

January 21, 1997

The Honorable Shirley Ann Jackson
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Petition to Conduct Expedited Agreement State
Program Compatibility Review

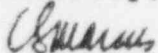
Dear Chairman Jackson:

Attached is a petition submitted by the American College of Nuclear Physicians California Chapter ("California ACNP") to the Utah Radiation Control Board and Utah Department of Environmental Quality seeking reasonable and prudent protection from what we are concerned may be significant deficiencies in the state's regulation of the Envirocare disposal facility.

By copy of the petition, prepared consistent with 10 CFR Part 2, Subpart H, s.2802(c), California ACNP hereby petitions the NRC to conduct a timely review of Utah's Agreement State Program with respect to the issues raised to ensure that Agreement State compatibility requirements are properly implemented. Petitioner seeks your particular attention to implementation of financial assurance requirements.

With Utah in the midst of reviewing a license renewal application based on receipt of up to 10.5 million cubic feet of waste per year, California ACNP respectfully requests your personal involvement in resolving the nationally important issues raised by our petition. In our view, a thoughtful and substantive response to the situation in Utah is critical to maintaining NRC's credibility as the federal entity responsible for regulating the management of low-level radioactive wastes.

Sincerely,



Carol S. Marcus, Ph.D., M.D.
Director, Nuclear Med. Outpt. Clinic
Harbor-UCLA Medical Center
and
Professor of Radiological Sciences,
UCLA
and
President, American College of Nuclear
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cc: Honorable Lauch Faircloth

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Robert J. Hoffman, Chairman
and Members
Utah Radiation Control Board
Department of Environmental Quality
168 North 1950 West
P.O. Box 144850
Salt Lake City, UT 84114-4850

Subject: Petition for Rulemaking

Dear Mr. Hoffman:

The following petition is submitted to the Utah Radiation Control Board in accordance with the State of Utah's responsibilities as an Agreement State under Section 274 (b) of the federal Atomic Energy Act as amended. Petition format and content is based on the U.S. Nuclear Regulatory Commission's 10 CFR Part 2, Subpart H, section 2.802(c) rule. We request that you inform us immediately if Utah law or regulations require us to follow an alternate procedure so we may take the necessary steps to resubmit it. By copy of this letter, we request that the Department of Environmental Quality undertake any related actions which are reserved to it or the Division of Radiation Control consistent with its Agreement State responsibilities and authority. We further request, by copy of this letter, that the NRC appropriately consider all Agreement State compatibility questions including the posting of sufficient financial assurances.

I. General Problem Statement and Proposed Solution

1. Problem Statement: Envirocare is not currently required to post substantial financial assurances, a circumstance we consider directly inconsistent with the state's earlier decision to exempt Envirocare from 10 CFR Part 61 institutional control requirements for land ownership. This concern is compounded by Utah's recent authorization to dispose of non-containerized nuclear power plant ion exchange resin wastes.

Envirocare is now actively pursuing a state license renewal based on acceptance of up to 10.5 million cubic feet of radioactive waste per year from combined private sector and government sources. (For comparison purposes, Ward Valley is licensed to receive a total of 5.5 million cubic feet of waste over the site's entire 30-year life). Of this total,

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for Envirocare, more than 1 million cubic feet would be comprised of nuclear reactor-related low-level wastes, of which 80,000 cubic feet may comprise resin and other nuclear power plant cleaning wastes. An additional 3 million cubic feet of annual capacity is proposed for unspecified radioactive wastes containing naturally occurring and man-made isotopes falling within the 10 CFR Part 61.55 Class A concentration limits. When compared to the detailed source term analysis and related safety evaluation performed by California for Ward Valley, Envirocare's request to take an unidentifiable source term of 3 million cubic feet/year raises serious questions about the level of detail used for pathways analysis and performance assessment.

