DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700 Washington, D.C. 20004-2901
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July 31, 2008

The Honorable Ron Curry
Secretary of the New Mexico
Environment Department
P.O. Box 26110
1190 St. Francis Drive
Santa Fe, NM 87505

Dear Mr. Curry:

The Defense Nuclear Facilities Safety Board (Board) received the enclosed June 20, 2008, letter from Mr. David McCoy, Executive Director, Citizen Action New Mexico regarding concerns at Sandia National Laboratories. The concerns focus on the Mixed Waste Landfill (MWL) facility. The Board has reviewed Mr. McCoy's letter and concluded that the jurisdictional predicate for the Board's oversight of the MWL is tenuous. Additionally, we understand that other state and federal entities are involved in oversight of environmental restoration activities at the MWL. As a result, the Board will not be providing any oversight resources to the issues raised by Mr. McCoy regarding the MWL at this time. We are referring Mr. McCoy's concerns to you, as well as the Department of Energy and National Nuclear Security Administration, for disposition.

Also enclosed find the written statement that Mr. McCoy offered at the Board's December 5, 2007, public hearing and meeting at Los Alamos National Laboratory. We provide this additional statement with the thought that it may be of further use in the evaluation of Mr. McCoy's concerns at the MWL.

Sincerely,

A. J. Eggenberger
Chairman

Enclosures

c: Mr. David McCoy, Executive Director
Citizen Action New Mexico

June 20, 2008
Mr. A. J. Eggenberger, Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Ave. NW Suite 700
Washington, D.C. 20004

Dear Chairman Eggenberger,

Thank you for your meeting in Los Alamos for the 42 USC 2286b hearing regarding NNSA and LANS safety performance at Los Alamos National Laboratory. We would appreciate receiving 5 copies of any report that the DNFSB may have issued as a result of that hearing.

Additionally, Citizen Action presented a report to the DNFSB regarding Sandia National Laboratories' failure to clean up and monitor nuclear and hazardous waste contamination that threaten the groundwater supply for a population of 600,000.

The question as to why nearly 2,000 nuclear weapons should be warehoused within a major metropolitan area needs to be examined. The danger of these continuing operations is underscored by the recent belated cleanup of depleted uranium from a thermonuclear warhead accidently dropped in 1957. "A plane on approach to Kirtland Air Force Base in 1957, 1,700 feet above ground, accidentally dropped what was, at the time, the largest hydrogen bomb in the U.S. arsenal." http://www.inkstain.net/fleck/?p=2521 The hydrogen bomb was dropped on property that is now under development as the 35,000 home Mesa del Sol subdivision at the western boundary of Sandia. The explosion of the high explosives in the nuclear bomb spread radionuclide contamination over a large area. An accidental drop of a nuclear weapon now would possibly cause many fatalities with only the high explosives. The delay in conducting a competent cleanup of the accident contamination until 2008 is inexcusable. Given that there is the potential for another such an airborne accident to reoccur in Albuqerque's urban center, the continued maintenance of nuclear warheads at Kirtland Air Force Base/Sandia National Laboratories should be eliminated.

Over the past eight years, the Sandia Mixed Waste Landfill (MWL) has been a primary concern for Citizen Action and other public organizations. The MWL remains one of the most dangerous dumps in the DOE complex because of its location in a major metropolitan area with over 600,000 people. The MWL contains poorly understood wastes in unlined pits and trenches a short distance above Albuquerque's groundwater resource. As an example, Citizen Action recently discovered from an informed source of the disposal of 119 steel drums of plutonium wastes in the MWL. These wastes are subject to release in the future if not at the present time because of corrosion of the steel drums. The precarious way in which the wastes are stored in shallow burial are a danger along the surface pathway and the groundwater pathway. The MWL is situated one mile away from the Mesa del Sol subdivision, a planned 35,000 home residential complex that will have its own groundwater supply wells. The MWL is close to Isleta Pueblo.

At Sandia, numerous other dumps located less than a mile from the MWL have released contaminants to the groundwater. That includes the Chemical Waste Landfill and the Old Radioactive Waste Dump at Sandia. Both of these dumps have been excavated showing that Sandia has the technology in hand for excavation of the MWL. Excavation of the MWL is essential because there is no reason to believe the MWL contaminants will not similarly reach the groundwater.

Sandia has a long history of uncontrolled dumping of hazardous and radioactive waste in "Yardholes" located across the facility. Sandia has not included the inventory of these wastes in its current Revision 12 to the Site Treatment Plan required under the Federal Facility Compliance Act. Sandia has not identified a pathway for disposal of these wastes although the NNSA claims in federal court documents that the wastes represent a great danger if they fall into the hands of terrorists. We would encourage the DNFSB to hold a public meeting with respect to Sandia nuclear waste and nuclear weapons production operations that are threatening public health and the environment.

