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Secretary  
Nuclear Regulatory Commission  
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Re: Release of Solid Materials  
Comments on Rulemaking

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

To NRC Committee on Rulemaking:

I respectfully submit the following comments pertaining to the rulemaking on the release of solid materials. I attended the workshop conducted at your headquarters in Rockville, Md. on May 21 and 22, and appreciate the opportunity to provide comment.

**NRC Should Base its Policy on Science, not Perception**

During the workshop, participants referred to public perception, using language like, "what the people want". These same participants emphasized "no matter what the science says", and even "science doesn't matter". These statements were made by people who purported to know what the public wants or feels, or who based those statements on hypothetical scenarios and public reaction. They encouraged abandoning science and basing regulatory requirements on assumed public perception. Stories of past events, or imagined events yet to occur, paint vivid pictures that threaten the objective development of public policy.

Public policy should never be based on anecdotal information, horror stories, or hypothetical situations, but on thorough evaluation of existing conditions and sound science. Basing policy on hypothetical scenarios subjects the regulated community to onerous requirements that may yield little or no benefit at great cost to the public. Examples illustrating how unreliable public perception can be include:

- The public is afraid of "heavy metals", but the public pays for supplements to ensure they ingest higher levels of zinc, selenium, iron, calcium, etc., than they already get from the food they eat. Some of the metals they intentionally ingest are listed in EPA's drinking water standards, and their intake is greater than that they would receive if they drank two liters of water per day at the promulgated limit.
- The public is afraid of hazardous organic compounds, but they inhale naphthalene from moth balls and benzene when they fill their gas tanks, and they literally spray phenol in their mouth when they use Chloraseptic.
- The public is afraid of radioactive materials and radioactivity, but the public buys smoke detectors, firebrick, blasting sand, and fertilizer, and demands chest and dental X-rays.

The "public" tends to be subject to buzz-words used by those whose desire is to propagate fear, not by those whose desire is to inform. Such buzz-words produce sensational news items, generate funds for environmental organizations, and yield significant liabilities for companies that produce anything but consumer-demanded products. Allowing public fears to influence

government policy only enables fear-mongering agents to hold both regulators and the regulated community hostage to indefinite and indefensible ever-changing demands, all based on "public perception".

I have often heard, "Exposure to consumer products is voluntary, whereas exposure to wastes and contaminated property is involuntary." I have discussed this topic with many people, and have met no one outside of the environmental profession who was remotely aware that:

- They purchase the "heavy metals" of which they are afraid in health supplements
- They purchase and use products which expose them to the organic compounds of which they are afraid
- The world around them and many consumer products contain radioactive materials and emit the radiation of which they are afraid.

I have been involved in public meetings during which each of these categories of contaminants were the focus. In the case of inorganic and organic compounds, regulatory agencies have at times yielded to public pressure and adopted limits that are below what sound science would justify. For example, the regulatory limit for dioxin is based on the ingestion of dioxin. After the limit was developed, it was determined that the gastrointestinal system is incapable of removing dioxin from the soil particles to which it becomes adsorbed. Nevertheless, the limits were never changed on the basis of this information. In fact, when new technology enabled the detection of dioxin at lower concentrations, the regulatory limit was lowered, primarily due to of public pressure!

#### NRC Should Inform the Public, not Pander to the Public

According to the Office of Nuclear Material Safety and Safeguards' publication, The U. S. Nuclear Regulatory Commission and How it Works, NRC's mission is to "regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of the public health and safety, to promote the common defense and security, and to protect the environment." According to this document, one way the safety philosophy is expressed is through accountability to the public. NRC states that accountability to the public includes, "ensuring that the public has sound, complete, up-to-date information on which to base judgments."

NRC has a responsibility to inform the public, not just collect input from the public. NRC should develop scientifically defensible, easily understandable material presenting facts on the risk and health impact from various materials and activities, and explaining the concept that there is a societally justifiable level of risk. We accept a risk every time we drive, every time we go to the doctor's office, every time we board an airplane, every time we mow the lawn, put a boat on the lake, etc. Yet we accept the risk for the perceived benefit. NRC's role is to determine what level of risk is acceptable in light of the benefit society derives from the use of radioactive material. There are numerous national and international agencies with sufficient technical expertise upon which to draw that NRC does not have to "stand alone" in its defense of a reasonable balance between risk and benefit. I urge NRC to take seriously its role to *inform* the public, so that policy can be based on sound science and effective industry practices, rather than on public perception.

### A Dose Limit of 1 mRem/yr is Protective

NRC is well aware that no health effects can be demonstrated at doses far greater than 1 mRem/yr. A paper on the variability of background (prepared several years ago by an NRC Commissioner) stated that there is no discernable difference in health effects between areas with background dose rates of 350 and 1,000 mrem/yr. NRC's unwillingness to commit to any standard as a "safe" standard only serves to give a platform to those who desire "zero risk", which is unachievable in the real world. This is not reasonable, and NRC needs the intestinal fortitude to take a strong position regarding "safe" exposure levels.

10 CFR 20 states that dose to a member of the public resulting from licensed operations must be below 100 mrem/yr. 10 CFR 20 Appendix A provides effluent release limits for liquid and air effluents that are based on exposures to the average member of the critical group of 100 mrem/yr. 10 CFR 20 limits for the unrestricted release of a licensed site state that the licensee must demonstrate that the dose to the future land owner will not exceed 25 mrem/yr. 10 CFR 141 states that the drinking water standard for radionuclides 4 mrem/yr. In light of all these standards, it is difficult to understand how NRC can refuse to release solid materials if the resulting dose will exceed 1 mrem/yr, without tacitly announcing that all the other standards in these other regulations are not protective of public health and safety.

