

TA-48

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April 23, 2002

Harold Johnson
NEPA Compliance Officer
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Carlsbad Field Office
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Dear Mr. Reidinger:

RE: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE ACTINIDE CHEMISTRY AND REPOSITORY SCIENCE LABORATORY, DEPARTMENT OF ENERGY, CARLSBAD FIELD OFFICE (DOE/EA-1404); MARCH 2002

This transmits New Mexico Environment Department (NMED) staff comments concerning the above-referenced Draft Environmental Assessment (EA).

SUMMARY

The Department of Energy (DOE) is planning on the construction and implementation of an Actinide Chemistry and Repository Science Laboratory (ACRSL) either at the New Mexico State University (NMSU) Monitoring and Research Center Facility (CEMRC) campus in Carlsbad, New Mexico, or at the Waste Isolation Pilot Project (WIPP) Site, or refurbish an existing similar site at Los Alamos National Laboratory (LANL). NMSU currently operates the CEMRC under a DOE funding source (funding will continue to 2008) and is conducting very small-scale actinide chemistry experiments, as well as being involved in human population radiological dynamics. The proposed ACRSL would be an additional wing of the existing campus. If the laboratory were to be constructed and operated at the WIPP site, it would be built on the extreme internally fenced off area in the northeast portion of the WIPP complex. LANL has been conducting ongoing actinide and repository science experiments at TA-48. Small-scale experiments were conducted at several DOE laboratories, such as the Pacific Northwest National Laboratory and Argonne National Laboratories. Operations of such activities have been discontinued due to lack of funding. DOE desires to conduct actinide experiments and will make a decision as to the location of the laboratory, based upon comments of this environmental assessment.

The primary reason for this proposed laboratory, according to DOE is "to address specific scientific and technical issues related to waste characterization, repository performance, and enhanced operations of the repository". DOE later stated that additional reasons for the proposed laboratory would be "to support WIPP's recertification efforts, address questions important to WIPP, improve waste characterization techniques, and improve DOE's



Harold Johnson

April 23, 2002

Page 2

understanding of how waste interacts with the natural environment in order to better understand waste isolation performance". Close proximity to the WIPP site was also listed as a reason for the experiments. DOE also presented other reasons for the construction and operations of the laboratory, which included reductions in travel budget between various DOE sites and heightened security requirements (due to events in the autumn of 2001) that are being placed on radiological weapons laboratories.

Initially, there are five basic experiments proposed. Overall, these experiments will address the issues of occurrences of Plutonium valences five (Pu (V)) and valence six (Pu (VI)) in some actinide source-term wastes. The effects of alpha radiolysis of WIPP related brines on the oxidation states of Plutonium, Uranium, and Neptunium. Another issue of that of the reduction of oxidized valences of Plutonium, primarily Pu (V) and Pu (VI) to Pu (III) with consideration of the materials that would catalyze or produce the reduction processes. These materials are steel (from the drums, steel netting for roof reinforcement, and from contaminated steel packaged as waste), other iron-based metals that was packaged as waste, Magnesium oxide from the mandates of the permit and EPA. Another issue of concern is that of the effects of actinides on heavy metals (with strong emphasis on the RCRA metals), the pH of the degrading materials, and microbial activity (as well as the microbial reduction action on Pu (V), Pu (VI), U (VI) and Np (V)). The formation of complexes from the reactions of Magnesium oxide on the actinides and other materials, such as cement (for panel closure) is another consideration within the experiments. A final area of emphasis involved in the proposed experiments is that of the extent of degree that degrading organics (most debris waste) will have on the solubility of the actinides.

One such experiment will encompass the reduction and radiolysis by-products (hypochlorite, peroxide formations, and daughter progeny from radioactive decay, for examples) of the oxidation states and speciation of Plutonium, Americium, Uranium, Thorium, and Neptunium. This will address the occurrences of the actinides and alpha radiolysis of WIPP brines on the actinides.

Another experiment will be a study of the effects of organic ligands on the mobility of the actinides as brine formation increases in time. This will address reduction-oxidation reactions with consideration of RCRA heavy metals and organic degradation.

A less notable experiment will involve the demobilization of the actinides by borehole fill materials. A series of materials will be tested to slow or actually cease the migration of actinides in various matrix materials that are contaminated with the actinides. This will address the issues of reduction-oxidation of the actinides by materials that they are packaged with.

Yet another experiment will co-inside with the other experiments. The utilization of X-ray diffraction, characterization using alpha and gamma solid state-Nondestructive Assay (NDA) of the radioactive inventory (as actinides reduce from oxidation processes, the energy levels will vary, possibly accelerating degradation activity), and microscopy. This experiment will assist the scientists in the determination of valence states, as well as reduction rates of the actinides.

A final proposed experiment is that of the catalyzing the reduction of the actinides utilizing X-ray diffusion and then subjecting the complexes with microwave digestion, liquid phase extraction, and chromatographic column extraction to determine oxidation phases of the actinides. This experiment will become the basis of all the abovementioned experiments for technique development while the experiments are being conducted.

The radioactive waste management of the experiments currently conducted by NMSU CEMRC is very small quantities. A self-imposed limitation of less than two curies presently creates a relative easy task of waste disposal. CEMRC does not currently experiment with any RCRA materials, with the exception of a few solvents. These are managed and disposed of much like a small, exempt generator would handle the materials. If the proposed laboratory were to be constructed and operated at the CEMRC site, experiments would be limited to the current restrictions of waste production. Any quantity over two curies, total inventory would mandate a Nuclear Regulatory Commission status considered to be a Category III, and CEMRC has no desire to have this situation occur. In addition to this self-imposed status, CEMRC will also mandate that RCRA materials not be involved in experiments, unless approved by the director of the program. The need would have to be so great, that heavy consideration of becoming permitted by the state would have to occur.

