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(57FR58727)

June 25, 1993

DOCKETED
USNRC

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Mr. Samuel J. Chilk, Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Docketing and Service Branch

Subject: Proposed Rulemaking to Establish Radiological Criteria For Decommissioning, Issues for Discussion at Workshops

Dear Mr. Chilk:

Commonwealth Edison Company welcomes the opportunity to provide comments on the Proposed Rulemaking to Establish Radiological Criteria for Decommissioning and Decontamination (D/D) of NRC Licensed Facilities. In addition to supporting the comments by NUMARC, CECo is submitting for NRC consideration additional comments (see attachment) based on its extensive experience of operating twelve nuclear power plants.

CECo's general comments address the nature of the proposed Rule and the regulatory approach which is best suited to ensuring that public health and safety issues are considered within an overall framework of maximizing the net benefits to society. CECo's specific comments address the technically complex issue of setting appropriate dose limits in addition to other regulatory issues discussed both in the NRC Issues paper and the public workshops.

Commonwealth Edison's interest in and concern about the D/D criteria are demonstrated by its participation in the Public Workshop held in Chicago on January 27-28, 1993 and attendance at the National Workshop held in Washington D.C. on May 6-7, 1993. These experiences lead us to believe that the enhanced rulemaking process was successful in providing an open public forum wherein the important issues of this proposed rulemaking could be discussed. Because the discussion needs to continue to resolution, we intend to continue to participate actively as indicated by our submittal of these comments.

Sincerely,

William F. Naughton

William F. Naughton, Director
Strategic Licensing
Policies & Issues

Attachment

DS10

ATTACHMENT

Commonwealth Edison Company provides the following comments on the Proposed Rulemaking to Establish Radiological Criteria for Decommissioning, issues for Discussion at Workshops.

GENERAL COMMENTS

1. Need for Rulemaking

There is a clear need for the NRC to promulgate regulations that provide licensees with the radiological criteria for D/D and termination of their license. Currently, radiological cleanup standards for D/D are handled on a case-by-case basis. Such a case-by-case approach does not provide the regulatory certainty and stability which are necessary for planning long term D/D efforts. At its worst, this approach can lead to different standards and inconsistencies in radiological impacts to which different populations may be exposed, as licensees are left to negotiate cleanup requirements with federal and state regulatory agencies. Public health and safety require a national standard for all licensees to assure that the basic approach to the regulation meets society's needs uniformly as discussed in the next comment below.

2. Basic Approach to Regulation

Regulatory requirements for D/D should be based on an accurate, technically sound evaluation of health risks, and acceptable standards should be established that will optimize public health and safety consistent with the cost-benefits established by the National Environmental Policy ACT (NEPA) and applied generally across regulatory activities by the federal government. Simply stated, cleanup and restoration activities should optimize doing more good than harm.

In developing any regulation designed to protect human health and safety, regulatory agencies have a clear responsibility to weigh the benefits of the regulation (risk avoidance) against all the costs of the regulation. Unnecessarily restrictive regulations impose a burden on society and the economy. Ultimately, all costs to implement the D/D Rule will be paid by all of us in the form of higher electric rates, more costly medical procedures, etc.

In addition to these direct economic costs, there are less easily identified indirect or hidden impacts which impose their own risks. For example, an overly restrictive D/D Rule designed to reduce the risks from residual contamination to exceedingly small values or to zero (implementing the "return to background" concept) may marginally afford more protection to a small critical group, but, on complete consideration of all impacts, may impose a greater (unreasonable) burden to society.

This concern is clearly illustrated by the following three examples:

(1) D/D costs will raise medical costs associated with patient treatment and research which utilize radioactive materials. Such cost increases were amply documented by the medical community and cancer patient participants in the recent California lawsuit involving a low-level waste disposal facility. The effect on public health and safety, from increased medical care cost or the elimination of some medical treatments, could far outweigh the benefits achieved through a regulation, which, because it is not risk based, results in unnecessary D/D costs.

(2) Future investment decisions, especially involving new technology vital to reviving American competitiveness, could be adversely impacted by the D/D Rule. Companies may not invest in the development of new business ventures in the U.S. if the use of radioactive materials results in unnecessarily high D/D costs which distort free market initiatives.

