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UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

NUCLEAR INFORMATION AND RESOURCE SERVICE; COMMITTEE TO BRIDGE THE GAP; PUBLIC CITIZEN, INC.; AND REDWOOD ALLIANCE,	No. 04-71432
Petitioners,	**PETITIONERS' MOTION TO TRANSFER PROCEEDINGS TO DISTRICT COURT**
v.	
UNITED STATES NUCLEAR REGULATORYCOMMISSION and the UNITED STATES OF AMERICA,	
Respondents	

The present petition for review under FRAP Rule 15 challenges final agency action in a rulemaking proceeding by the Respondents United States Nuclear Regulatory Commission (NRC). The challenged rulemaking was one of two companion rulemakings separately undertaken by NRC and the United States Department of Transportation Research and Special Programs Administration (DOT-RSPA).[1]

This Court has granted several stays of proceedings pending resolution of Petitioners' administrative appeal to DOT-RSPA, which was necessary to ripen judicial review of DOT-RSPA's rulemaking. Most recently, following DOT-RSPA's denial of Petitioners' administrative appeal, this Court granted a stay of its review of the NRC rulemaking until December 13, 2004 in order to allow Petitioners to file a complaint against DOT-RSPA in the U. S. District Court for the Northern District of California and then to move this Court to transfer this case to the District Court.

On November 9, 2004, Petitioners did file a Complaint for Judicial Review of Administrative Agency Action and for Declaratory and

[1] RIN 3150-AG71 published January 26, 2004 at 69 F.R. 3698 and RIN 2137-AD40 published January 26, 2004 at 69 F.R. 3632.

Injunctive Relief against DOT-RSPA ("DOT-RSPA Complaint"), a copy of which is attached. Exhibit 1. Accordingly, Petitioners now move the Court to transfer this case to the District Court for a hearing and a determination as if the proceedings were originally initiated in the District Court in accordance with 28 U.S.C. § 2347(b)(3), and for consolidation with the DOT-RSPA case, for the reasons set forth below.

A. The Hobbs Act Requires Transfer To District Court Because Petitioner Presents Issues of Material Fact

The Hobbs Act, which confers original jurisdiction on this Court in challenges to NRC rulemaking, requires transfer of proceedings to the District Court for "a hearing and determination as if the proceedings were originally initiated in the District Court" when there are issues of material fact presented. 28 USC 2347(b)(3); *Gallo-Alvarez v. Ashcroft*, 266 F.3d 1123 (9th Cir. 2001). Such issues of material fact include the adequacy of analyses and findings in rulemaking that cannot be determined on the record developed by the agencies. *Lake Carriers Association v. United States*, 414 F.2d 567 (6th Cir. 1969).

Review here is not possible on the record developed by the agencies; review requires extra-record evidence to determine the adequacy of NRC's analyses in support of its Finding of No Significant Impact under the

National Environmental Policy Act ("NEPA"). Such extra-record evidence is permissible in NEPA challenges when offered in support of contentions that an agency's analysis was clearly inadequate, that an agency failed to consider an environmental consequence entirely, or that an agency failed to articulate opposing views of a controversy. *National Audubon Society v. U.S. Forest Service,* 46 F.3d 1437 (9th Cir. 1993); *County of Suffolk. V. Secretary of Interior*, 562 F.2d 1368, 1384-1385 (2d Cir. 1977).

Petitioner intends to make just such contentions with respect to NRC's actions, including contentions that: (1) NRC's analyses and findings were inadequate with regard to the significance of the public health and safety effects from radiation doses involved, (2) NRC failed to address the substantial controversy and uncertainty regarding the effects of low-level radiation, (3) NRC failed to address and resolve uncertainty over the volume of shipments affected by the regulations and over collective radiation doses, (4) NRC failed even to consider the significant effects of rule changes affecting low specific activity materials, (5) NRC failed adequately to evaluate radiation doses to workers and accident victims, and (6) NRC failed even to consider the cumulative effects of the regulations. These contentions are set forth in Petitioners' DOT-RSPA Complaint, and

Petitioner intends to make the same contentions, based on the same facts, against NRC as soon as this Court determines the appropriate forum.

The DOT-RSPA Complaint and the attached declarations by Dr. Steve Wing and by Dr. Marvin Resnikoff (Exhibits 2 and 3) establish that Petitioner has presented genuine issues of material fact in connection with these contentions. For example, Dr. Wing has provided substantial evidence that radiation doses that are acknowledged by the agencies will in fact cause impacts that can only be viewed as significant, requiring the preparation of an Environmental Impact Statement ("EIS"). Dr. Resnikoff has demonstrated that the agencies simply failed to consider the substantially higher doses that will be received from radioactive waste that is newly defined as low specific activity material, demonstrating the inadequacy of the Environmental Assessment. Dr. Wing has also explicated the substantial controversy that was raised regarding the dose-response model that is implicit in the agencies' Finding of No Significant Impact, a controversy that requires preparation of an EIS. Dr. Resnikoff has also demonstrated that the agencies failed to consider collective radiation doses because they failed to evaluate available data about volumes of

exempt shipments, demonstrating the inadequacy of the Environmental Assessment.

A court must resolve the issues raised in these declarations to determine whether NRC failed its duties to prepare an environmental impact statement, to prepare an adequate environmental assessment, and to discuss a reasonable range of alternatives. The Hobbs Act provides that the proper forum to resolve these issues is the District Court.

B. Transfer to District Court Will Avoid Inefficiency and Inconsistency

As noted above, Petitioners' concerns with the NRC and DOT-RSPA rulemakings are identical. Thus, transfer of this case to the District Court to enable consolidation with the DOT-RSPA case would appropriately accommodate the process and time necessary to efficiently and prudentially complete judicial review of the companion rulemakings without disadvantage or prejudice to any party. The analytical factors applied by the Court in *Florida Power & Light Co. v. Lorion,* 470 U.S. 729 (1985) to avoid duplication of judicial review under the Hobbs Act favor transfer here to avoid (a) two layers of review, one in the District Court and another in the Circuit Court, (b) bifurcation of review orders in parallel rulemakings, and (c) the possibility of inconsistent determinations. *Id.* at 742-743.

Finally, the District Court is the appropriate forum because Petitioners' fundamental concerns are with regulations under the authority of DOT-RSPA, not NRC. The NRC rulemaking at issue in this appeal was subsidiary to the DOT rulemaking since the companion rulemakings at their core ultimately concern the safe transportation of radioactive materials, an activity over which DOT is effectively the "lead agency." A 1979 Memorandum of Understanding (MOU) between NRC and DOT-RSPA provides that each agency, in consultation with the other, will develop safety standards within their respective subject-matter jurisdictions. DOT is to be the national competent authority with respect to the administrative requirements set forth in the regulations for the Safe Transport of Radioactive Materials of the International Atomic Energy Agency ("IAEA"). 44 F.R. 38690. The MOU provides that DOT-RSPA will act as the U.S. representative to the IAEA on matters pertaining to the administrative and safety regulatory aspects of transportation of radioactive materials and that the NRC will provide technical support and advice to DOT-RSPA. The specific regulations at issue here from 49 CFR Part 173 were promulgated by DOT-RSPA with reference to IAEA standards and

were merely adopted by NRC as binding on its licensees. 10 CFR, § 71.5(a).

C. Conclusion

Petitioners request the Court to grant this motion to transfer this case to the U.S. District Court for a hearing and determination as if the proceedings were originally initiated in the District Court, and for consolidation with the DOT-RSPA case, and so that judicial review of two final agency decisions in companion proceedings of DOT and NRC and development of extra-record evidence may be undertaken in coordinated fashion.

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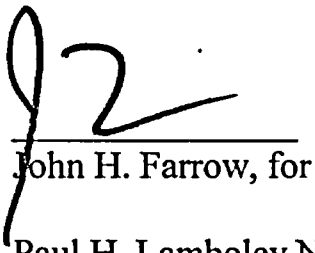
Respectfully submitted, this 10TH day of November, 2004 by



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I HEREBY CERTIFY that a true and correct copy of the forgoing document was mailed to the Respondent indicated below via first class mail, postage prepaid this 10 day of November, 2004:

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and

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UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

NUCLEAR INFORMATION AND RESOURCE SERVICE; COMMITTEE TO BRIDGE THE GAP; PUBLIC CITIZEN, INC.; REDWOOD ALLIANCE, and SIERRA CLUB

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF TRANSPORTATION RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION and NORMAN Y. MINETA in his official capacity as Secretary of the UNITED STATES DEPARTMENT OF TRANSPORTATION

Defendants

C 04 4740 MHP

Case No. _____

COMPLAINT FOR JUDICIAL REVIEW OF ADMINISTRATIVE AGENCY ACTION AND FOR DECLARATORY AND INJUNCTIVE RELIEF

Administrative Procedures Act Case

INTRODUCTION

1. This is an action under the judicial review provisions of the Federal Administrative Procedure Act ("APA"), 5 U.S.C. § 702, et seq. Plaintiffs NUCLEAR INFORMATION AND RESOURCE SERVICE; COMMITTEE TO BRIDGE THE GAP; PUBLIC CITIZEN, INC.; REDWOOD ALLIANCE, and SIERRA CLUB ("Plaintiffs") challenge the January 26, 2004 action by the UNITED STATES DEPARTMENT OF TRANSPORTATION RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION ("DOT-RSPA") and NORMAN Y. MINETA ("Defendants"), adopting regulations entitled "Hazardous Materials Regulations; Compatibility With the Regulations of the International Atomic Energy Agency," as published in 69 Federal Register 3632 et seq., January 26, 2004, and reflected in DOT-RSPA's Final Rule, RIN 2137-AD40, 49 CFR Parts 171, 172, et al.

2. The rulemaking at issue deregulates the transportation of some radioactive material so that it is not subject to DOT-RSPA's safety rules governing radiation exposure, packaging, marking, labeling, placarding, preparing shipping papers, and providing emergency information. Specifically, the new regulations adopt new definitions specifying what radioactive material is exempt from transport regulations. The new exemption levels are based on European standards for exemption that were developed without considering transportation risks.

3. The rulemaking at issue uses the new exemption levels to redefine a category of low specific activity radioactive material, LSA-I, and also relaxes the regulations for transporting LSA-I.

4. Although these regulations will have major and significant environmental impacts, DOT-RSPA did not prepare an Environmental Impact Statement as required by the National Environmental Policy Act of 1969 ("NEPA"). The Environmental Assessment on which DOT-RSPA based its Finding of No Significant Impact did not adequately evaluate public health impacts, cumulative impacts, or reasonable alternatives. The complaint seeks a declaratory judgment and a mandatory injunction requiring the defendant to rescind the regulations and to comply with NEPA by preparing an Environmental Impact Statement, or, in the alternative, to prepare an adequate Environmental Assessment.

5. The DOT-RSPA rulemaking at issue here was undertaken in coordination with a companion rulemaking by the United States Nuclear Regulatory Commission ("NRC"), RIN 3150 –

AG71, 10 C.F.R. Part 71, entitled "Compatibility With IAEA Transportation Safety Standards (TS-R-1) and Other Transportation Safety Amendments," as published in 69 Federal Register 3698 et seq., January 26, 2004. On March 26, 2004, Plaintiffs NUCLEAR INFORMATION AND RESOURCE SERVICE; COMMITTEE TO BRIDGE THE GAP; PUBLIC CITIZEN, INC.; and REDWOOD ALLIANCE filed a Petition for Review of the NRC rulemaking in the United States Court of Appeals for the Ninth Circuit, No. 04-71432, in accordance with the original jurisdiction provisions governing review of NRC rulemaking under the Hobbs Act, 28 U.S.C. § 2342(4). The Court of Appeal stayed the NRC review proceedings pending resolution of Plaintiffs' administrative appeal of the DOT-RSPA rulemaking. As Plaintiffs have previously advised the Court of Appeals, Plaintiffs now intend to move the Court of Appeals to transfer the NRC review proceedings to this District Court for a hearing and a determination as if the proceedings were originally initiated in the District Court in accordance with 28 U.S.C. § 2347(b)(3), and for consolidation with this case.

JURISDICTION

6. This Court has jurisdiction over this action under 5 U.S.C. §§ 702 and 704 (judicial review of agency action) and 28 U.S.C. § 1331 (federal question).

7. An actual controversy exists between the parties within the meaning of 28 U.S.C. § 2201 (declaratory judgments).

8. Venue is proper in the Northern District of California under 28 U.S.C. § 1391(e). Assignment to the San Francisco or Oakland Division is appropriate under Local Rule 3-2(d).

PARTIES

9. Plaintiff NUCLEAR INFORMATION AND RESOURCE SERVICE ("NIRS")is a non-profit corporation organized under the laws of the District of Columbia with its principal office in the District of Columbia. NIRS is engaged in advocacy and education concerning nuclear energy, environmental issues, and radioactive waste. NIRS has approximately 6,000 members of which over 300 live or work in the Northern District of California. NIRS' members use streets and highways on which radioactive material may be transported and live or work in close proximity to them.

10. Plaintiff COMMITTEE TO BRIDGE THE GAP ("CBG") is a non-profit corporation organized under the laws of the State of California with an office in Santa Cruz, California. CBG is

engaged in advocacy and education regarding environmental and security issues and provides technical assistance to communities near nuclear facilities. CBG has members who live and work in the Northern District of California and use streets and highways on which radioactive material may be transported.

11. Plaintiff PUBLIC CITIZEN, INC. ("Public Citizen") is a non-profit citizen research, lobbying, and advocacy organization with 160,000 members nationwide and 10,538 members in the Northern District of California. Public Citizen, Inc. has headquarters offices in Washington D.C. and a California Office at 1615 Broadway, 9th Floor, Oakland CA 94612. Public Citizen, Inc.'s Critical Mass Energy and Environment Program has long advocated strict regulation of the nuclear industry, strong enforcement of laws and regulations that protect the public from harmful radiation and other dangers associated with the nuclear industry, and government policies that promote a transition to clean, safe, affordable energy sources. Public Citizen's members use streets and highways on which radioactive material may be transported and live or work in close proximity to them.

12. Plaintiff Redwood Environmental Education Institute, dba REDWOOD ALLIANCE, is a non-profit corporation, incorporated in California, headquartered and with its principle place of business in Arcata, California. Redwood Alliance is a community-based social and environmental organization whose main focus is advocacy and education to promote safe and efficient energy use and development. Redwood Alliance has approximately 4,500 members, many of whom live and work in the Northern District of California. Redwood Alliance's members use streets and highways on which radioactive material may be transported and live or work in close proximity to them. .

13. Plaintiff SIERRA CLUB is a national non-profit corporation incorporated in California with its headquarters in San Francisco, California. The Sierra Club has approximately 700,000 members nationally and 95,000 members who live or work in the Northern District of California. The mission of the Sierra Club is to further the protection and restoration of the natural environment and all forms of life that inhabit it, and includes the protection of human health from radiation damage and prevention of exposures to radioactive materials and wastes. The Sierra Club's members use streets and highways on which radioactive material may be transported and live or work in close proximity to them.

14. Plaintiffs' members use streets and highways on which radioactive material may be transported or live and work in close proximity to these streets and highways. Plaintiffs' members also

include transportation and emergency response workers who may be involved in routine transportation of radioactive materials and transportation accidents. Defendants' action issuing the regulations at issue has harmed and will continue to harm Plaintiffs' interests in the safe transportation of radioactive materials by increasing the risk of unsafe radiation doses to Plaintiffs' members. Defendants' failures to comply with NEPA deny Plaintiffs information to which they are statutorily entitled, injuring their ability to conduct effective research, education, and advocacy related to radiation safety. Unless the Court grants the relief requested herein, Plaintiffs will continue to be adversely affected and injured by Defendants' failure to comply with NEPA. Plaintiffs' interests in this action fall within the zone of interests protected by the laws sought to be enforced in this action.

15. Defendant DEPARTMENT OF TRANSPORTATION RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION is a federal agency within the Department of Transportation authorized and responsible to regulate transportation of hazardous materials by the Federal Hazardous Materials Transportation Law, 49 U.S.C. section 5101 et seq. DOT-RSPA at all times relevant herein was obligated to comply with applicable substantive and procedural requirements of the Federal Hazardous Materials Transportation Law and its implementing regulations, and NEPA and its implementing regulations.

16. Defendant NORMAN Y. MINETA is sued in his official capacity as the Secretary of the Department of Transportation. NORMAN Y. MINETA at all times relevant herein was obligated to ensure DOT-RSPA's compliance with applicable substantive and procedural requirements of the Federal Hazardous Materials Transportation Law and its implementing regulations, and NEPA and its implementing regulations.

STATUTORY FRAMEWORK

17. The Department of Transportation is authorized to designate material as hazardous, including radioactive material, and to promulgate regulations governing the safe transportation of hazardous material. 28 U.S.C. § 5103. Rulemaking must be conducted under the Administrative Procedures Act, 5 U.S.C. § 553. *Id.* Rulemaking is a major federal action subject to the requirements of NEPA. 40 CFR § 1508.8(a).

18. NEPA is our "basic national charter for protection of the environment." 40 CFR § 1500.1. NEPA requires all agencies of the federal government to prepare a "detailed statement" regarding all "major federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(C). This statement, known as an Environmental Impact Statement ("EIS"), must describe (1) the "environmental impact of the proposed action," (2) any "adverse environmental effects which cannot be avoided should the proposal be implemented," (3) alternatives to the proposed action, (4) "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity," and (5) any "irreversible or irretrievable commitment of resources which would be involved in the proposed action should it be implemented." 42 U.S.C. § 4332.

19. The Council on Environment Quality – an agency within the Executive Office of the President created by NEPA – has promulgated regulations implementing NEPA which are "binding on all federal agencies." 40 CFR § 1500.3. These regulations require that, unless an activity is "categorically excluded" from NEPA compliance, an agency must either prepare an EIS, or, at the very least, an Environmental Assessment ("EA") which is used to determine whether an EIS is necessary. *Id.* § 1501.4.

20. Among the factors an agency must consider to determine whether a project may have "significant" impacts, and therefore whether an EIS is required, are the "context" and "intensity" of the action. 40 CFR § 1508.27. With regard to context, both short- and long-term effects are relevant. *Id.* With regard to intensity, the regulations provide that, among other relevant factors, the severity of the impact must be judged based on whether "the proposed action affects public health and safety"; "[t]he degree to which the effects on the quality of the human environment are likely to be high controversial"; "the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks"; "[t[he degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration"; and "whether the action is related to other actions with . . . cumulatively significant impacts." *Id.*

21. The scope of an EIS or EA must include an assessment of cumulative impacts. *Id.* § 1508.25(c)(3). Cumulative impacts include "the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-

Federal) undertakes such other actions." *Id.* § 1508.7. Cumulative impacts may result from "individually minor but collectively significant actions taking place over a period of time." *Id.* "Significance cannot be avoided by . . . breaking[an action] down into small component parts." *Id.* § 1508.27(b)(7).

22. A single EIS should be prepared for "[c]umulative actions, which when viewed with other proposed actions have cumulatively significant impacts." *Id.* § 1508.25(a)(2).

23. Regardless whether an EIS is required, where an agency prepares an EA the regulations require that the EA discuss both the need for the proposed action and alternatives to it, address the environment impacts of both the proposal and the alternatives, and "provide sufficient evidence and analysis for determining whether to prepare" an EIS. *Id.* § 1508.9.

24. If, after preparing an EA, the agency concludes that an EIS is not necessary, it must issue a Finding of No Significant Impact ("FONSI") that adequately explains why the project will "not have a significant effect on the human environment" and an EIS will not be prepared. *Id.* § 1508.13.

25. The APA enables any person suffering legal wrong because of a final federal agency action to seek judicial review thereof. 5 U.S.C. §§ 702, 704. Under the APA's standard of review, the reviewing court must hold unlawful and set aside agency action found to be arbitrary, capricious, or otherwise not accordance with law; or without observance of procedure required by law. 5 U.S.C. § 706(2)(A), (D).

FACTS

Background

26. DOT-RSPA entered into a Memorandum of Understanding with the NRC on June 8, 1979 providing that each agency, in consultation with the other, will develop safety standards within their respective subject-matter jurisdictions. The MOU provided that DOT-RSPA will be the national competent authority with respect to the administrative requirements set forth in the regulations for the Safe Transport of Radioactive Materials of the International Atomic Energy Agency ("IAEA"). The MOU further provided that DOT-RSPA will act as the U.S. representative to the IAEA on matters pertaining to the administrative and safety regulatory aspects of transportation of radioactive materials. NRC will provide technical support and advice to DOT-RSPA.

27. Between 1999 and 2004, DOT-RSPA and NRC engaged in the joint rulemaking at issue here, in which DOT-RSPA made a number of changes to its Hazardous Materials Regulations ("HMR"), 49 CFR Parts 171 through 178, and NRC made a number of changes to its regulations at 10 CFR Part 71. The HMR regulates shipping activities to ensure safe transport of hazardous materials, including radioactive materials, by specifying requirements for such matters as packaging, radiation exposure, marking, labeling, placarding, shipping papers, and provision of emergency information. NRC's regulations at 10 CFR Part 71 govern packaging and transportation of radioactive material by NRC licensees.

28. All of the changes in the joint rulemaking pertained to shipments of radioactive material. The overarching rationale for the rulemaking was to harmonize United States regulations governing domestic radioactive shipments with IAEA regulations.

29. In coordination with NRC, DOT-RSPA published an advance notice of proposed rulemaking on December 28, 1999 and published a notice of proposed rulemaking on April 30, 2002 identifying proposed changes in the HMR.

Changes to the definition of exempt material

30. One change proposed in the notice of proposed rulemaking was to alter the basis on which radioactive material is exempted from the provisions of the HMR by adopting the nuclide-specific exemption levels. The particular exemption levels to be adopted were those set out in the 1996 IAEA Regulations for the Safe Transport of Radioactive Material. This proposal was adopted in the final rule by revisions in 49 CFR sections 173.403, 173.436, and 173.433.

31. Adoption of nuclide-specific exemption values was intended to replace the uniform exemption threshold of 70 becquerels per gram (70 Bq/g) previously applicable to all nuclides. The previous uniform exempt concentration did not take into account their different physical and chemical properties, which determine different exposure pathways and dose risks. The change in the exemption rule was intended to ensure that exempt concentrations were based on a uniform dosage criterion rather the previous uniform radiation criterion.

32. In developing the new exempt concentration levels, IAEA contractors had first determined that the acceptable dose criteria would be the basic dose criteria of the International Basis

Safety Standards for Protection Against Ionizing Radiation (BSS) and for the Safety of Radiation Sources (Safety Series No. 115-I), which provided for maximum individual doses of 1 millirem under normal conditions and 100 millirems for accident conditions.

33. IAEA contractors then analyzed various transportation scenarios (*e.g.*, exposures to truck drivers, loaders, and other members of the public) for 20 of the approximately 360 regulated radionuclides to determine maximum concentrations that would meet these criteria. The result was a set of concentrations values that purported to limit doses to the adopted 1 millirem criterion in transport-specific scenarios.

34. The IAEA contractors then compared these transport-specific concentrations to the concentrations that IAEA had previously adopted as exemption levels for non-transport activities, the so-called Basic Safety Standard or BSS exemption levels. The BSS exempt concentration levels were in many instances an order of magnitude higher than the concentrations limits determined to be necessary to meet the 1 millirem dose criterion in transport-specific scenarios. Nonetheless, IAEA concluded that the higher BSS concentrations were acceptable for transportation.

35. The consequence of accepting the higher BSS exemption levels for transportation is that the dose criterion of 1 millirem for normal exposure was not met. In fact, doses from normal transportation activity caused by the new exemption levels range as high as 42 millirems and to average 23 millirems annually for a transport worker.

Changes to the definition and regulation of Low Specific Activity material

36. Another proposed change in the notice of proposed rulemaking was to redefine one class of low specific activity material, LSA-I, by reference to the proposed nuclide-specific exemption levels. LSA-I was to be defined as radioactive material in which the radioactivity is distributed throughout and the average specific activity does not exceed 30 times the exempt radioactivity concentration level. This proposal was adopted in the final rule by revisions in 49 CFR section 173.403.

37. Another proposed change was to permit the transportation of bulk LSA-I material without packaging. This proposal was adopted in the final rule by revisions in 49 CFR section 173.427.

The Environmental Assessment and Finding of No Significant Impact

38. The NRC prepared a draft EA purporting to address the environmental impacts of the joint rulemaking, which DOT-RSPA's entered into its docket on May 9, 2002. The NRC prepared a final EA, which DOT-RSPA entered into its docket on February 19, 2004.

39. On January 30, 2004, DOT-RSPA adopted a final rule that included the proposed changes to exemption levels and to the definition and regulation of LSA-I. In its final rule, DOT-RSPA issued a FONSI that purported to be based on a final EA prepared by NRC that was dated March 2002.

40. The EA did not discuss or evaluate the environmental or human health impacts from the changes to the definition and regulation of LSA-I materials. These changes were simply omitted from the list of topics evaluated in the EA.

