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To: Secretary, US Nuclear Regulatory Commission  
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USNRC

Comments re Code of Federal Regulations, Title 10, Part 71. 67 FR 21390-21484  
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OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

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Attn: Research and Special Programs Administration  
Washington, DC 20590-0001



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Comments re 49 CFR 171. 67 FR 83:21328-21388. 4/30/2002  
Docket No. RSPA-99-6283 Hazardous Materials Regulations. (HM-230)

**re Compatibility with the International Atomic Energy Agency Transportation Regulations/Standards and other transportation safety amendments.**

The proposed rule changes to the Code of Federal Regulations --- to the NRC's Title 10, Part 71 and the DOT's Title 49, Part 171 --- represent a major step toward the deregulation of unpredictable amounts of radioactive wastes. These rule changes would decree that certain radioactive concentrations and quantities of radioactively contaminated materials would become exempt from packaging and shipping requirements and controls, such as radiation shielding and labeling. I am submitting these comments with the hope that neither agency will adopt these changes which would reduce the isolation and protection requirements so essential for radioactive materials in transit. Instead, I urge both agencies to make every effort to strengthen the current regulations, standards and controls --- not weaken them.

Currently the NRC allows its licensees to exempt packages from regulatory requirements if the radioactive contents do not exceed 70 becquerels --- or 1,890 picocuries per gram (10 CFR 71.10). The new proposed Radioactive Exemption Tables A-1 and A-2 would exempt many more packages containing increased amounts of radioactivity. (Please note: I would appreciate it if the citations in my comments would, by reference, be extended to the relevant domestic DOT regulations, as outlined in 49 CFR Parts 170 through 189.)

The proposed exemption tables list concentrations of specific radioactive nuclides that would be eligible for shipment without regulated protective containers and without instructions dictating how such shipments would be kept isolated from commerce after their delivery. These materials would in essence be decreed to be safe for dispersal into our daily home, school and workplace lives.

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Over the years, when I have referred to the NRC's values in its "Standards for Protection Against Radiation" tables --- 10 CFR Part 20 Appendix B --- seeking to compare permissible concentrations of various radionuclides for a worker or a member of the public, I have been struck by the minute differences between the permissible values. Because the differences between the nuclides are so tiny, one would think that massive health and environmental research underlies the specificity of those differences. Discrete numbers with varying exponents dictate the permissible air versus water concentrations; solids versus gases or liquids; and permissible contaminant levels in the workplace versus in releases to the environment. But I have come to believe that the officials in the regulatory agencies who have created those values know that many if not most of the minute differences between the nuclides are arbitrary.

And I have to assume that many if not most of the Table A-1 and A-2 values, both current and proposed, in the NRC's Part 71 regulations ("Packaging and Transportation of Radioactive Material"), which are as minutely distinguished from each other as are the Part 20 Appendix B values, have also been arbitrarily chosen.

In trying to understand the derivation of the discrete levels of radionuclides in the amended Part 71, I looked at those nuclides that I believe are listed in Table A-1 as being allowed to be shipped in "unlimited" amounts of terabecquerels or curies. I thought perhaps they were chosen because most of them have very long half-lives --- such as, samarium-147 (106 billion years), thorium-232 (14.1 billion years), and rubidium-87 (47.5 million years). But zirconium-88 is also included, with only an 83.4-day half-life, while zirconium-96 is not. The Zr-96 half-life is more than 20,000,000,000,000,000,000 years. (CRC Handbook of Chemistry and Physics, 82nd Edition, 2001-2002; p. 11-82.)

I believe a forty-year-old quotation would perhaps be of interest to you, describing how the permissible levels of concentration have apparently been based on very few animal and virtually no human data. Appearing before the Joint Committee on Atomic Energy of the US Congress in May 1960, W. B. Harris, Director of the Environmental Science Division of the Atomic Energy Commission's Health and Safety Laboratory, testified as follows:

If one now refers to Handbook No. 69,\* here can be seen a list of approximately 25 numbers for each of about 200 radionuclides. How it is possible that one can derive approximately 5,000 different permissible concentrations, cloak these values with legal stature when they have been generated on the basis of the relatively few human injuries which have been documented, is beyond comprehension. . . . It is true that considerable animal experiment has gone into the development of many of these data. However, one must only cautiously take the position that man as an animal is to be ignored. Human experience is surely the more valuable. (quoted by the late Leo Goodman in a paper in the Atomic Energy Law Journal, Winter 1963, p. 264)

\* National Bureau of Standards: "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure." 6/5/59. (NCRP No. 22)

An additional quote that I believe is relevant comes from Catherine Caufield's Multiple Exposures --- Chronicles of the Radiation Age: "These new [National Council on Radiation Protection] standards, like all the earlier ones, were not the result of precise calculations. They

were compromises, estimates, and evolutions from earlier figures.” (New York: Harper & Row, 1987, p. 136)

The NRC and DOT are seeking to decree that certain quantities of radioactive wastes are not sufficiently radioactive to make them of regulatory concern --- by ruling that they need not be controlled or labeled as being radioactive. The new proposed exemption tables do not make the wastes safe to ship by water or air, on our railways or public highways --- through our neighborhoods, and past schools and farmlands. The transport amounts and concentration levels in Tables A-1 and A-2 are not safe; they are merely “permissible.”

