From: Diane D"Arrigo
To: RulemakingComments Resource
Subject: [External_Sender] nrc docket 2011-0012 comments of multi groups
Date: Wednesday, December 20, 2017 2:42:13 PM
Attachments: Multigroup Comments on NRC docket 2011-0012 10 CFR 61 reg analsis.pdf
NRC Docket 2011-0012 Attachment 2 to NIRS et AL comments on draft regulatory analysis 10 CFR 61.pdf

Nuclear Information and Resource Service * Beyond Nuclear Sustainable Energy and Economic Development Coalition South Carolina Chapter Sierra Club * Utah Chapter Sierra Club Tennessee Environmental Council *

Comments on 10 CFR 61
Draft Regulatory Analysis for Final Rule 'Low-Level' Radioactive Waste Disposal
NRC Docket 2011-0012 82
FR 199 10/17/17
December 18, 2017

Ever since the creation of the A,B,C and Greater than Class C system of categorizing so-called "low-level" radioactive waste in the US, 10 CFR 61.55 (12/27/82), public interest and environmental organizations have raised legitimate concerns that waste will remain radioactively dangerous or risky for well beyond the 100 institutional control period required in 10 CFR 61. Because some of the radionuclides in all of these Classes will still be radioactive for longer than the sites would be controlled, some of them lasting hundreds, thousands and even millions of years, it was extremely difficult for new so-called "low-level" radioactive waste disposal sites to be established, despite the provision for massive collaboration and pressure of both the nuclear industry and the state, compact and federal governments including preemption of state authority by governors' appointed compact commissions. In fact the threat in the Low Level Radioactive Waste Policy Amendments Act, later declared unconstitutional, demanded that states would have to take title liability for commercially generated radioactive waste, even though they are preempted from any control over the licensing of nuclear reactors and the generation of the waste in the first place.

All six of the original/first generation radioactive waste burial grounds have released radioactivity above the legal levels. Some continue to leak. Beatty exploded long after it was closed. Bottle water had to be provided at Maxey Flats, a Superfund site. Erosion and landslides threated the West Valley NY site which is surrounded by rapidly advancing stream and creeks, requiring constant geo-engineering and an estimate of $5Billion to "clean up." At Sheffield, Illinois the operator kept buying up farmland to counter the claims of offsite migration of the radioactive materials. Now it is the property and liability of the taxpayers of Illinois. The legal

requirements in 10 CFR 61 allow leakage and still allow unlined soil trenches. Barnwell SC is leaking and despite a court order after a 14 year lawsuit, the state owner and private operator (EnergySolutions) refuse to or are unable to stop the leaking. At the commercial US Ecology site on the Hanford Nuclear Reservation, close to the Columbia River, public interest advocates cannot get an inventory of what is buried in the unlined soil trenches. In the face of the existing problems with nuclear sites, the regulations should not be opening up to take longer lasting wastes and more concentrated wastes or types of waste not even created yet…

The "updating" of the radiation dosimetry ***increases the allowable releases of radioactivity and radiation.*** In addition, for future residents and so-called "intruders" the allowable dose is increased, for no justifiable reason, to 500 mr/yr, higher than the high level radioactive waste regulations permit, higher than the nuclear power and fuel chain facilities that generate the waste and higher than Environmental Protection Agency's reasonable risk and 40 CFR 190 regulations. The new definition of intruder can include a large number or people and there is no justification for them to each receive 500 millirems per year. That is a risk of 1 in 57 getting fatal cancer using NRC's own risk numbers and higher using other risk models.

The public interest call on US Nuclear Regulatory Commission (NRC) has been to treat long lasting radioactive waste as high level waste so that it has a better chance of being isolated from the environment than in shallow burial trenches permitted in 10 CFR 61, which will leak long before the long-lasting radionuclides decay 10 to 20 half-lives. These comments have been made formally and informally for decades by many or our organizations and others. The New England Coalition on Nuclear Pollution petitioned NRC for rulemaking along this line but it did not result change or improvement from the public perspective.

