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THE AMERICAN IRON AND STEEL INSTITUTE

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Introduction

The American Iron and Steel Institute ("AISI"), is pleased to submit these Comments on the Nuclear Regulatory Commission (NRC) Issues Paper on Release of Solid Materials at Licensed Facilities ("Issues Paper"). 64 Fed. Reg. 35090 (June 30, 1999). AISI is a trade association of North American steel producers. Its 48 producer member companies account for approximately 70% of the steel produced in the United States and over 80% of the steel produced in Canada and Mexico. AISI also is a member of the Metals Industry Recycling Coalition and fully supports the comments being submitted by the Coalition in this proceeding.

The Issues Paper raises a series of questions that need to be resolved in connection with the Commission's consideration of a possible rulemaking to establish dose-based levels for the release of radioactively contaminated solid materials from licensed facilities. Among the materials that are potential candidates for such release are scrap metal, equipment, structural metal components of buildings, and other used metal products from nuclear fuel cycle facilities, research laboratories, and other NRC licensees. Many of these materials contain steel that could make its way into the scrap stream for recycling.

Our interest in the Issues Paper is three-fold. First and foremost, we are concerned that a rule allowing the "free release" to commerce of radioactively contaminated metals from licensed facilities - even if the material meets dose-based "clearance" levels set by the NRC - could have a severe negative impact on the acceptance of metal products in consumer and commercial markets, since the intended use of the "free released" material would be as a recycled feedstock for steel making and other metals-melting furnaces. Second, we fear that the "free release" of these materials for unrestricted use in commerce would tarnish the positive image of recycling which the metals industries have carefully nurtured over the years, causing consumers to eschew all products with a recycled metal content. Third, operators of steel mills are concerned about the increased costs and disruption they would face if the scrap stream sent to steel making facilities for recycling contained significantly increased quantities of metal with above-background levels of radioactivity.

For these reasons among others, we believe strongly that the Commission should not allow

radioactively contaminated metals from licensed facilities to be released for unrestricted use in commerce, even if the metal meets dose-based release levels established in an NRC rulemaking.

- I. The Commission Should Not Allow the "Free Release" to Commerce of Radioactively Contaminated Metals from Licensed Facilities Even If They Meet Dose-Based Levels Established in an NRC Rulemaking.

AISI supports the establishment of generally applicable dose-based levels for the release of solid materials from licensed facilities - provided that if the material is a radioactively contaminated metal (other than an item that is to be used off-site for its original purpose), it can be released solely for specified restricted applications that would preclude its being scrapped, melted, and recycled for use in consumer or commercial products where it is not serving a nuclear-related purpose. To effectuate such restrictions, the Commission should establish appropriate labeling and tracking requirements. Moreover, as discussed below, these same restrictions must apply to metals being released from Department of Energy nuclear facilities.

Under this approach:

1. Metal-containing equipment or products from a licensed facility that are to be used for their original purposes off-site could be released without special restrictions if they meet the NRC's dose-based standards.
2. Scrap metal or metallic items from a licensed facility that meet the NRC's dose-based standards but are not to be used for their original purposes off-site could be released:
 - a. For disposal in municipal or industrial landfills that are not licensed for receipt of low level radioactive waste, as well as for disposal at licensed radioactive waste landfills; or
 - b. For processing at a dedicated, licensed facility where the metal would be recycled or recovered for use only at an NRC-licensed nuclear facility or at a nuclear facility operated by the Department of Energy ("DOE").

Whether the intended destination is a landfill or a dedicated processing/recycling facility, the released scrap metals should have to comply with appropriate labeling/tracking requirements to ensure that they arrive at the intended destination rather than entering the general stream of commerce without restrictions. The tracking procedures would terminate once the released metal arrives at the landfill or dedicated processing/recycling facility. However, the output of the processing/recycling facility also would have to be tracked to ensure that it winds up at an NRC-licensed or DOE-operated nuclear facility.