The proposal to allow for the dispersal (“recycling”) of the nation’s stockpiles of radioactively contaminated materials into the public domain is most certainly not based on sound science, but is instead based on commercial judgment: What works? What can we get away with?

Back in 1980 the NRC first proposed getting rid of some of the radioactively contaminated scrap metal from uranium enrichment plants by exempting it from licensing requirements, with the intent then to sell it on the open market. When members of the public heard about the Draft Environmental Statement (NUREG-0518), many protested. As you will note in the enclosed Wall St. Journal article (March 10, 1981) 3,300 people sent in comments, nearly all in opposition. I remember wondering whether the Draft Environmental Statement could perhaps be sold as a textbook to stand-up comics. The scrap metal proposal was quietly dropped. Until now.

Even assuming that no one could prove that exposure to the proposed contaminant levels would increase the risk of damage to tissues, cells, DNA and other vital molecules, such a current lack of proof fails to acknowledge the fact that scientists, physicians and biologists continue to learn more about an increasing range of damaging effects from radiation --- including programmed cell death (apoptosis), genetic mutations, cancers, leukemia, birth defects, and reproductive, circulatory, immune and endocrine system disorders.

Just recently, for example, evidence of elevated mutation rates has been found in families living downwind of a Soviet nuclear weapons test site in Kazakhstan. (Yuri Dubrova, et al., “Nuclear Weapons Tests and Human Germline Mutation Rate,” Science, 8 Feb. 2002, pp. 946 and 1037.)

In the April 1999 Proceedings of the National Academy of Sciences --- just three years ago --- it was reported that radiation can induce mutations not only when it hits the nucleus of a cell, but when it hits the cytoplasm (the body) of the cell as well. “When DNA in the nucleus is struck by a particle, the damage often kills the cell. Cytoplasmic irradiation may be more dangerous, the [Columbia University accelerator] researchers suggest, because it generally does not kill the cell, and the mutation can be passed on to future generations of cells.” (Nuclear News, 7/99, p.70)

At the very least, I hope the NRC and DOT will reconsider the proposed new safety amendments to the nuclear transportation regulations in light of the September 11, 2002, terrorist attacks and subsequent evidence of our nation’s unexpected vulnerability. Funneling shipments of dangerous radioactive materials into and through the heartland --- even without labels --- is almost like intentionally providing potential terrorists with home delivery of the ingredients

needed for dirty bombs, for the contamination of public water supplies, and perhaps for other ingenious acts of terrorism no one has yet considered. The NRC and DOT goal of bringing the U.S. transportation safety standards into harmony or conformity with the more lenient international standards --- in order to facilitate and expedite commerce, I assume --- should be subservient to your mandate to preserve the health and safety of the people who live, work and travel here in the United States.

It is difficult to imagine a more inappropriate time than now to embark on efforts to reduce or remove controls over the transport of radioactive wastes and concurrently to plan for the dispersal of those materials ultimately into the manufacturing and commercial marketplaces of the nation. The Congress is actively working to establish "homeland security" protections in response to the devastating acts of September 11. The NRC is working to improve its efforts "to protect against acts of radiological sabotage and to prevent the theft of special nuclear material." (10 CFR 73). The DOT is likewise working to tighten security over shipments on land, air, and water.

Can there be any reasonable justification for loosening the reins over the generators and transporters of nuclear materials at this time?

Once the unlabeled radioactive wastes are shipped off-site, ultimately to be used for an unpredictable range of consumer and industrial products, retrieval will never be possible.

I urge both the US Nuclear Regulatory Commission and the US Department of Transportation to abandon this proposal to try to detoxify radioactive waste by decree, by definition and, I fear, by deception. The public should have the right to be protected from the planned exposure to radiation generated for commercial and weapons purposes, or at least the right to be informed if such protection is no longer to be our right.

The public and its state and local governing agencies need the DOT, the NRC, the Postal Service and other federal agencies to strengthen and tighten regulations and oversight over the packaging and transport of radioactive materials --- not weaken them. Please do not adopt any of the proposed new exempt radioactive concentration or quantity values or other transportation regulations that would reduce the public safety and health.

Sincerely,

*Kay Drey*

Enclosure: "Want Skillets That Contain Atomic Waste?" by John Emshwiller, Wall St. Journal, March 10, 1981.

# Want Skillets That Contain Atomic Waste?

3/10 By JOHN R. EMBHWILLER 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 some have 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 reducing 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 16% 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.

-page 5- from Kay Drey

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