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**COMMENTS ON PROPOSED RULEMAKING TO SET REQUIREMENTS FOR THE
RELEASE OF SOLID MATERIALS**

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Dear Chairman Meserve et al.

OFFICE OF
REGULATORY
AFFAIRS

These comments are submitted as public comments for your consideration regarding the environmental and regulatory impact studies associated with rulemaking to set specific requirements for the release of solid materials, as mentioned in a Federal Register Document (FRD) dated June 30, 1999 (64 FR 35090) and related announcements.

REGULATORY FRAMEWORK FOR DETERMINING ACCEPTABLE RISK

Please evaluate all alternatives that are consistent with the levels of risk to the general public by which the U.S. EPA, under its legislative mandates, regulates exposure to chemical contamination and by which it evaluates regulatory alternatives. Please do not consider any exceptions for radioactive waste, materials, exposure, etc. in such analysis.

For Superfund Sites, the upper limit to lifetime cancer risk site allowed for the most exposed individual member of the general public (from contamination associated with human activity associated with a hazardous waste site) is ten to the minus fourth power. Exposures that could cause cancer risks above this level mandate remedial action under Superfund, including clean-up, containment, administrative controls, or evacuating an area as unfit for human habitation. This applies to all contaminant exposure associated with man made activities and routes of exposure combined.

At least a 70-year lifetime of continuous exposure should be used in such calculations for plausible maximum exposure because the release of radioactively contaminated solids could result in contaminated consumer goods:

- * That people could take with them over a lifetime, or
- * Be exposed to through successive consumer items in their vicinity over a lifetime

Of course, radioactive half-lives should be taken into account in such calculations.

PDR PR 20 64FR35090

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Given a 70 year exposure and the potency of radiation exposure assumed by EPA, DOE and NRC in its environmental studies, a ten to the minus fourth power cancer risk translates into 1 mrem/year exposure over a lifetime to the most exposed individual in the general public.

It also should be noted in the analysis that a ten to the minus fourth power cancer risk is an upper limit to risks from hazardous waste sites, and should not be characterized as an acceptable exposure.

For hazardous waste sites, Superfund rules require that remedial action alternatives be considered starting at alternatives that would limit cancer risks to no more than one in a million. Given a 70 year exposure and the potency of radiation exposure assumed by EPA, DOE and NRC in its environmental studies, a one in a million risk level translates into 0.01 mrem/yr exposure to the most exposed individual).

These aforementioned cancer risk levels come from the National Contingency Plan passed by the United States Congress and associated Superfund regulations and guidance documents (which did not exclude radiation exposure from chemical exposure).

The Clean Air Act of 1990 also mandates re-evaluation of regulatory limits for any category of air pollution sources for which existing regulations are unable to reduce cancer risks to the most exposed member of the general public to less than a one in a million level.

Thus, regulations that would limit cumulative lifetime exposure to the most exposed individual member of the general public to 0.01 mrem/yr need to be considered.

Under Superfund regulations, exceptions to the one in a million risk goal and ten to the minus fourth power risk ceiling may be allowed for specific substances when specifically applicable regulations for such substances allow them. However, the practice is encouraged is to nevertheless evaluate remedial alternatives capable of achieving risks between one in a million and one in ten thousand, as well as higher risk levels associated with compliance with such regulations.

Given that the proposed study is under NEPA and meant to help identify and evaluate a range of alternatives, the feasibility of alternatives consistent with the above range of risks, and even lower risks, should be considered, despite the fact that the releases are radioactive in nature.

It should also be noted that EPA guidance for the development of RCRA regulations mandate consideration of pollution control measures when cancer risks to which large numbers of people are exposed to one in ten million, which would translate into 0.001 mrem/yr.

Given that the unrestricted release of radioactively contaminated material could expose large numbers of people radiation, it is strongly urged that NRC consider regulations that would limit the maximum plausible exposure to any member of the general public to no more than 0.001 mrem/yr.

Any credibly computed exposures to members of the general public above these levels should trigger detailed, case by case, ALARA (as low as reasonably achievable) analysis of all alternative ways of handling this waste. The ALARA analysis should include isolation in secure vaults, disposal at landfills, and restricted use in settings that are unlikely to expose the general public.

For cumulative lifetime exposures between 0.001 mrem/yr and 1 mrem/yr to the most exposed member of the general public a variety of regulations and regulatory frameworks should be considered, and the environmental and human health impacts associated with these alternatives.

These risks need to be computed for all releases of solid materials from all radioactively contaminated sites covered by such regulations combined and all routes of human exposure combined. The calculations should consider all physical and biological pathways that could cause exposures to increase above those associated with direct exposure to the contaminated material (bioaccumulation, etc.).

In addition to the ranges of risks specified in hazardous waste regulations, the analysis should consider the risk based limits and guidance under other applicable and relevant and associated regulations, and associated alternatives.