3. If the operator of the licensed facility reasonably believes the scrap metal has not been radioactively contaminated, and if radiation detection technology and sampling/analytical protocols employed at the facility are sufficiently sophisticated and set to detect above-background levels of alpha, beta, and gamma radiation for all relevant isotopes, the approach outlined in paragraph 2 above could be modified to allow the unrestricted release of scrap metal from the facility if the scrap metal does not contain above-

background levels of radioactivity. In such a case, however, the released scrap metal should be subject to labeling/tracking requirements designed to ensure that any processing/recycling facility to which the scrap metal ultimately may be sent will be advised of its origin and can make an informed decision as to whether to accept the material.

We oppose the "free release" from licensed facilities of scrap metal (or other metal items that are to be processed and recycled) for three principal reasons:

1. We are concerned that the "free release" of such materials would undermine public trust in the safety of consumer and commercial products containing steel, nickel, and other metals.
2. We are concerned that a "free release" policy for such metals would adversely affect consumer acceptance of products having a recycled metals content, even if radioactively contaminated "free released" metals were not actually used to produce the products.
3. We are concerned about adverse impacts at steel mills and other metal-melting facilities to which scrap containing radioactively contaminated metal is sent.

In the balance of our Comments, we discuss these concerns. Before doing so, we should note that we take no position on what dose-based levels the NRC should establish for the restricted release of metals or the "free release" of other solid materials from licensed facilities. We do believe, however, that in selecting the benchmark dose level from which the release standards are calculated, the NRC should strive to be consistent with the guideline levels it has established for protection of potentially exposed populations in the past. For example, NRC's public dose limit is 100 millirems per year (100 mrem/yr),^{1/} and its Subpart E dose criterion for the release of decommissioned structures and land is 25 mrem/yr.^{2/} If the Commission decides to use a significantly more stringent dose criterion for the release of solid materials from licensed facilities, as NUREG-1640 suggests may be the case, it should explain why adoption of a lower dose criterion is necessary from a health perspective or otherwise is appropriate in this case, and it should consider what kind of message it would be sending to those who have been - and will continue to be - protected by the less stringent standards in other contexts. By constantly reducing the permissible dose over time without any new information indicating that earlier risk assessments were incorrect, the government exacerbates skepticism among members of the public as to whether any level of radiation is acceptable.^{3/}

- A. Even If They Meet Dose-Based Levels Established by the Commission, the "Free Release" to Commerce of Radioactively Contaminated Metals from Licensed Facilities Could Have a Devastating Impact on Consumer and Commercial Markets for Metal Products.

The main reason we oppose the "free release" from licensed facilities of scrap metal and other metallic items that are not to be used off-site for their original purpose is that they are likely to be recycled into industrial and consumer products. We believe that once such materials enter the recycling stream in any significant volume, the marketability of metal products for commercial and consumer use will be adversely affected, even though the released metal meets whatever dose-based standards NRC may establish.

Viewing the matter strictly from the perspective of health physics, we do not doubt that

"safe" release levels can be set. That, however, does not solve the problem - because, whatever the NRC and DOE may say about the safety of products made from "released" metals having very low levels of radioactivity, the marketability of these products will be determined by public perceptions, not by objective evaluations of risk. And we think it is highly unlikely that the public will accept the notion that the items they use and come in contact with on a daily basis are made, in part, from what undoubtedly will be characterized in the media as "radioactive metal."

ABC's World News Tonight with Peter Jennings on August 24, 1999 provides an example of what we can expect. That newscast featured a segment entitled "Dangerous Recycling." Building on the DOE's investigation of whether nuclear weapons facility workers may have been exposed to dangerous levels of radiation, the segment warned ominously that "now, there is reason to believe that some material potentially dangerous to nuclear workers could be recycled all the way to your kitchen." Focusing on BNFL's contract to recycle nickel from DOE's Oak Ridge facility, the report cautioned that this low level radioactive metal "could be used for silverware, pots and pans, watches, eyeglasses . . . the zipper on your pants, your earrings, your belt buckle, a hip replacement joint, your baby carriage."

A lengthy article on the NRC's clearance level initiative in the October 1998 issue of *The Progressive* struck a similar note - referring to an expected hundred-fold increase in output by the "radioactive metal processing industry" and suggesting that this could cause close to an additional 100,000 cancer cases in the United States alone. Like the ABC World News report, *The Progressive* article draws attention to the everyday products that could contain radioactive metal: "Your IUD, and your bracelets, your silverware, the zipper on your crotch, the coins in your pocket, frying pans, belt buckles, that chair you're sitting on, the batteries that are in your car and motorbike, the batteries in your computer."^{4/} It concludes with the vision of consumers bringing a Geiger counter to the department store when they are planning to buy frying pans or similar items.