2. Proposed Solution: The following petition components are respectfully submitted in the interest of obtaining reasonable and prudent protection from liability which may arise as a result of what appear to be significant deficiencies or potential deficiencies in the State of Utah's regulatory program for the Envirocare facility.
- (a) The California Chapter of the American College of Nuclear Physicians ("California ACNP"), whose members or member employers have shipped or will ship low-level radioactive waste to the Envirocare of Utah disposal facility in Tooele County, hereby file this petition for rulemaking with the Utah Radiation Control Board to obtain an indemnification from the State of Utah and/or its licensee for contingent environmental liability costs related to the disposal of low-level waste disposed at the Envirocare facility.
 - (b) California ACNP petitions the Board to consider promulgation of an emergency rule to prohibit the continued, non-containerized disposal of nuclear power plant ion exchange resins at the Envirocare facility. Petitioner does not understand why the Division of Radiation Control chose to authorize this apparently extraordinary practice in the midst of its ongoing review of Envirocare's radioactive materials license renewal application. Accordingly, an immediate order rescinding the Division's 1996 authorization pending Board action on this petition and completion of the Division's license renewal review process also appears to be appropriate.

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- (c) California ACNP petitions the Board to evaluate the potential need to order the timely removal, packaging and off-site disposal of such waste consistent with ALARA principles and other occupational radiation safety considerations.

The purpose of petition components (b) and (c) is to minimize the liability and related harms of practices we are concerned may be incompatible with the 10 CFR Part 61 regulatory framework and inconsistent with generally accepted worker radiation protection standards.

II. Petitioner's Grounds for and Interest in the Action Requested

Due to delays in the State of California's efforts to establish a commercial low-level waste disposal facility to service the four Southwestern Compact member states and California's loss of access to the Northwest Compact's low-level waste site in Washington State, certain members of California ACNP or member employers have utilized or may utilize the Envirocare disposal facility. In the context of the potential regulatory deficiencies described herein, such utilization gives rise to contingent liabilities for which our members now seek timely protection. As physicians with specialized expertise in radiation protection, we also have a professional concern with worker protection related to the safe handling of nuclear power plant ion exchange resins.

III. Statement and Analysis of Specific Issues:

1. California ACNP believes that financial assurance requirements for closure and postclosure monitoring and maintenance at the Envirocare facility may be inadequate. We understand that the funding levels now set aside to carry out these activities at the Envirocare facility are considerably less than those in place for South Carolina's Barnwell disposal facility and Washington's Richland disposal facility.

As envisioned by §61.63(a), NRC anticipated that no license would be issued prior to submittal of "a binding arrangement, such as a lease, between the applicant and the disposal site owner that ensures that sufficient funds will be available to cover the costs of monitoring and any required maintenance during the institutional control period." Utah's decision to exempt Envirocare from the 61.59(a) land ownership requirement and forgo the ability to

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enforce funding adequacy through a revocable leasehold interest would be understandable had the state been fiscally conservative in establishing Envirocare's financial assurance requirements and otherwise stringently applied Part 61 requirements. As discussed below, this does not appear to be the case.

As of January 1997, the Washington Department of Ecology's dedicated accounts for Site Closure (\$24.2 million) and Perpetual Surveillance/Maintenance (also \$24.2 million) for its Richland low-level radioactive waste disposal site exceed \$48 million. According to South Carolina officials, approximately \$87 million is set aside for its Barnwell site. Of this amount, \$12 million is designated for closure and stabilization and \$75 million is available for long-term care. Based on a January 16, 1996 discussion with Dane Finerfrock of the Utah Radiation Control Division, only \$5 million has been deposited with a custodian for both closure and long-term monitoring and maintenance of Envirocare's radioactive materials facilities.

We are quite concerned about this financial assurance differential within the overall context that Envirocare is operating on private land, accepts far greater waste volumes and more diverse waste types than either the Richland or Barnwell commercial sites, and carries out storage and processing operations in addition to disposal. Unlike the Washington and South Carolina facilities, Envirocare also disposes of "mixed wastes". Moreover, we understand that large volumes of undisposed waste are often present at the Envirocare site.

In the event this site were ordered closed prior to disposing of all of the wastes present at the facility and/or remedial actions involving buried wastes were required, it appears that very limited funds would be available. CERCLA experience teaches us that a private site owner/operator may be unwilling or unable to respond effectively necessitating government-funded actions which may later be recovered from the waste generators.