We are inquiring as to the role that the DNFSB has to offer with respect to examining these issues of Sandia failure to clean up and monitor wastes and the continuing storage and transport of the approximately 2000 nuclear weapons.

Sincerely,

David B. McCoy

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cc: Senator Bingaman

Presentation of Issues to the Defense Nuclear Facilities Safety Board (DNFSB) Regarding Sandia National Laboratories By Citizen Action New Mexico

December 5, 2007

1. Citizen Action asks that the DNFSB investigate numerous problems at the Sandia National Laboratories (SNL), and especially the Mixed Waste Landfill (MWL).
2. The MWL, originally the Sandia Radioactive Waste Dump, is a 2.6-acre dumpsite where legacy radioactive and hazardous wastes including liquids from making nuclear weapons were buried in shallow, unlined pits and trenches.
3. Disposal activities for the MWL dump operated from 1959 through December 1988 **and then containerized radioactive and mixed wastes were stored on a dirt surface without protection of leaks from damaged containers through 1996.** Due to poor record keeping, the actual volume of buried wastes is not known but may range up to 720,000 cubic ft. The wastes are inadequately characterized but include over 40 types of radionuclides, mixed wastes, and Volatile Organic Compounds. Plutonium, cobalt-60, cesium-137 and tritium have been identified in surface soil at the dump.
4. The MWL is located in a growing, urban area over Albuquerque's drinking water supply. The residential setting surrounding the MWL is threatened by water, soil and air contaminants from the MWL. SNL/DOE plans to leave the dangerous wastes permanently in place with only a dirt cover installed over the wastes and without adequate long term monitoring. A residential development of 35,000 houses is planned for construction approximately one mile from the dump.
5. There is non-compliance with DOE Orders 5820.2 A, 435.1, 450.1 and the Resource Conservation and Recovery Act 40 CFR 264 Subpart F for groundwater monitoring at the Mixed Waste Landfill.
6. A summary of the monitoring situation at the MWL is that:
    a. No adequate well monitoring system for early detection or long term detection of contaminant releases exists.
    b. No vadose zone monitoring is in place.
    c. No ongoing soil gas monitoring is in place.
    d. No required storm water protection has ever been in place to contain the toxic wastes from traveling offsite even during recent construction.
    e. Surface soil sampling along the sediment storm water run-off pathways from the MWL has not been conducted.
    f. No adequate risk assessment has been performed for the MWL.
7. **The well monitoring network at the MWL never provided reliable water sampling data to make any determination that the groundwater was not contaminated.** Citizen Action gained access to NMED and SNL documents that demonstrate the defective nature of the well monitoring network and that the defects are not corrected to the present time. NMED and DOE did not present this information about the failed well monitoring network at public hearings in 2004 for the soil cover decision.

8. **The NMED administrative record proves that the defective data from all past monitoring does not support the soil cover remedy for the dump.** In 1991, DOE's Tiger Team stated: "The number and placement of wells at the mixed waste landfill is not sufficient to characterize the effect of the mixed waste landfill on groundwater." In 1992, the Environmental Protection Agency stated: "the MWL monitoring wells are located cross-gradient instead of downgradient from the MWL; therefore, contaminants emanating from the MWL may not be detected in the monitoring wells." **In 2007, the problems with the monitoring wells are still uncorrected.**
9. **SNL continues to knowingly present false data regarding the MWL groundwater monitoring network. The MWL data are from wells that are cross-gradient, were drilled with drilling muds that prevent detection of contamination, have screens installed in the wrong strata, have corroded well screens that prevent the detection of contamination from the dump, have high turbidity in water samples and some of the wells have even gone dry.** The false data are presented as being reliable and representative in Annual Groundwater Monitoring Reports issued by the DOE for over a decade. The claim by DOE that the MWL wells have produced reliable data for the last 16 years is not supported by examination of the problems that exist for each well since their construction. The spurious data does not support the position that there is not contamination of the groundwater. There is no support for the position that the hazardous and radioactive wastes at the MWL can be safely left in place under a cheap, dirt cover.
    - **There was no appropriate located background well at any time.** Background monitoring well BW1 was located 500 feet south of the MWL because of the incorrect conclusion made in the early years that groundwater flow was to the north. The flow was determined in 1991 to be to the west. BW1 was not installed so as to provide background water quality data in either the fine-grained sediments or the uppermost aquifer to compare with the monitoring wells in the network installed for investigation of contamination at the MWL. The mandatory requirements of RCRA 40 CFR §§ 264.97(a)(1), and 264.98(a)(4) were never met that a background water quality well be located hydraulically upgradient of the MWL and installed in the uppermost aquifer. The well BW1 is located cross-gradient to the MWL and never furnished reliable and representative background water quality information. The lack of data from an actual background monitoring well was ignored by DOE and the data furnished as if it were from a background monitoring well does not support the decision to install a dirt cover at the MWL.
    - SNL notified the NMED in 2007 that there is **chromium and nickel contamination in the groundwater** at the MW dump that is above state and federal drinking water limits. The source of the contamination has not been determined. Chromium and nickel wastes are buried in the dump.
    - There were an **inadequate number of downgradient wells** including MW1 and MW2 that are both cross-gradient to the north of the MWL.
    - BW1, MW2, MW3 were installed using **mud rotary drilling that hides contaminants.**