There has not been any mention of waste management and disposal of wastes if the proposed laboratory were to be constructed and operated at the WIPP site. This action would occur in a future environment assessment of the program.

LANL currently has a Category II NRC status, as well as NMED permitted programs for waste management and waste disposal at TA-48.

Included in the assessment, was a short version of a National Environmental Policy Act (NEPA) study. Statistics from Eddy County were presented for the proposal of the laboratory being operated at the NMSU, Carlsbad campus, Lea County was presented for the proposal of the laboratory being operated at the WIPP site, and Los Alamos County was presented for the proposal of refurbishing TA-48 at LANL.

It must be noted that CBFO has advertised that a public meeting will be conducted twice on April 16, 2002. A letter to this effect was attached to the document, the letter is also on the WIPP website, and the same letter was mailed to the WIPP mailing list.

HAZARDOUS WASTE AND RELATED COMMENTS

1. As mentioned above, one of the reasons for not refurbishing TA-48 at LANL is that of increased security. If the laboratory is built on the NMSU, Carlsbad campus, will there be a need for security beyond what now exists? Currently, a private security company checks on the campus on an hourly basis. If the laboratory does become an NRC Category III or II, there are NRC regulations for intense security. The same question arises if the laboratory is built and operated at the WIPP site.
2. There is a strong possibility that the experiments will, indeed, exceed the two curie level, thus mandating an NRC Category assignment status. How would the waste management handle and dispose of the TRU waste that would be created? Would the laboratory be considered a WIPP site generator? Would the laboratory undergo an audit process for approval to dispose of TRU waste at WIPP? Would TRU pacts have to be mobilized to transport the waste to WIPP?
3. Many of the experiments will involve the use of possibly large quantities (usually, as a preservative, one liter for one gram of actinide so that the actinide will not oxidize) concentrated Nitric acid, which is not only corrosive, but is also an oxidizer. Will the training of the technicians be sufficient enough to ensure safety for the technician, as well as the environment? Will the Nitric acid be treated on site? Currently, NMSU CEMRC is not permitted, as it is exempt. Will

Harold Johnson

April 23, 2002

Page 4

small or large generator status of hazardous wastes force the facility to become permitted? There is insufficient data in the assessment to provide quantities to answer this question. The same questions apply if WIPP were to become the host for the laboratory.

4. Will biological (microbial) waste become contaminated, radioactively, and how will it be disposed of?

5. The Living Desert Museum is very near the NMSU CEMRC. Would the laboratory have any effect on the operations of the museum?

6. Would the City of Carlsbad Public Safety Department (emergency response, emergency medical capabilities, fire fighting capabilities, as well as the police department) be trained for any emergency situation that could arise for an accident at the NMSU campus?

7. As mentioned above, there were NEPA data presented. Why was Lea County presented for the proposal of the laboratory being built and operated at WIPP? WIPP is in Eddy County and the majority of the employees at WIPP reside in Eddy County. We must point out that the statistics for Lea County vary greatly from the statistics for Lea county (Eddy County is much more prosperous).

8. The experiments appear to have sound and justifiable basis; however, could the results of such experiments lead to requests for permit modifications? For example, Magnesium oxide is currently the 'stabilizing' agent for the integrity of the steel drums as they become encapsulated with brine and salt. One of the experiments is to study the effects of Magnesium oxide on the actinide reduction-oxidation process could result in the proposal to eliminate the stabilizing agent from the depository.

9. There was no mention of the tornado problem that exists in southeastern New Mexico. It must be noted that the WIPP site radioactive materials as waste below ground, whereas, the radioactive materials for both the NMSU campus and at the WIPP site are above ground. Please reference the following website for statistics on New Mexico tornados:

<http://www.tornadoproject.com//alltorns/nmtom.htm>

10. CBFO plans to conduct two public meetings on April 16, 2002 in Carlsbad, New Mexico; however, there is no planned public meeting in Santa Fe, as is the customary situation.

AIR QUALITY COMMENTS:

The proposed site for the addition to the Carlsbad Environmental Monitoring and Research Center (CEMRC), located in Eddy County, is currently in attainment for all National Ambient Air Quality Standards (NAAQS).

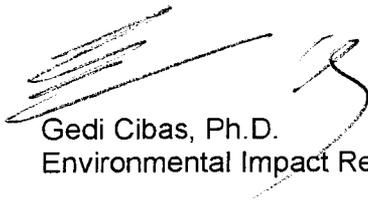
This proposal does not indicate if the ACRSL facility has submitted an application for an increase in volatile solvent and reagent emissions or currently has a permit on file with the Air Quality Bureau. A copy of the application or permit number should be included in the final assessment for review. The NMED currently does not assume regulatory oversight to facilities handling radionuclides. It is unclear whether the ACRSL facility will be included in the Memorandum of Understanding (MOU) between the DOE and EPA regulating radionuclides. The MOU should be included in the final environmental assessment.

Harold Johnson
April 23, 2002
Page 5

During construction activities, applicable local or county regulations requiring dust control should be taken to minimize the release of particulates during the proposed project. Areas disturbed by the construction activities, within and adjacent to the project area should be reclaimed to the extent possible to avoid long-term problems with erosion and fugitive dust. Any contractors supplying asphalt or cement for the project must have the appropriate current air quality permits.

We appreciate the opportunity to comment on this document. Please let us know if you have any questions on the above.

Sincerely,



Gedi Cibas, Ph.D.
Environmental Impact Review Coordinator

NMED File No. 1576ER