From: Judith Johnsrud <johnsrud@uplink.net>
To: <NRCREP@nrc.gov>
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Subject: Comments: NRC LLRW Program: 71 Federal Register 130, 38675-76

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Chief, Rules and Directives Branch
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Cc: Mr. Ryan Whited, Chief, Low Level Waste Section
RE: Federal Register vol. 11, number 130, pp. 38675-76, July 7, 2006
NRC Request for comments on NRC's low level radioactive waste (LLRW) program.

Please accept and, we respectfully request, act positively on the following comments that are submitted on behalf of the Sierra Club.

Introductory comments:
The NRC's intent to provide a "stable, reliable and adaptable regulatory framework" could be commendable, as would be the staff's objectives to identify and prioritize its LLRW activities, if they were directed to assist the people whom the Commission is required by law to protect. The success and appropriateness of staff efforts, however, will depend upon the intent of the staff to maintain and re-assert, regulatory control over all low-level radioactive wastes. The legislated definition of "low-level wastes" includes wastes that are actually very high in activity, capable of causing early mortality, whereas at the low activity end of the broad definition, the NRC persistently tries to deregulate those wastes altogether, releasing them into the biosystem.

In the decade since demise of Compact facility siting efforts, substantial amounts and types of "low-level" waste have been deregulated or re-classified in order, it seems, to reduce licensees' substantial costs of "disposal." At the same time the methods of LLRW disposal have continued to be, in large part, shallow land burial, with minimal protective packaging and trench lining to prevent release. Certainty of long-term isolation from the biosphere for all radioactive wastes should be the primary goal and is the regulatory responsibility of the NRC. As understanding of low-level and protracted-dose impacts increases, NRC should require regulation of all LLRW, including, if possible, regaining regulatory control over wastes previously released.

Instead of seeking this goal in the late 1980's and until Congress repealed the NRC's "Below

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Regulatory Concern" policy, the agency began a massive deregulation and uncontrolled spread and recycle of "low-level" radwastes into consumer products, into construction materials, roadbeds, and other unidentified uses that allow additive doses to be received by members of the public, without their knowledge or consent.

During that same time period, radiation microbiologists were developing advanced research techniques and methodologies that have enabled important discoveries concerning low-dose radiation impacts at very low levels. The National Academies BEIR Committee did not adopt the Linear No Threshold hypothesis of dose-response (LNT) until its 1990 Report V, but has recently reaffirmed its validity in BEIR VII. Many in the nuclear industry have continued to argue in favor of hormesis and against recognition that all radiation exposures do carry a risk of somatic or genetic injury to the recipient.

Moreover, the NRC continues to base its exposure standards on primarily lifetime risk of fatal cancer and gross genetic defects in the first two subsequent generations. This position remains in effect despite numerous research findings of such low-dose impacts as damage to the immune system, heart disease, mental retardation, and neurological, gastrointestinal, and respiratory disorders, and infant failure to thrive. Regulatory agencies still rely on "Standard Man," and continue to claim that the fetus and rapidly growing young children are not at much greater risk from irradiation than Standard (or Reference) Man.

It is the failure to take into account, in addressing control of low-level radiation and LLRW exposures, the research findings of the new biology that are perhaps the most troubling. With respect to the state of knowledge in the closely related fields of radiation microbiology and genetics, current standards proposals of the International Commission on Radiological Protection (ICRP) include the statement that a single [radiation] strike through a cell can be sufficient to initiate damage, including cancer. ICRP also notes that:

While...risk of radiation harm is presumed to be minute, at low radiation doses, the Commission's position is that following any incremental increase in dose above the unavoidable background dose there is assumed to be a proportional, small but finite, increase in the likelihood of... some cancers and hereditary effects. This hypothesis... is applicable to all exposures, however small,

regardless of their origin – whether natural or artificial.

(emphasis added)

Therefore, the NRC cannot continue to ignore the importance of such findings as delayed mutational responses, or genomic instability, imperfect cellular repair, and the bystander effect, among others. The NRC, as well as ICRP, IAEA, WHO, DOE, EPA, FDA, and state regulators, are urged to adopt, and adhere to, what is called the Precautionary Principle. It is closely associated with the medical dictum: primum non nocere: "First, to do no harm," or colloquially, "When in doubt, don't."