The picture being painted in media reports such as these may bear no relation to reality as far as actual risks are concerned. But in matters of this sort, public perception is at least as important as reality, and assurances of safety by public officials are unlikely to sway the public. A DOE spokesman discovered this first hand when he tried to explain the Department's plan to release slightly contaminated copper from DOE's Fernald, Ohio facility. As he somewhat colorfully put it: "When I went in front of the public, I got the crap beat out of me."^{5/} It seems doubtful that industry would be any more successful at explaining the situation than the government has been.

The issue of public perception is an overriding concern for steel producers and other sectors of the metals industry whose markets depend heavily on public trust in the safety of their products. The results of four focus groups conducted in Austin, Texas and Bethesda, Maryland earlier this fall by Wirthlin Worldwide demonstrate the legitimacy of this concern. Participants were told that several facilities previously used to produce nuclear material or generate nuclear power were being decommissioned. Group facilitators explained that these facilities were very carefully regulated by the NRC to ensure the safe handling and disposition of any unsafe radioactive materials. Some nickel, steel, and aluminum materials, however, had such low, almost negligible, amounts of radioactivity that they could be cleared by the NRC for release back into the stream of commerce. Considerable effort was taken in the description to avoid prejudicing responses. For example, the work "contaminated" was never used, and words like "safe" and negligible" were employed to describe the materials. Nevertheless, the focus group

reaction to the free release concept was overwhelmingly negative - over 80% of all respondents in the focus groups felt it was a bad idea.

Discussion revealed several reasons for the negative reaction. First, consumers do not believe we know enough about the long term effect of radioactivity - especially low level radioactivity - and they fear that decisions made now may create unintended consequences years or generations down the road that cannot be reversed. This uncertainty creates a sense of risk. Second, they feel that any risk is not worth it. One simple rule of consumer behavior is: "If a health risk can be avoided, avoid it." When it comes to personal health or future generations, consumers are at their all time most risk averse. Finally, most people simply do not trust any governmental agency, commission or department to tell them what is safe and what is not.

Just last week, Wirthlin Worldwide posed a series of similar questions to over 1,000 U.S. adults in a telephone survey. By a margin of almost three to one, the respondents said it would be a bad decision to allow steel from closed nuclear facilities that has picked up trace amounts of radioactivity over time to be recycled into new steel and used in everyday items like cars, appliances, and medical devices. When told that government nuclear scientists have determined that the radioactivity level in this steel is so low as to pose no significant health risks and that in their opinion, its use is safe and no longer needs to be restricted by the government, the respondents - by a margin of three to one - still said it would be a bad decision to allow this steel to be recycled into new steel and used in everyday items. Moreover, when informed that permanently disposing of steel from decommissioned nuclear facilities rather than recycling it could cost the government additional taxpayer money and increase monthly electric bills, the respondents continued to say - by a margin of three to one - that allowing such steel to be recycled and used in everyday items would be a bad decision. Finally, when asked what their impression of steel would be if they knew that a small amount of steel from closed nuclear facilities containing far less than the government-approved safety level of radioactivity was recycled into the mainstream production of new steel, the respondents gave an average rating of 43.6 on a scale of 0 to 100, with 0 indicating an unfavorable impression of the material and 100 indicating a favorable impression. This represented a 24 point drop from the rating given prior to introducing the issue of recycled steel from closed nuclear facilities.

Clearly, the steel industry's concern about negative public perception is well founded, a point that the NRC seems to recognize. Thus, the Issues Paper acknowledges that "material released for unrestricted use from nuclear facilities could result in concern, confusion, or fear if the public either does not clearly understand that the risk is small or does not accept the risk."^{6/} We think that regardless of how low the NRC sets the release level, the public will not understand or accept the concept of scrap from nuclear facilities being recycled into consumer products. Congress apparently has difficulty accepting that concept as well - as evidenced by the provision in the Energy Policy Act of 1992 revoking the NRC's Below Regulatory Concern Policy Statement which, among other things, would have set a standard for release of solid materials for recycle.^{7/} We fear that consumer aversion to perceived radioactive risk would be manifested in the form of metal product "de-selection" and in a general disinclination to purchase products having a recycled metals content. If that happens, the resulting impact on steel makers and on other metal producing and using industries could be devastating. This potential impact would have to feature prominently in the Regulatory Analysis that the Commission prepares for any "free release" rule it might propose.^{8/}

B. The "Free Release" to Commerce of Radioactively Contaminated Metals from

Licensed Facilities Could Tarnish the Image of Recycling and Create Consumer Aversion to All Products Having a Recycled Metals Content.

