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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Secretary, US Nuclear Regulatory Commission
Washington, DC 20555

Attn: Rulemaking and Adjudications Staff

This letter is in response to the opportunity for public comment on the scope of a proposed rulemaking on the disposition of solid materials with residual radioactive contamination. (Federal Register notice: Feb. 28, 2003. Vol. 68, No. 40, pp. 9595-9602) We are told that: "Solid materials containing appreciable levels of radioactivity are not the subject of this NRC rulemaking." (p. 9596)

**1. How much contaminated material could be released for consumer and industrial products?**

According to the American Nuclear Society's publication, Radwaste Solutions: "more than 70 test, demonstration, and power reactors have been decommissioned since the 1960s," with many more to come, plus many federal nuclear weapons-related facilities from the post-Cold War era that are also ready to be dismantled. (Jan/Feb 2003, p.9) Whereas applications have been submitted to the NRC, and approved, under the Code of Federal Regulations, Title 10, Part 20.2002, to release "small quantities of materials from operating reactors, they have not been used in general for the dispositioning of bulk material from decommissioning." (Ibid., p.11)

Is it correct that the NRC, through this rulemaking, is now trying to come up with standards that would be lenient enough to permit the free release of large quantities of debris containing surface and bulk radioactivity in order to try to reduce the huge volume of waste already stockpiled and expected to accumulate in the future? "Given that international commerce involves millions of tons of steel in imports and exports, differences in [surficial and volumetric radiation] standards between nations could lead to problems in the recycling and reuse of the materials. In developing a program for the release of equipment, recyclable metal, and concrete from a decommissioning project, these regulatory developments must now be taken into account." (Ibid., p.12) To date, in the United States, such materials have been excluded from local landfills and have been intractably spurned by scrap dealers and steel manufacturers, and by the public. At least, when they have been forewarned.

It would certainly be cheaper for the federal government and the nuclear industry to sell their millions of pounds of radioactively contaminated metals, concrete, decommissioned equipment and bulk materials, or to transport them to local waste landfills, than it would be to pay to transport them and bury them at licensed, low-level waste disposal sites.

But would it be safer? No!

**2. Because scrap dealers and steel manufacturers recognize that radiation monitors or detectors may not be foolproof, and mistakes happen, who would be liable for batches of contaminated materials containing excessively high levels of radioactivity that have escaped detection?**

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SECY-02

It is my understanding that the manufacturers of the detectors do not guarantee that every single radioactive source in a shipment to a scrap dealer or foundry will be caught. Who would be liable if an order of pots and pans or intrauterine devices were manufactured using metals with radiation levels above federal standards?

**3. Has the public been informed of this rulemaking proposal to decontrol these wastes, and if the proposal is approved, would labeling of the "cleared" materials be required?**

Once the American public finds out that metals quite possibly contaminated with plutonium, technetium, cobalt, uranium (depleted, enriched, natural), and other radioactive materials have been sold into the scrap metal marketplace, public protests will be too late. While federal standards may be able to dictate the permissible levels of contaminants allowed to be present in materials released for public use, no manufacturer, warehouse guard, or store clerk would be able to guarantee to a consumer that a particular baby crib or dinette set contains "only" that permissible amount. Uniform blending of the contaminants in the scrap metal or concrete is not possible; hot spots will inevitably occur.

Once the products using these blended materials would have been manufactured and distributed, it would be impossible to identify and retrieve them if a hazard has been suspected. The "free release" promoters have claimed that exposure to these materials would cause only a "trivial dose." But how could anyone assert or prove that the contaminants could be evenly distributed at foundries, steel mills, or plants where consumer goods are manufactured? How could anyone estimate accurately the radiation dose from exposure to any specific end product? While measurements of surficial and volumetric radioactivity in bulk waste could be averaged on paper, once the contaminated materials are released for industrial or commercial use, such averaging would not work. An individual fabricated item could contain radioactivity in concentrations many times higher than the calculated average; hot spots would be inevitable and unpredictable.

According to the NRC's current regulations, Regulatory Guide 1.86, dated June 1974, "Measurements of average contaminant should not be averaged over more than one sq. meter." (page 5 fn.)

**4. Would steel mills and foundries willingly, knowingly accept radioactively contaminated metals? Would a scrap dealer buy contaminated material from an NRC licensee if he knew that no informed steel manufacturer would buy it?**

Would responsible employers be willing to expose their employees to these life-threatening, long-lived radioactive materials? To what extent could scrap melting furnaces, air systems or bag houses (used to extract fumes from the furnace), or downstream processing equipment (such as casters and rolling mills inside a steel mill) become contaminated?

Would the foundries and steel mills be responsible for the millions of dollars of cleanup costs? If the specific generator of the scrap metal containing the illegal concentrations of radioactivity could be determined --- that is, the NRC licensee --- could he be held liable? If not, who would be?