Public health impact of acknowledged occupational doses

41. The acknowledged occupational doses to transport workers – averaging 23 millirems per year and ranging up to 42 millirems – exceed the European Union's Basic Safety Standard 1 millirem radiation dose criterion for public exposure from exempt activities, the standard that was adopted by IAEA in determining the BSS exemption levels.

42. The acknowledged doses also exceed the 1 millirem individual dose standard identified by the National Academy of Science for release or conditional release of radioactive solid material, by the American National Standards Institute and Health Physics Society for clearance of materials from regulatory control, and by the European Commission Working Group of Experts for clearance or conditional clearance of radioactive matter.

43. The acknowledged doses also exceed most current radiation protection standards for public exposure promulgated by federal agencies, including the U.S. Environmental Protection Agency (EPA) standards of 4 millirems for groundwater exposures, 10 millirems for air exposures, 15 millirems for disposal of spent nuclear fuel and high level waste, 15 millirems for Yucca Mountain exposures, and 25 millirems for nuclear fuel cycle facility operations, and the NRC standards of 25 millirems for land disposal of radioactive waste and 25 millirems for decommissioning nuclear facilities.

44. Cancer incidences from the acknowledged average dose, based on federal dose-response guidance, exceed the EPA acceptable risk goal of 1 excess cancer in 1 million persons by a factor of 800 and exceed the EPA maximum acceptable risk of 1 excess cancer in 10,000 persons by a factor of eight.

45. Doses of only 10 millirems to pregnant women, less than half the acknowledged average dose, may increase childhood cancers by 6 in 10,000.

46. The EA provided no discussion of any criteria of significance with respect to radiation doses from exempt shipments in support of DOT-RSPA's FONSI. The EA simply asserted that the IAEA has judged that the change would not significantly increase the risk to individuals.

47. The text of the final rule dismissed comments objecting to the failure to meet the IAEA 1 millirem standard by observing that the 23 millirem average exposure would be less than an unrelated 100 millirem exposure standard applicable to NRC licensees and less than unpreventable background radiation levels. Neither the EA nor the final rule put the 23 millirem exposure in the context of other standards for public radiation doses or determined cancer incidences in relation to any standards.

48. Allowable doses from the transport of LSA-I material may be up to 30 times higher than doses from exempt material. Neither the EA nor the final rule contained *any* analysis or discussion of the significance of doses attributable to the transport of LSA-I material.

Uncertainty and controversy about the radiation dose effects

49. There is uncertainty and controversy in radiation dose-response model with respect to cancers. Recent studies indicate that the actual number of cancers may be ten times higher than the federal dose-response guidance.

50. There is an evolving understanding that low radiation doses cause non-cancer biological impacts including heritable mutation, birth defects, genomic instability, bystander effects, and low birth weight.

51. Controversy and uncertainty about radiation standards are evident in a lack of interagency consensus on acceptable radiation risks to the public and the multiplicity of radiation standards.

52. Controversy and uncertainty about radiation standards are evident from the fact that Congress overruled the NRC's 1990 Below Regulatory Concern Policy Statement establishing a generic exemption level because the level was insufficiently protective. The NRC's policy statement had adopted a 10 millirem standard for an average individual dose from each exempted practice, less than half the average dose to transport workers under the new exemption levels.

53. Comments on the proposed rulemaking identified a substantial controversy and uncertainty regarding the radiation dose-response relationship and non-cancer effects of low level radiation.

54. Neither the EA nor the final rule contained any discussion of this controversy or uncertainty.

Assessment of occupational doses to individuals

55. Because LSA-I material is permitted to be 30 times as radioactive as exempt material, occupational radiation doses may therefore be 30 times higher – up to 2000 millirems in a 400-hour work year. Even if external radiation protection standards were applicable, allowable doses could still range up to 800 millirems.

56. The EA did not assess radiation doses from LSA-I; in fact, it contained no assessment of any potential impacts from the changes to the definition of LSA-I material.

57. The assessment of occupational doses from exempt material made by IAEA contractors understated potential doses because it made unreasonable assumptions about exposure durations and shipping geometry. The EA relied on the IAEA assessment.

Assessment of accidental doses

58. The IAEA assessment of exposures from transportation accidents was based on a model containing assumptions clearly inapplicable bulk shipments of exempt material not necessarily known to be radioactive, including the assumptions that workers and the public would know to limit exposures to 30 minutes, that dispersion of materials would be limited by packaging, that dust would settle as quickly as it does indoors, and that clean-up would be supervised by a health physicist and completed without residual contamination.

59. Neither the EA nor the final rule discussed exposures from transportation accidents involving exempt material.

60. The elimination of the packaging requirement for LSA-I material may increase radiation exposure to the public because material may be substantially more dispersed in the event of accidents.

61. Neither the EA nor the final rule contained any analysis of accidents involving LSA-I materials.

Assessment of collective doses

62. Collective doses to members of the public who receive smaller doses than transport workers may result in larger numbers of cancers because these members of the public are more numerous.

63. Evaluation of these collective doses may be based on a determination of the volumes and types of shipments and the application of models that evaluate population doses from normal transport and accident situations.

64. Volumetric and radiological data about waste shipments are available or can be obtained to determine relevant shipments, including survey results, Department of Energy studies, records of hazardous waste disposal sites, waste shipment manifests, and records of agency requests for proposals for shipment contracts.

65. The EA incorrectly concluded that there were no data available for the number and frequency of exempt shipments. Responses to Freedom of Information Act requests indicate that agency contractors identified only two documents in a purported search for such data.

66. Substantial volumes of both exempt and LSA-I material have been and will be transported, primarily as low-level waste destined for treatment and disposal.

67. The EA incorrectly concluded that the regulations altering exemption levels would not affect radioactive waste shipments.

68. Neither the EA nor the final rule contained any analysis of collective population doses based on evaluation of shipment volumes.

Assessment of cumulative and precedent impacts

69. Three federal agencies are currently considering proposals to deregulate recycling, disposal, and release of radioactive material. These proposals would adopt dose-based criteria for deregulated material that are similar or identical to the exemption criteria at issue here.

70. The Department of Energy is preparing a Programmatic EIS to consider a proposal for unrestricted release of radioactively contaminated scrap metals for recycling based on the adoption of IAEA criteria for radioactivity, the same criteria adopted in this rulemaking.

71. The EPA has begun a rulemaking for disposal of low-activity radioactive waste, which includes a proposal to adopt a dose-based radioactivity limits below which waste could be disposed of in landfills, the same regulatory approach as was taken in this rulemaking.

72. The NRC has begun a rulemaking and is preparing an EIS to consider a proposal for the unrestricted release or disposal of radioactively contaminated solid materials based on dosage criterion, the same regulatory approach as was taken in this rulemaking.

73. Each of these reasonably foreseeable proposals would affect the same members of the public affected by the rulemaking at issue here, including transportation workers, those traveling on roads and highways, and those living or working proximate to roads and highways.

74. Members of the public affected by this rulemaking are currently exposed to other permitted sources of radiation, including medical radiation, radiation from land disposal of waste, and radiation from nuclear fuel cycle operations.

75. Neither the EA nor the final rule contained any analysis or discussion of cumulative impacts.

76. Neither the EA nor the final rule evaluated the degree to which the adoption of BSS exemption values for transportation may establish a precedent for future regulatory actions with significant effects.

Alternatives analysis

77. The EA considered only the no-action alternative to the proposed change in the exemption levels. The EA did not consider an alternative that would not raise any exemption levels, *e.g.*, an alternative that would simply lower the exemption levels for those radionuclides for which the IAEA exemption level is less than the previous 70 Bq/g exemption level. The EA did not consider an alternative that would lower exemption levels to the level necessary to meet the IAEA's radiation dose criterion of 1 millirem per year. The EA did not consider any alternative to the changes in the definition of LSA-I materials or to the relaxation of LSA-I packaging requirements.

Exhaustion of Remedies

78. On February 25, 2004, Plaintiffs and others filed an administrative appeal of its final rule to DOT-RSPA.

79. On August 19, 2004, DOT-RSPA denied Plaintiff's administrative appeal.

FIRST CAUSE OF ACTION
(Failure to prepare an EIS)

80. Because the promulgation of Hazardous Material Regulations is a major federal action that may have significant, uncertain, highly controversial, and cumulative impacts on public health and the environment, DOT-RSPA violated NEPA and its implementing regulations and acted in a manner that is arbitrary and capricious and contrary to law in violation of the APA by failing to prepare an EIS prior to adopting its final rule and by improperly segmenting its consideration of environmental impacts. 42 U.S.C. § 4332; 5 U.S.C. § 706.

SECOND CAUSE OF ACTION
(Inadequate alternatives analysis)

81. Because the promulgation of Hazardous Material Regulations is a major federal action, by failing to consider reasonable alternatives in an EIS or an EA, DOT-RSPA violated NEPA and its implementing regulations and acted in a manner that is arbitrary and capricious and contrary to law in violation of the APA. 42 U.S.C. § 4332; 5 U.S.C. § 706.

THIRD CAUSE OF ACTION
(Inadequate Environmental Assessment)

82. Because the promulgation of Hazardous Material Regulations is a major federal action, by preparing an EA which failed to adequately consider the impacts of the regulations on public health and the environment, and by issuing a FONSI based on that EA, DOT-RSPA violated NEPA and its implementing regulations and acted in a manner that is arbitrary and capricious and contrary to law in violation of the APA. 40 CFR § 1501.4.; 5 U.S.C. § 706.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs respectfully request the Court to enter judgment:

1. Declaring that DOT-RSPA unlawfully promulgated the regulations with respect to exempt and LSA-I materials in violation of the requirements of NEPA and its implementing regulations;

2. Setting aside the FONSI with respect to exempt and LSA-I materials;

3. Ordering DOT-RSPA, through a permanent injunction, to rescind the regulations with respect to exempt and LSA-I materials unless and until it fully complies with the requirements NEPA and its implementing regulations;

4. Retaining jurisdiction of this matter until DOT-RSPA has fulfilled its legal obligations under NEPA :

5. Awarding Plaintiffs' costs in this action, including reasonable attorneys' fees and expert witness fees; and

6. Providing such other relief as the Court deems just and proper.

Dated: 11/9/04

Respectfully submitted,

By _____

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UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

NUCLEAR INFORMATION AND RESOURCE SERVICE; COMMITTEE TO BRIDGE THE GAP; PUBLIC CITIZEN, INC.; AND REDWOOD ALLIANCE, Petitioners, v. UNITED STATES NUCLEAR REGULATORY COMMISSION and the UNITED STATES OF AMERICA, Respondents	No. 04-71432

Declaration by Steve Wing, Ph.D.
in Support of Petitioners' Motion To Transfer
Proceedings to District Court

I, Steve Wing, declare in the above captioned matter that:

1. My name is Steve Wing. I am an Associate Professor in the Department of Epidemiology at the School of Public Health at the University of North Carolina.

2. I received my Ph.D. in epidemiology from the University of North Carolina where I joined the faculty in 1985. In 1987, I became lead investigator of a study of radiation health effects among workers employed at Oak Ridge National Laboratory. Since that time I have served as principal or co-prinicpal investigator

of studies of radiation-exposed workers at the Hanford, WA plutonium production site, Los Alamos National Laboratory, the Savannah River Site and Oak Ridge Y-12 plant. I have authored numerous articles about health effects of low-level ionizing radiation in peer-reviewed scientific and medical journals and have testified about health impacts of exposure to ionizing radiation before several committees of the US Congress and the National Academy of Sciences. A list of my publications and testimony about health effects of ionizing radiation follows this declaration.

Background

3. Among the biological impacts of radiation, cancer has received the most scientific attention. It is well known that ionizing radiation can damage DNA, causing cancer and inherited mutations (National Research Council and Committee on the Biological Effects of Ionizing Radiation (BEIR V) 1990). However, whether an individual experiences cancer following exposure to ionizing radiation depends on whether radiation damages the DNA, what part of the DNA is damaged, whether the cell line can reproduce, whether the damage is completely repaired, whether the cell completes transformations that lead to malignancy, how fast the latent cancer develops, and whether the person survives long enough for the cancer to be diagnosed.

4. Although it is clear that ionizing radiation plays a part in the causation of cancer, an individual cancer does not manifest unique characteristics that indicate whether radiation played a role in its development. Unlike infectious diseases, which are named for the pathogens that are present in every case of disease, cancers are named according to their tissues of origins and characteristics of the malignant cells rather than according to the presence of a specific causal agent. Therefore, the most important evidence regarding risks from human exposure to radiation comes from epidemiologic studies that examine incidence of cancer in populations exposed to varying doses of radiation. These include studies of cancer among children exposed to radiation *in utero*, people exposed to background radiation, nuclear workers, patients exposed to therapeutic or diagnostic radiation, and people exposed to radiation from nuclear weapons (NRC/ BEIR V 1990).

5. International and national radiation commissions such as the International Commission on Radiation Protection and the Committee on Biological Effects of Ionizing Radiation of the US National Academy of Sciences have summarized research on health effects of exposure to ionizing radiation (NRC/BEIR V 1990). These organizations support a linear-no-threshold model of risk for mutation-related impact of low-level ionizing radiation. This model presumes (1) risk of mutation-related damage (including cancer) is proportional to the radiation dose; and, (2) there is no threshold below which ionizing radiation

produces no damage. Although risks of disease and death cannot be measured directly at lowest doses, physical and biological theory as well as observations from studies of cells in culture, animals, and humans, support these assumptions. The linear no-threshold model means that background radiation from terrestrial, cosmic and anthropogenic sources causes cancer and genetic mutations, and that increases in background radiation lead to increases in cancer and genetic mutations among exposed human populations.

6. Low level exposure to ionizing radiation produces other biological damage in addition to cancer. Since the 1920s it has been shown in experimental settings that ionizing radiation can cause heritable genetic mutations that can be expressed in the descendants of exposed organisms (NRC/BEIR V 1990). Genetic mutations that result in major abnormalities in the offspring of exposed plants and animals can be recognized fairly easily, whereas other inherited mutations may produce subtle effects on offspring or may have impacts that do not appear until later generations. Ionizing radiation can also cause birth defects among individuals exposed *in utero*.

7. In addition to its ability to cause mutations in exposed cells, it has recently been recognized that ionizing radiation can cause genomic instability, a condition in which genetic damage appears in the daughter cells rather than in the

exposed cells, and that cells adjacent to an exposed cell can experience "by-stander effects" (Little 2000; Mothersill and Seymour 2001).

8. Other recent studies suggest that radiation exposures to the thyroid gland of pregnant women may affect gestational growth, possibly by affecting hormone production. A recent report in the *Journal of the American Medical Association* concludes that the mothers of low-birth-weight babies received dental x-rays during pregnancy more often than mothers of normal weight babies; a maternal thyroid dose of 0.4 mGy (40 mrem) was associated with more than a doubling of the risk of low birth weight (Hujoel et al. 2004). Low birth weight is an important risk factor for infant mortality.

9. Recent identification of previously unknown mechanisms of effect and biological damage shows that the spectrum of biological effects of low-level radiation is not yet fully understood.

Significance of risks from deregulation of radioactive waste transport

The NRC and DOT have proposed to deregulate transport of certain wastes that are currently regulated due to their radioactivity. NRC and DOT have used models to estimate radiation exposures to human populations, and have projected that drivers of trucks transporting deregulated waste would be the most exposed group. The *average* (not the maximal) estimated annual exposure of this group is projected to be 0.23 mSv (23 mrem) whole-body exposure to penetrating ionizing

radiation from gamma rays emitted by loads of waste during transit. According to risk models used by US and international government agencies, this exposure will lead to an increased risk of cancer in the exposed population.

11. Federal Guidance Report No. 13 from the US EPA provides estimates of cancer risks from exposure to ionizing radiation for a hypothetical stationary population based on the current US population (EPA 1999). FGR 13 figures can be used to evaluate the significance of an annual exposure from exposure to de-regulated nuclear waste. Truck drivers who receive annual whole body exposure to gamma rays of approximately 0.25 mSv (25 mrem) would, if they worked from age 20 to age 60, accrue a cumulative dose of 10 mSv (1 rem). FGR 13 provides an estimate of approximately 8 incident cancers and 6 fatal cancers for every 100 persons exposed to 1 Gy (100 rads). For gamma rays this is equivalent to 1 Sv (100 rem). Thus, FGR 13 predicts that a model US population exposed to 10 mSv (1 rem, equivalent to the average estimated cumulative dose of an exposed truck driver employed for 40 years) would experience an increased risk of cancer of approximately 8 in 10,000 and an increased risk of fatal cancers of approximately 6 in 10,000. This is a substantial risk that is 800 times greater than the one-in-a-million risk used by the US EPA as a point of departure for determining Superfund remediation goals for carcinogens for which there are multiple exposure pathways. 40 C.F.R. § 300.430(e)(2)(i)(A)(2).

12. Female truck drivers and their offspring would experience risks not relevant to male truck drivers. Standard medical practice restricts x-ray exposures of pregnant women because of the accepted increased risks of childhood cancer from *in utero* exposure to x-rays. The biological impacts of x-rays are considered to be essentially the same as gamma rays. Physicians delay x-ray procedures that result in lower doses than the average annual truck driver dose of 0.23 mSv (23 mrem) for pregnant women until after their pregnancies due to risk of cancer in their offspring. In a 1997 review published in *The British Journal of Radiology* (Doll and Wakeford 1997), Doll and Wakeford estimate an excess absolute risk of six percent per Gy (100 rads), or six additional childhood cancers for every 10,000 *in utero* exposures of 0.1 mSv (10 mrem), or 1.38 childhood cancers for every 1,000 exposures of 0.23 mSv (23 mrem) during pregnancy. This is in excess of EPA's acceptable risk thresholds.

Whole-body exposures of pregnant truck drivers would also expose the thyroid gland, potentially compromising intrauterine growth that is important to infant health and survival (Hujoel et al. 2004). Impacts on birth defects from *in utero* exposure are less well quantified but should be considered and discussed in any assessment of consequences of these exposures (NRC/BEIR V 1990).

Male truck drivers would also experience non-cancer risks from exposure to ionizing radiation. Studies of male nuclear workers have shown relationships

between the pre-conception occupation radiation dose and (1) an elevated proportion of male offspring (Dickinson et al. 1996), (2) still births (Parker et al. 1999), and (3) leukemia and lymphoma in offspring (Gardner et al. 1990). Lack of evidence of these effects in studies of off-spring of A-bomb survivors has been cited as a reason to disregard evidence from worker studies, however, the A-bomb studies lack individual dose measurements available for workers, and are influenced to an unknown degree by selective survival (Wing et al. 1999).

Uncertainties and controversy about dose-response relationships

15. Although much has been learned about health effects of radiation since Roentgen discovered x-rays at the end of the 19th century, improvements in understanding continue due to availability of better exposure measurements, longer follow-up of human populations, and advances in molecular radiobiology. As more has been learned, the quantities of ionizing radiation recognized to be capable of producing harm has diminished. One indication of this improved understanding is the long-term decline in permissible exposures for nuclear workers (Wing et al. 1999).

16. Estimates of the amount of cancer produced by a given amount of radiation have been derived primarily from studies of A-bomb survivors and, to a lesser extent, studies of patients irradiated for treatment or diagnosis (Brenner et al. 2003; NRC/BEIR V 1990). These select populations, however, differ from the

general public that would be affected by exposures from deregulation of radioactive waste. Numerous recent studies of nuclear workers indicate considerably higher cancer effects of radiation exposures than estimates used in reports such as FGR 13 (Ashmore et al. 1998; Beral et al. 1988; Kneale and Stewart 1993; Ritz 1999; Ritz et al. 1999; Stewart 2000; Wing et al. 2000; Wing et al. 1991; Wing et al. 1993). Despite the importance of studies of the A-bomb survivors, controversies exist over errors in their dose estimates and impacts of selective survival, factors that could lead to underestimation of radiation impacts on humans (Richardson et al. 2001; Stewart 2000; Wing and Richardson 2002; Wing et al. 1999).

17. Thus, increasing public exposure to radiation is an extremely serious decision. Prudence and precaution mandate that uncertainties in radiation risk estimates be carefully considered before such a policy is enacted.

Uncertainty and collective doses

18. In addition to the risk to maximally exposed individuals and cohorts, collective population doses should also be considered. Truck drivers might be the most highly exposed persons in event of deregulation of transport of radioactive wastes; however, they would not necessarily experience the largest numbers of radiation induced cancers, birth defects, and heritable mutations. This is because the population of truck drivers is small, the population exposed to lower doses may

be large, and the mutation risks from ionizing radiation display a dose-response relationship with no threshold.

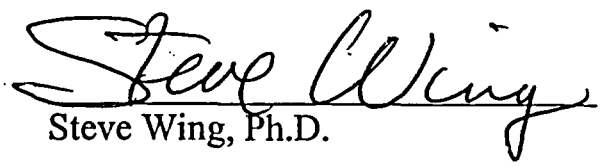
19. The environmental assessment undertaken by the agencies considered only the risk to maximally exposed individuals and did not quantify the collective exposures. However, exposure of large populations to smaller doses than truck drivers would receive could lead to far greater consequences of deregulation, an issue that should be carefully considered prior to any decision. For example, assume that for each truck driver with an annual dose of 0.25 mSv (25 mrem), there are 100 people with an average annual dose of only 0.01 mSv (1 mrem) that occurs through other occupational, environmental or accidental exposures. In this scenario, 10,000 truck drivers working for 40 years would accrue 1 Sv of cumulative dose and attendant health effects. There would be 100 x 10,000 or one million people exposed to 0.01 mSv (1 mrem) annually. If these exposures accrued over an average life span of 75 years, they would receive a total dose of 750 Sv and experience 750 times as many health events as the population of most exposed truck drivers.

Conclusion

20. Low level ionizing radiation, including background radiation, is a cause of cancer, heritable mutations, and probably other significant health effects. Deregulation of the transport of radioactive wastes would lead to exposures of

transport workers, accidental environmental releases, and exposures to the general population to low level radiation in a highly complex and difficult to predict pattern. Despite uncertainties about the doses, types of health effects, and numbers of health effects, it is clear from current knowledge that there are risks that are relatively large, especially when exposures over many generations are considered. These effects are significant enough to warrant extensive review prior to any final decision on deregulation.

I declare under penalty of perjury that the foregoing is true and correct.
Executed November 8, 2004



Steve Wing, Ph.D.

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UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

NUCLEAR INFORMATION AND RESOURCE SERVICE; COMMITTEE TO BRIDGE THE GAP; PUBLIC CITIZEN, INC.; AND REDWOOD ALLIANCE,	
Petitioners,	No. 04-71432
v.	
UNITED STATES NUCLEAR REGULATORYCOMMISSION and the UNITED STATES OF AMERICA,	
Respondents	

**Declaration by Marvin Resnikoff, Ph.D.
in Support of Petitioners' Motion To Transfer
Proceedings to District Court**

I, Marvin Resnikoff, declare in the above captioned matter that:

1. My name is Marvin Resnikoff. I am the Senior Associate at Radioactive Waste Management Associates ("RWMA"), a private technical consulting firm based in New York City. I hold a doctorate degree in high-energy theoretical physics from the University of Michigan. I have researched radioactive waste issues for the past 30 years and have extensive experience and training in the field of nuclear waste management,

transportation, storage, and disposal. Our work at RWMA includes matters covered in this testimony: (i) safety issues related to the transportation and disposal of radioactive waste and (ii) the calculation of radiation exposures. These are matters that are addressed in this declaration.

2. Since 1975 I have worked on transportation issues for the States of Utah, Nevada (including Churchill, Clark and White Pine Counties), Idaho, New Mexico and Alaska. This work began with work for the New York Attorney General's office on the safety of transporting plutonium by plane out of John F. Kennedy International Airport. My role in the case was to determine whether the plutonium shipping container could be punctured and the amount of plutonium that could be released. I was an invited speaker at the 1976 Canadian meeting of the American Nuclear Society to discuss the risk of transporting plutonium by air. On behalf of the State of New York, I also reviewed and provided comments on NUREG-170, "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes." On behalf of the State of Nevada and Clark County, Nevada, I provided comments on the transportation cask safety studies and transportation risk assessments, such as the Modal Study and references, and more recently NUREG/CR-6672. RWMA has conducted transportation risk

assessments for the State of Nevada and has employed various computer codes and formulas to estimate the amount of radioactivity released in and the health and economic consequences of a severe accident, including the computer models RADTRAN, RISKIND, RESRAD, and HOTSPOT. For the Council on Economic Priorities, I have written a book on the transportation and storage of irradiated fuel.

3. I have considerable training and experience in the field of risk assessment involving nuclear and hazardous facilities, serving as an expert witness in numerous personal injury cases in which I estimated radiation doses and the likelihood these exposures caused cancer. These cases involved uranium mining and milling, oil pipe cleaning, X-rays, thorium contamination and other issues. This work involved the use of computer codes, such as MILDOS, to estimate radiation doses and spreadsheets employing dose conversion factors. The staff at RWMA and I have reviewed risk assessment studies for proposed low-level radioactive waste facilities at Martinsville (Illinois), Boyd County (Nebraska), Wake County (North Carolina), Ward Valley (California) and Hudspeth County (Texas). Matters involving low-level radioactive waste and exempt waste are also discussed in this declaration. My resume is attached as Exhibit 1.