In addition to the negative impact that it likely would have on consumer and commercial markets for metal products, the "free release" of metals from licensed facilities could have broader negative implications for recycling generally. As consumers become aware of the fact that significant quantities of "radioactive metals" are being recycled, the "environmentally friendly" image of recycling that currently prevails would be tarnished, and public confidence in the use of recycled products would be undermined. This would restrict the market for products with recycled metal content, whether or not the products contain any radioactively contaminated material. The restricted market, in turn, would undercut the economic factors necessary to support environmentally sound recycling of metal-bearing wastes. Metals recycling also would suffer because dealing with an increased volume of radioactive scrap would add survey and other costs to the metals recycling process.^{9/} The combination of these factors could very well depress rates of metals recycling far below current levels.

Given the fundamental role that recycling plays in metal-related resource conservation, pollution prevention, and waste minimization, the adverse societal impact brought about by reduced levels of recycling could be enormous. This impact would have to be evaluated under the National Environmental Policy Act as one of the environmental implications of a "free release" rule.^{10/} In the long run, it would far outweigh any economic benefit that NRC licensees (and DOE or its contractors) might realize if they were free to recycle metals with low levels of radioactivity as unrestricted commodities in commerce. If the Commission thinks that environmental benefits would result from increased recycling of low level radioactive scrap,^{11/} it is sadly mistaken.

C. The "Free Release" of Radioactively Contaminated Metals from Licensed Facilities Could Cause Significant Disruption and Impose Large Additional Costs on Steel Mills and Other Metals Melting Operations.

Finally, apart from its potential impact on markets for metal products and on recycling generally, allowing the "free release" of metals from nuclear facilities once they meet dose-based levels established in an NRC rulemaking could prove to be very costly and disruptive for steel mills and other metals melting operations. This is because the "free release" of such metals would increase substantially the volume of scrap metal in commerce having above-background levels of radioactivity. That material would be combined with scrap metal from other sources and find its way to steel mills and other metals smelting and recovery facilities, thereby increasing the risk of a "radioactive melt." A melt of radioactive scrap - which currently may result from the presence of "orphaned" sources in the scrap stream - can have severe consequences for a steel mill or other metal-melting facility. The costs of decontamination, disposal, and shutdown losses associated with "radioactive melts" at minimills have ranged from \$8 million to \$25 million, and they are estimated to run as high as \$100 million or more in the event that a radioactive melt occurs at a large integrated facility.

To protect against the risk of a radioactive melt - and to protect their employees, their property, their products, and the general public - steel mills and other metals melting facilities utilize scrap monitoring alarm systems that typically are set to detect radioactivity at levels slightly above background. These systems - which have been installed and upgraded at considerable cost over the past fifteen years - are sensitive to gamma radiation (the usual form

of radioactivity found in licensed sources), but not to alpha or beta radiation (which may be present in volumetrically contaminated metal of the sort that might be released under an NRC dose-based standard). Thus, allowing the "free release" of metals from licensed facilities would increase the risk of a radioactive melt. This could be a serious problem even if the level of radioactivity in the scrap is within the dose-based limits being considered by the Commission, because the radioactivity could concentrate in the flue dust or slag to a higher level than in the incoming scrap. That, in turn, could mean that the dust or slag would have to be sent for disposal at a licensed radioactive waste landfill, thereby greatly increasing dust/slag management costs.