The Low Level Waste Program is urged to take the initiative in adopting more protective standards and practices, despite opposition from the industries it regulates.

The nuclear industry is now attempting to revive its moribund condition with new -- but untested -- reactor designs and new reactor construction in addition to 20-year license extensions for aging plants, plus new uranium enrichment and reprocessing facilities. If this expansion occurs, it will result in the generation of large additional quantities of both high-level and low-level radioactive wastes. In the absence of agencies' ability (or perhaps their will) to assure long-term waste sequestration, a competent and sternly active NRC Low Level Radioactive Waste Program is sorely needed. It is needed to assure that Americans will not be subject to proposals of ICRP and intent of the International Atomic Energy Agency to exclude substantial amounts of "low activity" radioactive materials and wastes from regulatory control altogether.

IAEA's decision to allow transport of low level wastes without appropriate warning labels has been challenged, and presently members of the public are also critiquing the ICRP's revised draft standards recommendations that would further weaken regulatory controls. Together, these private international organizations foster worldwide BRC-by-other-names. The agencies' purposes include increasing and preemptively "harmonizing" worldwide commerce in radioactive materials and wastes by adopting potentially mandatory standards. By excluding and exempting LLRW from regulations and allowing recycling, both IAEA and ICRP are also reducing costs for generators and users, and not requiring them to provide the safest achievable LLRW sequestration. We urge NRC to adopt, require, and enforce goals of minimizing LLRW waste

generation, and managing the isolation of all radioactive wastes in ways that will also minimize biological damage and economic costs to the public. It's "the public" who are the exposed human beings who, without rigorous regulations, will experience radiation-caused illnesses, premature deaths, and genetic damages in current and future generations.

Responses to NRC's questions:
All changes in the LLRW program's purposes and actions must increase, not relax or abandon, the goal of maximizing radiation protection and effectiveness of regulatory requirements, despite politicized pressures for relaxation. There is a concern that financial pressures on the agency may well result in budget cutting that could prevent appropriate controls, inspections, and enforcement by this NRC program.

Current LLRW Disposal Regulatory Program:
1. RE: Key safety and cost drivers and/or concerns relative to LLRW disposal:
In the five years since 9/11, NRC claims to have developed advance safety measures at reactors and other facilities. The need is great. However, members of the public have been denied any opportunity to examine them or their appropriateness to the need – with respect to the facilities as well as both HLW and LLRW management. Citizens at risk of terrorist or other attacks therefore have no means of judging how capable or useless any protective programs really are. The same is true of reactor or fuel cycle facility accidents. Note the failure of government agencies to prepare for or to act during and after Katrina, barely a year ago. That event alone justifies concerns.

As for the very term "cost drivers," it refers to licensees'cost concerns, not the public's, whose financial, physical, other economic, and social costs are not fully analyzed or incorporated in the agency's analyses. Inclusion of full public costs in all NRC economic analyses should be undertaken immediately and continuously updated, starting with this LLRW program. Increased inspection and enforcement actions are needed now as well as in the future. More rigorous requirements are now necessary due to the improved understanding of greater very low dose biologic damage than previously assumed. .

2. Vulnerabilities or impediments in the current regulatory approach:
2.a. Reliability, predictability, and adaptability
So far as can be observed of the programs and practices of the NRC's LLRW division, the emphasis seems directed to maximizing releases and allowing recycling. General licenses should

not be issued; they appear to have virtually no regulatory oversight. For instance, experience in the past indicated that the agency was prepared to issue a general license to an untrustworthy applicant that intended to airlift LLRW for disposal in a combat and seismically unstable region of the former Soviet Union. License approval was halted by public, apparently not by staff opposition.

In addition, there is concern that "adaptability" means that the program will take full advantage of opportunities to deregulate ever more wastes, which may be re-designated as "low activity," or having "trivial" levels of contamination, or are otherwise suitable for "exclusion" or "exemption," ignoring the implications of the new biology. The LLRW Program should resist all pressures to relax or eliminate low-level waste definitions or regulatory requirements. Greater rigor is what's needed. Rather than increasing the amount of waste released from control, NRC in this program should seek to recover previously deregulated or lost wastes that ought to be under regulation. Prediction of future volumes and toxicities is speculative. It is unclear if this program is prepared or able to project amounts to be managed in either near or far term futures.

