

August 20, 2007

John Kieling, Program Manager  
New Mexico Environment Department  
Hazardous Waste Bureau  
2905 Rodeo Park Drive East, Bldg. 1  
Santa Fe, New Mexico 87505-6303

Submission by E-mail: [john.kieling@state.nm.us](mailto:john.kieling@state.nm.us)

**Citizen Action New Mexico Supplemental Comments  
in the Matter of Sandia National Laboratories' (SNL)  
Chemical Waste Landfill (CWL) Post-Closure Permit**

Citizen Action submits the following supplemental comments to its July 19, 2007 submission.

**Citizen Action requests additional time for review of the Administrative Record and postponement of the deadline for citizen comments until the Department of Energy has properly assembled the Administrative Record for the Chemical Waste Landfill.**

The information for the Chemical Waste Landfill (CWL) is not reasonably assembled or available and does not provide the opportunity for the public to adequately participate in these Resource Conservation and Recovery Act (RCRA) proceedings for Post-Closure of the CWL. The Administrative Record (AR) for the CWL constitutes 69 pages of listed documents and is spread over three shelves with CWL documents intermingled with other Sandia National Laboratories ("Sandia") documents. Documents prior to 1980 are placed on a high shelf in boxes.

The documents for the CWL are spread out through the record of other facilities at Sandia National Laboratories. The earliest entry for the CWL in the AR is 11/13/1980. However, the CWL began operations in 1962 and there is no listing on the AR for documents obtained by NMED prior to the 1980 date. Records prior to 1985 are apparently located in boxes and not listed on the AR index. Thus the CWL record and index is incomplete.

SNL is required to pay for and assemble a complete administrative record for the CWL. This has not been done. All proceedings for the CWL should be held in abeyance until the AR is properly assembled for the CWL in a readily reviewable and comprehensive record. The lack of an AR was the reason for the delay of WIPP proceedings and serves as a precedent for postponing the deadline for the citizen comment period.

The Administrative Record should be accessible on the NMED website particularly because NMED is not providing the AR for the Albuquerque area in the vicinity of the facility and the major metropolitan population affected.

The records are not reasonably assembled and not convenient for access. Some documents identified in the AR were not located in the folders by the date they were listed in the AR. Documents are punched and clipped at the top so that files need to be rotated for every page that is double-sided involving great inconvenience in speed for review.

Viewing of the documents was only available in a cramped space.

**The monitoring well network at the CWL does not satisfy 40 CFR 265.90-100 requirements or Resource Conservation and Recovery Act (RCRA) post-closure requirements of 40 CFR Subparts F and G.**

1. NMED should issue a Notice of Disapproval for the Post Closure Plan based on the failure of Sandia National Laboratories to have a RCRA competent long-term well monitoring network.
2. NMED should order replacement of the existing CWL monitoring wells for reasons stated below.

No accurate inventory exists of the wastes that the CWL contains from 1962 to cessation of operations in 1985. (SNL Hazardous Waste Response to Information Request No.2 U.S. EPA RCRA Section 3007 Letter, p. 2-4).

It is not clear if SNL has appropriately identified the hydraulic conductivity for both the unsaturated and saturated zones and determined flow direction, vertical gradient and flow rate for the CWL. SNL may not have determined the rate and extent of migration of contaminant plumes at the CWL.

**The CWL does not meet closure performance standards under 40 CFR 265 Subpart G because it lacks a RCRA compliant well monitoring network.** The monitoring well network CWL-BW4A, MW4, MW5U and MW6U do not meet Subpart F requirements for a monitoring well network.

**Corroded well screens.** In 1992, the NMED stated the concern that the CWL monitoring well network is inadequate to perform its function due to the background well exceeding EPA action levels for chromium and the presence of TCE. The NMED stated: “Any monitoring well that has chromium contamination is inadequate to monitor the Chemical Waste Landfill.” (September 30, 1992 NMED Response to Public Comments on the DOE/SNL Proposed Closure Plan for the Chemical Waste Landfill, p.5-6). The problem of a corroded background well still exists at the CWL.

The carbon steel screen for background well BW4A is unacceptable to detect contaminants for long-term monitoring. The background well BW4A has a common carbon steel screen that is not standard industry practice for monitoring wells. Specific contaminants listed for long-term monitoring include chromium and nickel. Thus, BW4A does not supply the required data for contaminants of concern. Corrosion is guaranteed on this well screen installed in May 1994.

**Improper mud-rotary drilling techniques.** Well CWL-MW4 was drilled in 1990 using mud rotary drilling techniques that hide contaminants of concern. CWL-MW4 also has a 304 stainless steel well screen that is corroded since it has shown chromium concentrations greater than the MCL. In February and March 2002, chromium was detected above the MCL of 0.1 in CWL-MW4 at concentrations of 0.177 mg/L.

The Annual Groundwater Monitoring Report for 1999 (p. S-4) indicates that elevated nickel concentrations above the MCL were detected in two CWL wells. The nickel concentrations may be attributed to the degradation of the stainless steel well screens.

The July 2, 2007 NMED letter RE: REPLACEMENT OF MIXED WASTE LANDFILL GROUNDWATER MONITORING WELLS MWL-MW1 AND MWL-MW3 (7/2/07 NMED Replacement letter) states:

“Because of problems associated with stainless-steel screened wells at the MWL (chromium and nickel detections), the replacement wells shall be screened with polyvinyl (PVC) plastic casing. The mud rotary method shall not be used to install the wells.”

NMED should apply consistency at the CWL with the April 29, 2004 Consent Order and RCRA requirements to order replacement of BW4A and MW4 for corrosion of well screens because they can no longer serve the intended purpose of detecting contamination or serve for long-term monitoring needs.

