fraction of) the dose limit.

5. Exposures to Multiple Practices

The Commission seeks comment on whether individuals may experience radiation exposure approaching the limiting values through the cumulative effects of more than one practice, even though the exposures from each practice are only small fractions of the limit.

Response

The recommended dose rate exemption level of a few mrem per year for individual members of the public (arising from a single source, practice, and/or device) should provide reasonable protection against the inadvertent accumulation of annual doses in excess of the exemption level for individuals due to exposures to several exempted practices. Nevertheless, the Commission will need, in the long run, to guard against concentrations of exempted practices in localities and should include in its rules provisions that allow it to use judgment in this matter.

6. General Comments

In addition to the comments above, the ACNW offers the following general comments.

One requirement that the Commission should consider for inclusion in the exemption regulations is that for a source, practice, and/or device to be eligible for consideration, it must be "inherently" safe. That is to say, no accident scenario can be reasonably postulated that would result in doses to individual members of the public greater than a few mrem.

The Commission should also emphasize that, even after the application of a practice has been justified and approval has been granted for its application and/or use, the situation will be reviewed periodically to ensure that the original conditions are being met and that the given practice, source, and/or device is still acceptable for exemption. This is currently a part of the Policy Statement. It should be emphasized.

Equally important to the development of an exemption policy is the establishment of accepted exposure pathway scenarios, both for routine use of and accidents involving the practices, sources, and/or devices under consideration. This will require the development of environmental transport models and the derivation of secondary or derived guides (for example, concentration limits for specific radionuclides in low-level radioactive wastes that should be considered eligible for exemption), as

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well as the development of laboratory and/or field procedures for making the measurements necessary to confirm that the given practice, source, and/or device complies with the exemption levels.

Finally, we believe that at this stage in the process one of the most important goals should be to develop a policy primarily designed for application on a case-by-case basis. It is also clear that procedural flexibility should be explicitly maintained. A Policy Statement incorporating both of these attributes can then guide the practices and, as experience is gained, both can be modified, if necessary, to lead to a more workable approach.

We hope these comments will be helpful.

Sincerely,



Dade W. Moeller  
Chairman

Reference:

"Advance Notice of the Development of a Commission Policy on Exemptions From Regulatory Control For Practices Whose Public Health and Safety Impacts are Below Regulatory Concern," presented at the NRC/NEA Workshop on Rules for Exemption from Regulatory Control on October 17-19, 1988.