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- MW3 is downgradient from the MWL, but is **going dry and was improperly developed with high turbidity levels.** DOE states that well screen corrosion is present for MW3. MW3 cannot provide reliable and representative water samples due to corrosion and other factors.
- **MW4 has its upper well screen too deep to detect contamination at the water table under a trench where liquid wastes were dumped** (Goering), and has the lower well **screen** in differing strata. **A leaking packer** between the two screens is indicated by an anomalously lower water table than other wells.
- **MW5 cannot serve as a downgradient well because the well screen cross-contaminates the AF and ARG strata and also has grout contamination that hides contamination.**
- MW6 may be cross-gradient to the MWL from a location 500 feet to the north-west corner of the MWL. MW6 is the only possibly down gradient monitoring well with a well screen in the ARG strata. A minimum of three down gradient wells are required at the point of compliance, but are not in place for the uppermost aquifer (ARG strata). MW6 is too distant from the MWL to qualify as a point of compliance well.
- Three down gradient wells are also required, but do not exist, for the flow system of the AF strata.

10. **No vadose zone monitoring is in place at the Mixed Waste Landfill.** A September 2006 Response by **SNL** to the **DOE Office of Inspector General** Management Referral Memorandum dated June 21, 2006 Regarding Monitoring Wells at Sandia Mixed Waste Landfill admits (p.2) "... the fact that no wells are completed in the vadose zone is correct, but does not require corrective action at this time. Vadose zone monitoring is planned for the future, once the Long-Term Monitoring and Maintenance Plan has been developed and approved." The current September 2007 LTMMP for public comment does not present a plan for vadose zone monitoring beneath the dump. Under 40 CFR 264.98 Detection Monitoring Program, DOE is required to have, but does not have an active monitoring of the unsaturated zone (vadose zone) beneath the MWL.
11. **Failure to conduct adequate surface soil sampling precluded risk analysis for both the surface runoff pathway and for airborne emissions inhalation pathway.** The *Preliminary Human Health Risk Assessment for the Mixed Waste Landfill, Sandia National Laboratories, Albuquerque, New Mexico* (January 1995) was based on the limited and insufficient data from the RFI phase 1 and 2 surface soil sampling. "No surface soil sampling was performed during the RCRA Facility Investigations Phase 1 and Phase 2 for RCRA heavy metals." (P.9). (http://www.nmenv.state.nm.us/hwb/SNL/MWL/Preliminary_Human_Health_Risk_Assess_MWL_by_Johnson(1-1995).pdf)

    The 1995 Risk Assessment states further: "In addition, the lack of surface soil data precludes modeling the potential airborne emissions from the site. The potential pathways of concern for the future resident include inhalation and absorption of tritium, external radiation, and ingestion of groundwater. Inhalation of radioactive air particulates was not assessed for the same reason as for the worker scenario. Incidental ingestion of soil, and ingestion of contaminated food

also were not assessed *because surface soil data have not been collected.*" (Emphasis supplied).