4. In the proposed agency action, for transportation purposes, certain materials are considered non-radioactive and therefore exempt from regulatory requirements for radioactive materials, while others, LSA-I materials, have reduced regulatory requirements. In my opinion, the proposed regulations have a significant environmental impact that was not properly and fully assessed by the federal agencies. In this declaration, I wish to assert the following points in support of the NIRS petition to the court.

a. Substantial volumes of waste shipments meet the exempt criteria, contrary to the Environmental Assessments (EA) prepared by the Nuclear Regulatory Commission (NRC) and adopted by the Department of Transportation (DOT).

b. Substantial volumes of waste shipments also meet the LSA-I criteria, although impacts from LSA-I shipments were not discussed in the EA.

c. Data were available to document the number of shipments, contrary to the EA. The agencies did not collect this data.

d. The agencies did not determine the collective radiation impacts of the proposed regulations because they did not collect shipment data.

e. The agencies did not consider cumulative radiation doses from other existing and proposed activities.

f. Occupational doses to drivers from shipping exempt material, as shown by the agencies' own calculations, would be substantial.

g. The assumptions employed in the calculations of occupational doses from shipping exempt material are unrealistic and, in some cases, wrong, and underestimate the resultant radiation doses to drivers.

h. Occupational doses from shipping LSA-I material, which the agencies did not evaluate, would be substantially higher than from shipping exempt material.

i. The agencies did not determine the impact of accidents due to shipping exempt or LSA-I materials. The model that the International Atomic Energy Agency (IAEA) contractors

used to evaluate the accident consequences from exempt shipments made unrealistic and incorrect assumptions about exempt shipments. No evaluation was made of accidents involving LSA-I shipments.

5. In order to prepare this declaration, I reviewed the NRC's and DOT's Environmental Assessments, Federal Register notices, hearing transcripts, transportation regulations and a large number of supporting references. The reference list appears in Exhibit 2.

Substantial volumes of waste shipments meet the exempt criteria

6. The EA stated that the change in exemption levels would have little or no impact on Department of Energy (DOE) site clean-up activities, basing this conclusion on review of DOE's Waste Management Programmatic EIS, in which, the EA claimed, no shipments of radioactive material under exemption were mentioned.[1] In fact, substantial volumes of waste from DOE and other agency sites that met the exemption criteria have been shipped, and substantial volumes of projected future shipments and will meet the exemption criteria.

[1] US NRC, Environmental Assessment of Major Revision of 10 CFR Part 71, Final Rule, p. 52. Available online at http://dmses.dot.gov/docimages/pdf89/270248_web.pdf.

7. Approximately 500 sites, under NRC, DOE, DOD, Army Corps and EPA regulatory jurisdiction are being or remain to be decontaminated. The list of these sites is attached as Exhibit 3. Much of this waste is bulk contaminated materials, such as contaminated soil, and is either exempt or LSA-I material. The LSA-I material was or is being shipped to radioactive landfills such as Envirocare in Utah or Waste Control Specialists in Texas. The Department of Energy also ships its low-level waste to its own landfills, such as the NTS site in Nevada and Hanford in Washington. Exempt materials were shipped to hazardous waste landfills, such as the Buttonwillow facility in California and Envirosafe in Idaho.

8. We list below a few of many examples of exempt waste that either has been or will be transported for disposal. Calculations determining that this waste is exempt are shown in Appendix A.

a. **The DOE Current and Planned Low-Level Waste Disposal Capacity Report.** Twelve cubic meters of exempt contaminated soils will be shipped from Waste Control Specialists, a waste dump in Texas, to NTS.[2]

[2] US DOE, December 2000. Appendix D2.

b. **US Army Corps general data.** The Army Corps estimated in 1999 that "as much as two million cubic yards, or more" of radioactive material from FUSRAP [Formerly Utilized Sites Remedial Action Program] sites meeting the old exemption level (2000 pCi/g) would require off-site disposal.[3] The State of Texas agreed that millions of cubic yards of waste will be shipped from FUSRAP sites in the future.[4] A total of almost 2 million cubic yards are estimated from 22 sites in 8 states. This waste is very likely to be LSA-I or exempt. Large quantities of FUSRAP waste have in the past been shipped to RCRA facilities, like the Buttonwillow facility, licensed only to receive wastes with less than 70 Bq/g of radioactivity. A large amount will be shipped in the future. For example, the Texas report states that 7.6 million cubic yards of DOE waste will be sent to a

[3] US Army Corps of Engineers, 1999. Cost Effective Disposal and Recycling Options for FUSRAP Material. Available online at www.environmental.usace.army.mil/info/technical/hp/hppubs/WM99.doc. Accessed October, 2004.
[4] Rogers and Associates, 2000. Texas Compact Low-Level Radioactive Waste Generation Trends and Management Alternatives Study. p. 3-12.

CERCLA disposal cell,[5] that, like the Buttonwillow facility, will accept only materials with less than 70 Bq/g.

c. **US Army Corps data regarding Maywood, NJ.** The former Maywood Chemical Corporation was a thorium refinery. Over several decades, both during and after operations, mill wastes were spread around and off the property. At minimum, a total of 73,233 cubic yards will be removed to bring contamination at the site down to an acceptable level for restricted use. At least some of this waste will be exempt. Since most properties will be cleaned to an unrestricted use standard,[6] up to 37,121 cubic yards of additional waste will be removed, all of which will be exempt. [7]

d. **US Army Corps data regarding the Middlesex Municipal Landfill Pile, Middlesex, NJ.** Approximately 31,000 cubic yards of soil and debris were transported to a RCRA Subtitle

[5] Ibid, p. 3-8.
[6] US Army Corps of Engineers, 2003. Record of Decision for Soils and Buildings for the FUSRAP Maywood Superfund Site, Table 4.
[7] Ibid, Table 4.1.

C facility not licensed to receive mixed waste. This material was exempt under both old and new rules.[8] That is, as a practical matter, RCRA landfills, licensed by States, used the 70 Bq/g exempt transportation limit as the limit for RCRA facilities. For example, the Buttonwillow facility in California used the 70 Bq/g limit for radioactive material shipped from Linde.

e. **US Army Corps data regarding the former Linde site in Tonawanda, NY**: The site was used to process uranium ores between 1942 and 1946. To date, over 92,000 cubic yards of contaminated material have been removed from the site,[9] most of which would be exempt under both new and old rules. This can be calculated from radiological

[8] US Army Corps of Engineers, 1999. Cost Effective Disposal and Recycling Options for FUSRAP Material, p.4. Average concentrations of the material were 18.9 pCi/g Ra-226 and 19.5 pCi/g U-238. These amounts are below the exemption levels under both the old and the new rules.
[9] US Army Corps of Engineers, "Linde Site Status," Available online at http://www.lrb.usace.army.mil/fusrap/linde/lindstat.htm, accessed October, 2004.

characterization data.[10] It can also be inferred from the fact that the waste was shipped to the Buttonwillow facility,[11] which was not licensed to accept radioactive waste.[12]

f. **NMI:** A total of 1,275 cubic yards of subbasin gravel[13] was removed from under and around the holding basin of Nuclear Metals, Inc. It was contaminated with depleted uranium. This material would have been exempt under old and new rules.[14] All of this material was shipped from Massachusetts to Envirocare in Utah.

g. **Sodium Burn Pit, Rocketdyne.** Soil contaminated with Cs-137, Sr-90, U-235, U-238, Pu-238, Th-230, and Th-232 was shipped to the Buttonwillow landfill in 2001. There

[10] DOE, 1978. Radiological Survey of the Former Linde Uranium Refinery, Tonawanda, New York. DOE/EV-0005/b. Table 10.
[11] US Army Corps of Engineers News Report, April 25, 2001. Available online at http://www.lrb.usace.army.mil/fusrap/news/nr-0125.htm.
[12] Edward D. Bailey, Chief, Radiologic Health Branch, Dept. Of Health Services, letter to Watson Gin, Acting Chief, Hazardous Waste Managment Program, Dept. Of Toxic Substances Control, May 5, 1999. The Buttonwillow facility was authorized to accept naturally occurring radioactive material (NORM) and radioactive waste with concentrations less than 70 Bq/g, the transportation exempt limit.
[13] Nuclear Metals, Inc. Site Characterization Report for the Holding Basin. February 12, 1993. p. 58.
[14] Ibid, p. 41.

were 537 truckloads shipped over the course of three months. All of this material was exempt under both old and new rules.[15]

9. Since it saves costs for the Army Corps and the DOE to use non-radioactive or hazardous waste landfills, these federal agencies have shipped exempt or slightly radioactive materials to these landfills in the past. According to the GAO, the Army Corps claims a reduction of 58% in the

[15] State of California Environmental Protection Agency, California Air Resources Board, Findings and Conclusions Regarding Preliminary Hearings on Appellants Appeal, In the Matter of an Appeal Under the Tanner Act, Health & Safety Code Section 25199 et seq., Kern County's December 12, 1994; Approval of the Conditional Use Permit Granted to Safety Kleen's Buttonwillow Hazardous Waste Disposal Facility; Edwin F. Lowry, Director, California Dept. Of Toxic Substances Control, letter to James R. Ryden, Adminsitrative Law Judge, Air Resources Board, June 14, 2002; Arthur G. Baggett, Chair, State Water Resources Control Board, memorandum to James R. Ryden, Adminsitrative Law Judge, Air Resources Board, June 20, 2002; Edward D. Bailey, Chief, Radiologic Health Branch, Dept. Of Health Services, letter to Watson Gin, Acting Chief, Hazardous Waste Managment Program, Dept. Of Toxic Substances Control, May 5, 1999; Chart prepared by the California Department of Health Services, released to SSFL Interagecny Work Group Meeting, May 16, 2000; Ed Lowry, Director of California Department of Toxic Substances Control, letter to to Phillip Klasky, Bay Area Chapter of Physicians for Social Responsibility, and Ward Young, Bay Area Nuclear Waste Coalition, April 10, 2001.

disposal cost by using RCRA facilities, such as International Uranium Corporation (Utah) and Envirosafe (Idaho).[16]

10. Further, comments on the rulemaking at issue in this case informed DOT and the NRC that bulk shipments under exemption had occurred and would occur in the future:

a. In their comments on the Notice of Proposed Rulemaking, DOE noted that the change from the 70 Bq/g exemption level to the radionuclide-specific exemption levels would cause significantly increased costs.[17] Affected areas of DOE operations are stated to be "sample shipments, mixed waste, remelted metals, and environmental restoration activities." Costs are expected to increase for radionuclide characterization, paperwork, and package processing. These statements make it clear the DOE expects much of their

[16] GAO, "Corps of Engineers' Progress in Cleaning Up 22 Nuclear Sites," GAO/RCED-99-48, February, 1999.
[17] US Department of Energy Comments concerning Department of Transportation Advance Notice of Proposed Rulemaking (HM-230) *Hazardous Materials Regulations; Compatibility with the Regulations of the International Atomic Energy Agency.* Available online at http://dmses.dot.gov/docimages/pdf48/86437_web.pdf.

environmental restoration wastes will have radionuclide concentrations at or near the exemption levels.

b. In a comment submitted separately, DOE noted that environmental restoration at the Savannah River site had involved shipment of 98 railcars of contaminated soils as exempt material. The commenter noted that significant additional costs would probably have been likely to characterize and/or package this material if the new regulations had been in effect.[18] Obviously the DOE has copious experience with the shipment of exempt materials and could have provided information to DOT to help them with an assessment of the numbers of past and likely future exempt shipments from DOE activities.

c. Nuclear Energy Institute, an industry organization, commented to DOT that RCRA waste disposal sites would be affected by the change in exemption levels. RCRA

[18] Department of Energy Comments on the Research and Special Programs Administration, Notice of Proposed Rulemaking "Compatibility with the Regulations of the International Atomic Energy Agency," Docket HM-230. August 7, 2002. Available online at http://dmses.dot.gov/docimages/pdf1a/183480_web.pdf.

landfills have received radioactive wastes, containing radioactive concentrations less than 70 Bq/g. NEI commented, "as only the DOT and NRC are proposing to adopt the exemption values, situations may arise whereby DOT regulations and the new exemption values would allow the transportation of materials with residual radioactivity, but the RCRA landfills could not legally accept the materials for disposal." This suggests that the nuclear industry expects to generate wastes that would be exempt under the new regulations, although they would not have been exempt under the old regulations. Thus the change in regulations would possibly allow a significant increase in exempt shipments. Although RCRA regulations do not change, waste could be shipped with concentrations over 70 Bq/g and then mixed with less radioactive material in order to be acceptable to RCRA facilities. Since this would allow a significant savings in transportation costs to waste generators, we are concerned that substantial numbers of shipments containing over 70 Bq/g would result from the

change in regulations. DOT should have evaluated this practice in its environmental assessment to determine whether these shipments would have a detrimental environmental impact.

11. Some of DOE's Waste Management (WM) waste and much of DOE's Environmental Restoration (ER) wastes, as reported in DOE's Waste Management Programmatic EIS[19] (WM PEIS) and the DOE's Waste Disposal Capacity Report,[20] are likely to be exempt.

a. Further, according to the DOE WM Record of Decision at 65 FR 10061, DOE stated that while some of the WM waste from the INEEL, LANL, ORR, and SRS sites will stay on-site, other wastes will be sent to either Hanford or NTS for disposal. In its decision, DOE did not preclude use of commercial sites when appropriate. Thus significant numbers of exempt shipments will occur between DOE sites and from DOE sites to commercial facilities.

[19] US DOE, Final Waste Management Programmatic EIS, appendices I and B.
[20] US DOE, December, 2000.

12. New York State Attorney General Elliot Spitzer also believes that the new exemption levels are not sufficiently protective of human health.[21] His office notes that the change in regulations is "troubling," as exempt materials are "untraceable in commerce and are not readily recognizable in accident situations." They note the claim that average doses will be reduced from 50 mrem to 23 mrem, but state that if a regulatory change is being enacted, it should make sure the new regulation meets the 1 mrem dose criterion identified by the IAEA contractors whose work NRC and DOT relied upon, and not settle for a 2-fold reduction in doses when a 50-fold reduction is necessary. They also bring up the issue of inconsistency between DOT and EPA RCRA regulations, claiming it "is likely to sow confusion among the regulated industry, lower compliance with EPA regulations, and reduce trust in federal standards." It is unlikely that an attorney general would express such concerns unless he believed that significant numbers of shipments occurred within his state and posed a potential risk to residents and workers.

[21] State of New York Office of the Attorney General, comments, July, 2002. Available online at http://dmses.dot.gov/docimages/pdf1a/182465_web.pdf.

13. Finally, scenario TC2.1, the limiting scenario for gamma emitters that was evaluated by the IAEA contractors whose work NRC and DOT relied upon, assumed a large bulk source transported in a truck.[22] In the assessment of doses from exempt levels of radioactive materials, one of the dose calculation scenarios involved shipment of bulk materials. This scenario would not have been included if it were not a relatively common occurrence. For radionuclides for which this scenario is not likely, such as Kr-85, this exception was noted. Thus the IAEA contractors obviously believed that for other radionuclides, bulk shipments of exempt materials was a common occurrence and a representative scenario for most radionuclides.

Substantial volumes of LSA-I waste are shipped

14. The EA did not evaluate changes to the definition of LSA-I material or to the regulations governing its transportation. Thus, there was no apparent effort to quantify volumes of LSA-I waste shipments affected by the regulations. However, substantial quantities are affected.

15. We list below specific examples of LSA-I material that have been shipped to various low-level waste facilities. This list is not intended

[22] Carey et al., 1995.

to be exhaustive, but is illustrative of the type of data that should have been compiled by the DOT and NRC. Under the new definition of LSA-I material, the LSA-I material limit is 30 times the exemption limit.[23] Our calculations showing that this material noted below is LSA-I are included in Appendix A.

a. **Linde.** In order to lower costs, federal agencies responsible for decontaminating sites, such as the Army Corps, NRC, DOE and the EPA, attempt to lower costs by partitioning waste into exempt and LSA material. Exempt material can then be disposed in less expensive RCRA (C) facilities, while bulk contaminated materials, such as LSA-I, can be disposed at Envirocare or Waste Control Specialists. As one example, in decontaminating Building 30 at the Linde FUSRAP site in Tonawanda, New York, all the waste and debris stored in the building was shipped to Envirocare, as slightly radioactive material. Including the building contents, about 1,283 tons were shipped to Envirocare, and

[23] Definition of LSA-I. Federal Register Vol. 69 No. 16, Monday, January 26, 2004, p. 3671.

2,164 tons were considered exempt and shipped to the Buttonwillow, California RCRA site,[24] a ratio of 2 tons of exempt material to 1 ton of LSA. The average radioactivity of the exempt material was 335 pCi/g, far below 2000 pCi/g, the previous exempt level.

b. **DOE:** According to DOE's Current and Planned Low-Level Waste Disposal Capacity Report,[25] waste from several sites will be or has been shipped to the Nevada Test Site (NTS) for disposal. At least 43,712 cubic meters of this will be, on average, LSA-I. This includes wastes from LLNL, Pantex, Allied Signal in Kansas City, General Atomics, and Mound.

c. **Mound:** According to DOE, 1250 cubic meters of treatability category 2 (noncombustible, noncompactible)

[24] Westphal, JW, Asst Secretary of the Army (Civil Works), before the Senate Committee on Environment and Public Works, July 25, 2000.
[25] DOE, *Current and Planned Low-Level Waste Disposal Capacity Report.* December, 2000. Appendix D2.

d. waste would be generated at Mound per year.[26] On average, this waste would be LSA-I.[27] According to the Waste Management Record of Decision, this waste will be transported to NTS, Hanford, or a commercial disposal facility.[28] This is likely the same waste described above in the Current and Planned Capacity document.

e. **Rocky Flats** currently has 56,000 cubic yards of non alpha-emitting LSA-I waste, with a projected generation of 13,500 cubic yards per year over the period 1996-2016.[29] According to the Waste Management Record of Decision, this waste will be transported to NTS, ORNL, or a

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[26] Argonne National Laboratory, Low-Level Waste Inventory, Characteristics, Generation, and Facility Assessment for Treatment, Storage, and Disposal Alternatives Considered in the US Department of Energy Waste Management Programmatic Environmental Impact Statement. p. 9.
[27] Ibid., Appendix A.
[28] DOE, Record of Decision for the Department of Energy's Waste Management Program: Treatment and Disposal of Low-Level Wasted and Mixed Low-Level Waste; Amendment of the Record of Decision for the Nevada Test Site. Available online at http://web.em.doe.gov/em30/llwrod.html.
[29] Argonne National Laboratory, December, 1996. Mixed Low-Level Waste Inventory, Characteristics, Generation, and Facility Assessment for Treatment, Storage, and Disposal Alternatives Considered in the US Department of Energy Waste Management Programmatic Environmental Impact Statement. Pp. 2-6 and A-33.

commercial disposal facility. Other DOE low-level and mixed low-level waste may also be exempt or LSA-I.

f. **Wayne:** 40,000 cubic yards have been removed from the site.[30] On average, this material would have been LSA-I, based on radiological characterization data.[31] It is likely a small portion will also be exempt.

g. **Maywood:** This former thorium-processing plant was described above. Based on the maximum concentrations given for the MISS section, all contaminated soil at that portion of Maywood will be below LSA-I limits.[32] This amounts to 73,233 cubic yards.[33] Since the data given are ranges, some of the material would definitely be exempt as well. A total of 281,000 cubic yards of contaminated earth and tailings will be removed from Maywood.

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[30] US Army Corps of Engineers, Jan, 2004. Fact Sheet: FUSRAP Wayne Interim Storage Site (WISS), Wayne, New Jersey.
[31] US Army Corps of Engineers, March, 1998. Engineering Evaluation/Cost Analysis for the Removal of Subsurface Materials at the Wayne Site, Wayne, New Jersey.
[32] US Army Corps of Engineers, August, 2002. Feasibility Study for Soils and Buildings at the FUSRAP Superfund Site. Section 2.4.3.1.
[33] Ibid, Table 4-1.

h. **NMI:** A total of 2,800 cubic yards of sludge were removed from the holding basin of Nuclear Metals, Inc.[34] The sludge was contaminated with depleted uranium at LSA-I levels.[35]

16. **DOE's WM PEIS data:** As shown above, from information referenced in the DOE Waste Management Programmatic Environmental Impact Statement, we were able to determine that certain shipments of DOE Waste Management Wastes consist of LSA-I material. The WM PEIS included a comprehensive risk assessment of the transportation of Waste Management (operating) waste that was based on detailed inventories and radiological profiles of this waste at DOE sites. Since the DOE data was readily available, DOT/NRC could and should have analyzed this data to determine what types of LSA-I are likely to be shipped from DOE sites. Such analysis would have determined that substantial quantities of LSA-I materials are likely to be shipped. Appendix B of the WM PEIS discussed environmental restoration wastes, which are considered separately from Waste Management wastes. Such wastes are extremely likely to be at LSA-I concentrations at most, and portions of them are very likely to be exempt.

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[34] Nuclear Metals, Inc. Site Characterization Report for the Holding Basin. February 12, 1993. p.34.
[35] Ibid, p. 54.

There will be millions of cubic yards of these environmental restoration wastes, many of which will be shipped to commercial facilities. DOE could have provided information to DOT about estimated volumes of exempt and LSA-I materials from both waste management and environmental management. DOT should have used this information as part of an environmental impact analysis.

17. **NRC Historic Data:** In 1972, the Atomic Energy Commission surveyed radioactive waste shippers to determine the types of radioactive material and the number of shipments.[36] The NRC's Environmental Statement designates LSA shipments for the year 1975, and projected the number of shipments for 1985. The NRC's estimates for LSA (which also includes LSA-II and LSA-III) should be considered a lower bound for LSA shipments today, since a large number of sites, never considered at the time, are presently being decontaminated. In Table 1 below, radionuclide categories are as they appear in the NRC document, where no information on the category definitions is included.

[36] Nuclear Regulatory Commission, "Environmental Statement On The Transportation Of Radioactive Material By Air And Other Modes," NUREG-1700, December, 1970.

Table 1. LSA Shipments – 1975 and Projected 1985 Shipments

Nuclide	Packages per Year (1975)	Packages per Year (1985)
Co-60	5540	14400
H-3	18	47
Waste	20300	52800
MF+MC	33300	138000
Mixed	5830	15200
U_3O_8(T)	54400	224000
U_3O_8(R)	66000	273000
Total	**185,388**	**717,447**

Where (T) and (R) are truck and rail shipments, respectively.

The point here is not the exact numbers, which may be underestimates, but the fact that the AEC was able to determine the approximate number of shipments by surveying waste shippers. Clearly the same type of survey could have been done by the NRC and DOT to determine the number of exempt and LSA-I shipments and the impact of the proposed rule.

Data were available to determine volumes of exempt shipments

18. The EA claimed that there are no data on the number and frequency of exempt shipments in the U.S.[37] In fact, as shown above, and discussed below, data were available.

[37] US NRC, Environmental Assessment of Major Revision of 10 CFR Part 71, Final Rule, p. 51. Available online at http://dmses.dot.gov/docimages/pdf89/270248_web.pdf.

19. The AEC previously surveyed shippers to determine the number of radioactive shipments moving by truck and train. The same process could have been done by the DOT and the NRC in conjunction with other federal agencies. The Argonne/DOE data noted above does allow a determination of exemption and LSA-I status. Clearly if the agencies decided to determine the number of shipments, they could have obtained the data.

20. Government agencies can track down source information about existing waste by examining the production processes that generated the waste. This would include volumetric and radiological information sufficient to determine its exempt or LSA-I status. A DOE Blue Ribbon Panel I served on was able to evaluate the number of shipments from INEEL to the WIPP waste repository, by examining the production process, among other methods.

21. Federal agencies, such as the Army Corps, DOE, DOT, NRC and the EPA, hire shippers to package and transport radioactive materials. The Requests for Proposals (RfP) issued by these federal agencies are quite detailed in the isotopic inventory and volume of material that must be shipped. A search of these RfP's that appear in Commerce Daily is one

source of information that could have been compiled by the federal agencies. Two such RfP's are included with this declaration as Exhibit 4.

22. Generators and disposers of waste must comply with NRC's manifesting requirements for shipments of low level waste to disposal facilities as provided by 10 CFR § 20.2006 and 10 CFR Part 20, Appendix G. Shipment information must include volume and weight, total radionuclide activity, identities and activities of individual radionuclides, and masses of uranium, plutonium, and thorium. These manifests must be retained by generators, processors, and disposers and could be used to determine the number of LSA shipments.

23. As noted above, the DOE was able to determine the amount of wastes being shipped from LLNL, Pantex, Allied Signal in Kansas City, General Atomics, and Mound. At least 43,712 cubic meters of this will be, on average, LSA-I. In my opinion, the information was therefore available to support a determination whether exempt and LSA-I waste material is being shipped.

