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NEW MEXICO
ENVIRONMENT DEPARTMENT

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RON CURRY
Secretary

FACT SHEET

February 2, 2010

INTENT TO DENY
A HAZARDOUS WASTE FACILITY PERMIT
FOR THE OPEN BURNING OF HAZARDOUS WASTE AT TA-16
UNDER THE NEW MEXICO HAZARDOUS WASTE ACT
LOS ALAMOS NATIONAL LABORATORY (LANL)
LOS ALAMOS COUNTY, NEW MEXICO

Facility Name: Los Alamos National Laboratory

EPA Identification Number: NM0890010515

GENERAL BACKGROUND

The New Mexico Environment Department (Department), in accordance with the New Mexico's Hazardous Waste Act (HWA) and its associated regulations, intends to deny in part a hazardous waste permit (Permit) applied for by the owner (the U.S. Department of Energy, or DOE) and operators (DOE and Los Alamos National Security, L.L.C., or LANS) of Los Alamos National Laboratory (LANL, or the Facility) to treat hazardous waste. Specifically, the Department intends to deny a permit for treatment by open burning of hazardous waste at LANL's Technical Area (TA) 16. The Department is charged with issuing a permit that will ensure that LANL's hazardous waste operations are properly managed to protect human health and the environment. DOE and LANS (collectively, the Applicants) have not demonstrated that operation of the treatment units is protective.

Prior to denying a portion of a permit application, the Department is required by 20.4.1.901.A(2) NMAC to issue a fact sheet which serves two functions: 1) to facilitate the public's and applicant's involvement in the Department's proposed denial; and 2) to provided the basis for the Department's action. This is that fact sheet.

Previously the Department issued a Revised Draft Permit on July 6, 2009, which concerns all hazardous waste management units for which DOE and LANS had sought a permit. A fact sheet accompanied that issuance and explained the Revised Draft Permit. This fact sheet supplements that July 2009 Fact Sheet, and addresses only the Department's decision to deny the application for a permit for the Technical Area 16 open burning treatment units.

PUBLIC REVIEW

The Administrative Record for this proposed action consists of the Permit application, the Notice of Intent to Deny, the Public Notice, this Fact Sheet, and supporting documentation. The Administrative Record may be reviewed, with prior appointment, at the following location during the public comment period:

NMED - Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone: (505) 476-6000
Monday – Friday: 8:00 a.m. to 5:00 p.m.
Contact: *Pam Allen*

A copy of the Notice of Intent to Deny, the Public Notice, and this Fact Sheet are available on the Department's website at: www.nmenv.state.nm.us/HWB/lanlperm.html. To obtain a copy of the Administrative Record or a portion thereof, please contact Ms. Pam Allen at (505) 476-6000, or at the address given above. The Department will provide copies, or portions thereof, of the Administrative Record, including the revised draft Permit, at a cost to the requestor.

Pursuant to 20.4.1.901.A(5)(c) NMAC, the Environment Department Secretary has determined that a public hearing will be held on this matter, notwithstanding the absence of a timely request for public hearing. The public hearing on this action will begin April 5, 2010 at 9:00 a.m. MDT and continue as necessary through April 16, 2010. The public hearing will be located at the Santa Fe Community College located at 6401 S. Richards Ave., Santa Fe, NM 87508, in the Jemez Conference rooms. The public hearing will provide interested persons a reasonable opportunity to present data, views, and arguments, as well as to examine witnesses. The hearing will afford an opportunity for all persons to present comment. The hearing will be conducted in accordance with the Hazardous Waste Management Regulations, 20.4.1.901.F NMAC, the Environment Department Permit Procedures, 20.1.4 NMAC, and any scheduling and procedural orders as may be entered by the Hearing Officer. See the Public Notice for this action for further information regarding public involvement at www.nmenv.state.nm.us/HWB/lanlperm.html.

Any person, including the Applicants, wishing to submit written public comment or present oral public comment at the public hearing for the Department's consideration, shall do so according to the procedures set forth below. The public comment period continues through the close of the public hearing.

