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Comments to the
United States Nuclear Regulatory Commission (NRC) on

"Rulemaking on Controlling the Disposition of Solid Materials"

(Radioactive Waste and Materials Release, 'Recycling,' Dispersal)

Scoping Process for Environmental Issues
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Nuclear Information and Resource Service and the listed organizations call on the NRC to ***either reject this rulemaking or reframe it*** to concentrate on ways to truly control radioactive solid materials rather than deregulate and release them as if not radioactive.

We support actually "controlling" the radioactive materials that result from licensed activities, most importantly, nuclear power and weapons fuel chain facilities. Although NRC does not regulate some nuclear weapons facilities, some waste from those sites is being released through NRC- and Agreement State-licensed facilities thus must be considered in policies and regulations NRC makes on this issue.

Releasing radioactive materials from specifically licensed regulatory management ***is not "controlling"*** them. Making "an expert judgment" to irreversibly add, even minimally, to the radiation doses of the public, now and in the future, is ***not*** "controlling" radioactive materials. Some radioactivity will inevitably be released even if the goal and requirement is to prevent releases or exposures.

It is morally wrong to deliberately permit releases-- to add to the individual, public and environmental burdens in order to relieve the nuclear power industry's regulatory burden.

It is wrong to shift the economic burden from one industry (nuclear power) to other industries (such as recyclers, manufacturers, sales and landfill operators), facilities, local and state governments, the public, including consumers, and the environment.

"Nukespeak"

In his novel, *1984*, George Orwell coined the word "Newspeak," a term for the lies that were manufactured as truth. Subsequently, Hilgartner, Tell and O'Connor wrote *Nukespeak: The Selling of Nuclear Technology in America* (which won the 1982 George Orwell Award) about the ways the nuclear establishment uses language to deliberately mislead the public.

This rulemaking is classic "Nukespeak." Here are a few examples.

Nukespeak 1) The Title of the Rulemaking:

The word "radioactive" has been purged from the title so as to minimize public concern, alarm or interest. Then the word "control" is inserted to imply that the material will actually be controlled. Clever, when the only serious options are to remove the material from control.

This rulemaking, called "Controlling the Disposition of Solid Material," is essentially the same as NRC's previous (1986 and 1990) policies called "Below Regulatory Concern," which Congress revoked in 1992. NRC's desired outcome in both cases is clearly the release from control of as much radioactive material as possible, in order to relieve licensees that generate radioactive waste of economic and regulatory "burdens." EPA estimated that the Below Regulatory Control Policy would have allowed about a quarter

of the licensed "low-level" radioactive waste to be treated as non-radioactive. The National Academy of Sciences estimates that deregulating or clearing nuclear waste could save the nuclear industry in the range of $11 Billion to dump radioactive metal and concrete in unlicensed landfills and more if sold into commerce for reuse and "recycling." Once the waste is released, there will be ***no*** control. If there is, who pays and how does this then save the licensee money?

We request clarification as to whether liquids and sludges are also being considered for release or deregulation under this "control of solids" rulemaking.

Nukespeak 2) The "Conditional Use"/ Restricted Release Option, # 3:

In the "conditional use"/"restricted release" option (3), the implication is that there will be conditions, restrictions or some kind of continuing controls or regulations on radioactive materials that NRC no longer controls. But there cannot be meaningful conditions or restrictions if the materials are released.

No one will be legally tasked with enforcing the conditions. Who would take on the responsibilities and liabilities from the nuclear generators or responsibilities from the NRC? Who could be trusted to limit the uses of deregulated radioactive materials and how? Market forces? Recyclers? Manufacturers or builders? Customers? Private contractors? Local and State governments? No one?

Even if there were some entities that would take over for NRC, they would not be required to deal with the material as radioactive or protect workers or the public from radiological exposures. If they did, why shift from NRC?

How would they limit the subsequent uses of the materials once the "conditional" use is completed? What would prevent rerouting from the conditional to unconditional or unrestricted release once the waste left full regulatory control? What tracking or enforcement provisions are possible while keeping the costs low for the nuclear waste generators and NRC?

If it is too expensive for NRC to maintain long term regulatory control, how would another entity afford to do so? Would they be compensated? To whom would they be accountable?

Long term institutional control is challenging enough for regulated radioactive materials at specifically licensed NRC and Agreement State sites. Expecting long-term institutional controls over "released" materials, even with conditions, seems unreliable and irresponsible.

Would the new responsible entities be notified that they have become responsible and accountable for deregulated radioactive wastes? Or might there really be no control, despite the reassuring title?

The "conditional use" option plays on deception by holding out hope that there are some uses for radioactive wastes and materials (no longer regulated by NRC) that someone else will somehow regulate at a lower cost than NRC regulation. NRC already has restrictions on licensed radioactive wastes. These should be enforced by the NRC (and Agreement States) not shifted to even less capable pseudo-regulators. The conditional use option is nothing more than "nukespeak" for unrestricted releases.

Nukespeak 3) The so-called "enhanced participatory rulemaking:"

The NRC Commissioners voted to carry out an "enhanced participatory rulemaking," to involve the public more than usual in developing this regulation (for deregulation). But the Commission has also chosen to shorten the process by skipping the Advanced Notice of Proposed Rulemaking stage which could alert the potentially interested public that a rulemaking is underway that could bring nuclear waste closer home to them than ever before. Then NRC held only one public meeting (during work hours in the Washington, D.C. area), with nothing in the rest of the country during its scoping period. The Commission refused to commit to seriously considering critical technical comments by one invited expert participant, so his organization refused to participate in that way at this time. Enhanced participatory rulemaking?

NRC says that for input on unrestricted release and disposal in NRC licensed dumps (Options 1 and 5) ***it will rely on meetings held 4 years ago which the public boycotted because NRC refused to even consider preventing radioactive releases***[1], the public's clear choice.

Now the requests for an extension on the comment period on this scoping have been denied. ***We resubmit the request for 90 more days for public comment on the scope of this rulemaking.***

NRC takes undeserved credit for hearing from the public in 1999, but because of the clearly limited scope, the public interest and environmental groups and communities refused to participate. Although some of us are participating in this process now, NRC should not misinterpret this as having gained our trust. The trust we have in NRC is that it has already made the decision to release as much nuclear waste as possible. The mechanism for doing so is all that is at issue in this rulemaking.