Collective doses should have been determined using shipment data

24. The EA did not evaluate collective population risks from radiation exposures due to normal shipments or accidents from LSA-I or of shipments exempt due to their concentration or total activity. Determination of the numbers and volumes of exempt and LSA-I shipments was necessary to the determination of collective population doses from both routine and accident doses.

25. Collective dose calculations can be made by summing the doses received by members of the exposed population due to external radiation incident to normal transportation and due to accidental exposures using models such as RADTRAN 4. For example, RADTRAN 4 calculations for collective transportation risks were completed by DOE in evaluating changes to its waste management practices taking into account available data on shipment volumes and radiological characteristics, transportation routes, accident probability, and accident severity. [38]

[38] US DOE, Final Waste Management Programmatic EIS, DOE/EIS-0200-F, May, 1997, Appendix E, Radioactive and Hazardous Waste Transportation Risk Assessment, pp. 31-34.

26. Determination of numbers and volumes of exempt and LSA-I shipments was necessary to the determination of cumulative doses from transportation activities and other sources of radiation.

Cumulative doses were not considered

27. Transportation activities are just one source of regulated and preventable radioactive doses to members of the public. Other sources include medical use, industrial use, disposal, and the nuclear fuel cycle.

28. Proposals are now pending by three federal agencies – NRC, EPA, and DOE – that may further deregulate disposal, recycling, and release of radioactive materials.[39] These proposals may result in increased radiation doses to members of the public.

29. The EA did not evaluate any of these cumulative radiological exposures that would be additive to transportation-related doses.

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[39] EPA, Approaches to an Integrated Framework for Management and Disposal of Low-Activity Radioactive Waste: Request for Comment, RIN 2060-AL71, 68 Fed.Reg. 65120 *et seq.*, November 18, 2003; NRC, Rulemaking on Controlling the Disposition of Solid Materials: Scoping Process for Environmental Issues and Notice of Workshop, 68 Fed.Reg. 9595 *et seq.*, February 28, 2003; DOE, Notice of Intent to Prepare a Programmatic Environmental Imapct Statement on the Disposition of Scrap Metals and Announcement of Public Scoping Meetings, 66 Fed.Reg. 36562 *et seq.*, July 12, 2001.

Occupational doses from shipping exempt material are substantial

30. Occupational doses to truck drivers from bulk shipments containing exempt concentrations of each of the 20 radionuclides analyzed by IAEA contractors were acknowledged to be as high as 42 mrem per year and to average 23 mrem per year.[40] These doses are substantial in reference to most standards for acceptable doses to members of the public. For example, these doses exceed the EPA 4 millirem ("mrem") standard for groundwater, its 10 mrem standard for air exposures, and its 15 mrem standard at Yucca Mountain.[41] Some of these doses exceed the EPA 25 mrem standard for fuel cycle facility operations and the NRC 25 mrem standard for land disposal of radioactive waste and decommissioning nuclear facilities.[42]

Occupational doses from shipping exempt material were not correctly calculated

31. The calculations by IAEA contractors of occupational doses are underestimates of likely doses since they are based on 400 hours per year

[40] From Carey et al., 1995. The Application of Exempt Values to the Transportation of Radioactive Materials. p. 8, 33.
[41] 40 CFR §§ 141.15, 61.92, 197.20.
[42] 40 CFR §§ 190.10, 191.15, 191.03 ; 10 CFR §§ 61.41, 20.1402.

time in the cab for a trucker, and an unrealistic shipping geometry for bulk shipments.[43]

32. Drivers could receive exposures five times higher if engaged full time (2000 hours annually) in the transport of exempt materials and there is nothing in the regulations that prevent such full-time activity. Members of the International Brotherhood of Teamsters labor union have reported to us that it is not unusual to drive 60 to 70 hours a week.[44]

33. Drivers of bulk loads could also receive higher doses than projected by IAEA contractors since bulk loads are approximately one meter from the driver, not the two meters they assumed. Further, the geometry assumed by the IAEA contractors do not correspond to legal length shipping configuration.

34. Lower density material provides less internal shielding and therefore yields higher doses. According to the IAEA contractors, the dose rates were determined from a scenario involving "a half cylinder of concrete of a volume of 22 m^3 at a density of 2.3 gcm^{-3}." However, since almost all bulk shipments of exempt materials would consist of contaminated soils, we

[43] Carey et al., p. 13.
[44] Telephone conversation with D D'Arrigo, November 1, 2004.

believe that the density of soil, 1.6 gcm^{-3}, is more appropriate for these calculations and would yield higher doses. The IAEA contractors themselves admit that the shipment would likely be in a box form approximately 2 x 1.5 x 7 meters.[45] However, their actual calculation is based on a half cylinder of with a volume of 22 m^3. This half cylinder would require an extremely long trailer; the length of the truck plus trailer would require special overlength permission from each State. We don't think this geometry represents a realistic scenario. The box geometry is a more likely scenario, yet the IAEA contractors' calculations were based on the cylindrical geometry.

LSA-I shipments will cause substantially higher doses

35. The agencies did not calculate occupational doses from LSA-I shipments. However, the likely doses for LSA-I material may be 30 times higher than exempt doses since this material is permitted to be 30 times as radioactive as exempt material. The most restrictive regulatory gamma limits applicable to LSA-I are found in 49 CFR 173.441(b). 49 CFR 173.441(b) requires that the dose rate in any occupied space be less than 2 mrem/hr. In addition, 10 CFR 20.1302(b)(2)(ii) states that individual

[45] Carey et al., p.7.

member of the public may not exposed to dose rates greater than 2 mrem/hr in an unrestricted area. A rate of 2 mrem/hr would still allow the dose received by a truck driver over the course of a 400-hour year shipping LSA-I material to be as high as 800 mrem. In my opinion, this is still an unacceptable level of risk.

36. The doses calculated by Carey et al. for exempt materials may be multiplied by 30 to determine doses from LSA-1 materials, although no dose may be greater than 800 mrem/yr. Of the 20 radionuclides examined by IAEA contractors, the average dose to a driver from LSA-I material would be 212 mrem/year. The doses from four radionuclides would be 800 mrem/year. See Table 2. DOT/NRC made no effort to calculate potential doses from LSA-I material, despite the fact that both the LSA-I levels and the regulations on LSA-I transport are changed in the new rule. In particular, under the new regulations, LSA-I material would not have to be packaged, potentially reducing the shielding of the driver from radiation. In sum, the radioactivity of a shipment could increase while the safety margins decreased.

Table 2. Doses to Truck Driver from Exempt Materials and LSA-I as calculated by Carey et al.

Radionuclide	Exemption Level, Bq/g	Dose from exempt material, mrem/yr	Dose from LSA-I, mrem/yr
C-14	10000		
P-32	1000		
S-35	100000		
Cl-36	10000	1.6	47.6
K-40	100	18.7	560.7
Co-60	10	29.2	800*
Kr-85	100000	230.4	800*
Sr-89	1000	0.1	2.8
Sr-90	100	0.0	0.0
Mo-99	100	16.0	480.0
Tc-99m	100	10.8	322.6
I-131	100	39.5	800*
Cs-137	10	6.1	181.8
Ir-192	10	8.5	254.2
Au-198	100	41.8	800*
Tl-201	100	5.0	150.8
U-nat[a]	1	2.0	60.9
Ra-226[a]	10	20.2	604.8
Th-nat[a]	1	2.9	87.2
Pu-239	1	0.0	0.0
Average		25.5	211.8
a: assumes equilibrium with daughter products			
*: dose limited by 2 mrem/hr limit for occupied spaces in 173.441(b).			

Doses from transportation accidents were not correctly assessed

37. The federal agencies have not conducted a credible assessment of the impact from accidents of transporting exempt and LSA-I materials under the new regulations.

38. The methodology the IAEA contractors used to assess accident impacts of shipping exempt material was based on the Q-system.[46] The Q-system is a methodology to determine the quantities of radionuclides allowed in various packaging types; the "Q" stands for "quantity."[47] The Q-system is intended to determine the maximum quantity of each radionuclide that would still yield an allowable dose (considered to be 5 rem or 5000 mrem) in transportation accidents. Limits, known as Q-values, were calculated for various radiation pathways, with the most restrictive pathway defining the limit for a package type.

39. The Q-values were based on a maximum dose of 5 rem (5000 mrem). Because radiation dose increases linearly with radiation concentration, the IAEA contractors scaled down the Q-values to determine radioactivity limits for smaller maximum doses. When a maximum dose of

[46] Carey et al., 1995, pp. 3, 39-40.
[47] IAEA, Advisory Materials for the IAEA Regulations for the Safe Transport of Radioactive Material, No. TS-G-1.1 (ST-2), 2002, Appendix I.

1 mrem is used (*i.e.* the Q-values are multiplied by a factor of 1 mrem/5000 mrem), the resulting activity limits are far greater than the BSS exemption levels for activity. This led the IAEA contractors to conclude that accidents are not a limiting scenario for the determination of exemption values for transportation.

40. However, the methodology used for determining the Q-values is completely inappropriate for a dose calculation under a license-exempt transportation accident scenario. Several assumptions are made that are not credible for an accident scenario, much less one in which the parties involved may not know that the material is radioactive.

41. The Q-system assumes that a health physicist is present at all times to supervise cleanup. However, without the requirements for placarding, shipping papers, emergency response plans, driver training, or the other regulatory protections applicable to hazardous materials shipments, there is no reason to suppose that emergency workers or members of the public would know to contact a health physicist to supervise cleanup.

42. The Q-system assumes that no person is within 1 meter of a radioactive package for more than a total of 30 minutes. There is no reason

to suppose that emergency workers of the public would know to limit their exposure durations to 30 minutes.

43. The Q system assumes that all material is packaged and that dispersion in an accident is limited to a fraction of its contents. In the case of an accident involving the spill of a bulk exempt shipment, the material would not be contained by packaging and would spread out on the ground where rescue workers would be standing on it or even climbing through piles of it to reach the victims.

44. For inhalation doses, the Q-system assumes that 100% of the material is initially airborne within a closed room, but that it quickly disperses and settles. This assumption does not apply to an outdoor situation in which wind is blowing and people are moving around, during which time dust will be continually settling and resuspended. And, as with all other doses, the dose due to inhalation is only calculated for 30 minutes in the Q-system, despite the fact that many people could remain in the vicinity of an accident for far longer.

45. The Q system does not consider any dispersion of contaminants from the accident scene to homes of local residents. It ignores potential

radiation doses from residual contamination, including ingestion of contaminated food from gardens and ingestion of contaminated water. Dispersion and residual contamination could occur from accidents involving exempt shipments because emergency workers and adjacent property owners would not be on notice that the material is radioactive.

46. For LSA-I material, the regulations reduce the packaging requirements from IP-1, strong and tight containers, to unpackaged containers. This change removes one barrier between radioactive materials and the external environment and reduces the transportation safety margins. In a potential transportation accident involving LSA-I material, it follows that additional radioactive material may be released. In its own evaluation of transportation risks from waste management, DOE made explicit assumptions that all waste would be packaged and that dispersion of waste would be limited by packaging in the event of accidents.[48] The federal agencies have not evaluated the consequences of a transportation accident involving LSA-I materials under the new packaging requirements.

[48] US DOE, Final Waste Management Programmatic EIS, DOE/EIS-0200-F, May, 1997, Appendix E, pp. E-14 to E-16, E-18, E-47 to E48.

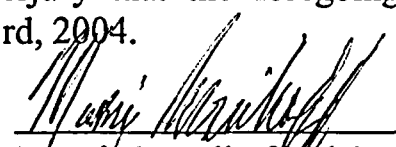
Conclusion

47. With the proffered rationale of making the federal transportation regulations compatible with IAEA regulations, the federal agencies have established a new set of regulations for exempt and LSA-I materials. However, DOT/NRC have not shown that there is a necessity for US regulations to be consistent with IAEA regulations, or that exempt and LSA-I materials are involved in international commerce. And there is precedent for the United States, in the interests of safety, taking the lead in developing regulations that are inconsistent with IAEA regulations. For example, the United States was the first to develop more protective regulations for shipping containers for the air transport of plutonium. These improved regulations were later incorporated into IAEA regulations.

48. In developing the proposed regulations, the federal agencies have not assessed the environmental and safety impact of the rule change. As shown above, the agencies have not determined the number of shipments of exempt and LSA-I materials that are affected by the regulations. In this declaration I showed that such data was available to determine the number of LSA-I and exempt shipments and therefore to do a comprehensive environmental assessment including collective dose evaluations. I have

shown that there will be a significant number of shipments and thus the impacts should have been more carefully assessed and that collective doses should have been determined. I have also shown that the impact of radiation doses to drivers due to LSA-I and exempt materials will be unacceptably high. Finally, I have shown that the impact of transportation accidents involving LSA-I and exempt materials have not been correctly assessed.

I declare under penalty of perjury that the foregoing is true and correct. Executed November 3rd, 2004.



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Appendix A: Calculations Showing Exempt and LSA-I Shipments.

The following spreadsheets show the calculations done to determine whether materials are exempt or LSA-I. The methodology for determining whether the average shipment is exempt or LSA-I is as follows.

Radiological characterization data are provided in a variety of formats. DOE waste stream data are provided in units of Ci/m3. This data must first be converted into Bq/g for exempt status to be determined. The mixture rule must then be applied to determine whether a particular combination of various radionuclides at different concentrations exceeds the exempt standard. Data in Ci/m3 can be converted into Bq/g by using the formula:

$$Y_i\,(Bq/g) = X_i\,(Ci/m^3) * (3.7 * 10^{12}) / (1.6 * 10^6)$$

Where Y_i is the concentration of radionuclide I in Bq/g
X_i is the concentration of radionuclide in Ci/m^3
$3.7 * 10^{12}$ is the Bq/Ci conversion factor
$1.6 * 10^6$ is the density of soil, g/m^3

After concentrations in Bq/g are determined for each radionuclide present, the mixture rule must be applied to determine the exempt activity concentration for the mixture. According to the changed rule[49], this determination is made according to the following equation:

$$\text{Exempt/LSA-I activity concentration for mixture} = \frac{1}{\sum_i \frac{f(i)}{[A](i)}}$$

Where f(i) is the fraction of activity concentration of radionuclide I in the mixture, and [A] is the activity concentration for exempt or LSA-I material containing radionuclide I.

[49] Federal Register Volume 69 No. 16, Monday, January 26, 2004. p. 3800.

Another way of stating this mathematically is to say that a mixture is exempt/LSA-I when the following statement is true:

$$\sum_i \frac{c(i)}{[A](i)} \leq 1$$

Where c(i) is the concentration of radionuclide I in the mixture.

In the tables below, we refer to $\frac{c(i)}{[A](i)}$ as "exempt fraction" or "LSA-I fraction." If the sum of these fractions is less than one, then the material is exempt/LSA-I.

Under the old rule, a shipment was exempt if the total amount of radioactivity was less than 70 Bq/g, regardless of whether there were one or multiple radioactive isotopes present. Thus the shipment was exempt if $\sum_i c(i) \leq 70$. In the tables below, we sum the concentrations of all radionuclides. If this sum is less than 70Bq/g, then the mixture would have been considered exempt under the old rule.

Under the old rule, a shipment was considered LSA-1 if its concentration was less than 10^{-6} of the A2 value per gram. The rule for determining A2 values for mixtures was similar to that described above for exemption levels under the new rule:

$$\text{A2 value for mixture} = \frac{1}{\sum_i \frac{f(i)}{[A2](i)}}$$

Where f(i) is the fraction of activity of nuclide I in the mixture and A2(i) is the A2 value for radionuclide i.

Exempt Shipments

In the tables below, where the sum of the concentrations of each radionuclide is less than 70 Bq/g, the mixture would have been exempt under the old rule. Where the sum of the "exempt fraction" for each radionuclide is less than 1, the mixture is considered exempt under the new rule.

DOE: Waste Control Specialists to NTS.[50]

Stream Name:	3539: Treated Pb Contaminated Soils			
Gen Site:	Waste Control Specialists			
FY98-70 M3	9			
Profile Source:	**Reported after 6/26/00 SDD (Ci/m^3)**	**conc, Bq/g**	**new exempt limit**	**exempt fraction**
Co-60	8.96E-07	2.07E-02	1.00E+01	2.07E-03
Sr-90	2.14E-06	4.95E-02	1.00E+02	4.95E-04
Cs-137	2.25E-06	5.20E-02	1.00E+01	5.20E-03
Ra-226	3.32E-05	7.68E-01	1.00E+01	7.68E-02
Th-232	7.38E-06	1.71E-01	1.00E+01	1.71E-02
Pu-239	3.33E-06	7.70E-02	1.00E+00	7.70E-02
Am-241	3.84E-06	8.88E-02	1.00E+00	8.88E-02
total		**1.23E+00**		**2.67E-01**

[50] DOE, December, 2000. Appendix D2.

DOE: Waste Control Specialists to NTS

Stream Name:	3540: Treated BFV Burn Soil			
Gen Site:	Waste Control Specialists			
FY98-70 M3	3			
Profile Source:	**Reported after 6/26/00 SDD**	**conc, (Bq/g)**	**exempt limit**	**exempt fraction**
Pu-239	2.24E-07	5.18E-03	1.00E+00	5.18E-03
Pu-240	2.24E-07	5.18E-03	1.00E+00	5.18E-03
Pu-241	2.24E-07	5.18E-03	1.00E+02	5.18E-05
Am-241	2.24E-07	5.18E-03	1.00E+00	5.18E-03
total		**0.021**		**1.56E-02**

Maywood: Additional soil to be removed to allow unrestricted use.[51]

	pCi/g	**Bq/g**	**exemption limit**	**exempt fraction**
Ra-226	15	0.555	10	0.0555
Th-232	15	0.555	1	0.555
U-238	15	0.555	10	0.0555
total		**1.665**		**0.666**

[51] US Army Corps of Engineers, August, 2002. Feasibility Study for Soils and Buildings at the Maywood FUSRAP Superfund Site, Table 4.1.

Linde[52] Soil sampling data for individual location. Maximum measured concentration for each sampling location is listed.

Ra-226 (Bq/g)	U-238 (Bq/g)	Ac-227 (Bq/g)	Exempt fraction			sum of exempt fractions	sum of concentrations
			Ra-226	U-238	Ac-227		
0.04	0.11	0.00	0.00	0.01	0.00	0.02	0.15
0.47	0.36	0.01	0.05	0.04	0.15	0.23	0.85
0.11	0.12	0.00	0.01	0.01	0.00	0.02	0.23
0.28	0.09	0.00	0.03	0.01	0.00	0.04	0.37
0.04	0.08	0.00	0.00	0.01	0.00	0.01	0.12
0.04	0.06	0.00	0.00	0.01	0.00	0.01	0.10
0.56	0.00	0.00	0.06	0.00	0.00	0.06	0.56
0.36	0.00	0.00	0.04	0.00	0.00	0.04	0.36
0.06	0.00	0.00	0.01	0.00	0.00	0.01	0.06
30.08	**50.69**	**2.42**	**3.01**	**5.07**	**24.24**	**32.31**	**83.19**
0.52	2.28	0.04	0.05	0.23	0.41	0.69	2.85
1.45	1.45	0.00	0.14	0.15	0.00	0.29	2.90
0.13	4.00	0.00	0.01	0.40	0.00	0.41	4.13
0.16	0.07	0.00	0.02	0.01	0.00	0.02	0.22
7.88	**6.33**	**0.00**	**0.79**	**0.63**	**0.00**	**1.42**	14.21
0.19	0.00	0.00	0.02	0.00	0.00	0.02	0.19
0.34	0.04	0.00	0.03	0.00	0.00	0.04	0.38
0.13	0.18	0.00	0.01	0.02	0.00	0.03	0.30
0.19	2.43	0.00	0.02	0.24	0.00	0.26	2.62
0.25	3.06	0.00	0.03	0.31	0.00	0.33	3.31
1.72	**6.73**	**0.17**	**0.17**	**0.67**	**1.70**	**2.55**	8.62
0.04	0.10	0.00	0.00	0.01	0.00	0.01	0.14
0.10	1.17	0.00	0.01	0.12	0.00	0.13	1.27
2.47	**15.02**	**0.24**	**0.25**	**1.50**	**2.41**	**4.15**	17.73
2.27	5.14	0.00	0.23	0.51	0.00	0.74	7.41
0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.06	0.00	0.00	0.01	0.00	0.00	0.01	0.06
0.26	3.15	0.00	0.03	0.32	0.00	0.34	3.41
0.09	**166.50**	**3.22**	**0.01**	**16.65**	**32.23**	**48.89**	**169.81**
0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0.19	0.40	0.00	0.02	0.04	0.00	0.06	0.58
0.07	0.14	0.00	0.01	0.01	0.00	0.02	0.21
2.01	**444.00**	**3.30**	**0.20**	**44.40**	**33.04**	**77.64**	**449.32**
1.91	58.83	0.00	0.19	5.88	0.00	6.07	60.74

Bold numbers in the "sum of exempt fractions" column show samples that would not be exempt under the new rule. Bold numbers in the "sum of concentrations" column show samples that would not be exempt under the old rule. These are a small minority of samples. The exemption limits are: Ra-226 (10), U-238 (10), Ac-227 (0.1).

[52] DOE, 1978. Radiological Survey of the Former Linde Uranium Refinery, Tonawanda, New York. DOE/EV-0005/b. Table 10.

NMI[53]

sub-basin gravel	
% U_3O_8	0.2214
%U	0.062580998
g/g	0.00062581
concentration of pure U-238, pCi/g	3.37E+04
U-238 concentration of gravel, (pCi/g)	2.11E+01

Rocketdyne[54]

All measurements are significantly below exemption levels.

[53] Nuclear Metals, Inc. Site Characterization Report for the Holding Basin. February 12, 1993. p. 41.
[54] California Department of Health Services, 5/16/00. Chart released at SSFL InterAgency Work Group meeting.

LSA-I Shipments

In the tables below, where the sum of the "LSA-1 fraction" for each radionuclide is less than 1, the mixture is LSA-1 under the new rule.

LSA-I to be shipped to NTS from Lawrence Livermore[55]

Stream Name:	1042: LLW from LLNL				
Gen Site:	Lawrence Livermore				
FY98-70 M3	15,736				
Profile Source:	**NTS Generator Data (Ci/m^3)**	**conc (Bq/g)**	**exempt limit**	**exempt fraction**	**LSA-I fraction**
H-3	2.98E-03	6.89E+01	1.00E+06	6.89E-05	2.30E-06
C-14	9.09E-06	2.10E-01	1.00E+04	2.10E-05	7.01E-07
Cl-36	8.45E-06	1.95E-01	1.00E+04	1.95E-05	6.51E-07
Co-60	4.29E-06	9.92E-02	1.00E+01	9.92E-03	3.31E-04
Ni-59	2.94E-04	6.80E+00	1.00E+04	6.80E-04	2.27E-05
Ni-63	3.41E-05	7.89E-01	1.00E+05	7.89E-06	2.63E-07
Sr-90	1.47E-06	3.40E-02	1.00E+02	3.40E-04	1.13E-05
Nb-94	3.32E-06	7.68E-02	1.00E+01	7.68E-03	2.56E-04
Tc-99	1.58E-05	3.65E-01	1.00E+04	3.65E-05	1.22E-06
Cs-137	6.88E-06	1.59E-01	1.00E+01	1.59E-02	5.30E-04
Ba-133	1.01E-05	2.34E-01	1.00E+02	2.34E-03	7.79E-05
Sm-151	1.15E-05	2.66E-01	1.00E+04	2.66E-05	8.86E-07
Eu-152	4.79E-06	1.11E-01	1.00E+02	1.11E-03	3.69E-05
Eu-154	3.09E-06	7.15E-02	1.00E+01	7.15E-03	2.38E-04
Ra-226	6.78E-07	1.57E-02	1.00E+01	1.57E-03	5.23E-05
Ra-228	9.29E-07	2.15E-02	1.00E+01	2.15E-03	7.16E-05
Th-229	1.78E-06	4.12E-02	1.00E+00	4.12E-02	1.37E-03
Th-230	1.25E-05	2.89E-01	1.00E+00	2.89E-01	9.64E-03
Th-232	4.16E-06	9.62E-02	1.00E+01	9.62E-03	3.21E-04
Pa-231	1.29E-06	2.98E-02	1.00E+00	2.98E-02	9.94E-04
U-232	4.69E-05	1.08E+00	1.00E+00	1.08E+00	3.62E-02
U-233	1.30E-06	3.01E-02	1.00E+01	3.01E-03	1.00E-04
U-234	3.05E-05	7.05E-01	1.00E+00	7.05E-01	2.35E-02
U-235	3.20E-06	7.40E-02	1.00E+01	7.40E-03	2.47E-04
U-236	1.84E-07	4.26E-03	1.00E+01	4.26E-04	1.42E-05

[55] DOE, December, 2000. Appendix D2.