(3) Finally, with respect to the nuclear power industry, costs for D/D will be passed on to society via higher electric rates. The higher the costs, the less money that individuals will have to spend on other goods and services or to save/invest for their future. Similarly, the higher the costs, the more non-competitive American industry becomes. In addition to direct cost, unnecessarily restrictive D/D cleanup requirements will result in a transfer of risk. Specifically, the radiological risk avoided by a small group must be evaluated against the following risks to which other significant elements of society will be exposed:

- additional radiation doses received by the cleanup

workers;

- increased number of predictable industrial accidents;

- increased transportation related accidents due to an increased number of material shipments.

These examples show how a complete analysis of the economic and concomitant impacts to society can significantly influence the analysis when developing the D/D Rule.

In summation, CECo believes that public health and safety will be optimized through the adoption of a technically justified risk based regulation which establishes dose limits that adequately protect the public and which incorporate the well established principle of keeping radiation doses as low as reasonably achievable (ALARA), taking into account socioeconomic and societal factors. This approach would simply continue the long history of radiation regulations that have successfully protected the public health and safety.

As applied in this proposed rulemaking, the ALARA principle would help to achieve these goals by serving to:

- balance societal factors along with costs and benefits, and thus result in cleanup activities that maximize societal benefits.

- minimize the total radiation dose to all reasonably foreseeable members of society including those exposed to occupational doses to clean up the site and all doses associated with waste transport/burial.

- minimize the need to remove and bury very low level contaminated dirt and materials at a licensed burial site, thereby increasing the availability of existing burial site capacity to safely dispose of radioactive wastes appropriate for disposal at such facilities.

3. Risk Based Limits

Radiation protection standards should provide for risk based limits which are consistent with the principal recommendations of the National Council on Radiation Protection and Measurements (NCRP) and the International

Commission on Radiological Protection (ICRP). A single dose limit should be established for members of the public in terms of the total effective dose equivalent (TEDE). Moreover, because the source of radiation dose not affect its impacts, it is appropriate to use the total individual risk concept. Accordingly, there would be no need to establish separate dose limits for individual pathways. All impacts would be considered by a comprehensive approach and would obviate the need for pathway specific standards.

4. "Taxonomy" of Licensee Requirements

The concept of classifying licensees under a "taxonomy" for the purpose of establishing graded requirements could result in inconsistent standards for protecting public health and safety. At several of the public workshops, some participants proposed a "taxonomy" of standards with the implied message that nuclear power plants (NPP's) should perform D/D to a higher standard. Nothing about radiation from nuclear power plants suggests that a more stringent standard would be necessary to achieve the same level of public protection.

However, a taxonomy of cleanup criteria might be appropriate if future uses could be predicted with enough certainty to conclude that actual doses to individuals at those sites would be limited as a result of those uses. For example, NPP's probably will be used as industrial sites and therefore, will not expose significant numbers of people to the low levels of potential exposures associated with these sites. In such cases a taxonomy of D/D criteria would appropriately recognize the unique circumstances associated with NPP's.

5. NRC "Educational" Role

The NRC's establishment of technically accurate protection criteria is also essential to obtaining a realistic public response to the radiation hazards which are incidental to the beneficial uses of radioactive materials for all of society. If the NRC sets unnecessarily stringent D/D criteria, the public will reasonably conclude that exposure to residual radiation is more dangerous than it actually is and can be expected to overreact to any potential for exposure. The paralyzing results of such public overreactions are only too clear regarding the so far futile attempts to develop new disposal capacity for high-level and

low-level radioactive wastes. Billions of dollars have already been wasted in disposal site searches which have been aborted by undue public alarm.

Such hysterical responses can be avoided for D/D activities if the NRC educates the public implicitly about the true nature of the risk by setting realistic D/D criteria and explaining the standard setting process in a way which makes it informative to even the non-technically trained layperson. Such an educational role is inherent in the NRC's standard setting authority as the principal agency of the federal government responsible for determining and ensuring adequate protection of the public health and safety. This rulemaking proceeding gives the NRC an opportunity to exercise this educational responsibility explicitly by adopting technically accurate D/D standards.