Moreover, even if the sensors detect the above-background radioactivity from "free released" scrap metal so that a radioactive melt is avoided, the increasing frequency of sensor alarm soundings would pose significant problems. When a sensor alarm sounds, there is a possibility that the scrap contains a radioactive source which, if melted, would create a very expensive and disruptive problem for the facility. Thus, such alarms must be taken seriously. Responding to a sensor alarm involves substantial costs. Among these are heightened employee concern, disruption of facility operations, the provision of notice to governmental agencies, arranging for return of the scrap to the supplier, and segregating the load pending its removal. Moreover, if sensor alarms sound with increasing frequency, there is a danger that - like the boy who cried "wolf" too often - they will not be treated with appropriate seriousness, thereby increasing the risk that scrap containing a radioactive source will be melted.

The last thing the steel industry needs is additional above-background radioactive material in the scrap supply that would make it even more difficult and costly to guard against the possibility of a radioactive melt. This point should be of concern to NRC licensees and DOE contractors who may contemplate releasing metals from their facilities for recycling, because - to protect themselves - most steel mills and other metal-melting operations apply a "zero tolerance" policy to loads of incoming scrap, i.e., if it sets off a sensor alarm, the load will be rejected. The widespread observance of this "zero tolerance" policy may severely depress the market for "free release" metals, whatever the NRC may say about their safety.

In sum, like the potential impact on the marketability of metal products, the adverse impact that a "free release" program could have on facilities that use scrap metal as furnace charge material argues strongly against allowing metal from NRC-licensed facilities to be released to commerce without restrictions simply because the metal meets dose-based standards set by the Commission.

II. The Commission Should Press for Adoption of a Restricted Release Policy for Radioactively Contaminated Metals by the Department of Energy and Our International Trading Partners.

As the Commission points out, the DOE operates nuclear facilities that generally are not licensed by the NRC but which, nonetheless, "face issues concerning the disposition of materials . . . similar to those faced by NRC licensees." See 64 Fed. Reg. at 35093. All of the reasons discussed above for restricting the use of radioactively contaminated metals released from NRC-licensed facilities apply with equal force to metals released from these DOE-operated nuclear facilities. Indeed, the need to promptly establish policies precluding the "free release" of radioactive metals is even more imperative for DOE facilities than for NRC-licensed facilities, since the release into commerce of large quantities of radioactive metal from DOE facilities is

more imminent.

We understand that the Commission does not directly control DOE policies. However, given its expertise in this area and the leading role it plays in developing governmental policy regarding the regulation of nuclear materials, the Commission should be able to influence Departmental decision making regarding the release of metals and other solid materials from DOE facilities. This is particularly true, since a private contractor handling radioactive byproduct material from a DOE facility will have to obtain a license from the NRC or an Agreement State - as BNFL's subsidiary, Manufacturing Sciences Corporation, purportedly did in connection with its contract to recycle the nickel from Oak Ridge.^{12/} At the very least, the Commission can "lead by example" in formulating and articulating policies to regulate the use and disposition of radioactively contaminated metals from nuclear facilities, and it can urge that those policies be applied across the board.

We see no principled justification for establishing different release criteria (and restrictions) for material that originates at a DOE facility than for material that originates at an NRC-licensed facility, and we doubt the public would understand the basis for any such distinction either. Accordingly, the NRC must work with DOE to ensure that the release criteria and restrictions adopted by the two agencies are fully congruent and that, in both cases, radioactive metals from nuclear facilities are not eligible for "free release" into commerce even if they meet dose-based clearance levels.

By the same token, the U.S. government should seek to persuade our trading partners to adopt this same model of "restricted release" for metals from nuclear facilities. If this approach were followed internationally, very little "radioactive" metal would arrive at our shores, because other countries would release metal from nuclear facilities only for landfilling or nuclear-related applications within their own borders. Regardless of what other countries may do, however, we believe the Customs Service should reject any shipment of metal or metal products that sets off a sensor which has been set to detect radioactivity above "background" levels, even if the radioactivity does not exceed the release levels that ultimately are set by the NRC for domestic licensed facilities. This is because it would not be feasible to subject imported metals and metal products to the use restrictions that we believe the NRC should establish for domestically "released" metals.