What would an un-enhanced process involve?

Nukespeak 4) The NRC's claim to be open to all options:

NRC states that they ***"have not made any decisions on the alternatives."*** However, based on numerous public meetings, conversations, responses and non-responses to our comments, ***neither the staff nor the Commissioners appear capable of envisioning a prohibition on release*** of the radioactivity generated by their licensees' activities.

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[1] June 1998 SRM

The February 28, 2003 Federal Register notice announcing this scoping process states, on page 9600, ***"The Commission noted that, in approaching stakeholders on this issue, the staff should reiterate the Commission's continuing support for the release of solid materials*** when there are no significant health consequences." (Emphasis added. Meaning of "no significant health consequences" is addressed below.)

In 1998, when NRC began this most recent effort at legalizing the deregulation of nuclear waste, the NRC Commissioners directed the staff to make a rule that will ***set a level "above background for unrestricted use...that ... allows quantities of materials to be released."***[2] The Commission reaffirmed this approach even after environmental and public interest groups across the country reported they would be unable to participate in such a meaningless process. Now NRC is attempting to give itself credit for gathering feedback from the public during this non-credible time period and ignoring the written feedback received in the majority of comments demanding a complete prohibition on releasing nuclear materials from regulatory control.

There has been no development by NRC staff or contractors of the option to prohibit release of all contaminated material, while untold resources have been and are being expended to hire number-pushers (some with conflicts of interest) to convince us they can correctly predict the supposedly acceptable low doses we will receive from the nuclear waste they deregulate and disperse.

In her objection to proceeding with this rulemaking, Commissioner Greta Dicus indicated that a million dollars will be spent on contractors and 14 to 15 (staff) Full Time Equivalents will be spent over the next 5 years to develop this rule.

The projects these expenditures would fund are indicated on NRC's rulemaking timeline and they don't look like they evaluate preventing clearance of nuclear materials. Rather they are being done to create the appearance of scientific justification for clearance.

NIRS requests full disclosure of all contracts and contractors supporting this rulemaking –those that have been, are being and will be used in this rulemaking, their histories and reporting of all work related to the issues in this rulemaking.

For example, what percent of Sanford Cohen and Associates income is dependent on projects related to release of radioactive materials? They have been working for years for EPA and NRC on modeling that is being used to justify deregulating nuclear wastes. Do they have work on projects that release radioactive materials? Do they any potential conflicts of interest or a biased perspective? Have they done any work on preventing nuclear waste releases?

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[2] NRC Staff Requirements Memo June 30, 1998. SECY-98-028 REGULATORY OPTIONS FOR SETTING STANDARDS ON CLEARANCE OF MATERIALS AND EQUIPMENT HAVING RESIDUAL RADIOACTIVITY

What other contractors are doing work for NRC and what experience, biases and potential conflicts do they have?

Many of the "other" scientific organizations (all of which are nuclear advocates)[3] that support legalized release of radioactive waste are not independent of NRC. NRC has actively encouraged and participated in the development of "clearance" standards by many, if not all, of them.[4] The NRC Commissioners have not directed the staff to look at any work of those opposing radioactive release standards or to participate in developing standards that prohibit release. For the past (more than) ten years NRC staff have been actively helping legalize radioactive releases and now they are being asked to review that same work to put into an NRC rule that will affect the American public. There is no evidence of NRC representing the interests of the American public, who prefer to avoid exposure to nuclear power and weapons waste, at the international and other scientific meetings with these entities. NRC has been advocating release from regulatory control for both the licensing and the transportation of nuclear wastes. In fact, the US "need" for other entities to develop standards was a motivation for some of the others doing so. Now NRC claims it needs to comply ("harmonize") with those "other" standards.

Any efforts by NRC at discussing continued regulatory control/prohibiting release have been framed as uncertain or nonexistent benefits to the public for unreasonable costs to the industry. We recommend that the scope of the rulemaking consider the ways all nuclear materials, even those with small amounts of contamination, can be effectively isolated from the environment. Since this is currently required, it should not be expected that the public must defend continued regulatory control by proving health impacts at low doses. Rather those wishing to be relieved of regulatory burdens must prove that the doses are harmless before imposing them on the unwilling, unsuspecting public.

If NRC tries to claim that there are no significant health effects from low doses, it must prove it. One way would be to **follow up on Option #6** suggested by the Sierra Club at the May 21 and 22, 2003 public meeting on this issue. That option calls for **the tracking and recapturing of all radioactive materials that have been released thus far** by the NRC. (The same call has been made to the Department of Energy.) Before assuming there have been no health effects, efforts must be made to identify where deregulated radioactive materials went and ascertain, with an appropriate methodology, what health effects have and are resulting. Absent this information, no amount of theoretical computer modeling can objectively show that the doses are "trivial" and that they are acceptable to the public. Nor can they predict the actual doses and dose rates that will result from deregulation.

"No Release" Option-

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[3] Dept of Energy, International Atomic Energy Agency, Euratom, Health Physics Society, International Commission on Radiological Protection, National Council on Radiological Protection and Measurements. p. 9598.

[4] NRC Rulemaking on Controlling the Disposition of Solid Materials: Scoping Process for Environmental Issues and Notice of Workshop, 68 FR 40:9595, February 28, 2003, page 9598.

It has taken decades for the public to get the NRC to begin to pretend it will consider keeping radioactive waste regulated. Waste isolation is still not really one of the 5 options provided in the scoping.

Option 5, which requires all solid material within restricted and impacted areas of licensed sites to go to an NRC or Agreement State (10CFR 61) licensed disposal site doesn't cover all licensed radioactive material that may be present on the site. The merit of this option is that most of the radioactive material stays in a specifically-licensed regulated facility. Unfortunately, though, the current goal of these facilities is not to isolate waste from the environment but to allow leakage at an acceptable leak rate (25 millirems per year by NRC regulations and more stringent by some states). Part of this rulemaking should explore ways to better isolate nuclear wastes at licensed facilities. There also appears to be at least one important loophole in the scope of this rulemaking in that it does not cover all radioactive materials on a licensed site.