SPECIFIC COMMENTS ON NRC ISSUES PAPER

1. What objective(s) should serve as the basis for establishing radiological criteria for decommissioning?

Risk Limit

CECo endorses the 100 mrem (TEDE) per year limit to any member of the public as recommended by the NCRP and ICRP. Furthermore, we support the recommendations of the Health Physics Society on the establishment of a compliance screening level of 25 mrem (TEDE) per year as applied to the critical group. If the mean dose to the critical group is projected to exceed 25 mrem (TEDE), then the licensee should show the bases for compliance with the limit. (Note: Throughout our comments all dose values are stated in terms of the total effective dose equivalent, TEDE.)

We endorse the application of the ALARA principle to the total radiation dose to both the public and site cleanup workers.

We do not endorse the use of a separate constraint value as defined by the ICRP. Such a value has not been adopted by other professional societies and is not a well recognized principle. We believe the concept of a compliance screening level is more practical and will ensure that no member of the public will receive a dose in excess of the limit.

A dose (TEDE) limit with ALARA would follow the long history for adopting radiation regulations that have successfully protected the public health and safety. Specifically, this approach offers the following advantages:

- Ensures public safety while optimizing the benefits to society. Expenditures for D/D will be consistent with avoided radiological risks.

- Provides for a reasonable and practical regulation to implement, and promotes consistent enforcement across all licensed facilities.

- Adopts the 100 mrem per year limit which is risk based and consistent with consensus science. Both the NCRP and the ICRP recommendations were recently issued and reflect current radiation risk values.

- Achieves consistency with the levels of health protection recommended by the international scientific community.

Extensive industry experience shows that the ALARA principle has been and continues to be effective in keeping occupational and public doses well below <u>all</u> regulatory limits.

Specifically, NPP dose performance typically shows:

- Mean occupational doses less than 10% of Part 20 limits.

- Off-site public doses less than 1% of Part 20 limits, and less than 20% of Part 50 Appendix I goals.

Equally as important as consistency with other well recognized radiation limits, the 100 mrem per year limit with ALARA is reasonably consistent with the EPA limits for chemicals as discussed in specific comment #2, <u>EPA Risk Goal Values</u>, below.

<u>Risk Goal Objective</u>

CECo opposes the establishment of a risk goal objective for the following reasons:

- A risk goal approach would not allow for the proper

balancing of societal resources and costs of D/D vs societal benefits.

- The certainty of risk limits provides the public with a clearer basis for understanding how protection of public health is achieved.

- The limiting nature of risk goals makes it inherently more difficult to determine if compliance is achieved because there is always a question about how close to the goal one should get. Moreover, over time, a risk goal would be perceived by the public and local governments as a limit. Licensees would be pressured/compelled to expend a disproportionate amount of resources to achieve minimal reductions in radiological risks.

At the Chicago workshop, industry, state and local governments and environmental group representatives, all expressed a clear preference for a limit instead of a goal.

Best Effort and Return to Background

Both the "best effort" and "return to background" objectives are flawed in that they are not readily definable and do not allow for use of cost-benefit analysis to optimize public health and safety protection. CECo offers the following objections to these approaches:

- "Return to background" is appealingly simple but scientifically unsupportable. Implicit in this approach is the assumption that a site would have otherwise remained pristine over the period for which it was actually put to beneficial use. That standard of comparison is clearly inappropriate. Therefore, "return to background" really could require the achievement of a level of "cleanliness" that would never have been expected had this site been put to a non-radioactive use, be it an industrial plant or hospital. "Return to background," therefore, unfairly burdens activities which provided societal benefits through the use of radioactive materials.

- Neither approach provides clear, well defined requirements that permit licensees to demonstrate compliance. The case of "return to background" raises many questions: How to define, establish or measure background? Do we measure background by individual

radionuclide utilizing laboratory sample analyses or by direct readings with a micro-R meter or G-M meter? What sensitivity requirements (lower limits of detection, LLD) do we establish for each type of measurement? Is LLD based on best technology, practicality, or is it risk based or a combination thereof? Ultimately, whatever LLD is established, there is an implied, acceptable level of risk associated with the unmeasured radioactivity assumed to be left behind.

- The removal of building structures and land excavation is not driven by available technology. A "best effort" approach will ultimately collapse to the technology/capability to measure residual radioactivity balanced against the practicality to continue the excavation. Thus, "best effort" is simply an alternative expression of "return to background."

- Both approaches will result in "moving targets" on acceptable cleanup standards. Over time, technological advances allow us to detect smaller and smaller quantities of radioactivity. Without a risk based cleanup standard licensees will spend an increasing amount of society's resources on negligible risk avoidance.