**Sampling methodology fails to obey RCRA requirements under the Consent Order.** Sampling rates are claimed to not exceed 12 liters per minute in the Draft Post-Closure Permit. This rate is unacceptable under RCRA and constitutes violation of the Consent Order. RCRA Draft Technical Guidance (1992) that must be applied under the Consent Order (p. 7-8) states:

“The rate at which ground water is removed from the well during purging ideally should be less than approximately 0.2 to 0.3 L/min (Puls and Powell, 1992; Puls et al., 1991; Puls and Barcelona, 1989a; Barcelona, et al., 1990). Wells should be purged at rates below those used to develop the well to prevent further development of the well, to prevent damage to the well, and to avoid disturbing accumulated corrosion or reaction products in the well (Kearl et al., 1992; Puls et al., 1990; Puls and Barcelona, 1989a; Puls and Barcelona, 1989b; Barcelona, 1985b). Wells also should be purged at or below their recovery rate so that migration of water in the formation above the well screen does not occur. A low purge rate also will reduce the possibility of stripping VOCs from the water, and will reduce the likelihood of mobilizing colloids in the subsurface that are immobile under natural flow conditions. The owner/operator should ensure that purging does not cause formation water to cascade down the sides of the well screen. At no time should a well be purged to dryness if recharge causes the formation water to cascade down the sides of the screen, as this will cause an accelerated loss of volatiles. This problem should be anticipated; water should be purged from the well at a rate that does not cause recharge water to be excessively agitated. Laboratory experiments have shown that unless cascading is prevented, up to 70 percent of the volatiles present could be lost before sampling.”

Purge to dry methods are being used at BW4A and other CWL monitoring wells for sampling and that is recommended against under RCRA Draft Technical Guidance

(1992). Requirements of the RCRA Technical Guidance are mandatory under the Consent Order. Wells should be purged at rates below 0.2 to 0.3 L/min. Wells at the CWL are being purged at rates of greater than approximately 1.0 to 2.0 L/min.

All of the four CWL wells are purged at rates greater than 1 L/min. Three of the four wells are purged dry as routine operation thus damage to the saturated hydraulic conductivity (Ksat) of the screened interval probably has occurred. That is unacceptable under RCRA. BW4A, MW5U, and MW6U are routinely purged to dryness with water samples collected the following day. The fact that the well recovers that quickly is evidence that if the proper purge rate were used, purging and sampling could be accomplished without purging to dryness.

MW4 is sufficiently productive that it is not purged to dryness, however the purging is at a rate of greater than 1 L/min. The contaminants of concern for long-term monitoring are nickel and chromium that cannot be detected adequately because of corrosion of the stainless steel screen masking detection. MW4 was installed in May 1990 a time period for substantial corrosion of the well screen to occur. Cadmium was present in the early years of collecting samples and now has disappeared. Research by Hewitt shows that corroded well screens will mask detection of cadmium and other trace metals.

MW5U is purged to dryness at a rapid rate and has a PVC screen. The bottom of the screen is at 497 ft. The static water level in 2006 was at 488 ft. Nine ft of water is in the well. Samples are collected the next day, rather than waiting for seven days. Thus the purging to dryness of the well at too rapid a rate could be avoided and the correct sampling methodology should be used. If a slow purge rate does purge the well dry, then it is necessary that the well be redeveloped or replaced. This is the case for MW5U and MW6U that both have PVC screens.

**The locations of the monitoring wells do not comply with RCRA requirements to be at the “point of compliance.”** MW5U is 225 ft from the point of compliance at the boundary of the CWL. MW6U is 200 ft from the RCRA point of compliance at the boundary of the CWL. MW4 is 70 ft from the point of compliance at the boundary of the CWL and is closer to the boundary, but was drilled with mud rotary and has a stainless steel screen installed in 1990 making it inappropriate for long-term monitoring for detection of contaminants of concern that are trace metals.

The NMED letter requiring replacement of MWL-MW1 and MWL-MW3, two wells at the Mixed Waste Landfill, requires that the well replacements be “installed as close as possible” to the downgradient boundary of the dump “for long-term monitoring of the groundwater.” (See, e.g., 7/2/07 NMED Replacement letter). This RCRA requirement for closure monitoring should be applied as well to the CWL.

**Unlined surface impoundments used at the CWL between 1970 to 1978 should be considered for well monitoring locations.** Liquid contaminants were present at those locations supplying liquid contaminants below the level of excavation of waste to the

unsaturated zone. The leaking and unlined impoundments should be considered hot spots for long term monitoring.

Sandia has not demonstrated that upon post-closure of the CWL that there is no potential for migration of wastes into the ground water because the monitoring wells as currently installed are not adequate, as described above, for the detection of the movement of the contaminants of concern.

Many of the received wastes of the CWL were of unknown quantity and kind and it is conceivable that the mixture of wastes in the landfill were such as to greatly alter the assumptions regarding what are the most mobile constituents of the dump. No accurate inventory exists of the waste the CWL contains.

Sandia should submit an estimate of what are the amounts, types and longevity of the free liquids that still exist in the flow paths at the CWL below the excavation. What wastes remain that may still be incompatible or reactive materials?

Sandia should provide information on how it will comply with vadose zone monitoring requirements under DOE O 5480.2.

Respectfully submitted,

David B. McCoy, Executive Director  
Citizen Action New Mexico  
POB 4276  
Albuquerque, NM 87196-4276  
505 262-1862  
[dave@radfreenm.org](mailto:dave@radfreenm.org)