Would any federal agency be responsible for keeping track of the chain of custody, and if so, for how many years?

Would workers employed to transport the bulk materials be informed of the risks of handling the contaminated soils, concrete or metals? Would the truckers of the contaminated consumer goods be informed of the risks? While I realize the NRC has amassed a great many reports extolling the virtues of risk-based analysis of equipment and other aspects of operating an NRC-licensed facility, including about radioactive waste practices, I believe that efforts to quantify risk have often lead to arbitrary, inconsistent and potentially dangerous decisions.

**5. Has the safe release of radioactive wastes into the public domain worked anywhere?**

Recently in Iraq, desperate villagers whose electric water pumps had become inoperable during the 2003 war, unwittingly stole metal barrels that had contained uranium ores, sludges and yellow cake from a government nuclear complex in order to carry drinking water from wells and canals. Some village people are already ill. (New York Times, June 8, 2003) While the Iraqi villagers had stolen the barrels from a government storage site, this proposed rule would give the American public access legally to contaminated metal. It would be brought into our homes and workplaces and, perhaps, even into factories where gourmet drinking water is bottled.

The Iraqi barrel theft is certainly not the only time when materials contaminated with radioactive waste have been released into the public domain. Even during times and at locations where radioactive materials were supposed to have been guarded and controlled by government regulations, such materials have become accidentally dispersed, such as at Grand Junction, Colorado, and Beatty, Nevada.

In 1983-84 after an abandoned cancer therapy machine was stolen and sold to a Mexican junkyard and then dismantled, its radioactive metal and some 6000 pellets of cobalt-60 were shipped to foundries. The metal was later discovered in steel bars and rods used to reinforce concrete, and in table legs found "in new homes, a prison, and even fast-food restaurants." (The Ironworker, Sept. 1984) According to the Feb. 9, 1984, St. Louis Globe Democrat, as many as 12,000 restaurant table pedestals or more may have been fabricated in Olivette (here in St. Louis County) from the contaminated metal. The therapy machine had contained an estimated total of 450 curies of radioactive cobalt (Science, 16 March 1984, p. 1153)

The Feb. 9, 1984, Wall Street Journal described the spread of the contaminated material as follows: "The cast iron table bases were made by Falcone de Juarez in Juarez, Mexico, and shipped to about 1,500 U.S. customers by Falcon Products Inc., St. Louis, between Dec. 10 and Jan. 25, an NRC spokesman here [in King of Prussia, PA] said. Some of the scrap metal used in the castings contained radioactive cobalt 60, he said. The table bases were shipped to such institutional customers as hotels and restaurants. The NRC spokesman said it isn't known whether any of the bases were sent to schools or hospitals. 'The contamination is only in spots (of the bases),' he said. 'It isn't throughout the whole pedestal.' "

In a Feb. 27, 1984, letter I received from the NRC's Region III: "The table bases produced by the foundry and shipped to St. Louis for further finishing have ranged from background radiation to as much as 300 milliroentgens per hour at the surface of the base in surveys performed by a radiation consultant retained by Falcon Products. NRC surveys found levels of up to 100 milliroentgens per hour. The radiation levels vary within a single casting because the cobalt is not uniformly distributed in the metal." (emphasis added)

The public and the media expressed surprise and concern about the widespread dispersal that resulted from just this one medical-waste accident. Now, however, the NRC is proposing to disperse contaminated metal intentionally into the scrap metal marketplace and the melting pots of our nation's foundries, and then on into the wholesale and retail world of consumer goods, such as table pedestals. Facilities licensed to generate radioactive waste and keep it isolated from the public will instead be authorized to provide it in bulk to unlicensed scrap metal fabricators, with employees not trained in radiation safety. By the time radioactive waste from an NRC-licensed facility containing illegal concentrations of radioactivity (accidentally cleared for release) will have ended up as a zipper or a highchair, the manufacturer would probably not even be able to identify which products were made from which particular batch of scrap, let alone be able to try to recall them. Is this the "free release" scenario the NRC is proposing?

**6. How long will the products remain a potential hazard? For how many centuries or generations would labeling be required, if at all?**

When a frying pan made of radioactive scrap metal is ultimately dumped in a landfill or a radioactive hip-joint prosthesis is buried in a casket, the radioactivity will continue emitting penetrating rays and particles, long into the future. Technetium-99, a common component of uranium enrichment plant wastes, has a half-life of 213,000 years (CRC Handbook of Chemistry and Physics, 2001-2002 edition, p. 11-86). And to predict the hazardous life of Tc-99, of course, we have to remember to multiply the half-life by ten. We were unable to keep track of the Iraqi barrels or Olivette table pedestals for even just a decade.