Inadequate scoping for "AREAS" of NRC sites:

NRC's proposed rulemaking only covers radioactive materials in "restricted" (defined in 10 CFR 20) or "impacted areas" (defined in MARSSIM for sites undergoing decommissioning), even though licensed radioactive materials may be stored in "unrestricted" or "controlled" areas, not considered "restricted." There needs to be radiological control over all licensed materials and materials potentially contaminated by them regardless where they are on a licensee's site.

Sections 20.1801 and 20.1802 (Subpart I of 10 CFR 20) indicate that licensed material may be in "unrestricted" or "controlled" areas, both of which are outside of the "restricted areas" proposed to be covered by this rulemaking. 10 CFR 20.1003 defines a "controlled area" as "an area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason," and an "unrestricted area" as " an area, access to which is neither limited nor controlled by the licensee." Since radioactive materials can be in these areas, and could contaminate objects or parts of these areas, they should be included in the rulemaking.

Apparent NEPA Violation:

NRC is violating the National Environmental Policy Act by failing to fairly explore all options, especially when the one option being ignored is that which has been most commonly demanded by the public. NRC is simply not evaluating "no release" at a par with release. This option is routinely dismissed by the nuclear industry and the Nuclear Regulatory Commission as unreasonable, even though it is what common law and common sense now require. It is also the policy that the public incorrectly assumes is in effect in this country and the world.

Nukespeak 5) Disposal options isolate nuclear waste from the public:

Since both EPA and NRC landfills leak and nuclear waste is radioactively hazardous longer than either of their institutional control periods (30 and 100 years respectively), it is inaccurate and misleading to claim that landfill disposal will isolate radioactive materials from the public and environment. Leaking landfills threaten drinking water and the ecosystems in which they are located. Landfill gasses and fires can disperse radioactivity into the air and biosphere. Burrowing animals spread radioactivity from burial trenches.

It is true that keeping the waste in a facility intended for waste is an improvement over deliberate dispensing of nuclear waste to the public through consumer goods, buildings and roads. But the requirements for "disposal" must be commensurate with the characteristics of the waste and they are not for radioactive waste in EPA or NRC landfills.

Since EPA "regulated" landfills (municipal, industrial and hazardous) are not designed or intended to isolate radioactive waste, they are likely to spread it into the groundwater and environs and mix it with other hazardous materials, exacerbating the risks. Depending on the synergistic effects, the speed, method, and combination of contaminants that leak, and the characteristics (age, health, sex, immunity, etc) of the people and other creatures exposed, they could pose a larger threat to the public and environment than if radioactive materials alone were leaking out.

If the waste is sent to a RCRA (Resource Conservation and Recovery Act) Subtitle C (hazardous) landfill or facility, it would be subject to the controls for hazardous but not radioactive wastes, despite nuclear materials having different characteristics. Nuclear wastes would presumably come into contact with hazardous wastes and be regulated as hazardous only. Hazardous waste sites require 30 years of institutional control versus the 100 years required at an NRC licensed sites. Neither is adequate for the thousands to millions of years some of the wastes will remain radioactively hazardous. Controls would be relinquished for the radioactivity despite its presence.

The situation would be even worse at a RCRA Subtitle D—municipal and industrial landfills-- because there are fewer controls making leakage into air, water, environment and food webs more likely. Local communities would pay the environmental, economic, legal and health costs.

NRC landfills all leak or have leaked. The option (5) to isolate nuclear waste in an NRC or Agreement State licensed facility is a step in the right direction, ***keeping the waste regulated as licensed radioactive material***, even in low concentrations. But as recommended elsewhere, improvements are needed at licensed NRC and Agreement State licensed sites that will prevent radioactivity from being released intentionally or unintentionally.

Nukespeak 6) NRC claim that health & environment are paramount:

NRC states that

"Protection of public health and safety is paramount...it is our principle goal in controlling the disposition of solid materials."

"...(O)ur decision making process needs to provide stakeholders with ... a meaningful role in(,) the process."

These sentences from page 9597 of the scoping announcement belie the NRC's actions in this rulemaking.

NRC shifts its responsibility, which it claims is paramount, to protect public health and safety and the environment in its "performance goals" to reducing unnecessary regulatory burdens on stakeholders (read licensees).

It is an unnecessary and unjustified regulatory burden on the public to have to prove negative health effects at low doses in order to convince the NRC to continue regulating waste with small amounts of licensee-generated radioactive contamination. This is especially unfair and difficult because NRC licensed the generation of the waste, in many instances against public opposition. The NRC admits that every dose of ionizing radiation, no matter how small, increases a person's cancer risk but advocates release or clearance levels to let out contaminated materials. Having previously determined that there is a trivial, insignificant or de minimis dose (based on international recommendations), NRC appears unmovable on its assessment of radiation risk at low doses and committed. We ask NRC to review and consider studies that indicate that exposure to low amounts of radiation are harmful to humans, including the studies by Morgenstern, Wing,[5] Schmidtz-Feuerhake,[6] Wright,[7] Viel,[8] and Stuart.

In addition, it is time now that our agencies acknowledge and protect other organisms and systems in the biosphere as well as humans from the effects of the nuclear fuel chain. In the 1993 International Atomic Energy Agency Safety Series No.115, "International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of

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[5] Wing S, Richardson D, Armstrong D, Crawford-Brown D, (1997) 'A re-evaluation of cancer incidence near the Three Mile Island nuclear plant: the collision of evidence and assumptions' *Environ. Health Persp.* 105 52-57.

[6] Hoffmann W, Dieckmann H, Schmitz-Feuerhake I, (1997) 'A cluster of childhood leukaemia near a nuclear reactor in northern Germany', *Arch. Environ. Health,* 52:275-280.

[7] Wright E G, Marsden S J, Lorimore S A, Goodhead D T, Macdonald D A, Khadim M A, (1994) 'Alpha Emitters Inducing Lesions in Stem Cells that can Result in Transmission of Chromosome Instability to their Progeny', *Nature,* 335, 6362.

[8] Viel J-F, Poubel D, Carre A, (1995) ' Incidence of leukaemia in young people and the La Hague nuclear waste reprocessing plant: a sensitivity analysis.' *Statistics in Medicine,* 14, 2459-2472.