- Both approaches will likely result in inconsistent standards being set both at the state and local community levels. Acceptable cleanup standards will end up being negotiated on a facility-by-facility basis as various governmental and political groups voice their concerns, objections and interpretations of the regulations. Standards will tend to be driven by the communities' perceived risk rather than by actual risk. This is exactly the situation that exists today and which the NRC and licensees desire to rectify.

In summation, because of the inherent problems described above, both approaches will result in 1) inefficient use of NRC and licensee resources, 2) inconsistent and non-uniform standards across all states and licenses, 3) licensees being unable to adequately plan for future decommissioning, and 4) extended delays in licensees decommissioning their facilities.

2. EPA Risk Goal Values

Significant discussion took place at the public workshops regarding the lifetime risk goals of 1 E-4 to 1 E-6 that the EPA uses for regulating chemical hazards. A 1 E-4 lifetime risk would translate into an annual exposure of 3 to 4 millirem continuous for 70 years or a lifetime dose of 210 to 280 millirem.

The appropriateness of a risk based goal is not supported based on specific comment #1 above. However, more important is that a risk based limit of 100 mrem per year with ALARA will provide a level of protection that is consistent with the EPA risk goals. The following points support this conclusion:

- In calculating a lifetime risk it is overly conservative to assume that members of the critical group will spend 70 years living at the decommissioned site. Given the mobile nature of society, a more reasonable yet conservative expectation is a mean residence time of 20 to 25 years. Under this scenario, the EPA Superfund risk goal would equate to about 10 millirem per year. (Ten mrem per year is the EPA goal set for radionuclides in NESHAPs.)

- If EPA's goals are to be applied consistently they must be applied using EPA's practice. A combination of EPA's goals with NRC practice would result in an internally inconsistent process. EPA's risk goals for chemicals are used with a practice which does not always sum the risks of all chemicals present. Thus, although any chemical may be at or below its goal value, the sum of the risks for all chemicals present might translate into multiple values of the risk based goal. By contrast, under NRC practice, isotopes are summed to provide an integrated limit risk. Allowing for the presence of several chemicals at one Superfund site could translate into a 20 to 30 mrem per year comparable radiation standard after applying the above time constraint.

- As stated in specific comment #1 above, industry use of ALARA will result in actual doses that are a small fraction of the limit.

- For the nuclear power industry the residual contaminants have relatively short halflives and radioactive decay will further reduce the lifetime dose to members of the public. For example, for Cobalt-60, the dose contribution in year 20, after the site is returned to unrestricted use, will be only about 7% of the dose in the first year. Thus, 50 mrem dose in year one would fall to 3.5 mrem dose in year 20. The 10 CFR Part 20 limit based standard provides sufficient flexibility to accommodate this example, whereas an unnecessarily restrictive risk based goal would not.

3. How Prescriptive Should Regulation Be

The regulation should codify the basic risk based dose limit of 100 mrem per year with a requirement that licensees establish an ALARA D/D plan. Regulatory Guides should be performance based and could provide the following guidance:

- Generic D/D site compliance values in terms of residual radioactivity concentrations and surface contamination levels. These values would be based on a generic pathway model and could correspond to the 25 mrem screening value. If these values were exceeded, the licensee could then use site specific models to demonstrate compliance.

- Acceptable methodology for site specific pathway models.

- Acceptable survey and sampling requirements to adequately measure residual contamination levels.

4. Sites Which Cannot Meet Unrestricted Use Criteria

The regulation should provide for alternatives to the unrestricted release of the site when the basic dose limits cannot be met (for practical/feasibility reasons) for the most limiting public-use scenarios - residential or agricultural. It may be likely that the dose limits could be met for other site usage scenarios such as industrial uses or public parks. For example, utilities might find it cost effective to reuse a nuclear site including some site facilities and equipment for alternate energy sources. Such reuse would benefit the local community and society by holding down energy prices.

Appropriate controls on site use after license termination would ensure public safety while maximizing public benefits. Specific controls such as zoning and deed restrictions could be in effect until such time that radioactive decay permits full unrestricted use of the site. In special cases, alternate controls might be necessary or preferred to provide assurance of site use restrictions. An example of an alternative control could be a simple Part 30 byproduct license which would remain in effect until the unrestricted release requirements are met.

