

ENVIRONMENTAL COALITION ON NUCLEAR POWER

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Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: ANPR, 59 FR 9146, 2/25/1994: Disposal
of Radioactive Material by Release
into Sanitary Sewer Systems

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

Dear Madam or Sir:

These comments are submitted on behalf of the Pennsylvania-based Environmental Coalition on Nuclear Power. They address the Commission's proposed rule on disposal by release of radioactive material in sanitary sewage systems.

Comments on Background and Discussion:

We commend those parts of the Commission's actions, in the May 1991 10 CFR Part 20 revision, that disallowed disposal of dispersible materials into sewers and reduced by a factor of ten the permissible concentrations of radionuclides released to sewers. They move in the right regulatory direction.

However, we note that the assumption of dilution at the point of water intake that is adequate to reduce a calculated individual dose from 500 mrem/yr at the point of outfall to a level below the 100 mrem/yr dose to a member of the public is only an assumption. These assumptions should have been, and now should be, verified with ample clear evidence - not mere calculational models. Obviously, the concentrations and dilutions will depend upon a number of factors, including but not limited to distance from outfall to drinking water intake, water composition, volume and flow variations, turbulence, water treatment, multiple sources of releases, and other conditions. Because of the number and variety of uncertainties and confounding factors, the standards should be set most conservatively, assuming always truly worst case conditions and incorporating all unknowns and variables into the analysis.

The FR notice cites cases of contamination and reconcentration but the Commission appears to believe that, because they occurred prior to implementation of the revised 10 CFR Part 20, they cannot recur. This is not so.

We strongly urge that the 20.2003 exemption for medical recipient excreta, also cited in the Discussion section, should be removed; these contributions, while assumed to be a short-lived and small contribution, are an additive exposure and may therefore be of significance to the health of others.

In the same section, the reconcentration modeling assumption that is described takes no account of potential accidental releases in excess of the Part 20 limit. Thus, the total effective dose equivalent exposures calculated may well represent dose levels well below what might be experienced in the real world where the unexpected often happens. To assure adequate conservatism, in view of rapidly changing medical and scientific opinion about adverse effects of chronic low-dose exposures to ionizing radiation greater than are recognized in Part 20 and the impacts of synergisms among radiation and other environmental contaminants, the rule should be more restrictive than is proposed.

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Responses to Request for Information and Comment:

The Commission states that it is seeking in particular information on the "impacts [of various options] on various types of licensees." It is the Commission's statutory role to seek information on the impacts of radioactive materials and wastes on those who are exposed to them, not on those entities that do the releasing of the materials, thereby placing in jeopardy the health and well-being of individual members of the public. There is here no comparable expression of concern or inquiry about the impacts on the various sectors of the affected public (present or future), in terms of their health damage and health costs, contamination of agricultural land, restriction of other land uses, other economic losses to affected areas, or environmental degradation.

(1) *Form of the Material for Disposal:* In devising regulations, the NRC should take into account the nature of, and both the positive and negative consequences of, existing and new technologies for sewage treatment, with added measures of conservatism to provide an extra safety cushion in the event of unanticipated negative effects. While a licensee is free to submit its opinion about impacts on its operations, those impacts are not, and must not be, the primary regulatory concern; health and safety are -- or should be. If restrictions need to be increased because of treatment technology, then the Commission should do so, but complaints from generators of costs or burdens of compliance with stringent regulations designed to protect the public must be disallowed. If the NRC does otherwise, it acts in an capricious and arbitrary manner with disregard for its legal mandates to protect health, safety, and environment.

(2) *Total Quantity of Material:* If the NRC has determined to limit the permissible total effective dose equivalent (TEDE) that a member of the public may receive annually on some basis of risk deemed "acceptable" to and by the Commission -- but with no opportunity for the potential recipient to determine acceptability -- then that limit should include all sources and pathways for emissions and effluents associated with a licensee's operations. There is no justification offered for the added dose from releases to a sewer, or for the presence of radionuclides in septage or in sewage sludge, or other releases with or without regulatory control. Yet each addition to total dose increases the risk ill health, cancers, genetic damage, or early death for the recipient.

Both the total quantity and a maximum for each radionuclide (in fractions, not multiples, of annual limits of intake) should be held to the minimum; both approaches should be applied, to attempt to assure the lowest possible (not merely "reasonably achievable") exposure for members of the public. No credits should be given for an advanced technology of treatment, but the adverse health and environmental impacts of multiple, additive, cumulative, and synergistic sources must be incorporated into the analysis and into release limits. To omit any potentially adverse impacts is also an arbitrary and capricious action by the agency and contrary to its charge under the Atomic Energy Act of 1954, as amended; the 1969 National Environmental Protection Act, the Energy Reorganization Act of 1974, and the recent Pollution Prevention Act.

As for the Northeast Ohio Regional Sewer District petition (PRM-20-22), the NRC should require a 24-hour notice if any radioactive materials are to be released. Since it is now recognized and accepted by the scientific community

that there is no threshold of safe exposure to ionizing radiation, (see BEIR V Report) NRC should eliminate exemptions from regulatory control altogether.