LSA-I to be shipped to NTS from Lawrence Livermore (continued)

Profile Source:	NTS Generator Data Ci/m^3	conc, Bq/g	exempt limit	exempt fraction	LSA-I fraction
U-238	6.00E-05	1.39E+00	1.00E+01	1.39E-01	4.63E-03
Np-237	2.24E-07	5.18E-03	1.00E+00	5.18E-03	1.73E-04
Pu-238	8.06E-05	1.86E+00	1.00E+00	1.86E+00	6.21E-02
Pu-239	3.20E-04	7.40E+00	1.00E+00	7.40E+00	2.47E-01
Pu-240	3.97E-04	9.18E+00	1.00E+00	9.18E+00	3.06E-01
Pu-241	1.25E-02	2.89E+02	1.00E+02	2.89E+00	9.64E-02
Pu-242	1.15E-07	2.66E-03	1.00E+00	2.66E-03	8.86E-05
Pu-244	6.05E-08	1.40E-03	1.00E+00	1.40E-03	4.66E-05
Am-241	4.52E-05	1.05E+00	1.00E+00	1.05E+00	3.48E-02
Am-243	1.02E-07	2.36E-03	1.00E+00	2.36E-03	7.86E-05
Cm-243	7.41E-08	1.71E-03	1.00E+00	1.71E-03	5.71E-05
Cm-244	2.77E-07	6.41E-03	1.00E+01	6.41E-04	2.14E-05
Cm-244	2.77E-07	6.41E-03	1.00E+00	6.41E-03	2.14E-04
total		**3.91E+02**		**2.48E+01**	**8.25E-01**

LSA-I to be shipped to NTS from Pantex[56]

Stream Name:	1194: LLW from Pantex				
Gen Site:	Pantex				
FY98-70 M3	1,021				
Profile Source:	**NTS Generator Data (Ci/m^3)**	**conc (Bq/g)**	**exempt limit**	**exempt fraction**	**LSA-I fraction**
H-3	1.45E+01	3.35E+05	1.00E+06	3.35E-01	1.12E-02
Th-232	1.09E-03	2.52E+01	1.00E+01	2.52E+00	8.40E-02
U-234	2.11E-07	4.88E-03	1.00E+00	4.88E-03	1.63E-04
U-235	3.63E-08	8.39E-04	1.00E+01	8.39E-05	2.80E-06
U-238	9.20E-06	2.13E-01	1.00E+01	2.13E-02	7.09E-04
Pu-238	1.37E-17	3.17E-13	1.00E+00	3.17E-13	1.06E-14
Pu-239	1.47E-18	3.40E-14	1.00E+00	3.40E-14	1.13E-15
Pu-240	3.45E-19	7.98E-15	1.00E+00	7.98E-15	2.66E-16
total		3.35E+05		2.88E+00	9.61E-02

LSA-I to be shipped to NTS from Allied Signal[57]

Stream Name:	1195: LLW from Allied Signal (DP Site)				
Gen Site:	Kansas City				
FY98-70 M3	24				
Profile Source:	**NTS Generator Data**	**Conc (Bq/g)**	**exempt limit**	**exempt fraction**	**LSA-I fraction**
H-3	5.00E-03	1.16E+02	1.00E+06	1.16E-04	3.85E-06
Ni-63	2.50E-01	5.78E+03	1.00E+05	5.78E-02	1.93E-03
U-238	1.00E-03	2.31E+01	1.00E+01	2.31E+00	7.71E-02
total		**5.92E+03**		**2.37E+00**	**7.90E-02**

[56] DOE, December, 2000. Appendix D2.
[57] DOE, December, 2000. Appendix D2.

LSA-I to be shipped to NTS from General Atomics[58]

Stream Name:	2154: LLW from GA				
Gen Site:	General Atomics				
FY98-70 M3	2,238				
Profile Source:	**NTS Generator Data (Ci/m^3)**	**conc (Bq/g)**	**exempt limit**	**exempt fraction**	**LSA-I fraction**
H-3	2.97E-04	6.87E+00	1.00E+06	6.87E-06	2.29E-07
Co-60	1.84E-05	4.26E-01	1.00E+01	4.26E-02	1.42E-03
Ni-63	1.73E-05	4.00E-01	1.00E+05	4.00E-06	1.33E-07
Sr-90	2.00E-04	4.63E+00	1.00E+02	4.63E-02	1.54E-03
Nb-94	2.16E-06	5.00E-02	1.00E+01	5.00E-03	1.67E-04
Tc-99	5.41E-08	1.25E-03	1.00E+04	1.25E-07	4.17E-09
I-129	4.05E-05	9.37E-01	100	9.37E-03	3.12E-04
Cs-137	1.41E-04	3.26E+00	1.00E+01	3.26E-01	1.09E-02
Ba-133	3.24E-07	7.49E-03	1.00E+02	7.49E-05	2.50E-06
Eu-152	2.05E-04	4.74E+00	1.00E+02	4.74E-02	1.58E-03
Eu-154	1.08E-05	2.50E-01	1.00E+01	2.50E-02	8.33E-04
Ra-226	4.05E-03	9.37E+01	1.00E+01	9.37E+00	3.12E-01
Th-230	3.51E-05	8.12E-01	1.00E+00	8.12E-01	2.71E-02
Th-232	6.76E-05	1.56E+00	1.00E+01	1.56E-01	5.21E-03
U-234	7.03E-04	1.63E+01	1.00E+00	1.63E+01	5.42E-01
U-235	2.70E-05	6.24E-01	1.00E+01	6.24E-02	2.08E-03
U-236	6.76E-06	1.56E-01	1.00E+01	1.56E-02	5.21E-04
U-238	1.86E-04	4.30E+00	1.00E+01	4.30E-01	1.43E-02
Pu-238	2.97E-08	6.87E-04	1.00E+00	6.87E-04	2.29E-05
Pu-239	2.70E-08	6.24E-04	1.00E+00	6.24E-04	2.08E-05
Pu-241	1.30E-07	3.01E-03	1.00E+02	3.01E-05	1.00E-06
Am-241	2.70E-08	6.24E-04	1.00E+00	6.24E-04	2.08E-05
total				**2.76E+01**	**9.20E-01**

[58] DOE, December, 2000. Appendix D2.

LSA-I to be shipped to NTS from Mound[59]

Stream Name:	2155: LLW from Mound				
Gen Site:	Miamisburg				
FY98-70 M3	24,693				
Profile Source:	**NTS Generator Data**	**Conc (Bq/g)**	**exempt limit**	**exempt fraction**	**LSA-I fraction**
Co-60	3.49E-08	8.07E-04	1.00+01	8.07E-05	2.69E-06
Sr-90	4.20E-07	9.71E-03	1.00E+02	9.71E-05	3.24E-06
Th-230	4.89E-08	1.13E-03	1.00E+00	1.13E-03	3.77E-05
Th-232	8.38E-07	1.94E-02	1.00E+01	1.94E-03	6.46E-05
U-234	1.01E-07	2.34E-03	1.00E+00	2.34E-03	7.79E-05
U-235	9.98E-09	2.31E-04	1.00E+01	2.31E-05	7.69E-07
U-238	1.10E-07	2.54E-03	1.00E+01	2.54E-04	8.48E-06
Pu-238	3.37E-04	7.79E+00	1.00E+00	7.79E+00	2.60E-01
Am-241	5.09E-08	1.18E-03	1.00E+00	1.18E-03	3.92E-05
Cm-244	8.77E-06	2.03E-01	1.00E+00	2.03E-01	6.76E-03
total		**8.03E+00**		**8.00E+00**	**2.67E-01**

[59] DOE, December, 2000. Appendix D2.

Mound: 1250 cubic meters of treatability category 2 (noncombustible, noncompactible) waste[60]

radionuclide	generation rate (m^3/year)	generation rate (Ci/year)	generation rate (Bq/year)	concentration (Bq/g)	exemption level	LSA-I levels	exempt fraction	LSA-I fraction
H-3	1250	1.59	58830000000	2.94E+01	1.00E+06	3.00E+07	2.94E-05	9.81E-07
Pu-238	1250	8.12E-02	3002550000	1.50E+00	1.00E+00	3.00E+01	1.50E+00	5.00E-02
Pu-239	1250	6.20E-03	229215000	1.15E-01	1.00E+00	3.00E+01	1.15E-01	3.82E-03
Pu-240	1250	2.17E-02	802160000	4.01E-01	1.00E+00	3.00E+01	4.01E-01	1.34E-02
Pu-241	1250	2.99E+00	1.10482E+11	5.52E+01	1.00E+02	3.00E+03	5.52E-01	1.84E-02
Am-241	1250	1.24E-04	4584300	2.29E-03	1.00E+00	3.00E+01	2.29E-03	7.64E-05
Cm-242	1250	1.74E-03	64195000	3.21E-02	1.00E+02	3.00E+03	3.21E-04	1.07E-05
Cm-244	1250	6.20E-04	22921500	1.15E-02	1.00E+01	3.00E+02	1.15E-03	3.82E-05
total							**2.57E+00**	**8.58E-02**

[60] Argonne National Laboratory, Low-Level Waste Inventory, Characteristics, Generation, and Facility Assessment for Treatment, Storage, and Disposal Alternatives Considered in the US Department of Energy Waste Management Programmatic Environmental Impact Statement, Appendix A, pp. A-29-30.

Rocky Flats: 56,000 cubic yards of non alpha-emitting LSA-I waste, (projected generation of 13,500 cubic yards per year over the period 1996-2016). To be sent to NTS, Hanford, or a commercial facility.[61]

radionuclide	Ci/m3	density	Ci/g	pCi/g	Bq/g	exemption level	exempt fraction	LSA-I fraction
Th-232	2.13E-08	1.6	1.33E-14	1.33E-02	4.93E-04	10	4.93E-05	1.64E-06
U-238	2.62E-06	1.6	1.64E-12	1.64E+00	6.06E-02	10	6.06E-03	2.02E-04
Pu-238	9.25E-05	1.6	5.78E-11	5.78E+01	2.14E+00	1.00E+00	2.14E+00	7.13E-02
Pu-239	9.95E-06	1.6	6.22E-12	6.22E+00	2.30E-01	1.00E+00	2.30E-01	7.67E-03
Pu-240	3.47E-05	1.6	2.17E-11	2.17E+01	8.02E-01	1.00E+00	8.02E-01	2.67E-02
Pu-241	6.45E-04	1.6	4.03E-10	4.03E+02	1.49E+01	1.00E+02	1.49E-01	4.97E-03
Am-241	1.82E-07	1.6	1.14E-13	1.14E-01	4.21E-03	1.00E+00	4.21E-03	1.40E-04
Cm-244	1.90E-07	1.6	1.19E-13	1.19E-01	4.39E-03	1.00E+01	4.39E-04	1.46E-05
							3.33E+00	1.11E-01

[61] Argonne National Laboratory, December, 1996. Mixed Low-Level Waste Inventory, Characteristics, Generation, and Facility Assessment for Treatment, Storage, and Disposal Alternatives Considered in the US Department of Energy Waste Management Programmatic Environmental Impact Statement. p. 2-6 and A-33.

Wayne—40,000 cubic yards of material removed from site[62]

WISS Averages—0-5 feet depth

	pCi/g	Bq/g	exempt limit	exempt fraction	LSA-I fraction
Ra-226	43.9	1.6243	10	0.16243	0.005414
Th-232	302	11.174	1	11.174	0.372467
U-238	34.6	1.2802	10	0.12802	0.004267
total		**<70**		**>1**	**<1**

5-10 feet depth

	pCi/g	Bq/g	exempt limit	exempt fraction	LSA-I fraction
Ra-226	15.3	0.5661	10	0.05661	0.001887
Th-232	292	10.804	1	10.804	0.360133
U-238	78.1	2.8897	10	0.28897	0.009632
total		**<70**		**>1**	**<1**

[62] US Army Corps of Engineers, March, 1998. Engineering Evaluation/Cost Analysis for the Removal of Subsurface Materials at the Wayne Site, Wayne, New Jersey. Table 2-1.

Maywood: 73,233 cubic yards to be removed from site[63]

MISS Subsurface Maximum Measurements

	pCi/g	Bq/g	exempt limit	exempt fraction	LSA-I fraction	LSA-I fraction, volume reduced by 60% by treatment
Ra-226	1669	61.753	10	6.1753	0.205843	0.329349
Th-232	417	15.429	1	15.429	0.5143	0.82288
U-238	304	11.248	10	1.1248	0.037493	0.059989
total				**22.7291**	**0.757637**	**1.212219**

MISS Surface Maximum Measurements

	pCi/g	Bq/g	exempt limit	exempt fraction	LSA-I fraction	LSA-I fraction, volume reduced by 60% by treatment
Ra-226	7.9	0.2923	10	0.02923	0.000974	0.001559
Th-232	95.2	3.5224	1	3.5224	0.117413	0.187861
U-238	304	11.248	10	1.1248	0.037493	0.059989
total				**4.67643**	**0.155881**	**0.24941**

[63] US Army Corps of Engineers, August, 2002. Feasibility Study for Soils and Buildings at the Maywood FUSRAP Superfund Site. Table 4.1.

NMI[64]

Basin sludge	
µg/g U	100,000
g/g U	0.1
specific activity of U-238, pCi/g	33,700
concentration of sludge, pCi/g	3,550
concentration of sludge, Bq/g	131
exemption level for U-238, Bq/g	10
LSA-I level for U-238, Bq/g	300

[64] Nuclear Metals, Inc. Site Characterization Report for the Holding Basin. February 12, 1993. p. 54.

Exhibit 1. Resume of Marvin Resnikoff, PhD.

Dr. Marvin Resnikoff is Senior Associate at Radioactive Waste Management Associates and is an international consultant on radioactive waste management issues. He is Principal Manager at Associates and is Project Director for dose reconstruction and risk assessment studies of radioactive waste facilities and transportation of radioactive materials. Dr. Resnikoff has concentrated exclusively on radioactive waste issues since 1974. He has conducted studies on the remediation and closure of the leaking Maxey Flats, Kentucky radioactive landfill for Maxey Flats Concerned Citizens, Inc. and of the leaking uranium basin on the NMI/Starmet site in Concord, Massachusetts under grants from the Environmental Protection Agency. He also conducted studies of the Wayne and Maywood, New Jersey thorium Superfund sites and proposed low-level radioactive waste facilities at Martinsville (Illinois), Boyd County (Nebraska), Wake County (North Carolina), Ward Valley (California) and Hudspeth County (Texas). He investigated phosphogypsum plants in Florida, Texas and Alberta, Canada, and served as an expert witness in a personal injury case involving a Texas phosphogypsum worker. He is also serving as an expert witness for CRPE, a public interest groups, regarding the proposed expansion of the Buttonwillow, California NORM landfill. He has conducted several studies of transportation accident risks and probabilities for the State of Nevada and several Nevada counties and dose reconstruction studies of oil pipe cleaners in Mississippi and Louisiana, residents of Canon City, Colorado near a former uranium mill, residents of West Chicago, Illinois near a former thorium processing plant, and residents and former workers at a thorium processing facility in Maywood, New Jersey. In West Chicago he calculated exposures and risks due to thorium contamination and served as an expert witness for plaintiffs A Muzzey, S Bryan, D Schroeder and assisted counsel for plaintiffs KL West and KA West. He is presently serving as an expert witness for plaintiffs in Karnes County, Texas, Milan, NM and Uravan, CO, who were exposed to radioactivity from uranium mining and milling activities and for former workers at the ITCO oil pipe cleaning yard in Louisiana. He also evaluated radiation exposures and risks in worker compensation cases involving G Boeni and M Talitsch, former workers at Maywood Chemical Works thorium processing plant. In June 2000, he was appointed to a Blue Ribbon Panel on Alternatives to Incineration by DOE Secretary Bill Richardson.

In March 2004, Dr. Resnikoff was project director and co-author of a study of groundwater contamination at DOE facilities, *Danger Lurks Below.*

In February 1976, assisted by four engineering students at State University of New York at Buffalo, Dr. Resnikoff authored a paper that, according to *Science*, changed the direction of power reactor decommissioning in the United States. His paper showed that power reactors could not be entombed for long enough periods to allow the radioactivity to decay to safe enough levels for unrestricted release. The presence of long-lived radionuclides meant that large volumes of decommissioning waste would still have to go to low-level or high-level waste disposal facilities. He assisted public interest groups on the decommissioning of the Yankee-Rowe, Diablo Canyon, Big Rock Point and Haddam Neck reactors.

Under a contract with the State of Utah, Dr. Resnikoff is a technical consultant to DEQ on the proposed dry cask storage facility for high-level waste at Skull Valley, Utah and proposed storage/transportation casks. He is assisting the State on licensing proceedings before the Nuclear Regulatory Commission. In addition, at hearings before state commissions and in federal court, he has investigated proposed dry storage facilities at the Point Beach (WI), Prairie Island (MN), Palisades (MI) and Maine Yankee reactors. He has also prepared studies on transportation risks and consequences for the State of Nevada and Clark and White Pine Counties.

In Canada, he conducted studies on behalf of the Coalition of Environmental Groups and Northwatch for hearings before the Ontario Environmental Assessment Board on issues involving radioactive waste in the nuclear fuel cycle and Elliot Lake tailings and the Interchurch Uranium Coalition in Environmental Impact Statement hearings before a Federal panel regarding the environmental impact of uranium mining in Northern Saskatchewan. He also worked on behalf of the Morningside Heights Consortium regarding radium-contaminated soil in Malvern and on behalf of Northwatch regarding decommissioning the Elliot Lake tailings area before a FEARO panel. He conducted a study for Concerned Citizens of Manitoba regarding transportation of irradiated fuel to a Canadian high-level waste repository.

He was formerly Research Director of the Radioactive Waste Campaign, a public interest organization conducting research and public education on the radioactive waste issue. His duties with the Campaign included directing the research program on low-level commercial and military waste and irradiated nuclear fuel transportation, writing articles, fact sheets and reports, formulating policy and networking with numerous environmental and public interest organizations and the media. He is author of the Campaign's book on "low-level" waste, *Living Without Landfills*, and co-author of the Campaign's book, *Deadly Defense, A Citizen Guide to Military Landfills*.

Between 1981 and 1983, Dr. Resnikoff was a Project Director at the Council on Economic Priorities, a New York-based non-profit research organization, where he authored the 390-page study, *The Next Nuclear Gamble, Transportation and Storage of Nuclear Waste*. The CEP study details the hazard of transporting irradiated nuclear fuel and outlines safer options.

Dr. Resnikoff is an international expert in nuclear waste management, and has testified often before State Legislatures and the U.S. Congress. He has extensively investigated the safety of the West Valley, New York and Barnwell, South Carolina nuclear fuel reprocessing facilities. His paper on reprocessing economics (Environment, July/August, 1975) was the first to show the marginal economics of recycling plutonium. He completed a more detailed study on the same subject for the Environmental Protection Agency, "Cost/Benefits of U/Pu Recycle," in 1983. His paper on decommissioning nuclear reactors (Environment, December, 1976) was the first to show that reactors would remain radioactive for hundreds of thousands of years. In January 2004, a book on groundwater contamination at DOE facilities he investigated will be released by ANA, a consortium of public interest groups residing near DOE facilities.

Dr. Resnikoff has prepared reports on incineration of radioactive materials, transportation of irradiated fuel and plutonium, reprocessing, and management of low-level radioactive waste. He has served as an expert witness in state and federal court cases and agency proceedings. He has served as a consultant to the State of Kansas on low-level waste management, to the Town of Wayne, New Jersey, in reviewing the cleanup of a local

thorium waste dump, to WARD on disposal of radium wastes in Vernon, New Jersey, to the Southwest Research and Information Center and New Mexico Attorney General on shipments of plutonium-contaminated waste to the WIPP facility in New Mexico and the State of Utah on nuclear fuel transport. He has served as a consultant to the New York Attorney General on air shipments of plutonium through New York's Kennedy Airport, and transport of irradiated fuel through New York City, and to the Illinois Attorney General on the expansion of the spent fuel pools at the Morris Operation and the Zion reactor, to the Idaho Attorney General on the transportation of irradiated submarine fuel to the INEL facility in Idaho and to the Alaska Attorney General on shipments of plutonium through Alaska. He was an invited speaker at the 1976 Canadian meeting of the American Nuclear Society to discuss the risk of transporting plutonium by air. As part of an international team of experts for the State of Lower Saxony, the Gorleben International Review, he reviewed the plans of the nuclear industry to locate a reprocessing and waste disposal operation at Gorleben, West Germany. He presented evidence at the Sizewell B Inquiry on behalf of the Town and Country Planning Association (England) on transporting nuclear fuel through London. In July and August 1989, he was an invited guest of Japanese public interest groups, Fishermen's Cooperatives and the Japanese Congress Against A- and H- Bombs (Gensuikin).

Between 1974 and 1981, he was a lecturer at Rachel Carson College, an undergraduate environmental studies division of the State University of New York at Buffalo, where he taught energy and environmental courses. The years 1975-1977 he also worked for the New York Public Interest Group (NYPIRG).

In 1973, Dr. Resnikoff was a Fulbright lecturer in particle physics at the Universidad de Chile in Santiago, Chile. From 1967 to 1973, he was an Assistant Professor of Physics at the State University of New York at Buffalo. He has written numerous papers in particle physics, under grants from the National Science Foundation. He is a 1965 graduate of the University of Michigan with a Doctor of Philosophy in Theoretical Physics, specializing in group theory and particle physics.

Dr. Marvin Resnikoff

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EXPERIENCE:

April 1989 - present **Senior Associate,** Radioactive Waste Management Associates, management of consulting firm focused on radioactive waste issues, evaluation of nuclear transportation and military and commercial radioactive waste disposal facilities.

1978 - 1981; 1983 - April 1989 **Research Director,** Radioactive Waste Campaign, directed research program for Campaign, including research for all fact sheets and the two books, *Living Without Landfills*, and *Deadly Defense*. The fact sheets dealt with low-level radioactive waste landfills, incineration of radioactive waste, transportation of high-level waste and decommissioning of nuclear reactors. Responsible for fund-raising, budget preparation and project management.

1981 - 1983 **Project Director,** Council on Economic Priorities, directed project which produced the report *The Next Nuclear Gamble*, on transportation and storage of high-level waste.

1974 - 1981 **Instructor,** Rachel Carson College, State University of New York at Buffalo, taught classes on energy and the environment, and conducted research into the economics of recycling of plutonium from irradiated fuel under a grant from the Environmental Protection Agency.

1975 - 1976 **Project Coordinator,** SUNY at Buffalo, New York Public Interest Research Group, assisted students on research projects, including project on waste from decommissioning nuclear reactor.

1973 **Fulbright Fellowship** at the Universidad de Chile, conducting research in elementary particle physics.

1967 - 1972 **Assistant Professor of Physics,** SUNY at Buffalo, conducted research in elementary particle physics and taught range of graduate and undergraduate physics courses.

1965 - 1967 **Research Associate,** Department of Physics, University of Maryland, conducted research into elementary particle physics.

EDUCATION

University of Michigan
Ann Arbor, Michigan

PhD in Physics, June 1965
M.S. in Physics, Jan 1962
B.A. in Physics/Math, June 1959

Exhibit 2. References

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Exhibit 3. List of sites under NRC, DOE, DOD, Army Corps, or EPA regulatory jurisdiction that have been or will be decontaminated. (attached)

1995 LIST OF SITES REVIEWED FOR POSSIBLE PAST INVOLVEMENT IN NUCLEAR WEAPONS AND NUCLEAR ENERGY RELATED ACTIVITIES (Also known as the "FUSRAP LIST")

BACKGROUND

As part of its review of agency records to identify sites for possible inclusion in the Formerly Utilized Sites Remedial Action Program (FUSRAP), the Department of Energy (DOE) compiled an internal working list in 1995 of 577 site entries that date back to the Manhattan Engineer District (MED). The MED is the original precursor to the Atomic Energy Commission (AEC), the Energy Research and Development Administration (ERDA) and the DOE.

The FUSRAP review sought to identify sites that may have been involved in nuclear weapons and nuclear energy related activities and determine which of these sites would require environmental cleanup.

THE FUSRAP REVIEW

File and field reviews of these sites -- some of which date back to the 1940's -- began in the early 1970's by the AEC, continued under ERDA and then the DOE. After the DOE's reviews were completed, and with instructions from Congress to include several sites, forty-six sites were identified for clean-up as part of the FUSRAP program. By 1997, when Congress transferred the FUSRAP program to the Army Corps of Engineers, the DOE had completed cleanup at twenty-five of the forty-six FUSRAP sites. The FUSRAP list of 577 site entries remained an internal working document of the DOE and the Army Corps of Engineers until September 21, 2000.

A HISTORICAL NOTE ON THE 1995 FUSRAP LIST

The FUSRAP list, compiled in 1995, reflects a snapshot of records related to these sites that had been reviewed at that time. It is an historical document and, therefore, the information is not up-to-date. The DOE has begun working to update, correct and clarify the information contained in the list. Revised information will be periodically posted to the DOE web sites.