A final question, which we hope can be affirmatively answered, is whether the State of Utah (as in Washington and South Carolina) controls the \$5 million closure and long-term monitoring and maintenance fund. In other words, does the state have the ability to access the fund over the licensee's potential objections? If not, there is added reason for concern about the comparatively meager available funds.

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The liability exposure to petitioner's members and member employers appears to be magnified by Utah's 1996 authorization to dispose of unpackaged ion exchange resins, an authorization based on a unique practice under which radionuclide concentrations present in containerized waste arriving at the site are emptied and diluted with soil in the disposal trench to meet applicable license limits (see attached Utah Division of Radiation Control Information Notice). According to Appendix P (November 1996) of Envirocare's license renewal submittals, the company is now seeking state approval to dispose of up to 80,000 cubic feet a year of nuclear power plant resins and solidified cleaning agents.

2. California ACNP is concerned that the Division of Radiation Control's authorization to dilute and dispose of non-containerized ion exchange resins may be contrary to the intent of the §61.55 waste classification system, invites violation of the §61.56(b) waste stability requirements, and may violate ALARA worker exposure principles. The §61.55 classification system for commercial low-level wastes is based on isotope concentration limits calculated on a per-unit-volume basis averaged across the size of the container. Utah's decision to base license compliance on isotope concentrations achieved within the disposal trench, after diluting the waste with soil at 9:1 ratio, appears inconsistent with §61.55 provisions for determining concentrations in the waste itself. In concept, it appears that Utah's approach allows Envirocare to accept waste at its gate which exceeds its license limits and may even exceed the §61.55 Class A limits. In the latter instance, §61.56(b) would require specified waste form stability measures which appear to be inconsistent with Utah's requirement regarding containerized waste. Moreover, we understand that Utah's regulatory authorization to accept the resins was based on existing license conditions applicable to debris waste posing little or no radiological hazard, and that no separate state-enforced license conditions exist to protect against the radiological hazards involved in emptying resin containers and mixing the waste within the trench.

Since the technical requirements of 10 CFR Part 61 are a matter of rather strict compatibility for Agreement States, we do not understand how Utah was apparently able to redefine the application of §61.55 without formally receiving approval from the NRC. Compatibility issues are also raised by the non-containerized disposal of commercial

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low-level waste, a practice prohibited by all other commercial low-level waste sites and seemingly in conflict with the intent of the §61.56 waste characteristics requirements. How, for example, is the §61.56(a)(3) 1% volume limit on free-standing liquids currently enforced in the absence of containers? Is this requirement applied?

Utah's practices raise a series of practical concerns due to the inherent nature of ion exchange resin waste. Used to filter strontium-90, cesium-137, cobalt-60 and other fission products out of the reactor's primary coolant loop, discarded resins often require shielding to minimize worker radiation exposure. (Petitioner notes that license renewal application Appendix P makes no mention of Sr-90 and other fission products). Is the 80,000 cubic feet of resin and other cleaning wastes reflected in Appendix P an established limit? Was performance modeling performed prior to the authorization? What effect did the assumed source term increase have on the modeling? How were the resins assumed to be distributed within the disposal units?

Assuming for a moment that these matters have been fully and properly-resolved, it is difficult to understand why such potentially dangerous wastes were administratively approved under existing license conditions developed for relatively innocuous debris materials. How will Utah regulators and Envirocare ensure that applicable waste concentration limits and potential waste form stability requirements are met? How are shielding considerations during package unloading and solid mixing addressed? What measures are in place to prevent unintended dispersion of the uncontained, lightweight resin beads? Is the entire trench volume used to calculate concentration limit compliance? If so, how is this accomplished and how are potential "hot spots" accounted for? What quality assurance program requirements and facility operating procedures are in place to address each of these considerations? The import of these questions is underscored by the seemingly minimal regulatory review and public process which accompanied the state's approval of this major change in the facility's waste acceptance criteria.