The need for such action has become painfully evident in recent years. As reported by International Atomic Energy Agency (IAEA) spokesman Klaus Duftschmid in August 1998: "Since the break up of the Soviet Union, incidents of illicit tracking of radioactive sources across borders and contamination of scrap metal imported from Eastern countries has considerably increased." Over 100,000 radioactive sources are unaccounted for in the Ukraine alone. And the Russian Atomic Energy Ministry has announced plans to sell scrap metal from decommissioned nuclear submarines to help dispose of Russia's massive pileup of submarines and nuclear materials.^{13/} Most recently, the Italian environmental association Legambiente and a branch of the Italian Carabinieri specializing in radioactive waste reported that 5,000 tons of radioactively contaminated ferrous wastes are brought into Italy each year from Eastern European countries - much of it involving illegal trade - with Italy serving as a point of passage to transport the waste elsewhere.^{14/} Clearly, there is a need to better safeguard our borders against the entry of radioactively contaminated scrap or metal products. A simple standard denying entry to scrap and metal products containing above "background" levels of radioactivity would meet that need.

Conclusion

AISI supports the establishment of dose-based standards for the release of solid materials from nuclear facilities. But we feel very strongly that scrap metal meeting these standards (or other metallic items that are not to be used for their original purpose off-site) should qualify to be released only for restricted applications - notably, landfilling or use for nuclear-related purposes or at nuclear facilities. These metals should not be "freely released" into commerce because, if they are, they could find their way into consumer or commercial products - either directly or as a result of the future scrapping of items made from the released metals. And if that were to occur, metal producers, metal recyclers, metal fabricators, and metal product manufacturers would suffer an enormous adverse impact - in large part because the public will perceive products made from "radioactive metal" to be unsafe, regardless of what the NRC, the DOE, or other governmental agencies may say.

For that reason - and because of the added costs and disruption that a "free release" policy would impose on the operations of recyclers, metals melting facilities, and their suppliers - we believe that restrictions of the type outlined at pages 3-4 of these Comments must be placed on metals released from nuclear facilities. The Commission should incorporate this "restricted use" concept into its own regulations and should press the DOE and our international trading partners to do the same.^{15/}

- 1/ See 10 CFR § 20.1301; 64 Fed. Reg. at 35098.
- 2/ See 64 Fed. Reg. at 35098. Similarly, EPA has exempted from regulation as a solid waste recycled coal ash used in concrete block which results in a dose of approximately 10 mrem/yr. See 64 Fed. Reg. at 35095.
- 3/ At the same time, while harmonization with international standards is desirable, it should not be a deciding factor in setting the release standards. Instead, the release standards should be risk-based and reflect sound science. If standards established by the NRC on that basis differ from those being considered by the IAEA or the European Commission (EC), the United States Government should urge those bodies to adjust their own release standards to match those established here.
- 4/ See Anne-Marie Cusac, "Nuclear Spoons," *The Progressive*, October 1998 at 22.
- 5/ See Anne-Marie Cusac, "Nuclear Spoons," *The Progressive*, October 1998 at 23.
- 6/ 64 Fed. Reg. at 35097.
- 7/ See 64 Fed. Reg. at 35094.
- 8/ See 64 Fed. Reg. at 35094, 35096 (noting that impacts on other industries and on recycle/scrap/manufacturing processes would have to be considered).
- 9/ See 64 Fed. Reg. at 35096 (noting that a rule allowing the release of solid materials from licensed facilities would impose survey costs "at non-licensed facilities that may use or

receive released solid materials, to verify that permissible release levels have been met").

- 10/ See 64 Fed. Reg. at 35094.
- 11/ See 64 Fed. Reg. at 35097 (noting the environmental impacts of mining and primary metals production).
- 12/ We say "purportedly" because, as pointed out in the October 25, 1999 letter to Chairman Dicus from Congressmen Dingell, Klink, and Markey, there is a serious question whether the license amendment granted by the State of Tennessee to Manufacturing Sciences Corporation is legally valid.
- 13/ See The Washington Post, November 16, 1998.
- 14/ See BNA International Environment Reporter (December 8, 1999) at 1001.
- 15/ As noted in paragraph number 3 on page 3 above, once sufficiently sensitive, comprehensive, and reliable detection technology and sampling/analytical protocols are in place, scrap metal from a licensed facility that does not contain above-background levels of radioactivity could be released without special restrictions -- provided that the Commission establishes appropriate labeling/tracking requirements that would apply until the scrap metal arrives at and is accepted by a metals-melting facility.