2.b. Regulatory burden (including cost): All costs of control, interim storage, and disposition (which is not disposal: we can only change forms or locations; we do not "dispose" of anything) in or emanating from this LLRW Program should be considered a cost of doing business and be paid by licensees or generators. The industry should not be allowed to argue that this is a burden. The people who comprise the affected public (essentially all of us) may realize the added risks associated with unwanted exposures are a significant burden for them. See above. The LLRW program must be proactive and firm in imposing regulatory controls that recognize adverse consequences of additive low doses.

2.c. The entire NRC, and its radiation-related counterpart agencies all need to take immediate, as well as long term, concerted actions to improve and expand safety and security. Although the Department of Energy promised several years ago to undertake low-dose radiation research and regulation of radiation in the natural environment, those programs appear to be moving at what would formerly have been called glacial speed (prior to current rapid glacial melt). The same appears to be true of ICRP efforts or NRC, commitments seemingly largely

ignored. Admittedly, these are difficult tasks, and lengthy research must precede recommendations and actions – although the urgency now is greater than anticipated in the past.

Potential Alternative Futures:
3. Any answer to this question depends on whether or not new reactors, weapons, and fuel chain facilities will be built and operated. The committed amounts of LLRW, Categories A, B, C, or GTCC will be increasing, due to 20-year license extensions, and possible new plants. The industry will press NRC to expand exclusion and exemption of these wastes and to relax further NRC's regulatory controls. NRC is advised to resist all demands to deregulate. Once radioactive materials and wastes are released from control and accountability by the generator, it is extremely difficult to recover them and return them to control. That action is, however, important for human health and safety. Our degree of pessimism will be a function of the NRC's exercise of expanded regulatory control under EPact. The amounts of each LLR waste category are also subject to many variables, but the important action will be the ongoing maintenance of strict control over all classes. The recycling of LLRW should not be permitted. If it is allowed by the Commission, or required by ICRP and IAEA, the outlook for future human health and well-being will be bleak.

4.a. If any potential future LLRW management, treatment, storage, or disposal scenarios adopted by NRC fail to maximize controls and long-term responsibility, the regulatory system of the NRC will have failed to be reliable, or predictable, or even adaptable. If LLRW escapes, or is allowed to leak or be dumped so that it enters into the biosystem, people and other forms of life will be negatively impacted. Loss or lack of control also means failure of the Commission and this LLRW program. The review and soul-searching inherent in the request for input opens a valuable opportunity for significant regulatory decisions.

4.b. If NRC and this LLRW division honestly evaluate the ability to achieve the level of perfection that will be required to meet protective goals that are supposedly required of this agency, the conclusion for the nuclear industries will be that they cannot afford to continue or to expand production of ever more radioactive wastes. This conclusion should be an ethical decision, but at best will probably be an economic one.

4.c. It is apparent, in our rapidly changing world with seemingly increasing contempt for life

and the well-being of humans and all other forms of life, that it will be difficult or impossible to assure successful protection of all people or the whole environment. A halt in reliance on technologies that are capable of such enormous physical and biological destruction, as are the contemporary uses of nuclear energy, would be a wise and prudent national and international action. Our nation had lived, produced, and prospered – and was globally respected – before splitting the atom. The nuclear power industry could be capable of restructuring itself to become a benign generator of safer, cleaner, and even cheaper methods of producing electricity. The military consumers for nuclear weapons might also learn less biologically hazardous ways to protect the nation, as well. The NRC, with Congressional assistance, should be capable of transformation, too.

5.a – d. Among the most effective actions that could be taken by NRC, other government agencies, the nuclear industry, scientific organizations and others would be to adopt the recommendations of critics of the industry and agencies: namely, to halt generation of ever more radioactive wastes that none knows how to control. Investments should go to developing, constructing, and using alternative sources of whatever amount of energy is actually needed by a truly energy-conservative society. This recommendation is not frivolous. It is, rather, a recognition of the nature of changes that have begun to occur on a planetary basis. Because radioactive waste control is among the most difficult unsolved – and probably un-resolvable – problems for this industry, it might be logical to begin the energy transformation process with this Low Level Waste Program.