Risks associated with exposure to radiation in air and groundwater from licensed nuclear facilities and their closure are not relevant and appropriate, since the most exposed individuals are in a limited geographical area (unlike the widespread exposure possible from releasing contaminated solid material into consumer products). Furthermore the protectiveness of such rules are highly controversial and debatable.

GENERAL ENVIRONMENTAL CONSIDERATIONS

It is extremely unlikely that anything like the huge anti-nuke movement would exist if nuclear facilities:

- * Were subject to the same environmental restrictions regarding risks and exposure as conventional sources associated with chemical exposure and
- * Had similar ranges of potential consequences from accidents

So far, my comments have focused on exposures and risks to the most exposed individual member of the general public. The environmental impact and regulatory analysis should also compute population impacts. These impacts should be measured at least as the cumulative number of cancer cases and deaths from cancer for the most exposed generation among the general public as well as for all future generations combined. These calculations should be determined without applying time discounting--a fudge factor that artificially reduces future impacts beyond those associated with credible scientific facts and methods.

Such "body counts" are especially important for the unrestricted release of contaminated solids into commerce, for which exposure could be very widespread, along with the relative body counts associated with feasible alternatives.

While economic considerations are important in many people's minds, what is being evaluated is a new program. Ethically it is difficult to distinguish a proposed action mandated by the government that:

- * Would increase deaths among the general public from exposure to contaminated materials released by licensed nuclear facilities from

- * One that would involve the government randomly selecting members of the general public and, without trial and due process, secretly subjecting them to painful execution.

This ethical analogy should be considered in discussions of trade-offs between human health impacts and other environmental impacts, including economic impacts.

In addition, it should be recognized that any deaths or cancers are unacceptable, and that due to the existence of nuclear and other facilities and their waste, no alternative is without consequences. Under the circumstances, one is forced to attempt to choose between the lesser of evils, often with inadequate information to make an informed decision.

A similar analysis is need for impacts on workers and other human beings not considered to be among the general public -- although in most cases, their being exposed to higher risks in return for economic advantages can be considered to be somewhat voluntary.

In addition, the probability and consequences of unintended or even catastrophic releases of contaminated material into unrestricted use due to accident, inadequate monitoring or deliberate fraud needs to be evaluated in detail. This analysis needs to:

- * Identify, track and evaluate the consequences of the radioactive waste that has already been released from nuclear power, materials, and weapons facilities under past and existing rules and their expected and unintended consequences (including consequences when the rules were not followed)
- * The potential increase in such releases and associated consequences if unrestricted release into commerce is allowed under rules under consideration

In addition, the impact of current programs allowing releases to commerce on a case by case basis do need to be evaluated, along with probable changes in the frequency of such releases if general rules for unrestricted release are not promulgated, and associated environmental impacts.

As is the case with US EPA regulations for chemical exposure, high amounts of background exposure from natural and/or other sources is no justification for reducing the risk based limits. It just relates to the limitations of current monitoring technology at inexpensively measuring exposure from man made contamination and associated limitations of the enforcement of associated regulations and verification of their impact.

We all are going to die eventually somehow. The issue at hand is how much change in risks and how many more people will die earlier or later than they would otherwise due to the alternative activities under consideration.

Furthermore, the cost and environmental impacts of tracking and recapturing already released wastes need to be considered, along with how the alternatives under consideration, and associated opportunities for mistakes, as well as fraud may change the frequency of occurrence of such actions, as well as their economic and environmental consequences. This needs to be evaluated cumulatively as well as for specific industries in which small releases could contaminate large amounts of expensive materials, such as the metals industries.

NRC should also consider requiring the recapture and containment of material that has already been released that is associated with significant adverse impacts.

Note, the regulatory alternatives to be evaluated should also include technology-based limits, to reduce impacts as low as reasonably possible, as well as risk based limits. All feasible measures to prevent avoidable exposures should be evaluated, along with their environmental impacts.

Furthermore, the concept of what constitutes contaminated material should not be misused. Material containing any number of additional radioactive atoms due to human activity is contaminated regardless of exposure levels. However, perhaps considerations of risk could be used to develop criteria for material being considered to contain de minimus contamination, such as material that would not cause exposures above 0.00001 mrem/yr above background if all material in a human beings environment consisted of such materials. However, this concept should not be confused with the material not being contaminated.

UNCERTAINTIES AND OTHER ENVIRONMENTAL IMPACTS

Quantitative estimates of impacts are of extremely limited, if any, value without being associated with credible quantitative assessment of the uncertainties in such numbers.

Uncertainties need to be assessed quantitatively for all numbers presented in the associated environmental impact analysis. Such quantitative analysis of uncertainties should include not only environmental impacts predicted, but also the numbers, assumptions and methods from which they were derived

The results of the quantitative analysis of uncertainties should be used to help identify:

- * The types of monitoring and corrective action programs to be associated with regulatory analysis
- * The Frequency of re-assessment of regulations for the release of solid materials and associated alternatives and environmental impacts
- * Areas where further research is needed to provide an adequate basis for informed decision making,

and to help evaluate the possibility of delaying implementation of new regulations until adequate data for adequately informed decision making is gathered, processed and available.