Radiation Sources," in the preface, it is assumed that protecting humans protects other species as well so no attempt is made to account for the effects of environmental contamination on nonhuman species. "...it is considered that standards of protection that are adequate for this purpose will also ensure that no other species is threatened as a population, even if individuals of the species may be harmed." No supporting evidence for this assumption is provided.

Dirty Bombs

The field of radiation detection and measurement is growing rapidly, especially in light of increased concerns about radioactive materials being used for "dirty bombs." Now is not the time to relax radiation standards and "release" nuclear materials from regulatory controls. The likelihood is that those with enough resources will be able to monitor isotope-specific radiation at sensitive levels but it will continue to be very difficult and expensive to monitor everything around us. The goal should be to prevent contamination and deliberate release of potentially radioactive materials.

Information that must be included if NRC proceeds with this rulemaking:

DOE Nuclear Weapons Production Waste

It is a fact that nuclear power and its fuel chain generate the vast majority of radioactivity of all licensees. According to the Department of Energy's Integrated Database, commercial nuclear power generates the majority of the radioactivity in all nuclear waste, including that from nuclear weapons production. Thus it is especially important to keep control over this radioactivity.

Department of Energy (DOE) weapons production activities are not NRC-licensed but DOE has announced it intends to release radioactive metals according to standards that NRC sets. DOE already contracts to send its radioactive waste to NRC and Agreement State licensed facilities which have permits to "process" and release it into unrestricted commerce and disposal. It is essential that NRC evaluate the DOE and DOD inventories when considering this rulemaking.

Justification of Practice

It is unacceptable to use levels of Naturally Occurring Radioactive Material (NORM) as a justification for setting a floor to regulate anthropogenic radioactive materials and sources. It is also unacceptable to use background levels or already-permitted legal releases as a justification for adding to background.

It might make sense to set a floor on the amount of naturally occurring radioactivity we regulate, but it is not logical or defensible to set a lower limit (floor) on radioactive materials that are generated by industry activity. Part of the cost of doing business for any industry is managing its wastes. Interveners in nuclear reactor licensing proceedings across this country and abroad have repeatedly argued to the licensing agencies (NRC in

this country) that there is no solution to the nuclear waste problem and this should be considered before licensing the production of more nuclear waste and contaminated materials. NRC has repeatedly dismissed this concern. Now, with reactor closure and decommissioning beginning and underway at more and more sites, with leaking radioactive waste dumps and public opposition to new ones, the nuclear industry must deal with the radioactive waste it has generated and wants an out.

NRC cannot assume that the operation of and decommissioning of nuclear power reactors are activities that are socially "justified." Yes, it is a reality that the waste has been and continues to be generated, but NRC has not done any analysis of whether or not the practices generating the wastes are justified, thus cannot make that assumption. NRC has historically assumed they are and granted licenses.

Nor should NRC assume that releasing what it considers small amounts of radioactivity is "justified." What direct personal benefit does it provide the exposed individuals in this and future generations?

Unlimited Releases

There is no real enforceable limit on the amount of radioactivity that NRC proposes to "control" by releasing from control. By setting a legal dose or risk, NRC is essentially opening the floodgates to unlimited amounts of radioactivity being released in several ways:

1) no limit on the number of "practices,"
2) no upper bound on the total amount of radioactivity to be released from all practices now and into the future,
3) no ability to objectively measure, verify or enforce dose and risk levels.

The fact that NRC allows radioactive effluents into our air and water now does not justify releasing more radioactivity into the public domain for either personal-use consumer products or "conditional use" construction or industrial purposes.

Goal of Prevention of Exposure to Ionizing Radiation

Our goal is to prevent exposure to the radioactivity from nuclear power and weapons production activities, practices that are not justified. This should be NRC's goal, but it's not. The general public misperceives government on this front. Most people expect that their government would try to protect them from known carcinogens and health hazards.

Simply because nuclear reactors and fuel chain facilities exist does not "justify" the unnecessary release of their wastes into the public realm.

Illegitimate comparisons to existing background radiation

The claim has been made often by nuclear industry promoters that "radiation is radiation is radiation," meaning that exposure from background is the same as exposure from

manmade radiation. Whether or not that is true, the presence of some naturally occurring radiation or even human-made or enhanced radiation in the environment, does not justify deliberately adding more, of any amount. In addition, internal doses can be much more damaging that external. Releasing nuclear waste into roads, pans, jewelry, toys and other items could result in both internal and external exposures and the impacts could be different than if it were delivered externally only. Furthermore, many radionuclides generated by industrial processes are very different than the naturally occurring ones, in some cases more harmful.

Proposal for best use of resources

NRC's resources should be expended to devise better ways to isolate long-lasting radioactivity from the environment and the public, not to deny its presence and effects, and deliberately disperse it into consumer goods, building supplies and commerce or into waste facilities not designed to isolate radioactivity.

Despite the resources NRC is expending to justify releasing and "recycling" radioactive waste, NRC cannot guarantee that its release will result in a given dose or risk and no more. The dose cannot even be measured. It must be calculated based on assumptions and highly variable depending on those assumptions and the choice of computer model used.

The NRC, Environmental Protection Agency (EPA), Department of Energy, international and national nuclear societies and associations have all made efforts to project where radioactivity will go once released into the steel industry but they still can't accurately predict, guarantee or prove what the exposures and risks will be especially to the general public. It is known that steel workers will get the highest doses.

Now (as in 1985, 1990 and 1999) NRC proposes to release not just steel but other metals, concrete, soil, asphalt, plastics, wood, glass, paper, equipment and more without having done nearly as much work on projecting the doses to the public and environment, not that it would be adequate either.

NRC and all the other agencies and commissions should stop wasting time and resources trying to prove that it is safe to expose us to deregulated nuclear waste and spend a fraction of those resources instead on licensed management and isolation of the materials.

NRC long ago (1980s) had done an Environmental Impact Statement on 10 CFR Part 61, the NRC regulation for land disposal of radioactive waste. This current rulemaking purports to not apply to wastes that would go to a 10 CFR 61 landfill, yet the whole purpose of this rulemaking is to redirect wastes that would have gone to such site to unlicensed destinations. The industry is currently required to send its waste to specifically licensed sites but this rule would allow it to go somewhere else that is not regulated. We advocate continued specifically licensed control but encourage improvements in the requirements for licensed sites.