(3) *Type of Limits:* In response to the first question (continue limitation based on ingestion of water from the sewer outfall): yes, but the permissible limit should be lowered from the 500 mrem/yr cited in the previous paragraph and incorporated into the maximum TEDE permitted for a member of the public from any aspect of operations of all licensed facilities. Sources should not be considered separately in calculating TEDE. We also contend that the maximum permissible total exposure should be set well below 100 mrem/yr for a member of the public, in recognition of no threshold and higher sensitivity of the young and the elderly. We urge monitoring at both outfall and intake.

As for the second part of this question (consider other locations): no; at any downstream location, some dilution will have taken place, with variations as described above. Measurement at outfall is equivalent to measurement at fence post in assessing dose to the maximally exposed person. Sewage sludge should be monitored separately and exposure limits should be no greater than, and incorporated with, those for "low-level" radioactive waste, if any activity is to be permitted in sewage and sludge. My sewage is your drinking water.

For the reasons given above, calculational models would not serve to protect the public adequately and should not be used. They cannot "deal with exposure scenarios such as contamination of sewage sludge" with enough accuracy to provide acceptable levels of protection for the public. Self-regulation should be disallowed; the industry has not merited such trust.

The second question asks if the NRC should consider limitation using a dose limit approach and provide quantity and concentration values. Yes; the dose limit should be substantially lower than the limit for "low-level" radioactive waste. And each affected municipality should also have the right to set standards more restrictive than those of NRC to protect its residents.

(4) *Exemption of Patient Excreta:* Sewer releases of patient excreta should not be exempted from regulatory control. Information Notice 94-09 (Release of Patients with Residual Radioactivity from Medical Treatment and Control of Areas Due to Presence of Patients Containing Radioactivity Following Implementation of Revised 10 CFR Part 20) is indicative of the relaxations of regulatory control which may affect public health and safety. Although the NRC notes nuclear medicines are generally short-lived, each amount released to a sewer is an addition, worsening the potential total contribution to TEDE, especially if NRC determines to abandon outfall measurement.

This commenter has observed, on more than one occasion, counts at or above 20,000 cpm in patients released but given no warning about high residual radioactivity after diagnosis and treatment with nuclear medicines. In one event, the patient had been assured that excreta to septic systems are of no health importance, indicating physicians' tendency to ignore multiple, additive, cumulative, and synergistic effects of environmental contaminants.

Comments on Case Studies:

Cases 1 and 2 -- Tonawanda and Grand Island, NY: Americium-241 is not short-lived. Its presence and other radioactive materials in sewage sludge may

presumably result in subsequent exposures via ingestion or inhalation, the latter especially if sludge is then spread on open fields. The fact that the particular workers tested did not exhibit detectable activity "over background levels" must not be used as justification for releases of radioactive materials to sewers or their presence in sludge. What level of activity was considered as "background" by NRC? "Naturally-occurring background" levels (c. 100-200 mrem/yr) or the augmented "background" figure that NRC now claims (NCRP's estimate of c. 300-400 mrem/yr, an average of 360 mrem/yr)? As the levels of activity may rise over years ahead -- due to increased numbers of generators, accidents, routine releases, deregulations, abandoned facilities, regulatory relaxation, or legislative changes -- the temptation and pressures to allow higher levels, based on a *de minimis* approach, will undoubtedly increase.

Case 3 -- Royersford, PA: Here, NRC again uses this example to assure that "the highest potential doses would be received by farmers working the fields where sludge had been applied. However, potential doses were less than...5 mrem/yr." This is not a scientifically justifiable conclusion; it is based on too small a sample size. Doses to farm workers, nearby residents, or consumers of agricultural produce could very well be substantially higher, particularly if the sludge spread on farm fields contains radioactive materials from multiple sources.

Case 4 -- Oak Ridge, TN: Did the analysis of risk from these sludges, which are said to have contained cesium-137, extend over the full hazardous life of the radionuclides? In the instance of spread on deforested land, were inhalation doses from uptake by subsequent vegetation and later release to the atmosphere by burning taken into account? This release pathway for residual radioactivity has been noted in Belarus and Ukraine post-Chernobyl, as it has also with respect to wood ash in this country (Farber and Hodgdon, Health Physics Society, 1991).

Cases 5 and 6 -- Washington, DC, and Cleveland OH: In these instances, urban water was affected, indicative of the potential for contaminations of significance to large populations. A licensee should certainly be required to assume all costs resulting from offsite releases of any of its licensed radioactive material found at a treatment plant or sludge waste disposal facility or on sludge-treated lands, and full liability for clean-up of contaminants under rebuttable presumption, plus all costs of decontamination in such instances.

We urge the Commission to incorporate these positive changes into its Notice of Rulemaking on Disposal of Radioactive Material by Release into Sanitary Sewer Systems. The Commission's goal must be to assure the isolation, not release, of all forms of radioactive waste, not to permit an environmental build-up or "environmental loading" from multiple sources in a succession of small incremental amounts, each of which can be dismissed as merely *de minimis*. The best approach is to curtail the generation of more wastes.

Sincerely,



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