Among the sources of uncertainty that need to be assessed are:

- * The limitations of computer models and associated assumptions, including their:
 - Accuracy
 - Reliability
 - The degree to which they have been and can be verified to accurately predict exposures and/or other environmental consequences

- Systematic errors
 - Random errors
 - Uncertainty in the ability to predict future use patterns for materials in commerce that could include material released from nuclear sites, and associated exposure and economic impacts. Some people are likely to not want to have categories of material near them known to contain or to possibly contain material from nuclear sites, and some countries may not allow the importation of such materials
 - Variability of the radioactive waste content of material to be released to commerce
 - The possibility of significant quantities of radioactive material being enclosed and shielded in relatively uncontaminated material, going undetected and being released from nuclear sites for unrestricted use -- after which it is released into new materials that become waste and/or released into commerce and the environment
 - The increased possibility of deliberate and accidental release of material not cleared under the regulations into unrestricted use due to case by case analysis not being required
 - Deliberate bias in the selection of models used for environmental studies and their assumptions. An example is the common process of deliberately adding fudge factors to models, like time discounting, to make future impacts appear to be less than what known physical, chemical mechanisms and environmental transport mechanisms would predict on the basis of science.
- * The contribution of human error, accidents, natural disasters, exposure from emissions from manufacturing processes involving recycled materials, bioaccumulation, etc to expected exposures.
 - * The limitations of the sensitivity and extent of monitoring, quality assurance programs, etc. and

associated record keeping and review to assure compliance with limits.

If current state of the art monitoring etc. is not sensitive enough to verify compliance with risk based exposure limits or other otherwise potentially applicable standards, this should not be taken as a mandate to allow higher exposures and risks that can be easily measured. It should be taken as a mandate to use modeling as well as research to develop more sensitive, accurate and reliable methods. The trade offs between programs of differing costs also need to be considered, versus the costs of impacts that may go undetected in event of inadequately sensitive programs, versus the alternative of not proceeding with any form of related unrestricted release of contaminated or potentially contaminated material into commerce.

- * The cost and environmental impacts of not allowing any release of contaminated material from DOE sites along with probable releases if not officially allowed.
- * The impact of varying degrees of non-compliance with associated regulatory alternatives on environmental impacts and the impact of improved monitoring and enforcement programs on such impacts

CONFLICTS OF INTEREST

From the material that I have reviewed to date, it appears that a decision by the NRC to allow the unrestricted release of some material under some designated circumstances, and to continue its case by case release program, is a given.

To comply with NEPA, alternatives that would not allow any unrestricted releases need to be seriously considered, along with alternatives to reduce or eliminate releases for restricted use. NRC and other decision-makers should keep an open mind towards all alternatives, and consider what is known and especially what is unknown about existing and predicted environmental impacts before making any decisions or even scheduling decision making.

To make matters worse, the NRC is relying on a private contractor called Science Applications International

Corporation (SAIC) to prepare the technical basis for the proposed regulation. Comments by environmental organizations and the facts available to me suggest that this is a blatant conflict of interest. The selection of SAIC calls into question not only the legality of the entire process but the credibility of any environmental impact studies performed on this project.

It is strongly suggested that the NRC consider remedying the situation by:

- * Selecting contractors and technical contractor staff that are acceptable to both NRC and the Nuclear Information and Resource Service (NIRC) to do the work
- * Arranging that all communications involved in implementing the project be placed in the public domain whenever possible (except those that, for legitimate reasons of national security must remain classified-- which should be available to individuals selected by the NIRC with necessary clearances)
- * All employees engaged in the project be protected from retaliation due to any disclosures related to the project and threats or perceived threats to public health

EXTEND THE COMMENT PERIOD

The actions under consideration by the NRC have not been widely publicized. Rarely has anything been said about it in major public news media. Furthermore, many environmental professionals are unaware of its existence, or only recently became aware -- leaving inadequate time (if any) to provide comments.

It is strongly suggested that NRC remedy the situation by extending the comment period by at least eight months and by adequately advertising what it has in mind and opportunities to comment, through press releases, well advertised press conferences, as well as paid advertisements on CNN and other mass media.

Furthermore, a schedule for release of scoping documents, implementation plans, work plans, preliminary draft

reports, etc. for this project is needed. The preliminary draft, draft, and final draft documents should be posted on the worldwide web, along with associated comments and sent in hardcopy to all organizations and individuals who have indicated an interest in commenting on them. The web postings and opportunities to comment should be well publicized.

Adequate time should be given for people receiving the documents to comment on them, and the documents should be appropriately edited in response to comments. When needed plans for continuation and completion of the project should be appropriately re-evaluated, adjusted, and even terminated.

Sincerely,

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