Incomplete Scoping

The US NRC is not considering all available options in this EIS. All reasonable options for managing solid materials with radioactive contamination would include considering all materials with ANY industry-generated radioactive contamination as licensed waste and to consider materials without such contamination as clean. Then, a determination would have to be made as how to dispose of all contaminated materials in a manner that isolates and has the goal of sequestering the waste from the environment for as long as it remains detectably radioactive. This would need to be accomplished using the best possible detection methods, equipment and training, and suitable time for meaningful measurements.

The technical challenge is to detect the presence (or absence) of any nuclear industry-generated contamination. Rather than require the public to do that, the tables should be turned and the nuclear generators required to prove there is no contamination before anything is released as non-radioactive.

If it is too difficult or unreasonable to detect radioactivity from nuclear power or weapons fuel chain facilities, the material should be considered contaminated. The burden of proof should not be on the public to prove contamination but on the generator to prove absence of contamination. If this is "unreasonable" consider waste production unreasonable. If this is unreasonable, don't do it, don't try to convince us it is clean—and then put the necessary resources into isolating the material at specifically licensed sites.

NRC offers 5 options in its Scoping for Rulemaking. Sierra Club offers a 6th.

Allowing currently licensed and regulated nuclear wastes to be cleared from regulatory control in either a restricted or unrestricted way will result in exposures, which are unnecessary. There are other ways to manage radioactive wastes that have a better chance of not exposing us.

If NRC decides to proceed with this rulemaking, it should concentrate on identifying and requiring isolation, monitoring and management for the hazardous life of all the waste. The goal should be to keep track of and isolate radioactivity and all materials contaminated with it, generated by nuclear power and weapons fuel chain industries, from the environment, workers and the public.

Option 1 Continuing unrestricted release on a case-by-case basis and through license amendments:
NRC and Agreement States should stop granting exemptions and allowing nuclear wastes to be treated like regular trash or recycled into the marketplace. Current releases should be halted. All releases should be tracked and records kept available to the public. NRC should improve its ability and public knowledge of detection capabilities and practices so as to able to detect and prevent releases of any contamination.

Option 2 Unrestricted releases based on dose based standards:

Dose-based standards are calculated doses from various amounts of contamination at the point of release. The doses are calculated by contractors who think up scenarios of how the radiation will spread and disperse once it is released from the nuclear site. They apply International Commission on Radiological Protection risk numbers to guess at how much biological damage that radiation might do. But they might not think up or be able to figure out the scenarios that really happen—people and radionuclides are unpredictable. The International Commission on Radiological Protection (ICRP) has been criticized for underestimating the real risks of radiation—their models were created before the DNA was discovered. And, most importantly, dose and risk numbers are not measurable, verifiable or enforceable. So this option is an open door to unlimited amounts of nuclear waste getting out into commerce.

We oppose dose based standards for release of radioactive materials and waste from regulatory control and challenge any supporter of the concept to demonstrate how such standards could be proven valid and enforced.

Option 3 Conditional use or Restricted Release:
The public could get significant exposures from so-called restricted uses. If gamma-emitting nuclear waste is used to make roadbeds, we will be exposed routinely on our daily commutes by car, bus, bike or on foot. If it is used to make sewage pipes, sewage will be even more contaminated if it picks up radioactivity. Towns downstream of sewage facilities clean and reuse that water. That piping could get melted and reused for unrestricted uses. Restricted release is a foot in the door for unrestricted release.

Option 4 Disposal in EPA landfills:
NRC has not excluded incineration or other treatment facilities from consideration as destinations for radioactive waste even though only landfills are identified as options. Landfills leak. Radioactive landfills have had serious problems. Why spread these potential problems to municipal, industrial and hazardous waste landfills, already struggling with their own technical and political problems?

Nuclear waste should not be buried in dumps never designed to manage or isolate them as long as they remain hazardous. EPA landfills have a 30 year institutional control period. Some of the radioactivity that could be released is hazardous for hundreds, thousands, literally millions of years (ex. strontium 90, plutonium 239 and iodine 129).

Option 5 Materials from "restricted areas" and "controlled areas" go to NRC licensed disposal sites:
Radioactive waste should be stored, managed and isolated from the environment for as long as it is hazardous at facilities specifically licensed for that purpose for radioactive waste. Existing regulations (10CFR61) for nuclear waste disposal should be strengthened. NRC should use this rulemaking to devise ways to truly control radioactive waste, not release it from licensed control.

Option 6 Recapture previously released radioactive materials:

Sierra Club is requesting NRC to recapture the radioactive wastes that have already been released. Since the claim is made that they have had no effect, Sierra Club asks for proof by identifying where the nuclear wastes have gone and checking to see what effect there have been. We support this exercise.

Modeling

RESRAD:

The main way NRC intends to "enforce" release limits is to project doses from given amounts of contamination and then check the materials being released to make sure they don't exceed those (variable) numbers. The numbers are variable because one can change the assumptions about how people will be exposed to change the allowable contamination level on the materials.

DOE and NRC funded Argonne National Labs to develop one of the now-most commonly used computer codes to justify release of radioactive materials, wastes, sites, into the recycling, unrestricted uses, and landfills. The RESRAD family of codes includes several different models – for allowing contaminated buildings to be used for unrestricted uses, for recycling contaminated metals or concrete, for projected doses from contamination in the environment, and other.
One of several weaknesses in this and other codes is that they rely on radiation risk estimates that have not been proven to be valid, even though RESRAD was put the test at a radioactive metal smelter in Sweden that recycles nuclear metals from Europe and releases them into open commerce.

The only validation study for RESRAD relies on EPA's Federal Radiation Guidance documents, FRG 11 and 12 for its pathways analysis to estimate dose and impact but both of those documents have a clear disclaimer right in the front that indicates that no one is liable or responsible for the use of the information inside. So not only are they not verifiable or enforceable, they are not reliable.

The disclaimer in EPA FRG 11 and 12 states:
"This report was prepared as an account of work sponsored by an agency of the US Government. Neither the US Government nor any agency thereof, nor any of the employees makes any warranty, or implied or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer or otherwise does not constitute or imply its endorsement, recommendation or favoring by the US Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the US Government or any agency thereof."