UNDERSTANDING THE FUSRAP LIST

The list includes the following types of sites:

- *Private contractor sites* that performed nuclear weapons and nuclear energy-related work for the Government;
- *Government sites* being cleaned up by government programs other than the FUSRAP program;
- Private or government sites that were involved in nuclear weapons and nuclear energy activities, but where no radioactive material was released to the environment;
- Private or government sites that were involved in defense activities, but did not receive any radioactive materials (sites that carried out engineering, contracting or administrative operations); and
- Sites with no involvement in nuclear weapons and nuclear energy activities, but were reviewed in response to allegations, inquiries or concerns.

NOTE: Not all of the sites on the list were involved in nuclear weapons and nuclear energy production or have been contaminated with radioactive materials. Nonetheless, to address questions raised about this list of sites, and to help provide a publicly accessible source of information to answer questions in the future, the DOE is posting this internal working list from 1995 on the DOE and DOE-EM web sites.

In addition to the operations at the sites identified on the internal working list, the AEC conducted operations at certain military installations that are currently classified and not included in the FUSRAP list. These sites were referred to the Department of Defense in 1982.

The hand written markings on this 1995 document were on the original file copy and do not reflect any recent effort to alter the historical document.

THE FUSRAP LIST: A COLUMN BY COLUMN LOOK

"File #"	Refers to record-keeping used at that time. In most cases, this file number is no longer being used.
"Site Name"	Refers to the name used in 1995 and may no longer be the most commonly used name for the site.
"Location"	Based on information available in 1995.
"Alternative Name"	In some cases, the site was also known by a different name.
"Status"	Indicates whether a site was: (a) in a Department of Energy program, (b) under the jurisdiction of another Federal Agency, or (c) eliminated from further consideration for the FUSRAP program. The status of many of these sites has changed since this list was compiled in 1995.

NOTE: The 1995 list included the names of individuals that have been redacted to protect those individuals' privacy in accordance with Freedom of Information Act rules and procedures.

KEY TO COMMONLY USED TERMS

The terms used to indicate status in the FUSRAP list are notations of whether the site required cleanup and, if so, to which agency the DOE referred the site for further action. Where a Government agency other than DOE is listed in the "status" column, the results of DOE's review were provided to that agency. In most of these cases the site was already being managed by the other agency and DOE notified that agency that it had completed its file review of that particular site.

Eliminated	The site was "eliminated" from further consideration because it was found not to be contaminated under screening criteria. Some of these sites were determined to have never received radioactive materials (e.g., served as engineering, contracting or administrative operations). Others were found to have no higher than acceptable levels of radioactivity because any radioactive material was handled in small quantities or kept in a contained state. In still

other cases, sites were eliminated because DOE lacked legal authority to conduct cleanup operations. In these cases DOE notified the appropriate federal and state agencies.

DOE The site was placed in a DOE program for cleanup (as summarized below).

* **Argonne**: Argonne Laboratory, Chicago
* **WSSSRAP**: Weldon Spring Site Remedial Action Program
* **Los Alamos**: Los Alamos site, New Mexico
* **BCLDP**: Battelle Columbus Laboratory, Columbus, Ohio
* **Mound**: Mound Site, Miamisburg, Ohio
* **Pantex**: Pantex Facility, Amarillo, Texas
* **Hanford**: Hanford site, Richland, Washington

Naval Reactors The site was addressed by the Naval Reactors Program.

FUSRAP site The site was placed in the Formerly Utilized Sites Remedial Action Program (FUSRAP) for cleanup

* TBD: "To be Determined"
* VP: "Vicinity Property"

UMTRAP site The site was placed in the Uranium Mill Tailing Remedial Action Program (UMTRAP) for cleanup.

TVA The site was owned or operated by the Tennessee Valley Authority (TVA).

NRC The site was licensed by the Nuclear Regulatory Commission (NRC).

DOD Results of the review were provided to the Department of Defense (DOD).

State Results of the review were provided to a relevant state agency.

EPA Results of the review were provided to the Environmental Protection Agency (EPA). NPL is an acronym for the Superfund National Priority List.

USGS The site was owned or operated by the U.S. Geological Survey.

BIA The site was owned or operated by the Bureau of Indian Affairs.

31-Aug-05

FUSRAP LIST

File #	Site Name	Location	Alternative Names	Status
	Alaska			
AK.01	Amchitka Island Test Center	Amchitka	Amchitka Island Test Site	DOE
	Alabama			
AL.01	Tennessee Valley Authority	Muscle Shoals	Uranium Recovery Pilot Plant and Laboratory	TVA/NRC
AL.02	Alabama Ordnance Works	Sylacauga		DOD
AL.03	Southern Research Institute	Birmingham		NRC
	Arizona			
AZ.0-01	Monument Valley Mill	Monument Valley		UMTRAP site
AZ.0-02	Tuba City Mill and AEC Ore Buying Station	Tuba City		UMTRAP site
AZ.01	University of Arizona (Southwest Experiment Station Buildings)	Tucson	U. S. Bureau of Mines	Eliminated
AZ.02	Cameron Station [Former name at site.]	Cameron		NRC?/BIA
AZ.03	Globe (Cutter) AEC Ore Buying Station	Globe (Cutter)	Globe Ore Buying Station	Eliminated
	California			
CA.0-01	Mare Island Navy Yard	Mare Island	Navy Yard	DOD
CA.0-02	Northrup Aircraft Co., Inc. [Former name at site.]	Hawthorne		NRC
CA.0-03	Shannon Luminous Metals Co.	Hollywood		NRC
CA.0-04	Leland Stanford University (Microwave Laboratory)	Stanford		Eliminated
CA.0-05	University of California - Lab. for Energy Related-Health Research (LEHR)	Davis	California Resources & Development	~~NRC~~ ~~EPA~~ DOE
CA.0-06	U. S. Naval Radiological Defense Laboratory	San Francisco		DOD

File #	Site Name	Location	Alternative Names	Status
CA.01	Arthur D. Little Co. [Former name at site.]	San Francisco	Merrill Co.; A. D. Little Co.	Eliminated
CA.02	DOW Chemical Co.	Walnut Creek		Eliminated
CA.03	University of California (Gilman Hall)	Berkeley		FUSRAP site
CA.04	California Institute of Technology	Pasadena		DOE
CA.05	University of California (Chemistry Building and Radiation Laboratory)	Berkeley		NRC
CA.06	Naval Ordnance Test Station	Inyokern/China Lake	Naval Ordnance Test Site	DOD
CA.07	North American Aviation, Inc. [Former name at site.]	Downey		Eliminated
CA.08	Electro Circuits, Inc.	Pasadena		Eliminated
CA.09	Santa Susana Field Laboratory	Canoga Park, CA	Atomics International, Canoga Park, Field Test Laboratory; Site Surplus Facility	DOE
CA.10	Burris Park Field Station [Former name at site.]	Kingsburg, Kings Co.		Eliminated
CA.11	Hunter Douglas Aluminum Plant, Div. of Bridgeport Brass Co. [Former name at site.]	Riverside	Hunter Douglas Aluminum Corp.; Bridgeport Brass Co.	NRC
CA.12	Stauffer-Tenescal Co.	Richmond	Stauffer Metals Co.; Tenescal Co.	NRC
CA.13	General Electric Co.	San Jose		NRC
CA.14	Gulf General Atomic	San Diego		NRC ~~FUSRAP/DOE~~

Colorado

CO.0-01	American Smelting and Refining Co.	Grand Junction	American Smelting & Refining Co. AEC Ore Buying Station	NRC?
CO.0-02	Bureau of Mines	Denver		NRC
CO.0-03	Climax Uranium Co.	Grand Junction		UMTRAP site
CO.0-04	Denver Equipment Co. [Former name at site.]	Denver		NRC

File #	Site Name	Location	Alternative Names	Status
CO.0-05	Durango Mill	Durango		UMTRAP site
CO.0-06	Gunnison Mill - Same as CO.10	Gunnison		UMTRAP site
CO.0-07	Maybell Mill	Maybell		UMTRAP site
CO.0-08	Naturita Mill	Naturita		UMTRAP site
CO.0-09	Project Rio Blanco	Rio Blanco Co.	CONOCO; CER Geonuclear Corp.	DOE
CO.0-10	Project Rulison	Garfield Co.		DOE
CO.0-11	Rifle Mill	Rifle		UMTRAP site
CO.01	Colorado School of Mines	Golden		NRC
CO.02	Uravan Mill Site [Former name at site.]	Uravan/Nucla - Nucla		NRC/State
CO.03	Loma Mill [Former name at site.]	Loma		Eliminated
CO.04	Gateway Mill [as of 01/95]	Gateway		NRC?
CO.05	Vanadium Mill [Former name at site.]	Vanadium	Vanadium	NRC?
CO.06	Rocky Mountain Research Laboratories [Former name at site.]	Denver	Colorado Research	NRC
CO.07	Hendricks Mill			NRC?
CO.08	Slick Rock	Slick Rock		UMTRAP site
CO.09	Marion Mill Site [Former name at site.]	Boulder	Lenway Mining and Development Corp.; Sweeny Mining and Milling Corp.	NRC
CO.10	Colonial Uranium Co. - Same as CO.0-06	Grand Junction		UMTRAP site
CO.11	Shattuck Chemical	Denver	Dawn Mining Corp.	EPA

File #	Site Name	Location	Alternative Names	Status
CO.12	Coors Porcelain	Golden		NRC
CO.13	University of Denver Research Institute	Denver		NRC/State
	Connecticut			
CT.0-01	Metals Selling Corp.	Putnam		Eliminated
CT.0-02	Olin Mathieson	New Haven	Charles A. Pfizer Co.; NELCO	NRC
CT.01	American Brass Co. [Former name at site.]	Waterbury	Fabric Metal Goods Plant and West Tube Mill (of American Brass, Co.); Anaconda Co. [name after American Brass, Co.]	Eliminated
CT.02	Seymour Specialty Wire	Seymour	The former Reactive Metals, Inc.; National Distillers and Chemical Co.; The former Bridgeport Brass Co.	FUSRAP site
CT.03	Combustion Engineering Co.	Windsor	Asea Brown Boveri, S1C prototype.	FUSRAP site
CT.04	Pratt and Whitney Corp., CANEL Facility [Former name at site.]	Middletown	Connecticut Advanced Nuclear Engineering Lab.; United Aircraft Corp.	NRC
CT.05	Yale Heavy Ion Linear Accelerator	New Haven	Yale Heavy Ion Linac	DOE
CT.06	Bridgeport Brass Co., Havens Laboratory [Former name at site.]	Bridgeport	Formerly may have been part of Reactive Metals, Inc.	Eliminated
CT.07	Sperry Products, Inc. [Former name at site.]	Danbury		NRC
CT.08	New Canaan Site	New Canaan		Eliminated
CT.09	Torrington Co.	Torrington		Eliminated
CT.10	New England Lime Co. [Former name at site.]	Canaan	New England Lime Co.	Eliminated
CT.11	Fenn Machinery Co.	Newington	Fenn Manufacturing Co.	Eliminated
CT.12	Wesleyan University	Middletown		NRC
CT.13	American Cyanamid Co. [Former name at site.]	Stamford		NRC
CT.14	Dorr Corp. [Former name at site.]	Stamford	Dorr-Oliver Corp.	NRC

File #	Site Name	Location	Alternative Names	Status
CT.15	American Chain and Cable Co. [Former name at site.]	Bridgeport		Eliminated
	Washington, DC			
DC.0-01	Naval Gun Factory and Bureau of Ordnance	Washington, DC		DOD
DC.01	National Bureau of Standards [Former name at site.]	Washington, DC	University of the District of Columbia	NRC
DC.02	Naval Research Laboratory	Anacostia, Washington, DC		DOD
	Delaware			
DE.01	Allied Chemical and Dye Corp. [Former name at site.]	North Claymont	The former General Chemical Div., Allied Chemical and Dye Corp.; Allied Chemical Corp.; Union Texas Petroleum Div.	Eliminated
	Florida			
FL.0-01	University of Miami	Miami	Perrine Field	Eliminated
FL.01	Armour Fertilizer Works [Former name at site.]	Bartow	The former Armour Fertilizer Works; U. S. Agri-Chemicals Pilot Facility; U. S. Steel Corp.	Eliminated
FL.02	International Minerals and Chemical Corp., Pilot Plant [Former name at site.]	Mulberry	Pilot Facility	Eliminated
FL.03	International Minerals and Chemicals Corp., Bonnie Mill Plant [Former name at site.]	Bartow (Mulberry)	The former International Minerals and Chemical Co., Uranium Recovery Unit at the Bonnie Plant; Phosphate Chemicals Div., Bonnie Uranium Plant,	Eliminated
FL.04	W. R. Grace Co., Agriculture Chemical Div. [Former name at site.]	Bartow (Ridgewood)	Davison Chemical Corp.; Agri-Chemicals Div.	Eliminated
FL.05	Gardinier, Inc. [Former name at site.]	Tampa	The former U.S. Phosphoric Plant Uranium Recovery Unit; Cargill Fertilizer, Inc..	Eliminated
FL.06	Virginia-Carolina Chemical Corp. [Former name at site.]	Nichols (in Polk Co., FL)	The former Conser Dept. of Phillips Brothers Div., Englehard Minerals and Chemical Corp.; Socony Mobile Oil Co.	Eliminated
FL.07	Pinellas Plant; General Electric Co.	St. Petersburg		DOE ~~Eliminated~~
FL.08	Humphreys Gold Co.	Jacksonville	Titanium Alloy Manufacturing Co.	Eliminated
FL.09	University of Florida	Gainesville	J. Hillis Miller Health Center, College of Medicine, Dept. of Radiology [current, but site question?	NRC
	Iowa			
IA.01	Iowa State University, Ames Lab.	Ames	Ames Laboratory; ISU.	DOE

File #	Site Name	Location	Alternative Names	Status
IA.02	Burlington Ordnance Plant	Burlington	Burlington Ordnance Plant; Iowa Ordnance Plant; Silas Mason Co.	DOD
IA.03	Ames Laboratory Research Reactor Facility	Ames	Ames Research Reactor Facility	DOE
IA.04	Titus Metals [Former name at site.]	Waterloo	Titus, Inc.	Eliminated
IA.05	Bendix Aviation Corp., Pioneer Div. [Former name at site.]	Davenport		Eliminated
	~~Iowa~~ Idaho			
ID.0-01	Naval Ordnance Plant, Project Marsh	Pocatello		DOD
ID.01	Lowman Mill	Lorna		UMTRAP site
	Illinois			
IL.0-01	ELMCO Corp. [Former name at site.]	Palatine		Eliminated
IL.0-02	Granite City Army Depot	Granite City		DOD
IL.0-03	Hydroblast Corp. [Former name at site.]	Chicago		Eliminated
IL.0-04	Midwest Manufacturing Co. [Former name at site.]	Galesburg		Eliminated
IL.0-05	Morse Chemical Co. [Former name at site.]	Chicago		Eliminated
IL.0-06	Sciaky Brothers, Inc.	Chicago		Eliminated
IL.0-07	Wyckoff Drawn Steel Co. [Former name at site.]	Chicago	Wyckoff Steel Co.	Eliminated
IL.0-08	Besley-Wells [Former name at site.]	S. Beloit		NRC
IL.01	Billings Hospital, Small Animal Facility, University of Chicago [Former name at site.]	Chicago	Small Animal Facity	Eliminated
IL.02	GSA 39th Street Warehouse [Former name at site.]	Chicago	The former GSA 39th Street Warehouse; Resco Air Conditioning and Heating Co.	Eliminated
IL.03	Museum of Science and Industry	Chicago		Eliminated

File #	Site Name	Location	Alternative Names	Status
IL.04	Palos Park Forest Preserve Site (A/Plot M)	Chicago	Cook County Forest Preserve (includes CP-2, CP-3 and Plot M); Palos Park	DOE
IL.05	National Guard Armory	Chicago	Washington Park Armory	FUSRAP site
IL.06	University of Chicago	Chicago	Eckhardt Hall (+ West Stands, New Chem. Lab. and Annex, Ryerson Physical Lab., Kent Chem. Lab.) (site)	FUSRAP site
IL.07	Blockson Chemical Co. [Former name at site.]	Joliet	The former Blockson Chemical Co.; Blockson Chemical Group; Olin Mathieson; Olin.	Eliminated
IL.08	Argonne National Laboratory, Radiobiology Building 60	Chicago	Radiobiology Building 60	DOE-Argonne
IL.09	Rock Island Arsenal	Rock Island		DOD
IL.10	Lindsay Light and Chemical Co. [Former name at site.]	West Chicago	The former Lindsay Light and Chemical Co.; Kerr-McGee; Reed-Keppler Park.	NRC/EPA/State
IL.11	Quality Hardware and Machine Co.	Chicago	Ravenswood Venture–Owner(?); Marden Manufacturing–Tenant.	Eliminated
IL.12	W. E. Pratt Manufacturing Co.	Joliet	The former William E. Pratt Manufacturing Co.; Klassing Handbrake– Tenant; Altrachem, Inc. – Nearby Tenant.	Eliminated
IL.13	Crane Co. [Former name at site.]	Chicago		NRC
IL.14	Heavy Minerals, Inc. [Former name at site.]	Chicago	The former Heavy Minerals Co.; W.R. Grace	Eliminated
IL.15	International Register [Former name at site.]	Spring Grove		Eliminated
IL.16	Fansteel Metallurgical Corp. [Former name at site.]	Chicago		NRC
IL.17	Armour Research Foundation of the Illinois Institute of Technology [Former name at site.]	Chicago	ARF; Illinois Institute of Technology; IIT	NRC
IL.18	International Mineral & Chemical Corp.	Chicago		Eliminated
IL.19	Kaiser Aluminum Corp.	Dolton	Kaiser Chemicals	NRC
IL.20	Precision Extrusion Co.	Bensenville		Eliminated
IL.21	Great Lakes Carbon Corp.	Chicago (North Grove)		Eliminated

File #	Site Name	Location	Alternative Names	Status
IL.22	Podbielniac Corp. [Former name at site.]	Chicago		Eliminated
IL.23	Swenson Evaporator Co.	Harvey		Eliminated
IL.24	American Machine and Metals, Inc.	E. Moline		Eliminated
IL.25	Vapofier Corp. [Former name at site.]	Blue Island	Therm-A-Shield Co. (Current?); Blue Island Chrysler Plymouth; American Machine and Metals; Bennette and Kahnweiler (B/K).	Eliminated
IL.26	Specuflte Consortium, Inc. [FUSRAP Madison Site]	Madison	DOW Chemical	FUSRAP site
IL.27	R. Krasberg and Sons Manufacturing Co.	Chicago	Trade Finishing Services, Inc. (Recent owner or tenant–unclear.)	Eliminated
IL.28	Granite City Steel	Granite City	Old Betatron Building; General Steel Castings.	FUSRAP site
IL.29	ERA Tool and Engineering Co.	Chicago	Audio-Tex, Inc.	Eliminated
IL.30	Max Zuckerman & Sons [Former name at site.]	Chicago	Atlantic Chemicals & Metals [a recent owner of site?]	Eliminated
IL.31	C-B Tool Products Co. [Former name at site.]	Chicago	The former C-B Tool Products Co.	Eliminated
IL.32	Kankakee Ordnance Plant	Kankakee		DOD
IL.33	Allied Chemical Corp. Plant	Metropolis	General Chemical Div.	NRC
	Indiana			
IN.0-01	University of Notre Dame	South Bend		NRC
IN.01	Joslyn Stainless Steel Co. [Former name at site.]	Ft. Wayne	Joslyn Manufacturing and ... Co. [The former]	Eliminated
IN.02	Purdue University Van der Graaf Laboratory [Former name at site.]	Lafayette	Includes (?) Chemistry Building, Locomotive Lab.	NRC
IN.03	Wabash River Ordnance Works	Terre Haute		DOD
IN.04	Standard Oil of Indiana, Whiting Research Laboratory	Whiting		Eliminated
IN.05	Indiana Steel Products Co.	Valparaiso		Eliminated

File #	Site Name	Location	Alternative Names	Status
IN.06	University of Indiana	Bloomington		NRC
IN.07	General Electric Co.	Shelbyville	GE; General Electric Plant	NRC
IN.08	Wash-Rite Co. [Former name at site.]	Indianapolis		State
IN.09	American Bearing Corp. [Former name at site.]	Indianapolis		NRC
	Kansas			
KS.0-01	Spencer Chemical Co., Jayhawks Works	Merriam		NRC
	Kentucky			
KY.01	Paducah Gaseous Diffusion Plant	Paducah		DOE-Paducah
KY.02	Commercial (Burial) Disposal Site (~~unnamed, circa 1972~~)	Moorehead	Major Flats	[redacted] EPA/State
	Massachusetts			
MA.0-01	E. B. Badger	Boston		Eliminated
MA.0-02	Edgerton Germeshausen & Grier, Inc.	Boston		NRC
MA.0-03	Englehard Industries	Plainville	Makepeace, D.E. Div.	NRC
MA.0-04	Manufacturing Laboratories, Inc. [Former name at site.]	Boston		Eliminated
MA.0-05	Tufts College	Medford		NRC
MA.01	Massachusetts Institute of Technology, Hood Building [Former name at site.]	Cambridge	MIT, Hood Building	NRC
MA.02	Watertown Arsenal (Bldgs 421, 34, 41 and GSA Site (on the arsenal grounds)	Watertown		DOD
MA.03	Winchester Engineering and Analytical Center	Winchester	U. S. Public Health Service, N. E. Radiological Laboratory; Formerly run by American Cyanimid Co. [1952-54]; Formerly run by National Lead Co. [1954-	Eliminated
MA.04	Ventron Corp.	Beverly	The former Metal Hydrides Corp.; Ventron Div., Morton Thiokol, Inc.	FUSRAP site
MA.05	Harvard University Electron Accelerator	Cambridge	Cambridge Electron Accelerator	DOE

File #	Site Name	Location	Alternative Names	Status
MA.06	Shpack Landfill	Norton. Also Attleboro.	The former Shpack Landfill; Metal and Controls Nuclear Corp.; Texas Instruments; M & C Nuclear.	FUSRAP site
MA.07	Woburn Landfill	Woburn	Winchester Engineering Vicinity Property	Eliminated
MA.08	Chapman Valve Manufacturing Co.	Indian Orchard	The former Chapman Valve Manufacturing Co.; Crane Co.	FUSRAP site
MA.09	Nuclear Metals, Inc.	Cambridge		NRC
MA.10	National Research Corp.	Cambridge	NRC	NRC
MA.11	Tracerlab, Inc.	Boston		NRC
MA.12	Norton Co.	Worcester		NRC
MA.13	National Fireworks Ordnance Corp. [Former name at site.]	Hanover (W. Hanover)	American Potash & Chemicals Co., National Norther Div.	Eliminated
MA.14	Fenwal, Inc. [Former name at site.]	Ashland		Eliminated
MA.15	Heald Machine Co.	Worcester		Eliminated
MA.16	La Pointe Machine and Tool Co. [Former name at site.]	Hudson		Eliminated
MA.17	C. G. Sargent & Sons	Graniteville (Westford)		NRC
MA.18	Reed Rolled Thread Co.	Worcester		FUSRAP-TBD
MA.19	NRC Equipment Co. [Former name at site.]	Newton		NRC
MA.20	New England Materials Laboratory, Inc.	Medford	Teledyne Materials	FUSRAP-TBD
MA.21	Metals and Controls Corp., FSM Dept. [Former name at site.]	Attleboro	M & C; Texas Instruments	NRC
	Maryland			
MD.0-01	Bendix Corp., Frieze Division [Former name at site.]	Baltimore		NRC
MD.0-02	Glenn L. Martin Co.	Middle River		NRC

File #	Site Name	Location	Alternative Names	Status
MD.0-03	Naval Ordnance Labortory	Silver Spring	Naval Surface Weapons Station	DOD
MD.0-04	Public Health Service, National Institutes of Health	Bethesda		NRC
MD.01	W. R. Grace Co.	Curtis Bay, Baltimore	Davison Chemical Div.	FUSRAP site
MD.02	Johns Hopkins University	Baltimore	JHU; Remson Hall-Chemistry Building, East Wing.	NRC
MD.03	Armco-Rustless Iron & Steel Co. [Former name at site.]	Baltimore	Armco Steel	Eliminated
MD.04	Max Zuckerman & Sons, Inc. [Former name at site.]	Baltimore	Maryland Alloys Corp.	NRC
MD.05	Maryland Disposal Site	--conceptual, not identified		FUSRAP-TBD
	Michigan			
MI.0-01	AMEX Specialty Metal Corp. [Former name at site.]	Coldwater		Eliminated
MI.0-02	DOW-Detroit Edison Project	Detroit	FERMI	DOE
MI.0-03	Naval Ordnance Plant	Centerline		DOD
MI.01	General Motors Co.	Adrian	The former Bridgeport Brass Co., Uranium Metal Extrusion Plant; General Motors, Chevrolet Mfg. Div.; National Distillers and Chemical Corp.; Martin	FUSRAP site
MI.02	Westinghouse Naval Ordnance	Detroit		Naval Reactors
MI.03	Michigan [Velsicol] Chemical Corp. [Former name at site.]	St. Louis	The former Michigan Chemical Corp.	NRC
MI.04	Revere Copper and Brass Co. [Former name at site.]	Detroit	City of Detroit (Current)	Eliminated
MI.05	Wolverine Tube Division [Former name at site.]	Detroit	Div. of Calumet Hecla Consolidated Copper Co.; Hermes Automotive (current); Mamif Corp.	Eliminated
MI.06	DOW Chemical Co.	Midland	DOW-Detroit Edison Project	NRC
MI.07	General Motors Co.	Flint	AC Spark Plug	NRC
MI.08	Univeristy of Michigan	Ann Arbor		NRC