5. Collective Dose

A separate limit or constraint on the projected collective dose to be received by members of the public from future uses of the decommissioned site would be inconsistent with the need to consider the total risk, including all of the risks associated with the activities to achieve that collective dose. Examples of the contributions to a true collective dose include the following:

- doses received by site cleanup workers.
- transportation related doses both to drivers and members of the public. (Even though individuals may separately receive very small doses due to transportation, their integrated doses might be significant in comparison to the long-term doses from residual radioactive material left on site.)
- doses received at the low level burial site.
- doses received by members of the public from unrestricted use of the decommissioned site.

Thus, a limit on the collective dose received by the last population group without assessing the dose impact on the first three groups violates the ALARA principle.

Also, any additional cleanup and waste transportation activities needed to meet a collective dose limit will result in the following:

- increases in non-radiological risks from industrial and transportation accidents.

- increases in costs and the social and economic impacts created as previously described.

Thus, the establishment of a separate collective dose limit for residual radioactive material left on site is not appropriate. Rather, collective dose needs to be treated in a more comprehensive way as a part of a D/D ALARA plan in which the above impacts can be assessed and the total risk minimized. Collective dose also will be considered in a comprehensive manner in the generic environmental impact statement (GEIS) which will accompany the D/D Rule.

In addition, we endorse the comments of both NUMARC and the Health Physics Society on collective dose for practical considerations, as well. Large uncertainties in demographics beyond tens of years turn calculated collective doses beyond 50 to 70 years into pure speculation. This is not an appropriate basis for setting standards to protect the public health. A technically supportable measure of societal risk in this case is provided by the mean dose to the critical group of individuals who live on or dominate use of the site.

We understand that the NRC is required under the National Environmental Policy Act (NEPA), 10 CFR Part 51, to consider all of the reasonably foreseeable consequences of a rule. To this end we offer the following recommendations for the rule:

- require a D/D ALARA plan which addresses collective dose in a comprehensive way, but do not set a limit.

- restrict the calculation of collective dose from radioactive material left on site to a realistic period based on the halflives of the radioisotopes which are expected to contribute significantly to any public dose, or to a maximum period of 70 years beyond which such calculations have very little meaning.

6. Consideritions on Reuse/Recycle of D/D Facilities

CECo agrees with NUMARC's comment that the residual radioactive material remaining on facilities, equipment or the land left on site for unrestricted use would be limited by the D/D criteria so as not to be significant enough to warrant any further restrictions on future uses of the site. As for any subsequent removal of those materials for

disposal or other uses, case-by-case review could be considered.

For example, off-site use of material in its form on-site would not cause any concern because it would be consistent with unrestricted use on-site. Off-site uses which could result in the concentration of radioactive materials present different concerns. Thus, a D/D plan could address which materials might be readily recycled versus those with a low probability of being recycled.

7. Previous On-Site Burials (Part 20.302s)

Approved on-site burials of low level radioactive material under 10 CFR Part 20.302 should be evaluated under the site cleanup criteria. No additional remedial actions should be required if the burial site meets the 100 mrem per year limit.

Previous on-site burial sites, which do not meet the 100 mrem per year limit, should be cleaned up to meet the standard, or the site should be treated as one that can not meet the criteria. In this case, additional controls such as industrial use restrictions via deed restrictions, or a part 30 license, would be necessary (See specific comment #4.)

8. Site Reopening

Regulatory finality is especially important to utilities and to businesses in general so that they can accurately assess the costs of cleanup and provide funds for the cleanup by properly pricing their product.

We understand the need to consider and take additional cleanup measures if new information in the future shows a serious public health threat. However, reopening sites for cleanup to obtain marginal reductions in risk at great expense is not warranted.

A good model for reopening criteria is provided by the NRC's backfit rule, 10 CFR 50.109. This approach in this rule has the added advantage of having been upheld in the courts as a reasonable way to apply regulatory discretion. Thus, reopening criteria which mimic the backfit rule would be consistent with the regulations already adopted to protect the public health and safety from radiation risks.

The backfit rule establishes a two-part test for a new requirement:

- it must result in a substantial increase in overall public health and safety; and

- its benefits must outweigh its costs.

Thus, under this rule a two-tier approach would be applied to site reopening, and a new requirement which would improve safety only marginally would not be adopted, even if its benefits outweighed its costs.