We are expected to trust the computer codes that rely on data from these reports to tell us that the amount of radiation dose we get from nuclear waste being allowed into our

tableware, water bottles, soft drink cans, garden soil and juice jugs can be calculated accurately and that it is "safe enough."

What is "safe enough?" As mentioned elsewhere, there is not safe dose of radiation. Even if there were, we would have to trust the Department of Energy contractors and Nuclear Regulatory Commission (and Agreement State) licensees to only let out that very amount that is acceptable. We cannot trust them to protect us. We can trust them to get rid of as much contaminated material as they can in this manner. But since there is no safe level of exposure to ionizing radiation, the answer is simple. That which is generated by nuclear power and weapons and industry must continue to be regulated as waste with a goal of isolating from the environment and public for as long its entire hazardous life.

MARSSIM:

The US federal nuclear agencies together produced MARSSIM to assist in modeling the decommissioning of radioactive sites, to allow licensees to be relieved of liability and responsibility. It is still being developed but has been used at nuclear reactors to convince the public that the sites are clean enough.

NUREG 1640 draft:

NUREG 1640 was developed by SAIC Inc for NRC to help determine how much contamination is allowable on metals and concrete that would be recycled and used in the open marketplace. While doing that work for NRC, SAIS was contracted to assist with the release and recycling of the nation's largest radioactive metal recycling contract in history (of which we are aware). NRC had to dismiss them from the contract because the blatant conflict of interest was brought to public attention during the NRC's last attempt at making this rule in 1999. NRC let the company go but kept the product. Although another company was hired to check the math, and the National Academy panel made recommendations to try to compensate, that document should not be used. Rather than start over without the taint of conflict of interest, the NRC has hired Cohen and Associates to expand and complete the NUREG, which appears will the major technical justification for recycling radioactive metal, concrete and equipment and for landfill disposal.

Modeling Limitations:

Among the limitations of models is that they knowingly and inadvertently fail to calculate doses from all the isotopes present. Assumptions are made about which isotopes are most important and attention is focused on those. There are instances, such as at the uranium enrichment facility in Paducah, Kentucky, where workers and the public are unaware of all the isotopes that are present in their environments. After decades of operation, it was (re) discovered that uranium with fission products and transuranics had been processed there so whole new categories of contaminants were present. The calculations that had been done on releasing and recycling that material did not include plutonium or fission products, but they were present.

Modeling falls short of predicting what radiation goes where and relies on health effects information that is controversial.

The claim is being made by promoters of clearance that 1 millirem dose criterion is reasonable and acceptable. Some state that at 1 millirem only one person in a million exposed will die of cancer. But the US NRC's numbers based on UNSEAR and BEIR V indicate that one in every 28,600 people exposed to a millirem a year will get fatal cancer. As mentioned elsewhere, NRC is not limiting the number of releases it will permit—NRC is proposing to set a level that would be used generically to permit unlimited numbers of practices.

There are studies that indicate that the NRC estimate of 1 in 28,600 is in an underestimate.

That number doesn't include nonfatal cancers, birth defects beyond the first two generations, reduced immunity and greater susceptibility to other diseases and health problems and other non-cancer health effects of radiation.

NRC has explained that by modeling various exposure scenarios, the most exposed critical group can be identified. Then by making sure the models limit that group's exposure, everyone is protected adequately. But, making limits based on a critical group ignores the growing knowledge that low doses are sometimes more harmful per unit dose than high doses, that some people are more susceptible than others. Assuming that the critical group that will receive the highest dose will have the largest effect is not necessarily true. More vulnerable members or groups of the population might get a smaller dose but have a more negative health effect.

"It is ... relevant that the Commission is, to an increasing degree, relying on quantitative risk analysis for its regulatory decisions. Where the agency and licensees rely extensively on quantitative risk analysis, it is only fair that the public should have sufficient access to the information undergirding those analyses, in order to determine whether the analyses are being conducted with the level of rigor claimed, and also with prevailing standards for such studies. Mere qualitative results or summary information simply do not yield sufficient information to make such judgments."[9]

NRC is not using publicly acceptable information to determine the health consequences. It is relying on pronuclear agencies and committees who have developed policies to promote release/clearance/ "recycling."

When broken down piece by piece, the nuclear industry and NRC attempt to make each action that releases radioactivity appear to have insignificance, but the whole purpose of NEPA is to consider the actions in total.

[9] Diane Curran in NIRS, BREDL intervention

NRC Questions (pp. 9600+ and Info Packet Section H)// **NIRS* Answers**

(1) If you have commented previously are there areas where you have modified views that you expressed in earlier public comment periods?

NIRS still is committed to preventing public exposures and environmental contamination from nuclear waste generated by nuclear power and weapons fuel chain facilities. Our message has not changed except to expand to reject NRC's additional unacceptable options for deregulating nuclear waste. We continue to oppose any deregulation or release/clearance/"recycling" of industry-generated radioactive materials and wastes. Since NRC has reframed the rulemaking to "control the disposition of solid materials" from "restricted" and "impacted" areas of NRC sites, we call on NRC to develop better ways to control radioactive materials and wastes under licensed regulatory control. We are also asking for much more detailed clarification of the site designations and potential for radioactive contamination in all areas of the sites. We are also expressing clearly that in all evaluations of inventories and potential releases and doses, that Department of Energy and any additional categories of waste that would be impacted directly or indirectly by the rulemaking be expressly considered and included in all calculations and projections.

(2) Are there comments, beyond those summarized here or contained in the documents linked to this information packet, that you have on any alternatives?

NIRS advocates that this rulemaking explore better isolation of nuclear wastes in facilities specifically licensed for radioactive waste management and isolation.

We would also like to point out that our perspective was not fully reflected in the Summary of Comments by your consultant, ICF. Important points were omitted.

The NRC summary of comments related to public health and safety failed to point out simply that people who would receive the doses do not want to be exposed. They are refusing to accept the so-called "trivial" doses, whether or not they are trivial in fact.

There was no mention of the lack of credibility of the ICRP upon whose risk estimates the doses and projected risks are based.

There was no mention of the threat (putting nuclear waste into recycling supplies) poses to the whole concept of recycling and conservation that have taken decades to become popular and common sense in a world of finite resources.

(3) Are there areas where additional scientific information is available with regard to any of the alternatives?