File #	Site Name	Location	Alternative Names	Status
MI.09	Gerity-Michigan	Adrian		Eliminated
MI.10	Detrex Corp.	Detroit		Eliminated
MI.11	Oliver Corp. [Former name at site.]	Battle Creek		NRC
MI.12	Carboloy Co.	Detroit		NRC
MI.13	Baker-Perkins Co. [Former name at site.]	Saginaw		Eliminated
MI.14	Mitts-Merrel Co. [Former name at site.]	Saginaw	Genesse Packing Co.	Eliminated
MI.15	Star Cutter Corp. [Former name at site.]	Farmington	Hitachi Farminton Hill Technical Center, Inc. [as of 10/94]	Eliminated
MI.16	Extruded Metals Co. [Former name at site.]	Wyoming Park (Grand Rapids)		NRC
MI.17*	[redacted] [vicinity property landfill to Baker Brothers, Toledo, OH]	Ottawa Lake	*Information deleted relates to a private individual (9/14/00)	FUSRAP-VP
MI.18	Chrysler Corp., Defense Operations Div.	Detroit		FUSRAP-TBD
	Minnesota			
MN.0-01	Twin Cities Ammunition Plant	New Brighton		DOD
MN.01	ELK River Reactor [Former name at site.]	Elk River	Elk River Facility	NRC
	Missouri			
MO.0-01	Spencer Chemical Co.	Kansas City		Eliminated
MO.0-02	St. Louis University	St. Louis		NRC
MO.0-03	United Nuclear Corp.	Hematite	Mallinckdrodt Chemical Works, Chemicals Div.	NRC
MO.01	St. Louis Airport Storage Site (SLAPS)	St. Louis	Robertson Airport; The former Robertson Storage Area.	FUSRAP site
MO.02	St. Louis Downtown Site	St. Louis	SLDS, Downtown Site; Destrehan St. Plant, Mallinckrodt Chemical (Works) Co.; The former Mallinckrodt Chemical Works of MCC.	FUSRAP site

File #	Site Name	Location	Alternative Names	Status
MO.03	Weldon Spring Chemical Co.	Weldon Spring	Weldon Spring Ordnance Works; WSSRAP; WSS.	DOE-WSSRAP
MO.04	Latty Avenue Site	St. Louis	Hazelewood Interim Storage Site (HISS): Hazelwood; the former Cotter Corp.	FUSRAP site
MO.05	West Lake Landfill	Bridgeton (St. Louis)		EPA
MO.06	Bendix Aviation Corp. [Former name at site.]	Kansas City		DOE
MO.07	Washington University	St. Louis		NRC
MO.08	Petrolite Corp.	St. Louis		NRC
MO.09	Medart Co. [Former name at sites.]	St. Louis		Eliminated
MO.10	Rogers Iron Works Co.	Joplin		Eliminated
MO.11	Tyson Valley Powder Farm	St. Louis		DOD
	Mississippi			
MS.01	Tatum Salt Dome Test Site	Hattisburg		DOE
	Montana			
MT.01	Montana State College	Bozeman		NRC
	North Carolina			
NC.01	North Carolina State University	Raleigh		NRC
NC.02	Youngsville Warehouse	Youngsville		FUSRAP-TBD
	North Dakota			
ND.0-01	Belfield Mill	Belfield		UMTRAP site
ND.0-02	Bowman Mill	Bowman		UMTRAP site
	Nebraska			
NE.01	Hallam Nuclear Power Facility	Hallam	HNPF; Nebraska Hallam Nuclear Power Facility	NRC

File #	Site Name	Location	Alternative Names	Status
	New Hampshire			
NH.01	R. Brew Co. [Former name at site.]	Concord		Eliminated
	New Jersey			
NJ.0-01	International Pulverizing Co.	Morristown		Eliminated
NJ.0-02	J. T. Baker Chemical Co.	Phillipsburg		NRC
NJ.0-03	Metals Disintegrating Co., Inc. [Former name at site.]	Verona/Elizabeth		Eliminated
NJ.0-04	Bell Telephone Laboratories	Murray Hill		Eliminated
NJ.01	Princeton University	Princeton	Palmer Physical Laboratory	DOE
NJ.02	Vitro Corp. of America [Former name at site.]	West Orange	The former Vitro Corp. of America	NRC/EPA
NJ.03	Westinghouse Electric Corp.	Bloomfield	North American Philips Lighting	NRC
NJ.04	Middlesex Sampling Plant	Middlesex	MSP	FUSRAP site
NJ.05	Middlesex Municipal Landfill Site	Middlesex	MML	FUSRAP site
NJ.06	E. I. du Pont	Deepwater	E. I. duPont de Nemours and Co.	FUSRAP site
NJ.07	Kellex/Pierpont	Jersey City	Vitro Corp. of America; The former Kellex Corp.; Kellex/Pierpont.	FUSRAP site
NJ.08	Princeton University	Princeton	Princeton University Accelerator; Palmer Physical Lab.	DOE
NJ.09	U. S. Radium Corp.	Orange		NRC/EPA
NJ.10	Maywood Site	Maywood	Maywood Interim Storage Site, MISS; Stepan Co.; Maywood Chemical Works (MCW)	FUSRAP site
NJ.11	Tube Reducing Corp. [Former name at site.]	Wallington		Eliminated
NJ.12	Chemical Construction Co., Linden Pilot Plant	Linden	Chemico	Eliminated

File #	Site Name	Location	Alternative Names	Status
NJ.13	Baker and Williams Co. [Former name at site.]	Newark	Englehard Industries; Platinum (or Baker) Div. of Englehard Industries; Baker and Co., Inc.	NRC
NJ.14	New Brunswick Laboratory	New Brunswick		FUSRAP site
NJ.15	Navy Ammunition Depot	Earle		DOD
NJ.16	Wayne Site	Wayne (+ see Pompton Plains)	Wayne Interim Storage Site, WISS; W. R. Grace Rare Earths;Davison Pequannock Chemical Div., Rare Earths Inc.	FUSRAP site
NJ.17	International Nickel Co., Bayonne Laboratories	Bayonne		Eliminated
NJ.18	Standard Oil Development Co. of NJ	Linden	Bayway, Exxon	FUSRAP-TBD
NJ.19	Heyden Chemical Corp. [Former name at site.]	Princeton (Junction?)	American Cyanamid Co.	NRC
NJ.20	Wyckoff Steel Co. [Former name at site.]	Newark	Ferranti Steel & Aluminium Co. [as of 10/94]	Eliminated
NJ.21	Bloomfield Tool Co. [Former name at site.]	Bloomfield		Eliminated
NJ.22	E. I. du Pont de Nemours and Co., Dyeworks–Carney's Point [contiguous to Deepwater FUSRAP site]	Deepwater (Carney's Point)	du Pont	Eliminated
NJ.23	U. S. Pipe and Foundry Co.	Burlington		Eliminated
NJ.24	Aluminum Co. of America (Alcoa) [Former name at site.]	Garwood		Eliminated
NJ.25	Fairmont Chemical Co.	Newark		Eliminated
NJ.26	Colonial Chemical Co.	Engelwood		Eliminated
NJ.27	Harrison Manufacturing Co.	Rahway		Eliminated
NJ.28	Pfaltz and Bauer, Inc.	Richfield		Eliminated
NJ.29	United Lead Co. [Former name at site.]	Middlesex		Eliminated
NJ.30a	Eclipse-Pioneer Div. of Bendix Aviation Corp.; Bendix Aerospace Corp. [Former name at site.]	Tetterboro		Eliminated

File #	Site Name	Location	Alternative Names	Status
NJ.30b	Sumitomo Machine Co. [Formerly Bendix Aerospace Corp. owned all 107 acre site]	Teterboro		Eliminated
NJ.30c	Metpath Co. [Formerly Bendix Aerospace Corp. owned all of 107 acres site.]	Teterboro		Eliminated
NJ.31	Picatinny Arsenal	Dover		DOD
NJ.32	Raritan Arsenal	Raritan		DOD
NJ.33	Bowen Lab. [Former name at site.]	North Branch		Eliminated
NJ.34	New York Shipbuilding Corp. (site) [Former name at site.]	Camden		Eliminated
NJ.35	Bakelite Corp.	Bound Brook		Eliminated
NJ.36	Callite Tungsten Co. [Former name at site.]	Union City		Eliminated
NJ.37	New Jersey Disposal Site	--conceptual, not identified		FUSRAP-Considered
NJ.38	American Peddinghaus Corp.	Moonachie		FUSRAP-TBD
	New Mexico			
NM.0-01	Ambrosia Lake Mill	Ambrosia Lake		UMTRAP & NRC
NM.0-02	Blue Water AEC Ore Buying Station	Grants?		NRC
NM.0-03	Naval Office at the University of New Mexico	Albuquerque		DOD
NM.0-04	Shiprock AEC Ore Buying Station	Shiprock		UMTRAP site
NM.01	Bayo Canyon Area	Los Alamos	Project Y Demolition Range; Bayo Canyon Site; TA-10: Project Y.	FUSRAP site
NM.02	Los Alamos Underground MED Pipelines	Los Alamos	Los Alamos County Industrial Waste Line (Pipe); MED Pipeline; Underground Industrial Pipe.	DOE
NM.03	Acid/Pueblo Canyon	Los Alamos		FUSRAP site
NM.04	Chupadera Mesa Area	White Sands		FUSRAP site

File #	Site Name	Location	Alternative Names	Status
NM.05	ACF Industries	Albuquerque	American Car and Foundry	Eliminated
NM.06	LASL TRACT "OO"	Los Alamos		DOE-Los Alamos
NM.07	LASL Land Parcels A, B, C, E, K, LN, PL	Los Alamos	Additional LASL land parcels were evaluated--OO, AA, North Mesa, Rio Grande, K, BB, JJ, SS, Lt 67, Trailer Park on DP road.	DOE-Los Alamos
NM.08	LASL Pipeline Facility	Los Alamos	Southern Union Gas Co.; Los Alamos Pipeline Facility.	DOE-Los Alamos
NM.09	LASL Tracks Eastern Area L ("J", 2 ("AA"), 2("Y")	Los Alamos	Project Y Demolition Range (unclear ?)	DOE-Los Alamos
NM.10	LASL Tracts Eastern Area No. 3 (BD, JJ, SS, And Lot 67)	Los Alamos		DOE-Los Alamos
NM.11	TA-1 Manhattan Laboratory	Los Alamos	MED Laboratory (original MED Lab. Site); Manhattan Project Lab. Site; TA-1; Main Technical Area.	DOE-Los Alamos
NM.12	Project GNOME Site	Carlsbad	Gnome	DOE
NM.13	Jackpile-Paquate Uranium Mine [Former name at site.]	Laguna	Jackpile-Paquate Uranium Mine	USGS/BIA
NM.14	Project Gas Buggy			DOE
NM.15	Church Rock			NRC/EPA-NPL
NM.16	Marino Lake	--no entry--		USGS/BIA?
NM.17	Trinity Test Site	White Sands		DOE
NM.18	Grants AEC Ore Buying Site	Grants	Grants Ore Buying Station	NRC
	Nevada			
NV.01	University of Nevada	Reno	U. S. Bureau of Mines; BOM; MacKay School of Mines.	Eliminated
NV.02	Central Nevada Test Site			DOE
NV.03	Shoal Test Site	Fallon	Sandy Springs Range	DOE
NV.04	Nellis Air Force Base			DOD

File #	Site Name	Location	Alternative Names	Status
NV.05	Nuclear Rocket Development Station	Nevada Test Site		DOE
NV.06	U. S. Bureau of Mines, Reno Station	Reno	BOM, Reno Station	NRC
NV.07	Titanium Metals Corp., Div. of NLO	Henderson	Titanium Metals Corp. of America	NRC
	New York			
NY.0-01	African Metals	New York	AFRIMET; Agent for Union Miniere; Boris Pregel..	NRC ?
NY.0-02	Allegheny-Ludlum Steel Corp. [Former name at site.]	Dunkirk	Allegheny-Ludlum Steel Corp.	Eliminated
NY.0-03	American Railway Express Office	New York		Eliminated
NY.0-04	Bell Telephone Labortories	New York		Eliminated
NY.0-05	Boyce Thompson Institute for Plant Research	Yonkers		Eliminated
NY.0-06	Canadian Radium and Uranium Corporation of New York City	New York	Agent for Eldorado Mining	Eliminated
NY.0-07	Carnegie Institute of Washington (Dept. of Genetics)	Cold Spring Harbor		Eliminated
NY.0-08	Colorado Fuel and Iron	Watervliet		Eliminated
NY.0-09	Eastman Kodak Laboratory	Rochester	Tennessee Eastman	NRC
NY.0-10	Enterprise Metal Products	unknown		Eliminated
NY.0-11	Floyd Bennett Field	Brooklyn		Eliminated
NY.0-12	Fordham University	New York		Eliminated
NY.0-13	Frederick Flader, Inc.	Tonawanda		Eliminated
NY.0-14	Long Island College of Medicine	Brooklyn (New York)		Eliminated
NY.0-15	Lucius Pitkin	New York		Eliminated

File #	Site Name	Location	Alternative Names	Status
NY.0-16	Memorial Hospital	New York		Eliminated
NY.0-17	National Research Corp.	New York		Eliminated
NY.0-18	Pier 38	New York		Eliminated
NY.0-19	Polytechnic Institute of Brooklyn	Brooklyn		NRC?
NY.0-20	Pyroferric Co. [Former name at site.]	New York		Eliminated
NY.0-21	Rockefeller Institute for Medical Research	New York		NRC?
NY.0-22	Union Mines Development Corp.	New York	Subsidiary of Union Carbide	Eliminated
NY.0-23	Utica Street Warehouse [Former name at site.]	Buffalo		Eliminated
NY.01	Allegheny-Ludlum Steel Corp. [Former name at site.]	Watervliet	The former Allegheny-Ludlum Steel Corp.	Eliminated
NY.02	Bethlehem Steel Corp., Lackawana Plant	Lackawana		Eliminated
NY.03	Columbia University	New York	Included Pupin Hall, Havemeyer Hall, Nash Building, Prentiss Hall (Building), Schermerhorn Hall	NRC
NY.04	Electromet Corp. [Former name at site.]	Niagara	Umetco Minerals Corp.; Electro-Metallurgical Corp.; Union Carbide Corp. [circa 1980]	Eliminated
NY.05	Hooker Chemical Co.	Niagara Falls	Occidental Chemical Corp.; Occidental Chemical Corp., Specialty Chemical Div.; Hooker Chemical and Plastics Corp.	EPA/litigation
NY.06	Colonie [FUSRAP site.]	Colonie	Colonie Interim Storage Site (CISS); National Lead Co.	FUSRAP site
NY.07	Sylvania Corning Nuclear Corp., Inc., Sylvania Laboratories [Former at the site.]	Bayside, Queens	General Telephone and Electronics Laboratories (GTE)	NRC
NY.08	Linde Air Products Div.	Tonawanda	Linde Air Products Div. of Union Carbide Corp.; Ceramic Plant; Linde; Linde Center; Uranium Refinery.	FUSRAP site
NY.09	Seaway Industrial Park	Tonawanda	Charles St. Plant	FUSRAP site
NY.10	Ashland #1 and Ashland #2	Tonawanda	Ashland Oil Co.; Haist Property; E. Haist and coowners.	FUSRAP site

File #	Site Name	Location	Alternative Names	Status
NY.11	Seneca Army Depot	Romulus		DOD/EPA--NPL
NY.12	Simonds Saw and Steel Co.	Lockport	Simonds Saw and Steel Div., Guterl Special Steel Corp.; Allegheny-Ludlum Steel Corp.; The former Simonds Saw and Steel Co.	Eliminated
NY.13	ACF Industries, Inc.	Buffalo	American Car and Foundry	Eliminated
NY.14	Brookhaven National Lab.: Buildings 353, 354, 457, & 488	New York	(question if Bldgs. 467 and 488 vs 488/489)	DOE
NY.15	E. I. du Pont De Nemours and Co.	Watervliet		Eliminated
NY.16	Knolls Atomic Power Laboratory	Schenectady	Knolls Atomic Power Lab. of General Electric Co.; Peek Street Site; Sacandage Site.	Naval Reactors
NY.17	Niagara Falls Storage Site	Lewiston	NFSS; Lake Ontario Ordnance Works; LOOW or B-10; Hooker Boron Plant.	FUSRAP site
NY.18	Rensselaer Polytechnic Institute	Troy		NRC
NY.19	Sylvania-Corning Plant	Hicksville		NRC
NY.20	University of Rochester Medical Lab.	Rochester		NRC
NY.21	West Milton Reactor Site	Schenectady		Naval Reactors
NY.22	Staten Island Warehouse	New York	The former Archer-Daniels Mediand Co.	Eliminated
NY.23	West Valley Demonstration Project	Ashford, West Valley		NRC/DOE
NY.24	Love Canal	Niagara Falls		EPA
NY.25	Federal Repository	Elmira		Eliminated
NY.26	American Machine and Foundry Co. [Former name at site.]	Brooklyn	AMF; Lutheran Medical Center	Eliminated
NY.27	Tonawanda Office, Export, Import	Niagara Falls		Eliminated
NY.28	Cornell University Medical College [Cited in file. Use Ithaca address.]	Ithaca		NRC

File #	Site Name	Location	Alternative Names	Status
NY.29	Syracuse University	Syracuse		Eliminated
NY.30	Wolff-Alport and Co.	Brooklyn		NRC
NY.31	The Carborundum Co., Inc., Buffalo Ave. Plant	Niagara Falls		NRC
NY.32	Nuclear Development Corp. of America [Former name at site.]	White Plains		NRC
NY.33	Han-Newer Corp.	New York		Eliminated
NY.34	Crucible Steel Co. of America	Syracuse	Crucible Steel	Eliminated
NY.35	Simmons Machine and Tool, Inc.	Albany	Simmons Machine Tool, Inc.	Eliminated
NY.36	Naval Supply Depot, AEC Warehouse	Scotia	U. S. Naval Supply Depot, Bld. 648	DOD
NY.37	Ledoux and Co.	New York		NRC
NY.38	International Rare Metals Refinery, Inc.	Mt. Kisko	Canadian Radium and Uranium Corp.; Pregel's Mt. Kisko Refinery; Pregel.	Eliminated
NY.39	Utica Drop Forge & Tool Corp. [Former name at site.]	Utica		Eliminated
NY.40	Curtiss-Wright Corp., Metals Processing Div.	Buffalo		Eliminated
NY.41	Titanium Alloys Manufacturing Co., Div. of National Lead of Ohio [Former name at site.]	Niagara Falls	Titanium Alloy Metals; Titanium Pigment Co.	NRC
NY.42	Ferro Metal & Chemical Co.	New York		Eliminated
NY.43	Kennecott Copper Corp.	New York		Eliminated
NY.44	Belmont Smelting & Refining Works, Inc.	Brooklyn		Eliminated
NY.45	Pfaltz & Bauer, Inc.	New York		Eliminated
NY.46	Charles Handy, Inc.	New York		Eliminated

File #	Site Name	Location	Alternative Names	Status
NY.47	B. L. Lemke	New York		Eliminated
NY.48	National Carbon Co.	New York		Eliminated
NY.49	Markite Co.	New York		Naval Reactors
NY.50	New York University [Former name at site.]	New York		Eliminated
NY.51	Scandaga	Glenville	General Electric Co.; GE; Naval Reactors.	Naval Reactors
NY.52	Niagara Smelting Co. [Former name at site.]	Lewiston	Zencec, Inc. [as of 10/94]	Eliminated
NY.53	Ithaca Gun Co., Inc. [Former name at site.]	Ithaca	Ithaca Gun Club	FUSRAP-TBD
NY.54	Bliss & Laughlin Steel Co.	Buffalo	B & L Steel; Niagara Cold Drawn.	FUSRAP site
NY.55	Gleason Works	Rochester		Eliminated
NY.56	Buflovak Co. [Former name at site.]	Buffalo		Eliminated
NY.57	Radiation Applications, Inc. [Former name at site.]	New York		Eliminated
NY.58	--no entry--	--no entry--		--no entry--
NY.59	American Machine and Foundry Co. [Former name at site.] [site related to Lutheran Medical Center]	New York	AMF; Bus Terminal	Eliminated
NY.60	Radium Chemical Co., Inc. [Former name at site.]	New York	Radium Luminous Materials Corp.; J. Kelly.	NRC/EPA-NPL
NY.61	Baker and Williams Warehouses [FUSRAP site.]	New York	Pier 38 (Referenced but not correct. Ore was moved from Pier 38 to this location.); Ralph Ferrara Co. Warehouse; Raaph Ferrara, Inc.	FUSRAP site
NY.62	Charbonneau Site [Former name at site.]	Malta		Eliminated
NY.63	American Machine and Foundry Co.	Buffalo	AMF	Eliminated
NY.64	Wilson Warehouse	Buffalo		Eliminated

File #	Site Name	Location	Alternative Names	Status
NY.65	Linde Air Products [Former name at site.]	Buffalo	Chandler Plant	Eliminated
NY.66	Pfohl Brothers Landfill	Tonawanda		EPA–NPL
	Ohio			
OH.0-01	Case School of Applied Science, Ohio State University	Columbus		NRC
OH.0-02	Cyrus Foote Mineral Co. Plant	Cambridge	Foote Mineral Co.; Foote Mineral Co. Plant	Eliminated
OH.0-03	Fosdick Machine Shop	Oxford		Eliminated
OH.0-04	National ACME Machine Co. [Former name at site.]	Cleveland		Eliminated
OH.0-05	Ohio State University, Metallurgical Engineering Experiment Station	Columbus		NRC
OH.0-06	Ohmart Corp.	Cincinnati		NRC
OH.0-07	University of Cincinnati	Cincinnati		NRC
OH.0-08	Wright Air Development Center	Dayton	Kilcurie Gamma Facility	DOD
OH.01	Battelle Memorial Institute, Battelle Columbus Laboratories	Columbus	BCL	DOE-BCLDP
OH.02a	Brush Beryllium Co. [Former name at site.]	Cleveland	Brush Wellman, Co.	Eliminated
OH.02b	Brush Beryllium Co. [Former name at site.]	Cleveland	Brush Wellman Co.	Eliminated
OH.03	E. I. du Pont, Grasselli Plant [Former name at site.]	Cleveland	The former E. I. du Pont de Nemours and Co., Grasselli Plant; Standard Oil of Ohio	Eliminated
OH.04	Harshaw Chemical Co. [Former name at site.]	Cleveland	Harshaw/Filtrol Partners, Uranium Refinery	NRC
OH.05	Horizons, Inc. [Former name at site.]	Cleveland	The former Horizons, Inc.; Celcon Metals Co.; Lamotte, Inc.	NRC?
OH.06	Air Force Plant 36 [Former name at site.]	Evandale	G. E., Evandale Plant; G. E. Cincinnati; G. E. Lockland.	DOD
OH.07	Dayton Project Units 3 & 4 [Former name at site.]	Dayton	Dayton Project Unit 3 was also known as Mound Lab. Unit VI (not the same as Mound Unit VI).	DOE MOUND

File #	Site Name	Location	Alternative Names	Status
OH.08	Piqua Nuclear Power Facility	Piqua	PNPF	NRC
OH.09	Brush Beryllium Co.	Elmore		Eliminated
OH.10	Reactive Metals, Inc.	Ashtabula	Bridgeport Brass Co. site originally (50% owned by National Distillers in 1950's), then BB Div.; Reactive Metals, Inc. [renamed in 1964], U. S. Steel &	DOE
OH.11	OARDC	Wooster		Eliminated
OH.12	Feed Materials Production Center [Former name at site.]	Fernald	FMPC; National Lead of Ohio	DOE-FEMP
OH.13	Cooper Metallurgical Associates, Inc.	Cleveland		Eliminated
OH.14	Tech-Art, Inc.	Milford		FUSRAP-Considered
OH.15	Battelle Columbus Laboratories, W. Jefferson Plutonium Facilities	W. Jefferson	West Jefferson Plutonium Facilities	DOE
OH.16	Baker Brothers [FUSRAP site.]	Toledo	Rems, Inc.	FUSRAP site
OH.17	McKinney Tool and Manufacturing Co.	Cleveland	Parker Rust Proof; Meister-matic Inc.; KC & F.	Eliminated
OH.18	Brush Beryllium Co.	Luckey	Motor Wheel Corp.; Magnesium Reduction (Diamond Magnesium Co. is on same site.); Brush Wellman Co.	FUSRAP site
OH.19	MOUND Laboratory	Miamisburg	MOUND; Monsanto Research Corp.; Units 1, 3, 5.	DOE-MOUND
OH.20	National Smelting & Refining Co. [Former name at site.]	Cleveland		Eliminated
OH.21	Magnus Brass Manufacturing Co.	Cincinnati	Magnus Metals; Moenes Brass.	EPA/State
OH.22	Alba Craft Shop [FUSRAP site.]	Oxford	Alba Craft Laboratories; Albaugh	FUSRAP site
OH.23	Associate Aircraft Tool and Manufacturing Co. [FUSRAP site.]	Fairfield	Force Control Industries; Fairfield; Former Dixie Machinery ownership.	FUSRAP site
OH.24	Lodge and Shipley	Cincinnati		Eliminated
OH.25	Cincinnati Milling & Machining Co. [Former name at site.]	Cincinnati	Cincinnati Milcron, Inc. (current); Milcron	NRC