Rather than make 10 CFR 61 more protective of public health and the environment, the Proposed Rulemaking to Amend 10 CFR 61 weakens public protections in many ways and the Draft Regulatory Analysis is completely deficient.

There is no option for greater public and environmental protection—only

"stay the same" or weaken protections while claiming to "enhance them."

The argument seems to be that putting any kind of waste into the 10 CFR 61 disposal sites gets it away from wherever it is now so that improves somebody's risk. The more waste that can go into the facilities, despite their inability to isolate it, the more money the waste dump operators make, thus it is an "economic benefit."

There is absolutely NO technical basis in this rulemaking to justify waste such as Depleted Uranium, which has peak dose. See the repeated concerns of numerous organizations including IEER for example https://ieer.org/resource/depleted-uranium/comments-to-the-nrc-on-low-level-waste-disposal/.

> (Excerpt: Ten thousand years as a compliance period is both too short and too long. It is too short because some radioactive materials have half-lives that are far longer. For instance, the half-life of uranium-238, the main constituent of depleted uranium, is over 4.4 billion years. Its specific activity grows over hundreds of thousands of years due to the growth of progeny (uranium-234, thorium-230, and radium-226). The proposed rule is unacceptably vague about the protection of the public for long periods, including periods beyond the 10,000 years period to which explicit compliance with 10 CFR 61.41 is proposed to be limited. For instance, the proposed 10 CFR 61.13(e) simply says that long-term radiological impact analysis will be required only if there are wastes exceeding Class A limits (by reference to Table 1 in 10 CFR 61.55) "or if necessitated by site-specific factors including engineering design, operational practices, and site characteristics." This language does not specify what factors would trigger such a special analysis. Nor does it state that if long-lived radionuclides (according to the NRC's proposed definition) are present, that such an analysis would be required. At the same time, 10,000 years is a very long-time for analysis of performance of shallow land systems. Ice ages can occur and have occurred on time scales that are similar. Severe climate disruption due to warming is already occurring, according to the best available scientific evidence and analysis. The NRC's own invited experts to the 2009 depleted uranium workshop considered 10,000 years far too long for reasonable modeling of shallow land facilities.)

We ask that NRC make public all internal discussions about the compliance period and provide a meaningful technical justification for the 1,000 years preferred by the Commissioners and the 10,000 years also under consideration. It appears neither accomplishes adequate protection.

For the record we submit that NRC staff should read or re-read the comments provided over the many years of this rulemaking from critics including, Nuclear Information and Resource Service, Institute for Energy and Environmental Research IEER (all comments are posted at

www.ieer.org), Heal Utah, Tennessee Environmental Council and Sierra Club, Heart of America NW among other organizations as part of the rulemaking and regulatory analysis.

We continue to oppose the inclusion of long lasting waste especially DU with its long decay chain which has a peak dose into the hundreds of thousands to million years in the 'low level' category of waste especially Class A which supposedly decays to (what NRC considers) acceptable levels in 100 years. Despite the various periods, institutional control, compliance periods and performance periods, there is no physical improvement in the protection or isolation of the waste.

The rule allows the dump operators, who stand to increase their profits, to do their own analysis of the risks. This is a clear conflict of interest. They spend some resource doing computer analysis and make more money taking more dangerous wastes. There is no provision for a public electronic online library to even verify or understand the assumptions let alone have them validated. State regulators spend some resources trying to regulate this but there is no analysis in the Regulatory Analysis document of the health and environmental consequences and THOSE COSTS. The assumption is that there will be no health effects that are quantifiable. We disagree. The analysis should consider not only Cost to Industry and Cost to Agreement States but Cost to Society, the Public, Members of the Public from this and future generations. Cost to society have been quantified in the hazardous waste realm (see ATTACHMENT to these comments) and can be carried for radioactive materials. The Costs to society include but are not limited to cancer, heart problems, reduced immunity, and other increased radiation health effects such impaired neurological development, mental retardation, the cost to society of members of the public who cannot function to their full potential because of radiation exposure during development, the increased costs for babies and children especially females who are more susceptible to radiation than adult males or averaged adults (who are at the basis of the 10 CFR 20 and the "updated" radiation dosimetry), costs to the health care and medical systems, to the environment and ability to enjoy and use it for other purposes. What will the costs for clean water be in centuries to come? How do the synergistic effects of radioactive and other pollutants affect the quality of life, the cost for community and private water systems?