There has been scientific research on low-dose exposures to radiation that has not been included in the NRC's evaluations and in the underlying ICRP reports upon which the risk and dose estimates are based. Many of these studies are listed in ECRR 2003, the European Commission on Radiological Risk report. NIRS will also provide a list of studies.

We recommend a thorough review of the effectiveness of the existing licensed disposal sites to isolate nuclear waste from the environment and that this rulemaking explore more effective ways of isolating all three (or four if Greater than Class C is included) classes of "low-level" radioactive waste especially Class A, which appears to be what NRC intends to deregulate, at least partially.

(4) Are there areas where additional economic information is available with regard to any of the alternatives?

Health/medical costs are rising and a large percentage of Americans do not have health insurance or access to adequate health care to deal with the consequences of additional unnecessary exposures permitted by this rulemaking.

Rather than assuming, incorrectly that resources will be saved by "recycling" contaminated materials, assume that more resources will be expended because consumers will insist on products made with virgin, uncontaminated raw materials.

The current concern with the danger of dirty bombs has caused an increase in local, state and federal government efforts to detect radioactivity. By legalizing various amounts of every radionuclide to facilitate release and clearance, NRC would make it more difficult to monitor, detect and measure for such radionuclides in commerce. The public is demanding better control of nuclear materials not deregulation. NRC must estimate the costs to compensate local, state and federal emergency response and customs agencies for the increased expense in security due to the unnecessary relaxation of regulatory control.

(5) Are there new or modified alternatives beyond those discussed in Sections D, E or F above, that you would suggest be considered

Prohibit the release of any contaminated or potentially contaminated materials and develop licensed storage and management options that are designed to prevent releases to the environment or public. Improved licensed "disposal" must be developed.

NRC: Specific New Input Needed:
RE the pathways especially conditional use and landfill disposal, are these alternatives effective, reasonably possible to implement and increase public confidence in the process?

NIRS: Absolutely not. There is no way to enforce conditions on any material that has been "released." Public confidence is reduced by efforts to sneak the radioactive materials out of regulatory control. Sending them to landfills that already have public confidence problems hurts the landfill owners and operators, the communities in which they are located, the states in which they are located and NRC's credibility.

Perhaps NRC forgot that the reason the BRC policy was revoked in 1992 was largely due to opposition to nuclear wastes being sent to RCRA C and D facilities. You have gotten clearer feedback on this option than any other from your employers, the American public.

Furthermore, regarding landfill disposal, EPA-"regulated" RCRA Subtitle C and D landfills and NRC/Agreement State-licensed landfills, burial have proven to be a failure. It is time for humanity to take another step forward and stop burying our long-lasting radioactive wastes in the ground and pretending they are "disposed." Licensed control is essential but with the goal of preventing, not permitting public exposures at any level.

NRC: Questions on these topics that we would like your input on for each type of material noted in Section A are listed on the following pages.

NIRS: How much has been spent by all agencies and entities to assess the impacts of releasing and recycling and sending for unregulated disposal, steel, copper, aluminum, nickel and concrete? And you still don't really know what the effects would be. You have no proof that the doses being projected have meaning and that they will not be exceeded. No effective method exists to measure, verify or validate the doses and impacts on the public.

Now, NRC wants to expand this release idea to cover more materials, for which less or no analysis has been done.

NIRS calls on the NRC to use its resources to develop better mechanisms to isolate radioactive materials, not to make calculations the public will never believe anyway, and send them into the marketplace in either a restricted or unrestricted way.

NRC: Conditional Use (Path A2 of figure 1)
There are two principal considerations with regard to the conditional use alternative:

a) it provides assurance that solid material is restricted to only certain authorized uses (Path 2A) and kept separate from general consumer uses (Path A1);
b) To be viable, this alternative must be able to be established and implemented in a manner that is both practical and economical.

Specific questions we are asking regarding these considerations are:

(1) With regard to considerations of assurance:

a) Can a scrap/manufacturing/distribution process not licensed by NRC provide assurance that the materials is limited to its authorized use (and why), or should NRC maintain regulatory control by licensing all or some portion of the process (eg only the scrap process or the scrap and manufacturing process)?

NIRS: From a public perspective, neither option is acceptable. NRC currently allows radioactively contaminated air and water to be released into the environment, against the public will. Why would the public accept more NRC-approved releases? Adding new NRC licensed facilities means more facilities with permission to contaminate air and water where they operate. We especially oppose NRC issuance of more general licenses, which appear to be the major cause of the sealed source problems the metal recycling industry faces.

b) Could involvement by another Federal agency in the scrap/manufacturing. distribution process provide assurance that the material remains with its authorized use? How might such involvement be implemented and how would it function?

NIRS: No. Outrageous. Concurrently with this rulemaking and for the past several years or more, NRC has been attempting to become the sole regulator (deregulator) of radioactive materials, removing more protective requirements by EPA and other regulators. Here NRC is supposedly suggesting shifting the burden, cost, liability and responsibility of shepherding nuclear waste through the marketplace by another agency!

(2) With regard to considerations of viability:

a) What are the feasibility, economic, and assurance aspects of a smelter facility being dedicated to such material, either full time or as a portion of its process capability?

The metals industries have said no repeatedly to these questions. There is not enough inventory to justify a dedicated facility whether commercial or government operated. This feeds our existing concern that operators of such a facility would be economically motivated to expand, thus creating a political force (similar to ARMR Association of Radioactive Metal Recyclers) pushing to "recycle" more and more material for unrestricted release. In addition, the economic pressure would continually build to allow higher and higher release levels to provide increasing amounts of raw materials for such a facility. Public assurance aspects would be negative.

b) What are the feasibility, cost and increased assurance aspects of NRC or other Federal agency involvement?

See response to 1 b) above.

c) What end use products could be manufactured under such a conditional use, e.g. bridge girders, sewer pipes, industrial coils? Would there be sufficient need for these products so that a process to manufacture them would be viable despite the relatively small magnitude of materials from NRC licensed facilities?

NIRS: There are NO products or uses for radioactively contaminated materials in the open marketplace and environment. NIRS seriously doubts the possibility of much reuse within the regulated environment as well, having concerns about additional doses to workers in those facilities from such materials, likely deregulation of those materials and subsequent release into unrestricted commerce, additional environmental contamination (e.g. from radioactive containers coming into direct contact with soil and groundwater), and finally the perpetuation of contaminated processing facilities that will have the economic incentive to expand their "services" (disservices) to unrestricted markets.