File #	Site Name	Location	Alternative Names	Status
OH.26	B & T Metals [FUSRAP site.]	Columbus		FUSRAP site
OH.27	Herring-Hall-Marvin Safe Co. [FUSRAP site.]	Hamilton	The former Herring Hall and Marvin Safe Co.; Diebold Safe Co. (current)	FUSRAP site
OH.28	Etna Machine Co. [Former name at site.]	Toledo	Abbey-Etna Machine Co.; Press Equipment Co.	Eliminated
OH.29	Clifton Products Co.	Painesville		Eliminated
OH.30	Monsanto Chemical Co. [Former name at site.]	Dayton		Eliminated
OH.31	General Electric Co.	Cincinnati		NRC
OH.32	Western Reserve University	Cleveland		FUSRAP-Considered
OH.33	Copperweld Steel Co.	Warren		Eliminated
OH.34	Osborne Co.	Cleveland		Eliminated
OH.35	Clevite Corp. [Former name at site.]	Cleveland	Clevite Research Center	NRC
OH.36	American Steel Foundries, Elmes-King Div. [Former name at site.]	Cincinnati	ITT	Eliminated
OH.37	Gruen Watch Co. [Former name at site.]	Norwood	Gruen Watch Co., Time Hall	Eliminated
OH.38	R. W. Le Blond Machine Tool Co.	Cincinnati		FUSRAP-Considered
OH.39	Dubois Chemical Co.	Cincinnati	Griffin Industrial Plant (current)	Eliminated
OH.40	John Van Range Co., Div. of Edwards Manufacturing [Former name at site.]	Cincinnati		Eliminated
OH.41	Queen City Barrel Co.	Cincinnati		Eliminated
OH.42	Tocco Induction Heating, Div. of Ohio Crankshaft Co. [Former name at site.]	Cleveland	Ohio Crankshaft Co.; Tocco Heat Testing; Park Ohio Industries	NRC
OH.43	Ajax-Magnethermic Corp. [Former name at site.]	Youngstown		NRC

File #	Site Name	Location	Alternative Names	Status
OH.44	Processes Research, Inc.	Cincinnati		Eliminated
OH.45	Marion Engineer Depot [Former name at site.] Mound Unit 6 (Scioto Lab.)	Marion	Marion Ordnance Works; Dayton Plant VI..	DOD
OH.46	Motch and Merryweather [Former name at site.]	Cleveland		~~FUSRAP-TBD~~ elim
OH.47	Brush Beryllium Co.	Lorain		~~FUSRAP-Considered~~ elim
OH.48	Uniroyal Chemical Co. (FUSRAP Painesville Site)	Painsville	Diamond Magnesium Co. [Former site name.]; Lonza Chemical Co.;Uniroyal.	FUSRAP site
OH.49	Durlron Co.	Dayton		NRC
OH.50	Charles Taylor and Sons	Cincinnati		FUSRAP-Considered
OH.51	Robbins and Myers Co.	Springfield		Eliminated
OH.52	Mitchell Steel Co.	Cincinnati		FUSRAP-TBD
OH.53	Dresser-Stacey Co., Stacey Bros. Div.	Cincinnati		FUSRAP-TBD
OH.54	Vulcan Tool Co.	Dayton		FUSRAP-TBD
	Oregon			
OR.0-01	Lakeview Mill	Lakeview		UMTRAP site
OR.0-02	Oregon Metallurgical Corp. [Former name at site.]	Albany		NRC
OR.0-03	Wah Chang [Former name at site.]	Albany		NRC
OR.01	Albany Research Center	Albany	ARC; U. S. Bureau of Mines, Albany Metallurgical Research Center	FUSRAP site
	Pennsylvania			
PA.0-01	American Chain and Cable Co., Andrew Campbell Div. [Former name at site.]	Wilkes-Barre		Eliminated
PA.0-02	Bartol Research Foundation	Swathmore		NRC?

File #	Site Name	Location	Alternative Names	Status
PA.0-03	Hygrade Sylvania Corp.	unknown		Eliminated
PA.0-04	Mell & Worthington	Hatboro		Eliminated
PA.0-05	Paul & Beekman	Philadelphia		Eliminated
PA.0-06	University of Pennsylvania	Philadelphia		NRC
PA.0-07	Westinghouse Electric Co.	Pittsburgh		NRC
PA.0-08	University of Pittsburgh	Pittsburgh		NRC
PA.01	Teledyne-Columbia-Summerville	Pittsburgh	Columbia Steel Co.; Summerill Tube; Columbia-Summerill.	Eliminated
PA.02	Rohm & Hass Co.	Philadelphia	R & H	NRC
PA.03	Superior Steel Co. [Former name at site.]	Carnegie	Had been purchased by Copper Weld, Inc. [1957] then sold to various companies; Lot and Block 102J210 [location where work was performed].	Eliminated
PA.04	Westinghouse Atomic Power Development Plant [Former name at site.]	Forest Hills, East Pittsburgh	East Pittsburg Plant (in Forest Hills)	NRC
PA.05	Canonsburg Industrial Park	Canonsburg	The former Vitro Rare Metals Plant., Division of Vitro Corp. of America; Uranium Processing Facility.	UMTRAP site
PA.06	Penn Central Transportation Co. Property Landfill	Blairsville	Penn Railroad Landfill; Burrell Township Property Landfill.	UMTRAP-VP
PA.07	Aliquippa Forge [FUSRAP site.]	Aliquippa	Universal Cyclops, Inc.; The former Vulcan Crucible Steel Co.	FUSRAP site
PA.08	Philadelphia Navy Yard	Philadelphia	Abelson's Pilot Plant	DOD
PA.09	Carnegie-Mellon Institute Cyclone Facility [Former name at site.]	Saxonburg	Carnegie-Mellon Institute of Technology [The former]	Eliminated
PA.10	Westinghouse Advanced Reactors Div. (W-ARD), Plutonium Fuel Laboratories, and the Advanced Fuels Lab	Cheswick (Harmon Township)	Westinghouse Astronuclear; Westinghouse Electric Co., Atomic Power Div.	NRC
PA.11	C. A. Schnorr & Co. [FUSRAP site.]	Springdale	* [redacted] Conviber; Premier Manufacturing.	FUSRAP site
PA.12	Carpenter Steel Co.	Reading		Eliminated

* Information deleted relates to a private individual (9/14/00)

File #	Site Name	Location	Alternative Names	Status
PA.13	Shippingport Atomic Power Plant	Shippingport	Shippingport	DOE
PA.14	Try Street Terminal	Pittsburgh		Eliminated
PA.15	Vanadium Corp. of America [Former name at site.]	Bridgeville		Eliminated
PA.16	Westinghouse Atomic Power Div.	Homestead		NRC
PA.17	Jessop Steel Co.	Washington		Eliminated
PA.18	Babcock & Wilcox Co. [Former name at site.]	Beaver Falls	Tubular Products Div., Lone Star Tech.	NRC
PA.19	Heppenstall Co. [Former name at site.]	Pittsburgh	The former Heppenstall Co. (?)	Eliminated
PA.20	Penn Salt Manufacturing Co., Whitemarsh Research Laboratories [Former name at site.]	Chestnut Hill, Philadelphia		NRC
PA.21	Frankford Arsenal			DOD
PA.22	Aeroprojects, Inc.	West Chester		Eliminated
PA.23a	Aluminum Co. of America (Alcoa); but included 2nd site at New Kensington Works location.	New Kensington	The former Aluminum Research Laboratories on Freeport Rd.; The former New Kensington Works (of ALCOA).	NRC
PA.23b	Aluminum Co. of America (Alcoa) [Former name at site.]	New Kensington	The former Aluminum Research Laboratories; The former New Kensington Works (of ALCOA) on Pine and Ninth Sts.	NRC
PA.24	Summerville Tube (Ing?) Co.	Bridgeport		Eliminated
PA.25	Koppers Co., Inc.	Pittsburgh		NRC
PA.26	Philadelphia Naval Yard	Philadelphia	Koppers Co.	DOD
PA.27	Foote Mineral Co.	Philadelphia, Exton	Cyrus Foote Mineral Co.; Formit; Shieldalloy Metallurgical (purchased plant in 1987).	EPA–NPL
PA.28	Roberts & Manders Corp.	Hatboro		Eliminated
PA.29	Sharples Corp. [Former name at site.]	Philadelphia		Eliminated

File #	Site Name	Location	Alternative Names	Status
PA.30	Minneapolis-Honeywell Regulator Co. [Former name at site.]	Philadelphia	Brown Instrument Div.	Eliminated
PA.31	Birdsboro Steel & Foundry Co.	Birdsboro		Eliminated
PA.32	Pennsylvania Ordnance Works	Williamsport		DOD
PA.33	Palmerton Ore Buying Site [Former name at site.]	Palmerton	Mauchchunck; New Jersey Zinc Storage Site; Horsehead Resource Development Co.	NRC/EPA-NPL
PA.34	Landis Machine Tool Co. [Former name at site.]	Waynesboro		Eliminated
PA.35	U. S. Steel Co., National Tube Div., Christy Park Works.	Mckeesport		Eliminated
PA.36	U. S. Bureau of Mines	Bruceton		Eliminated
PA.37	Curtis-Wright Corp. [Former name at site.]	Quehanna	Quehanna Wilderness Preserve	NRC
PA.38	Durlron	Reading		Eliminated
PA.39	Berylllum Corp.	Reading		Eliminated
PA.40	Catalytic Co.	Philadelphia		Eliminated
PA.41	Nuclear Materials and Equipment Corp. [Former name at site.]	Apollo	Numec, Atlantic Richfield; Babcock & Wilcox.	NRC
PA.42	Chambersburg Engineering Co.	Chambersburg		FUSRAP-Considered
PA.43	Pennsylvania Disposal Site	--conceptual, not identified		FUSRAP-Considered
PA.44	Bettis Atomic Power Laboratories	W. Mifflin		DOE
PA.45	Babcox & Wilcox Co.	Parks Township	Numec, Atlantic Richfield	NRC
	Rhode Island			
RI.01	Brown University (Metcalf Research Lab.)	Providence		NRC
RI.02	C. I. Hayes, Inc.	Cranston		NRC

File #	Site Name	Location	Alternative Names	Status
	South Carolina			
SC.01	Savannah River Swamp	Aiken		DOE
	South Dakota			
SD.01	Edgemont Mill	Edgemont		NRC
	Tennessee			
TN.01	Parcel 228	Oak Ridge		DOE
TN.02	Oak Ridge Gaseous Diffusion Plant	Oak Ridge	K-25	DOE
TN.03	Tennessee Eastman Corp.	Kingsport		Eliminated
TN.04	Vitro Corp. of America [Former name at site]	Chattanooga	Heavy Minerals Co. [Vitro Chemical Co. had controlling interest.]; Vitro Chemical Co.	NRC/State
TN.05	W. R. Grace [Former name at site.]	Erwin	Davison Chemical	NRC
TN.06	Clinton Laboratories	Knoxville (aka)		DOE
TN.07	Knoxville Iron Co. [Former name at site.]	Knoxville		NRC
TN.08	Clarksville Foundry & Machine Co.	Clarksville		Eliminated
TN.09	Elza Gate Warehouse [FUSRAP site.]	Oak Ridge	Melton Lake Industrial Park, Elza Gate.	FUSRAP site
TN.10	Union Carbide and Carbon Co. [Former name at site.]	Oak Ridge	K-25 (?)	DOE
	Texas			
TX.01	Pasadena Chemical Corp., Pilot Plant [Former name at site.]	Pasadena	Olin Mathieson Chemical Co.; Mathieson Chemical Co.; Mobil Mining and Minerals Co.	Eliminated
TX.02	Texas City Chemicals Co., Inc. [Former name at site.]	Texas City	The former Texas City Chemnicals, Inc.; American Oil Co.; Borden, Inc.; Smith-Douglass	Eliminated
TX.03	Pantex Sewage Reservoir	Amarillo		DOE-Pantex
TX.04	Falls City Uranium Ore Stockpile	Falls City	Falls City Uranium Mill Ore Stockpile; at Kearns City. Three Rivers. Kennedy [locations in ?].	UMTRAP site

File #	Site Name	Location	Alternative Names	Status
TX.05	Karnes City [survey of two counties and the city--see below]	3rd site--Kearns City		Eliminated
TX.06	Kennedy	Kennedy		NRC?
TX.07	Three Rivers	Three Rivers		NRC?
TX.08	American Manufacturing Co. of Texas (AMCOT)	Fort Worth	The former ...	FUSRAP-Considered
TX.09	Sutton, Steele & Steele Co. [Former name at site.]	Dallas		Eliminated
	Utah			
UT.0-01	Green River Mill	Green River		UMTRAP site
UT.0-02	Mexican Hat AEC Ore Buying Station	Mexican Hat		UMTRAP site
UT.0-03	Salt Lake City AEC Ore Buying Station	Salt Lake City		UMTRAP site
UT.0-04	Salt Lake City Mill	Salt Lake City		UMTRAP site
UT.01	U. S. Bureau of Mines [Former name at site.]	Salt Lake City		NRC
UT.02	University of Utah, Medical Research Center	Salt Lake City		NRC
UT.03	Monticello Ore Buying Station and Mill Site	Monticello	Vanadium Corp. of America; Gallgher Co.	DOE-MRAP
UT.04	White Canyon AEC Ore Buying Station [Former name at site.]	White Canyon	Vanadium Corp. of America (?)	NRC?
UT.05	Marysvale AEC Ore Buying Station [Former name at site.]	Marysvale	Uranium Ore Stockpile Site	NRC
UT.06	Moab AEC Ore Buying Station	Moab		UMTRAP site
	Virginia			
VA.0-01	Naval Proving Ground	Dahlgren		DOD
VA.0-02	Reactor Site - Fort Belvoir	Fort Belvoir		DOD

File #	Site Name	Location	Alternative Names	Status
VA.01	Mobil Oil Corp.	Richmond	Virginia-Carolina Chemical Corp.	Eliminated
VA.02	Babcock & Wilcox Co. Nuclear Facility [Former name at site.]	Lynchburg		NRC
VA.03	University of Virginia, Physics Dept.	Charlottesville		NRC
VA.04	Reynolds Metals Co. [Former name at site.]	Richmond	The former Virginia-Carolina Chemical Corp. (?)	NRC
VA.05	Norfolk Naval Station	Norfolk	Norfolk Naval Air Station	DOD
VA.06	American Machine and Foundry Co. [Former name at site.]	Alexandria		NRC
	Washington			
WA.0-01	University of Washington	Seattle		NRC
WA.01	Hanford Engineer Works	Pasco	General Electric, GE; Westinghouse	DOE-Hanford
	Wisconsin			
WI.0-01	Globe Steel Tubes	Milwaukee		Eliminated
WI.0-02	Tranes Co.	Lacrosse		NRC
WI.01	Allis-Chalmers Co.	West Allis	Hawley Plant	Eliminated
WI.02	Research Products Corp.	Madison		Eliminated
WI.03	Besley-Wells [Former name at site.]	Beloit		NRC
WI.04	Milwaukee Airport	Milwaukee		Eliminated
	West Virginia			
WV.01	Reduction Pilot Plant [Former name at site.]	Huntington	The former Reduction Pilot Plant.	Eliminated
WV.02	The Carborundum Co., Inc. [Former name at site.]	Parkersburg	AMAX Corp.	NRC
WV.03	Morgantown Ordnance Works	Morgantown		DOD?

File #	Site Name	Location	Alternative Names	Status
WV.04	Food Machinery and Chemical Co. [Former name at site.]	Nitro	Food Machinery Corp.	Eliminated
	Wyoming			
WY.0-01	Converse County Mill	Converse Co.		UMTRAP site
WY.0-02	Crooks Gap AEC Ore Buying Station	Crooks Gap		NRC
WY.0-03	Riverton AEC Ore Buying Station	Riverton		UMTRAP site
WY.0-04	Riverton Mill	Riverton		UMTRAP site
WY.0-05	Shirley Basin AEC Ore Buying Station [Former name at site.]	Shirley Basin		Eliminated
WY.01	Lost Creek	Sweet Water *	[redacted]	NRC?
	Puerto Rico			
PR.01	Boiling Water Nuclear Facility	Punt Higuera (?)	Bonus; Boiling Nuclear Superheater Power Station.	DOE
PR.02a	Center for Energy and Environmental Research (CEER)	Mayaquez	CEER	DOE
PR.02b	Center for Energy and Environmental Research (CEER)	Mayaquez		DOE
	United States			
US.01	Bistro Manufacturing Co.	unknown		FUSRAP-TBD
US.02	Layton Brothers Drum	unknown		FUSRAP-TBD
US.03	—no entry—	unknown		—no entry—
US.04	Camin Laboratories	unknown		FUSRAP-TBD
US.05	Allmous Processes, Inc.	unknown		FUSRAP-TBD
US.06	Transcontinental Machine and Tool Co.	unknown		FUSRAP-TBD
US.07	Midland Machine Co.	unknown	Defense Plant Corp.	FUSRAP-TBD

* Information deleted relates to a private individual (9/14/00).

File #	Site Name	Location	Alternative Names	Status
US.08	Metcut Research Site	unknown		FUSRAP-TBD
US.09	Vulcan Tool Co. (see OH.54)	Dayton, OH		— see OH.54 —

Exhibit 4. Request for Proposals for shipping of exempt waste.

[Commerce Business Daily: Posted in CBDNet on June 28, 2001]
[Printed Issue Date: July 2, 2001]
From the Commerce Business Daily Online via GPO Access
[cbdnet.access.gpo.gov]

PART: U.S. GOVERNMENT PROCUREMENTS
SUBPART: SERVICES
CLASSCOD: F--Natural Resources and Conservation Services
OFFADD: U.S. Army Corps of Engineers, Omaha District, 106 South 15th Street, Omaha, NE 68102-1618
SUBJECT: F--TRANSPORTATION OF LOW-ACTIVITY RADIOACTIVE MATERIALS FROM THE DENVER RADIUM SUPERFUND SITES
SOL DACW45-01-R-0003
DUE 081701
POC Primary - Mike H. Michelson (402) 221-3227; Secondary - Michael R. Duffy (402) 221-3708
DESC: The U.S. Army Corps of Engineers (USACE), Omaha District intends to issue a Request For Proposal No.: DACW45-01-R-0003 on or about 16 July 2001 for an Indefinite Delivery/Indefinite Quantity (ID/IQ) type contract under NAICS Code 56211 for the transportation of low-activity radioactive materials from the Denver Radium Superfund Sites to an off-site disposal facility. This will be a firm-fixed price (unit price) contract, which is 100 percent set aside for qualified small businesses. The ID/IQ will have a base period of three years with two one-year options. The magnitude of this project will be approximately $5 - 10 Million U.S. Dollars. The purpose of the contract will be for the transportation of radioactive materials from any property impacted by the Denver Radium Superfund Sites. The Government will designate the disposal facility and disposal is not part of this contract. The transportation contractor will be responsible for providing gondola rail cars (or other suitable shipping containers), transportation of materials from the project site to the disposal facility, logistics management, shipping papers, decontamination and management of all containers, compliance with all Federal, State and Local laws and regulations and other related activities as necessary. The transportation contractor will be selected on the basis of experience, past performance, price and technical factors. Price evaluation will be made on the basis of the combined costs of transportation, disposal and related costs. The base contract and the first task order will be awarded simultaneously. The first task order will be for the transportation of low-activity radioactive materials from the Shattuck project site located in Denver, Colorado to a disposal facility designated by the Government. Currently USACE has three facilities under contract for the disposal of this type of material. These facilities are Envirocare of Salt Lake City, Utah; Waste Control Specialists, LLC of Andrews, Texas; and U.S. Ecology, Idaho of Grand View, Idaho.

Unit prices for disposal and related costs will be set forth in the solicitation. Proposals can submitted for transportation to any or all of the facilities. It is anticipated that the Shattuck material will meet the Department of Transportation classification of non-regulated or perhaps "Environmentally Hazardous Substances, Solid" N.O.S., Class 9, UN3077. There are anticipated to be approximately 84,500 cubic yards of monolith material and 3,500 cubic yards of foundation soil for disposal.

A Pre-Proposal conference will be held in Denver, Colorado. The time and date of the Pre-Proposal conference will be contained in the solicitation package and will be posted on the website address listed below. Prospective offerors and other interested parties are asked to register for the RFP as found on the Omaha District Homepage at http://www.nwo.usace.army.mil under the "Contracting" button. Click on the solicitation number, e.g. DACW45-01-R-0003 to access the solicitation information. Click on "Solicitation Registration" to register your firm. Click on "Plan Holder List" to access a list of potential contractors. Click on "Solicitation Files" and then click on the file name, e.g. 01r0003.PDF to access the solicitation, when it is available. This file is in Adobe format and the Offeror will need to have the latest version of Adobe Acrobat installed to view the document. Go to http://www.adobe.com to download this software for free. This solicitation shall be available through INTERNET ACCESS ONLY. All solicitation documents shall be posted to this website. All amendments to the solicitation will be posted to the web site. It shall be the offeror's responsibility to check the web site for any amendments. Interested parties are required to register for the solicitation through this website.

LINKURL: http://155.77.110.11/ebs/AdvertisedSolicitations.asp
LINKDESC: Omaha District Advertised Solicitations
EMAILADD: Mike.H.Michelson@usace.army.mil or Michael.R.Duffy@usace.army.mil
EMAILDESC: Contact the primary contract specialist or secondary contract specialist via e-mail
CITE: (W-179 SN50Q3T6)

The above from:
http://frwebgate6.access.gpo.gov/cgi-bin/waisgate.cgi?WAISdocID=340528235650+0+0+0&WAISaction=retrieve

[Commerce Business Daily: Posted August 18, 1997]
[Printed Issue Date: August 20, 1997]
From the Commerce Business Daily Online via GPO Access
[cbdnet.access.gpo.gov]

PART: U.S. GOVERNMENT PROCUREMENTS
SUBPART: SERVICES
CLASSCOD: F--Natural Resources and Conservation Services--Potential Sources Sought
OFFADD: U. S. Department of Energy, Oak Ridge Operations Office, P. O. Box 2001, Oak Ridge, Tennessee 37831
SUBJECT: F--ENVIRONMENTAL REMEDIATION SERVICES

DUE 082997
POC Walker K. Love, Contract Specialist,423-576-1220, Gary Riner, Technical Point of Contact, 423-241-3498
DESC: The U.S. Department of Energy (**DOE**) is requesting expressions of interest for removal, treatment, and off-site disposal of sediment and subimpoundment soil (the "waste") from the Surface Impoundments Operable Unit (SIOU) at the Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee. **DOE** will be performing additional sampling and analysis of the "waste" for inclusion in a future request for proposal (RFP). **DOE** will hold a meeting to provide a summary of the "waste" characteristics on August 26, 1997, at 8:30 a.m., at the American Museum of Science and Energy, 300 South Tulane Avenue, Oak Ridge, Tennessee. A tour of the site will follow to inspect the impoundments, utilities, and potential staging areas. **DOE** is requesting the expressions of interest by close of business on August 29, 1997, as well as identification of any additional physical or chemical characteristics which might be needed by prospective contractors for development of their proposals. Background: Approximately 5,000 cubic yards of waste is in 2 large and 2 small impoundments at ORNL. There are 80 cubic yards in the 2 small impoundments which may contain polychlorinated biphenyls (PCBs) above 50 ppm, hazardous constituents regulated under the Resource Conservation and Recovery Act (RCRA), and low activities of radionuclides. The low-level radioactive waste in the large impoundments contains approximately 180 curies of americium, cesium, cobalt, plutonium, and strontium. The remedial investigation/feasibility study, proposed plan, and an engineering support study are available at the **DOE** Information Resource Center, 105 Broadway Avenue, Oak Ridge, TN 37830.

EMAILADD: **lovewk@oro.doe.gov**
EMAILDESC: Walker Love, Contract Specialist
CITE: (W-230 SN111597)

The above from:

http://frwebgate3.access.gpo.gov/cgi-bin/waisgate.cgi?WAISdocID=34337929027+0+0+0&WAISaction=retrieve