We oppose the adding in and weakening of protections to justify the waste facility operators claiming they are being protective enough, when in fact this rule would increase allowable radioactivity releases and doses providing "flexibility" for the operators and higher risks to the public especially nearby and downstream and downwind.

We oppose the assumption that there is no public cost now or in the future.

We oppose the use of the discount rate to make future costs appear less.

We oppose a "risk informed" framework when the regulator refuses to admit or weigh health risks and costs.

We plan to provide more comments on future iterations of the analysis and the rule.
Attachments and set of comment on more detail on the radiation aspects of the analysis are being provided.

Diane D'Arrigo
Nuclear Information and Resource Service

Susan Corbett
South Carolina Sierra Club

Ashley Soltysiak
Utah Chapter Sierra Club

Don Safer
Tennessee Environmental Council

Karen Hadden
Sustainable Energy and Economic Development Coalition

Cindy Folkers
Beyond Nuclear

Comments of Beyond Nuclear on Docket number: EPA-HQ-OA-2017-0190 regarding Executive Order 13777, issued 2/24/17, directing agencies to establish a Regulatory Reform Task Force to oversee the evaluation of existing regulations to make recommendations about potential repeal, replacement, or modification.

May 15, 2017

Thank you for the opportunity to comment in response to EPA's Proposed Rule soliciting input on Executive Order 13777 on EPA actions that could be repealed, replaced, or modified. These comments are meant to provide additional details supplementing brief comments presented by Beyond Nuclear, as well as addressing comments of others presented on the public conference call hosted by EPA OAR on April 24, 2017.

Regarding EO 13777 request to examine actions that could be repealed, replaced or modified, EPA should take two actions to reduce the American public's burden from exposure to radioactivity: (1) account for radiation-caused or –induced health costs to society; (2) Streamline EPA's regulations by protecting for the most susceptible.

Teleconference commenters brought up two issues as if they weren't settled radiation science, when in fact, they are.

Hormesis

In 2015, the NRC entertained a petition for rulemaking asking that the Linear-no-threshold basis for radiation exposure allowance be replaced with a model based on hormesis (a little radiation exposure is beneficial). Importantly, EPA rejected this, stating "Of all the agents demonstrated to be carcinogenic, the evidence for LNT is particularly strong for ionizing radiation…"and "[g]iven the continuing wide consensus on the use of LNT for regulatory purposes as well as the increasing scientific confirmation of the LNT model, it would be unacceptable to the EPA to ignore the recommendations of the NAS and other authoritative sources on this issue. The EPA cannot endorse basing radiation protection on poorly supported and highly speculative proposals for dose thresholds or doubtful notions concerning protective effects from low-level ionizing radiation."

Beyond Nuclear also provided comments to the NRC on the LNT and the implications of replacing it with a hormesis-based model, alluding to the LNT model's function as a model for cancer risk. As such, LNT does not represent other clinical or subclinical impacts of exposure to radioactivity, particularly for sensitive life stages like pregnancy.

Threshold dose

Explicit in the LNT cancer risk model is a reflection of scientific research showing that there is no threshold for radiation damage—every dose poses a risk. As EPA recognizes in their letter, referenced above, any support for a threshold is based on "highly speculative proposals". Efforts by industry (Health Physics Society is a 501c6 non-profit and therefore operates for the benefit of the businesses they represent, according to the IRS code definition) to lull the public and federal regulatory agencies into believing that doses of 2 rem or 10 rem or whatever dose they contend is safe, are simply not supported by the scientific research that is most relevant to protecting public and environmental health. Beyond Nuclear's comments to EPA on their proposed rewrite of the 1977 radiation

exposure regulations, as well as our comments on hormesis, linked above, and our comments to NRC in response to their potential revision of radiation regulations, highlight a body of applicable research illustrating clinical and subclinical impacts, cancer and non-cancer impacts, at very low radiation doses—doses within range of *natural* background (100 mrem per year from *immitigable* natural radiation)

There is association in health studies to many clinical and subclinical impacts from even very low radiation exposure, particularly to uniquely sensitive early life-stages. Therefore, EPA must avoid increases in radiation exposure through regulatory accommodation of scientifically irrelevant phenomena like hormesis, or assumption of a threshold dose.