6.a.- g. First, bound the problem. Second, maintain control. In all instances listed here, that means to exercise regulatory control of all LLRW generated. Replace generation of additional quantities of LLRW (and HLW and MW) with focus on how to create effective institutional control for the full hazardous life of the existing radwastes. Be especially careful to control alpha and other internal emitters from entering the environment. Recognize the significance of the new biology and base all future regulations on that understanding of the biological consequences of even low doses, and of the multiple, additive, and cumulative sources of exposures. Consider the impacts of synergistic relationships between and among the combinations of radioactivity and toxic chemicals and other contaminants that enter the biosystem in

establishing and enforcing more truly protective standards and regulations.

7. Recognize the finite nature of the planet and its resources for the future, especially for continued capability to maintain control in the future of the wastes that are produced and "disposed" of today and tomorrow. Perhaps it is most important to consider what are the unintended consequences of continuing current practices and optimistic beliefs in the necessity and efficacy of continued or expanded uses of atomic energy with the accompanying risks of accidents, terrorist attacks, routine emissions, and old age.

8. Over the years, the NRC has periodically become somewhat more open to the constructive recommendations of the public interest community. It seldom lasts. We encourage expansion of agency willingness to listen to – and act upon -- suggestions from the public. An important factor in need of attention is the gap between long-time NRC staff, who have vital historical memory of all nuclear facilities and wastes for which the Commission is responsible, and the young recently hired staff who would be ignorant of the past. An active historical waste information transmission program for new employees should be a significant part of the LLRW Program.

As for communication with stakeholders: do it, without the reluctance and seeming contempt shown by far too many. Listen respectfully and then act upon the good advising from the public; some are very well informed. Never forget that it is citizens who pay all your salaries. Financial assistance is needed for the affected public (which includes essentially everyone) to be able to participate in NRC's decision processes. We note that the public's increasing nuclear-powered electricity cost burden is due in no small measure to actions of the Commission, its ASLB actions, and those of staff and legal divisions, who, from our perspective, impede public inputs in all realms of participation. The public's respectful advising needs to be accompanied by financial assistance for responsible involvement to occur.

Of great importance is the discrepancy between proportions of participants in public meetings. Within the past week, Sierra Club has been represented in three government-sponsored radiation meetings. Two speakers represented the public at two meetings; 21 speakers were from the nuclear industry and its regulators. At another (called "A Stakeholder Dialogue"), there were only two public-interest speakers -- and 32 speakers associated with the agencies and

industry. A similar situation was also true at the May 23-24 ACNW meeting cited in the Federal Register Notice. We want to emphasize that equal representation for the public is essential to fairness. It does not exist, and therefore, the information provided for decisions is seriously out of balance.

9. To gain cooperation with other federal and state agencies for the best possible management and isolation of all radioactive wastes, the NRC needs to clarify that the biologic hazards are greater than is generally recognized, not less as the NRC's claims and practices would lead others to believe. That means the NRC must accept the reality of the recent findings of somatic and genetic dose impacts, for both present and future populations, and assist others to understand the reasons for the peculiar nature of radiation hazards.

Finally, the changes in NRC regulatory philosophy some years ago from "Defense in Depth; Redundancy of Safeguards' to "Performance-based, Risk-informed" regulation appear to have allowed a laxity of regulatory control that only increases the probability of serious accidents and contamination. A return to the earlier, more conservative, philosophy could add a measure of confidence.

Thank you for consideration of these comments.

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Background:
These comments are submitted on behalf of the Sierra Club by a member who has served on Pennsylvania's State LLRW Advisory Committee since its inception in 1988. Comments are based, in part, on active long-term participation in development of siting, design, public participation, and health and safety goals of the Commonwealth in its role as Host State for the Appalachian States Compact LLRW Facility. This commenter represents a different organization on the Advisory Committee, but submits these comments as Sierra Club National Senior Advisor on Radiation and related nuclear energy issues. Sierra Club's Pennsylvania Chapter has also been represented on this Advisory Committee from its beginning. Other Club Chapters have also been fully involved in LLRW Compact issues in other Host States since the 1980's.

Note:
Inability to access the referenced 1996 LLRW document ML061700297 in ADAMS may have caused these comments to be incomplete. Questions posed by staff are partly addressed. Some comments may

not represent views of all organization members.

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