Beyond the site-specific regulatory and safety considerations noted, petitioner is also concerned that the availability of comparatively inexpensive disposal capacity for large volumes of commercial nuclear power plant residues and other commercial low-level wastes will have a lethal effect on current efforts to license and open new Compact

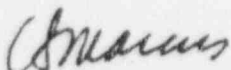
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disposal facilities pursuant to the federal Low-Level Radioactive Waste Policy Act. Since the Barnwell site has a finite remaining capacity, and the Richland site is only open to the Northwest and Rocky Mountain Compact states, Envirocare seems poised to emerge as the nation's main disposal site.

Perhaps our greatest fear is that Envirocare's cheap prices, expanding waste acceptance criteria and vast unused capacity will lead to abandonment of the new facility siting efforts now underway, and that Envirocare will indeed become the main national disposer just long enough to develop problems which force its unexpected closure. This scenario would leave our members and many other waste producers across the nation with no place to take their waste and an undesired share of potentially significant environmental restoration costs. In many ways, this fear lies at the crux of the issue.

We look forward to the State of Utah's formal reply and stand ready to help answer any questions you, the Department of Environmental Quality, or other state officials may have in considering this petition.

Sincerely,



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APPENDIX P - PROJECTED WASTE STREAMS

1 Determination of Types, Kinds, and Quantities of Waste

Waste to be received will consist of naturally occurring and accelerator produced radioactive material (NARM), source material, special nuclear material and byproduct (11a.(1)) material. The nature of remediation activities has changed with time and it is expected that this pattern will continue. Envirocare has researched the currently-known sources of radioactive and mixed waste and has developed the following waste characterization. The radioactivity and volumes are the best estimates at this time, but may very well change over the period of the license. Envirocare's original license was based on modeling which established upper limits to the concentrations of specific radionuclides in waste. After evaluating realistic scenarios, the controlling factor was dose to the on-site worker. The conclusion being that annual average concentrations in waste received should not exceed the calculated concentrations. For a mixture of radionuclides, the sum-of-fractions rule applies. Envirocare does not believe that any changes Envirocare believes that any changes in the nature of individual waste streams received for disposal will have a significant impact on the overall nature of the waste disposed or on the environment.

Envirocare's original license was based on modeling which established upper limits to the concentrations of specific radionuclides in waste. After evaluating realistic scenarios, the controlling factor selected for most radionuclides was dose to the on-site worker, assuming no respiratory protection and full-body exposure to recommended maximum radionuclide and external gamma radiation at the center of the disposal cell without consideration for shielding provided by equipment. The maximum concentrations for several radionuclides were based on groundwater protection levels. Subsequently, additional radionuclides were added to the license with concentration limits determined to provide the same level of radionuclide exposure control as that established by the original model. Groundwater transport modeling was used to confirm that these concentrations were also protective of groundwater. The conclusion of the original modeling was that annual average concentrations in waste received should not exceed the calculated concentrations based on either worker exposure or groundwater protection standards. For a mixture of radionuclides, the sum-of-fractions rule was applied in order to control worker exposure.

Because Envirocare does provide respiratory protection to workers and maintain ground exposure by limiting the time spent in close proximity to waste material, worker dose can be controlled to ALARA goals without specifically controlling annual average concentrations, through such processes as use of radiation work permits. However, in order to ensure groundwater protection, average concentrations of individual radionuclides within a lift area will not exceed the concentration limits of Table 4. A lift area is defined as the volume of material within the 100 foot square lift from bottom liner to top of the waste.

Materials being considered for disposal include:

1. Naturally occurring radioactive material (NORM) waste - contaminated soils and building debris, less than 100 pCi/g ~~concentrations~~ average concentration with Uranium, Thorium-230, and Radium-226 considered to be in equilibrium.

200,000 cubic feet per year (cfy)

2. Radon waste (NORM) - contaminated soils with scrap metal, glass, wood and masonry rubble. Weighted average concentration approximately 40 pCi/g. ~~However,~~ with small amounts are as high as up to 10,000 pCi/g.

3,000,000 cfy

3. Sludges, tailings, or residues from industrial waste streams containing various NORM materials. Uranium and thorium decay chain nuclides 50 - 5,000 pCi/g with weighted average concentration approximately 500 pCi/g.