All written comments submitted will be considered in formulating a final decision. The Department will respond in writing to all public comments. This response will briefly describe and respond to all public comments raised during the public comment period. All persons presenting written comments or who requested notification in writing will be notified of the decision by mail. These responses will also be posted on the Department's website.

After consideration of all the written public comments received, and after considering the outcome of the public hearing, the Secretary of the New Mexico Environment Department will make a final determination regarding the proposed denial. The Secretary will make the final decision publicly available and shall notify the Permittees by certified mail. All persons submitting written public comment, who filed an Entry of Appearance, or requested notification in writing, shall be notified of the decision by first class regular mail. The Secretary's decision shall constitute a final agency decision and may be appealed as provided by the HWA (Chapter 74, Article 4 NMSA 1978).

ARRANGEMENTS FOR PERSONS WITH DISABILITIES

Persons having a disability and requiring assistance or auxiliary aid to participate in this process should contact Judy Bentley at the New Mexico Environment Department, Human Resources Bureau, P.O. Box 5469, 1190 St. Francis Drive, Santa Fe, New Mexico, 87502, telephone number: (505) 827-9872. TDY users please access her number via the New Mexico Relay Network at 1-800-659-8331.

OPEN BURNING UNITS SUBJECT TO A PERMIT APPLICATION

The Applicants submitted a Part B permit renewal application pursuant to 20.4.1.900 and 902 NMAC, as described at page 11 of the July 2009 Fact Sheet. Among the units sought to be permitted are units that are currently operating under RCRA interim status. In that application, the Applicants seek a permit to treat by open burning, and otherwise manage high explosive hazardous waste at the following interim status units:

TA-16, Structure 388 (Flash Pad);
TA-16, Structure 399 (Burn Tray).

Open burning (OB) is the burning of any materials that produces air contaminants that are directly emitted into the air without first passing through a stack or chimney from an enclosed chamber. The two OB units at the Facility contemplated by the Applicants (TA-16-388 and TA-16-399) burn off-specification and discarded high explosive wastes, and wastes contaminated with high explosives, in a raised steel pan or tray designed to withstand extremely high temperatures. The purpose of this kind of treatment is to destroy the explosive component of the waste, which is considered hazardous. The Applicants request authority to cumulatively burn 12,500 lbs of waste per year at the units.

OB units are considered RCRA miscellaneous units, which are regulated by 40 CFR Part 264, Subpart X. Because there are no federal rules specifically for open burn units (unlike the rules for containers, as an example (*see* 40 CFR Part 264, Subpart G)), this type of units are subject to the federal miscellaneous unit requirements (*see* 40 CFR §§ 264.600 through 264.603). The Department has determined that it is required to deny the permit applied for as to Open Burning (OB) treatment operations at TA-16.

July 6, 2009 Permit Prohibition Regarding Dioxins and Furans. The July 6, 2009 Revised Draft Permit included a prohibition on treating wastes capable of generating dioxins and furans. This prohibition was based upon the Department's air modeling, subsequent soil sampling conducted by the Applicants, and an associated screening level risk assessment that identified furan concentrations in excess of Ecological Screening Limits (ESLs). The permit application provided information indicating that the majority of the high explosives treated at the OB units contain plastics that are capable of generating dioxins and furans. The Department understood that the prohibition upon the open burning of wastes capable of generating dioxins and furans would effectively prohibit the operation of the open burning units. The modeling of air emissions indicated that ESLs for certain species would be exceeded by the release of furans during open burning. In an effort to confirm or refute these modeling results, the Applicants collected soil samples at six locations near the OB units to determine the current concentrations of furans. The sampling results confirmed that furans are present in surface soils at the OB unit at concentrations that exceed ESLs.