Assessing true costs of exposure to radioactivity

The costs of disproportionate health burden of radioactivity on women and early life stages not known because it has not been examined. Costs of this health burden must be researched and added to the burden on society of using nuclear technologies; EPA must not only recognize that this burden weighs disproportionately on women and children, but must focus on protecting them instead of more resistant males or some hybrid model of men, women and children.

Radiation pollution is privileged in many ways (refer to Beyond Nuclear's comments dated July 31, 2014 linked above), even at EPA. It is allowed to sicken and kill more people than EPA's stated risk goals and other pollutants regulated by EPA. The costs of allowing radiation this privilege are left unaccounted while the health impact costs of other pollutants are examined.

These comments on EPA's response to EO 13777 are focused on "actions" taken by OAR, however, the Office of Policy, National Center for Environmental Economics (NCEE) should be instrumental in helping to cost out the impacts of radioactivity released from the nuclear industry using the following research and guidelines. These guidelines are in no way comprehensive:

1) Women are more susceptible to exposure to radioactivity—a susceptibility which is not compensated—and this disproportionate impact should be accounted for in the public health costs.

2) Vulnerable life stages like pregnancy and childhood need to not only have disproportionate effects costed out for initial exposure, but also into adulthood due to a phenomenon known as intrauterine programming (see Beyond Nuclear's comments dated July 31, 2014).

3) The following clinical and subclinical diseases have been associated in scientific, peer-reviewed literature, with exposure to low and very low levels of radioactivity. This list is NOT exhaustive. (supporting studies in previously-referenced documents unless linked below):

impaired neural development (decreased lifetime earnings capacity)
childhood cancers, particularly leukemia and central nervous system cancers (also treatment of secondary cancers caused by treatment of primary cancer)

low birth weight (and accompanying health impacts)
placental impacts and resultant health issues
delayed growth
CFIDS (chronic fatigue and related)
Female subfertility (inability to get pregnant and accompanying health care costs)
Potential estrogenic impacts

4) Estimating costs of these health impacts from exposure to radioactivity can be informed by work already underway for cost estimates of other toxic exposures, although this work might have to adjusted for impacts unique to radionuclide exposures. While determining the cost of cancers to society seems less challenging, for costs of subclinical and brain development impacts, Dr. Leonardo Trasande, Department of Pediatrics, New York University (NYU) School of Medicine, has provided good research to start.

Streamline EPA regulations by protecting the most susceptible

Women and children are more susceptible to radiation's impacts and the life-stage of pregnancy is uniquely sensitive. They pay the highest price for nuclear power and its releases, yet these unique sensitivities are buried in a tangle of unnecessarily complex regulations resulting in both allowance of higher exposures and obscuring of impacts on the most vulnerable. Reiterating Beyond Nuclear's verbal comments: If EPA wants to streamline their regulations, they should modify them to protect the most vulnerable life stages – pregnancy and childhood – and get rid of more complicated, much less protective, exposure standards. EPA should assume that pregnancy is a constant state in the population and set any radiation standards to protect pregnancy.

A brief comment on the process of this proposed rule:

The public comment period for **EPA-HQ-OA-2017-0190** is ridiculously short for the number of issues fielded by EPA, but I suspect Administrator Pruitt is well aware of this since he is the one who signed off on the May 15 deadline. The short comment timeline favors individual industry input since their interests are often more narrow than the much broader public interest with which individual citizens have to engage in order to maintain their health and that of their environment.

Beyond Nuclear thanks you for the comment opportunity.