160,000 cfy

4. Soils from decommissioning of reactor facilities contaminated with any of the byproduct materials associated with such operations. Major radionuclides are Fe-55, Co-58, Co-60 and Cs-137 with weighted average concentrations of approximately 100 pCi/g ~~but with~~ some small quantities up to 40,000 pCi/g of each nuclide.

400,000 cfy

5. Non-compactible debris from decommissioning of reactor facilities contaminated with any of the byproduct materials associated with such operations. Major radionuclides are Fe-55, Co-58, Co-60 and Cs-137 with weighted average concentrations of approximately 100 pCi/g ~~but with~~ some small quantities up to 40,000 pCi/g of each nuclide.

200,000 cfy

6. Dry active waste from cleanup and maintenance of nuclear reactors, fuel processing and D&D operations. May contain any source, special nuclear or byproduct material nuclides. Most nuclides are in the range of a few tens of pCi/g, but C-14 and tritium may be as high as 100,000 pCi/g in some wastes and Co-58, Co-60, Cs-137 or Fe-55 may reach 40,000 pCi/g.

350,000 cfy

7. Resins and solidified cleaning agents containing byproduct materials from nuclear power plants. Most nuclides are at a few tens of pCi/g, but Co-60 and Cs-137 will be as high as 60,000 pCi/g in some waste streams.

80,000 cfi

8. Sludges, tailings, slag or residues from industrial waste streams containing various sources, byproduct or special nuclear materials. A weighted average concentrations less than 50 pCi/g.

2,500,000 cfi

9. Smelter fine dust contaminated by introduction of sealed sources or uranium metal. Depleted uranium averaging enriched averages 1,000 pCi/g, maximum 200,000 pCi/g. Cs-137 averaging 500 pCi/g; maximum 20,000 pCi/g. Some may contain Ra-226 at approximately 100 - 1,000 pCi/g.

60,000 cfi

10. Depleted uranium from the Department of Defense target area cleanups or from Department of Energy gaseous diffusion plants. Target area concentrations weighted average about 400 pCi/g; gaseous diffusion plant wastes as high as 280,000 pCi/g.

400,000 cfi

11. Cleanup of industrial areas with trace quantities of fission products or fallout from past above ground testing.

20,000 cfi

12. Accelerator-produced radioactive materials from D&D projects. May contain act activation products, primarily Co-60 and tritium with concentrations approximately 100 pCi/g.

60,000 cfi

13. Treated mixed waste containing any sources, special nuclear or by-product materials in concentrations approximately 100 pCi/g.

60,000 cfi

14. Site-generated waste including material removed from haul roads and from building sites. Includes a small amount annually of laboratory waste. Weighted average concentrations 10 pCi/g for the uranium and thorium decay chain radionuclides, less than one pCi/g for all others.

25,000 c/y

145. Because of the nature of Envirocare's operations, it is anticipated that unforeseen waste streams will be identified in the future as remediation, waste treatment and waste-generating processes develop. Radioactivity could include any of the naturally occurring or manmade radionuclides. Concentrations would not exceed Class A limits and the average concentrations in a cell area would not be greater than those in Table 4.

3,000,000 c/y

146. Any of the above waste streams may contain some hazardous materials and, therefore, be classified as mixed waste.

500,000 c/y

At the termination of disposal activities at the site, it is reasonable to assume there will be some contaminated soils with trace quantities of radioactivity that will need to be recovered and placed in the enhancement. Also, dismantling of existing facilities will generate considerable waste consisting of road materials, asphalt paving, concrete structures, steel debris, building debris and pond liners.

2 Composite Projection of Waste Inventories

2.1 "Initial" Inventory

The inventory of all radionuclides in storage or disposed at the end of 1995 is shown in Table 1. The uranium and thorium decay chain radionuclides comprise the majority of radioactivity in inventory. This reflects the importance of Envirocare as a NORM disposal facility, as well as the remediation of large projects involving various source material waste streams. This inventory also demonstrates the low overall concentration of radioactivity in waste received by