(3) What typical lifetimes might the conditional (authorized) uses have, and what would likely happen to the solid materials after the lifetime was over? Could the material continue to be part of a conditional use, or would it become available for unrestricted use?

NIRS: Such timeframes are not predictable. NRC can't even keep track of the generally licensed sealed sources that can give lethal doses when mishandled. How much have EPA, DOE, international agencies and victimized industries expended to compensate for this irresponsible mismanagement by NRC? Now NRC asks if the private sector or other local, state or government agencies (all with less mandate than NRC to protect the public from radiation) can be expected or trusted to watchdog "conditional" uses. Even within the Department of Energy (a so-called self-regulated environment) there is no mechanism to guarantee "conditional use" products will be considered radioactive during or after their first use, let alone subsequent uses. NRC cannot reasonably expect that structures, materials or products out in the general marketplace and environment can be tracked.

(4) What criterion should be used before allowing release of solid materials to a conditional use e.g. should dose based or concentration based criterion be used and what should it be.

NIRS: Contaminated materials must not be released for conditional use, no matter how lightly contaminated. Dose based standards are unnecessary because the public will accept no additional dose above their previously existing background. Concentration based criteria are unnecessary for the same reason.

The question might be posed how to prove no contamination. For objects that have no contamination, their release must require complete testing of the entire surface and volume in order to guarantee no industry-generated contamination is present. Record keeping would need to be dramatically improved and made easily accessible

to the public. This must include complete public access to the description and identification of the materials/equipment/etc, their history, the analytical procedures, results, equipment, contractor or responsible party carrying out the analysis, complete records, conditions and results of the analysis along with identification, tracking and notification to the public and the recipient that the radioactive contamination-free material came from the specific nuclear facility.

NRC: Disposal to Landfill (Path B1 of Figure 1):
1) With regard to consideration of assurance:
a) Would placing the material in a RCRA Subtitle C site accomplish the goal of isolating the material from the public? If so, what controls are in place in RCRA C site to provide such assurance?

RCRA C facilities are not designed to isolate radioactive waste. They require 30 years of institutional control but the radioactive wastes can be hazardous for hundreds, thousands, literally millions of years. They won't be sequestered long enough. There could be physical and chemical interactions that could accelerate the migration of the radioactive materials or otherwise defy predicted behavior. There are synergistic health and environmental effects of mixing toxic chemicals and radioactive materials. Public assurance will decrease for both the RCRA C site and the radioactive waste generators and regulators.

b) Would placing the material in a RCRA Subtitle D landfill accomplish the goal of isolating the material from the public? If so, what controls are in place in a RCRA D site to provide such assurance?

No. These have even less controls than RCRA C (hazardous waste) landfills. As previously mentioned, it was largely the public opposition to nuclear wastes going to regular municipal landfills that led to the revocation of the BRC policies. This option would result in neither technical isolation nor public support.

2) What criterion should be used before allowing solid material to leave an NRC-licensed facility for disposal at a landfill such that the public and landfill workers are protected? In particular, should a different regulatory scheme be used depending on the radioactivity level of the material potentially to be placed in the landfill facility, i.e. lesser requirements if the potential dose is lower?

The only solid materials that should leave an NRC-licensed facility for landfill disposal is that for which there is proof that the material has no contamination from the licensed activity at the site at which it was generated. Since no residual radioactivity is acceptable, it is unnecessary to provide different regulatory schemes for RCRA D landfill disposal. This is not intended to complicate the storage for decay practices already in place at licensed facilities that generate low concentration, short-lasting radionuclide waste. As usual, we oppose justifying weakened requirements for nuclear power and weapons fuel chain facilities by

disingenuously claiming impacts on small generators (whose practices are more publicly acceptable and whose wastes are much less problematic).

3) If EPA and/or NRC rulemaking is developed in this area, would RCRA Subtitle C or D landfill operators accept material which had been surveyed and released from an NRC-licensed facility?

Whether RCRA landfill operators accept nuclear waste or waste from NRC/Agreement State licensed sites probably depends how lax the proposed 10 CFR 61 "lite" regulations being contemplated would be. We understand NRC might give a mini radioactive disposal license to RCRA facility operators. This is objectionable in the same way that sealed sources with general licenses are. Fully licensed need improvement. New sites should not be made more lax, especially when there is an increased likelihood of commingling with chemicals. How willing RCRA operators will be will depend on how much the nuclear waste generators are willing to pay and who has liability. NIRS will oppose both NRC and EPA efforts to deregulate nuclear waste and permit it to go to landfills.

For either conditional use or landfill disposal:
1) As a backup, should a "cap" be placed limiting the dose that would occur if the restrictions for the conditional use became no longer effective, or if the material being disposed of at a landfill was diverted or removed from the landfill, and the materials wound up in an unrestricted use? If so, what should the cap value be?

No, doses are not enforceable thus a clear prohibition is necessary. Or alternatively, yes, as long as the cap is no legal exposure to radioactively contaminated material dumped at the landfill or used in a conditional way. NRC and other entities advocating a dose-based standard have not adequately answered the question of how any dose or dose limit will be measured, verified and enforced in the real world.

NRC: Input on Environmental Impact of Alternatives
For each type of material listed in Section A, information is requested regarding:

(1) The inventory of solid materials at NRC licensed facilities including quantities and radioactivity levels;

NIRS: The inventory to be considered must include the Dept of Energy materials and any future facilities, industries, waste generators and processors that will be licensed and eligible to take advantage of them. Factor in the effect of this economic subsidy as an incentive for more nuclear power and other fuel chain facilities. Evaluate the potential influx of deregulated materials from other countries, not just the alleged convenience of "harmonized" standards for the industry.

(2) How control processes at NRC licensed facilities function so that materials from different areas of a facility are kept separate to assure that those materials with no or very small amounts of radioactivity do not become mixed with those with higher levels;

Not possible.

(3) Potential exposure scenarios associated with the alternatives in particular for conditional use and landfill disposal.

Continual exposure from large projects, subsequent uses unregulated, internal exposures, effects on other than Standard Man.

*Partial list of cosigners

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