I have to wonder if the International Atomic Energy Agency spokeswoman, quoted in the June 8, 2003, New York Times, truly believes what she said to the British Broadcasting Corporation. Referring to the materials looted from the Iraqi nuclear vaults and warehouses, she said: "We are going to find out what's missing, to see if we can repackage and secure the material, so that we can account for every gram of it." A gram is only about a thirtieth of an ounce.

In describing the concentrations of a radioactive material, the term "picocurie" is often used --- that is, a trillionth of a curie. While a trillionth may sound like an innocuous amount, one picocurie of a radioactive material gives off 2.22 radiation particles or rays every minute, per gram. And in assessing the hazard of smelted scrap metals, a manufacturer is dealing not with grams, of course, but with tons of potentially contaminated materials.

Once again I am submitting a copy of a March 10, 1981, Wall Street Journal article that, I believe, describes very well an earlier, lesser version of the free-release proposal now pending. People may not know of the NRC's current proposal to help its licensees rid their facilities of radioactive wastes by redefining their hazard, but someday they will find out. And I'll bet they'll be incredulous.

Sincerely,

Kay Drey

Enclosure

# Want Skillets That Contain Atomic Waste?

3/10 By JOHN R. EMSHWILLER 1981

*Staff Reporter of* THE WALL STREET JOURNAL

The government would like to get rid of some radioactive waste by turning it over to the public. But the public hardly seems enthusiastic about the idea.

The Nuclear Regulatory Commission is considering an Energy Department proposal to permit the sale of metals that have been contaminated at federal nuclear-fuel processing plants. Once sold, the steel, copper, nickel and other metals could be used for nearly anything. The NRC suggests the metals might be used in automobiles, frying pans, jewelry, surgical pins and dietary supplements, such as iron tonic.

NRC officials say the move doesn't pose a health hazard because the radiation involved is extremely small. But some people aren't happy about the idea that their next frying pan might be a little hot even before it reaches the stove. The commission has already received about 3,300 written comments on the plan — an agency record. Nearly all express opposition, often vehemently.

## "Outrageous" Idea

"Why don't you just eat your radioactive waste?" suggests a writer. Another calls the plan "one of the more outrageous ideas to come out of idiotic bureaucrats." A third wonders whether some NRC official is in the scrap-metal business.

Scientists involved in radiation health matters also express concern. Although none has studied the specific proposal and all say the potential radiation sounds small, some scientists contacted about the plan say any uncontrolled release of even low-level radiation is risky.

"If there isn't any way to stipulate where the material is going, there isn't any way to know how it will be used. It sounds like a lousy idea," says Prof. Edward P. Radford, an environmental epidemiologist at the University of Pittsburgh.

Some also worry that the proposal could be just the first step in relaxing the government's definition of a radioactive hazard. "As a harbinger of things to come, it makes me very nervous," says Jan Beyea, senior energy scientist for the National Audubon Society.

## A Money-Maker?

Selling contaminated scrap could help alleviate the country's mounting problem with low-level nuclear garbage. It even could be profitable. The NRC estimates that the government could earn about $42 million from the sale of about 42,000 metric tons of metal from worn-out machinery at three federal nuclear-fuel processing plants.

The potential radiation doses to individuals would vary widely, depending on the metal's use. Most uses would result in exposure well below the 100 millirems or so that the typical person receives yearly from background sources, according to the NRC environmental report. For instance, the agency calculates that a person working 1,000 hours a year in a room made of the metal would receive a radiation dose of 0.05 millirem annually.

But wearing a bracelet of contaminated copper for 16 hours a day for a year could result in a dose of 290 millirems. While the NRC concedes that's "relatively high," it says the dose is safe because it "would be localized to the area in contact with the bracelet" and wouldn't reach vital organs. In the case of a tainted belt buckle, the commission says clothing would provide an added safety margin.

## Little Danger

The commission also contends that people wouldn't have to worry if the metal were inside the body. A surgically fitted stainless steel pin could give a dose of 440 millirems a year to the adjacent bone, but one centimeter away from the pin, the dose would drop to 0.01 millirem. And the carrier would be an "essentially negligible" radiation source to others, the NRC says.

In its effort to control the garbage problem, the commission recently approved a plan to exempt some wastes from strict burial rules. There are only three sites—in Nevada, Washington State and South Carolina—for storing low-level radioactive waste. Local politicians and citizen's groups have been pressing to limit the flow of trash to those dumps.

The new burial rule, which goes into effect soon, will allow medical wastes, such as testing liquids and animal carcasses containing small amounts of radioactivity, to be dumped in local landfills. The commission says the material represents about 15% of the waste that went to the three federal burial sites last year. Each year, about 18,000 dogs and 500,000 smaller animals are radioactively contaminated in medical research.


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