Release criteria based on 1 mrem/yr would result in the disposal of a large quantity of material as low level radioactive waste, when it is far less radioactive than many consumer products. One licensee with which I am familiar recently spent over \$600 per cubic yard to ship contaminated soil to a licensed disposal facility in Utah. The soil was contaminated with uranium and thorium, both naturally occurring radionuclides. Had that company filled the same containers with the same weight of commercially-available fertilizer, they would have shipped over 200 times as much radioactive material (in the form of naturally occurring uranium) to the disposal site. In essence, fertilizer, which is "safe" to put on your land, is 200 times more radioactive than the soil that was too "dangerous" to leave on site. And yet the decommissioning criteria requiring the disposal of this soil would model far more than 1 mrem/yr!

NRC cannot defend a standard of 1 mRem/yr, except by citing pressure from environmental groups and international consensus. I believe the basis for this standard is more philosophic than scientific. However, if NRC is committed to a 1 mRem/yr dose limit, NRC needs to clearly state that it is their position that this standard is protective of public health and safety, and close the book on further discussion of this topic for this rulemaking.

### Waste Minimization Should Be a Goal

In many other areas of environmental regulation, waste minimization is a desirable goal. Environmental groups urge regulatory agencies to develop regulations that minimize the generation of waste. They encourage recycle, beneficial re-use, etc. In the case of radioactive material, their stated desire to "allow *no* material with *any* radioactive contamination to be released from licensed facilities" would result in the generation of large quantities of essentially harmless waste. This is not beneficial to society any more than the generation and disposal of any other type of waste. EPA's Land Disposal Restrictions were created to force industry to develop alternatives to the disposal of many hazardous wastes in landfills. NRC's policy should

encourage licensees to reduce the level of contamination of solid materials to safe levels so those materials can be beneficially re-used.

#### Metal Recyclers May Need to Change, Too

I understand and appreciate the difficulty this *may* cause some recyclers, but many other industries have adapted their practices to variations in incoming material streams. Metal recyclers appear to be asking NRC to make everyone *except them* change their processes. The metal recyclers we heard from during the workshop don't want to have to determine whether their detectors are triggered by orphan sources (their justification) or by low levels of radioactive materials. Numerous licensees distribute wastes containing naturally occurring radioactive materials (e.g., welding rods) throughout their metal waste stream, knowing that if they were massed together in one location they would trigger the recyclers' alarms. This causes no problems for recyclers because it doesn't impact their operations. Responsible regulatory policy may require metal recyclers to "come up the learning curve" so that safe and reasonable regulations can be implemented. The promulgation of release criteria based on 1 mrem/yr will certainly impact licensees. The criteria should not be made excessively restrictive to avoid any impact to metal recyclers, particularly if the alternative would be far greater impact to licensees.

#### Conditional Use

As several of the panelists stated, I believe the term "conditional use" is inappropriate and subject to misunderstanding. I agree that the term "authorized disposition" is more appropriate. There should be a dose, concentration, or surface contamination threshold below which material can be released for unrestricted use. There should be a second dose, concentration, or surface contamination threshold above which all material must be disposed of in a licensed disposal facility. Licensees should be able to dispose of any material that falls between these two thresholds in a non-licensed, environmentally regulated disposal facility, which may be a Subtitle C, Subtitle D, or 11.e(2) facility. When this topic was discussed, several panelists contended that if material not releasable for unrestricted use was discharged from a licensed facility without NRC controls, there would be nothing to prevent it from being used inappropriately. Those expressing such concerns are either intentionally overlooking the controls EPA has promulgated within the RCRA program, or are ignorant of the existence of such controls.

Many waste generators dispose of industrial hazardous and/or non-hazardous waste in environmentally regulated disposal facilities on a routine basis. Hazardous waste must be disposed of in a Subtitle C facility, and manifesting controls are in place to provide "cradle-to-grave" custody from generation to final disposition of the waste. This is very similar to the radioactively contaminated material currently disposed by licensees at NRC-licensed disposal facilities. Those same waste generators dispose of common trash and solid waste at municipal (Subtitle D) landfills with no manifesting or tracing of custody. This is similar to the unrestricted release for which licensees currently seek better rules from NRC. There is a "middle" category of industrial waste which is not considered hazardous by the regulatory agency, but which is still regulated as non-hazardous industrial waste. This material may or may not be suitable for unrestricted use, based on the concentrations of the various chemical compounds in the waste. If material is not suitable for unrestricted use, it must be disposed of in an environmentally regulated facility, which may be a Subtitle D or a Subtitle D landfill. When waste generators dispose of such waste, they generate manifests to track the disposition of the

waste from their facility to the disposal site. Although the waste is not "hazardous", its disposition is tracked and controlled by the regulatory agency.

The NRC should adopt a similar program for that "middle" category of waste that yields too high a dose, concentration, or surface contamination level for unrestricted use, but which still yields less than a specified dose in a landfill scenario. NRC should establish criteria for unrestricted release and for authorized disposition. Any material exceeding the higher threshold should be disposed of at an NRC- or agreement state-licensed disposal site. The use of waste manifests similar to those used by waste generators would provide the needed controls to ensure this material is not misdirected for an inappropriate use.

As stated above, I appreciate the opportunity to offer these comments, and look forward to reviewing NRC's responses to the wide variety of comments you will surely receive.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jeff Lux', with a stylized, cursive script.

Jeff Lux  
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