12. **Failure of the DOE Office of Inspector General (OIG) to conduct investigations of numerous SNL violations at the MWL. An April 2007 Complaint to the DOE OIG contained sufficient proof that DOE proceeded to begin covering the MWL without a post-closure permit in place and without a long term monitoring well network in place for groundwater monitoring at the MWL.**
    a. The construction of a soil cover at the MWL began prior to final approval of a Corrective Measures Implementation Plan (CMI Plan) and during pendency of a Notice of Disapproval (NOD) for the soil cover remedy. Despite this, Sandia began construction on the dirt cover, compacting fragile barrels, cardboard boxes and flimsy containers containing dangerous wastes that could be released to air and water. These compaction activities took place without groundwater and soil gas monitoring beneath the dump.
    b. Failure to control storm water flow across the MWL. Berms built to protect construction of a subgrade portion of a soil cover for the MWL were breached by storm waters in August 2006.
    c. Surface soil sampling along the storm water flow path from the MWL has not been conducted. Failure to conduct surface soil sampling for nuclear weapons radionuclides, RCRA heavy metals. The storm water run-off pathways for these contaminants were not characterized.
13. **SNL has not complied with DOE O 450.1 requirements for an Integrated Safety Management System (ISMS) to be in place for the MWL.** The ISMS is to be based on an Environmental Monitoring and Surveillance Plan (EMSP). A status report was to have been furnished to the Cognizant Secretarial Officer by December 31, 2005 to show that the requirements of DOE 450.1 were integrated into the Integrated Safety Management Systems. Citizen Action made a Freedom of Information Act (FOIA) request for the status report. A DOE Office of Hearings and Appeals (OHA) FOIA Decision (TFA-0203, May 2, 2007, p.2 II.A. http://www.oha.doe.gov/cases/foia/tfa0203.pdf) indicated DOE's denial that any such status report was to have been furnished in writing: "DOE/AL refutes that argument and contends that SNL's Environment Programs and Assurance Department reviewed the order, but was unable to identify the requirement..." Further the OHA stated: "According to SNL, it has never prepared a 'site-wide ground water surveillance plan." SNL/DOE did not meet the 450.1 requirement for submitting the ISMS, the EMSP or the status report to the Cognizant Secretarial Officer. SNL/DOE did not implement the management system requirements of DOE O 450.1 by December 31, 2005 or subsequently. An earlier DNFSB letter of October 8, 2004 concludes that "The events associated with this occurrence suggest that problems previously noted with the implementation of ISM at SNL-NM have not been completely eliminated."
14. **Failure to conduct an adequate risk analysis for the airborne emissions pathway.** In 2004, 15 sources for release of radioactive materials were identified by SNL. The sources do not include the buried radioactive wastes at the MWL

and the Chemical Waste Landfill. The MWL and CWL have not published inventories of releases of radioactive and hazardous waste constituents into the air or evaluated onsite soil deposition. NESHAP Compliance reports also do not report or consider releases from nuclear warheads at KAFB along with stored reactor fuel. The tritium inventory in warheads at KAFB may be as high as 98 million curies by the 1998 estimate of 2,450 warheads at KAFB. SNL has much higher releases than other DOE sites for tritium and alpha and beta activity. However, the number of air monitoring locations at SNL is only four and does not meet the de facto standard established at other DOE facilities.

15. **Failure to address the pathway for disposal of the large inventory of SNL's Yard Hole wastes.** DOE has not addressed the pathway for disposal of the large inventory of Sandia "Yardhole wastes." Citizen Action obtained information from a FOIA request that the waste from numerous experiments with the reactor fuels had been disposed of in various areas known as "Yardholes"at SNL. http://www.radfreenm.org/pages/nr/041504.html The yardholes were over 30 primitive holes dug in the ground; some were lined and some were unlined. One of the yardholes was a water filled hole under the Hot Cell Facility monorail at SNL and contained a spent fuel element from the Savannah River Site. SNL has kept secret from the public the types and amounts of the contents of the various yardholes. The yardholes contain nuclear materials and/or hazardous wastes that should be disposed of or regulated under the Resource Conservation and Recovery Act (RCRA), the Atomic Energy Act, Nuclear Regulatory Commission (NRC) regulations, or Department of Energy (DOE) Orders.

    A "SNL Site Team Report on Spent Fuel," October 1993 ("Yardholes report"), assessed vulnerabilities of the DOE storage of irradiated reactor fuel and other irradiated nuclear materials (RINM). The 1993 Yardholes report stated: "The vulnerability identified was the lack of approved Safety Analysis Reports." The report identified the existence of the Yardholes at the location of the Sandia Pulse Reactors (19 yardholes) and the Hot Cell Facility (13 yardholes under the HCF Monorail) associated with the Annular Core Research Reactor (ACCR).

    The Yardholes report, Appendix 1 C. Sandia Pulsed Reactor Facility states:

    p. 7 - "The other concern is the ultimate recovery and disposition of these nuclear materials, All of the materials are currently stored on site since there is no approved method of disposal.....There are various concerns associated with the long term storage of any radioactive material, specifically leachability of material, decay rates and potential corrosion of the containment packages due to environmental conditions."

    The Yardholes report, Appendix 1 D. Hot Cell Facility, p. 2, identifies "hazardous materials such as cadmium, silver, lead, metallic sodium, etc." These materials may constitute hazardous or mixed hazardous waste under RCRA.

16. **Failure to timely provide responses to Freedom of Information Act requests regarding operations at SNL.** Citizen Action currently has 15 FOIA requests outstanding for over a year. Citizen Action has currently filed a federal lawsuit to gain compliance.