The Department concluded that, based on this information, a decisive determination as to whether operation of the OB units at TA-16 will result in excess ecological risk could not be made at the time of permit issuance. The Department issued a Revised Draft Permit to allow open burning, but with restrictions to prevent burning of waste that could generate dioxins and furans. The July 6, 2009 Revised Draft Permit also stated that the Applicants may seek relief from the prohibition on wastes that generate dioxins and furans by submitting a Class 3 permit modification request supported by a demonstration that open burning of such wastes will only be conducted in a manner that is protective of human health and the environment. Such a demonstration would, at a minimum, have to include a collection and analysis of a statistically appropriate number of soil samples that

refutes the screening level assessment's prediction of an unacceptable level of risk to biotic receptors. At the time of issuance of the Revised Draft Permit, such a risk assessment had not been conducted. The July 6, 2009 Revised Draft Permit also contained special waste characterization requirements, certain prohibitions, and annual volume and batch limits on waste to be treated by open burning. The July 6, 2009 Revised Draft Permit also required soil monitoring and surface water monitoring to determine the impact of open burning, and the submission of a study of alternatives to open burning.

The Applicants submitted a risk assessment (*Transmittal of Human Health and Ecological Screening Assessment for the Technical Area 16 Burn Ground, Revision 1*, dated January 8, 2010*)* to the Department on January 11, 2010. A synopsis of the Department's evaluation of the risk assessment is provided below.

BASIS FOR DENIAL

Ecological Risk

Air modeling and depositional patterns. The Open Burn Open Detonation Model (OBODM) was developed at the U.S. Army Dugway Proving Ground to specifically evaluate release and dispersion characteristics from open burn/open detonation (OB/OD) operations. OBODM predicts how emission products from open burning will rise and transport and disperse downwind. These data are used to estimate deposition of the emission products onto soil. OBODM was applied to: 1) understand depositional patterns at TA-16 from OB activities; and 2) evaluate the extent of impacts from conducting propane assisted burns. The model was run under two different presumptions: 1) a burn of 35 lbs of high explosive (HE) contaminated waste; and 2) a burn of 250 lbs of HE contaminated waste. The results from OBODM indicated that there was a dominant depositional area to the north and to the east/southeast of the burn units. The depositional patterns were the same regardless of the weight of waste burned. The only difference between the two scenarios was the extent of deposition. In addition, the OBODM indicated that there was potential for adverse ecological risk due to dioxin/furan congeners.

A second modeling approach using the model CALPUFF, which can estimate concentrations of pollutants from non-steady-state emission sources, was also used by the Applicants. The results from CALPUFF were compared to the results from OBODM. While there was no correlation between the maximum deposition and the estimated risks, the dominant areas of deposition as predicted by CALPUFF were consistent with those predicted by OBODM. Both OBODM and CALPUFF indicated that the primary areas of dispersion and deposition are to the north and east/southeast of the burn units.

Soil sampling. To verify the results of the air modeling, discrete surface soil samples were collected by the Applicants at 36 locations for analysis for dioxin/furan congeners and at 31 locations for metals analysis. Concentrations of dioxin/furans as well as metals detected above background levels were plotted on a site map. The highest concentrations of all data were found to the north and east/southeast of the burn units. The soil data confirmed the deposition pattern predicted by both OBODM and CALPUFF. Since both the modeling and soil data are consistent, it can be concluded that the levels of contamination detected within TA-16 were a result of past operation of the burn units at TA-16 and that contamination detected in soil at TA-16 is not likely from other sources.

The results from the soil sampling were also evaluated in a human health and ecological screening level risk assessment to determine if the burn units could be operated in the future in a manner protective of human health and the environment.

What is a risk assessment? A risk assessment, whether human health or ecological, is conducted to determine if constituents in various environmental media could cause harm to humans or animals that come into contact with them. The risk assessment provides an understanding of potential risks posed by contamination in the

absence of any cleanup or removal. In the case of the TA-16 burn units, this would equate to assessing risks posed by contamination due to past operations of the units.

Risk assessments address the following four basic questions:

1. Who [humans (resident or industrial worker) and/or animals] could potentially be exposed and to what levels of contamination in the environmental media (e.g., soil, air, vegetation)?
2. How could this exposure to site contamination occur (e.g., ingestion, inhalation) and how often may they be exposed (e.g., frequency at site, amount of food ingested)?
3. How do chemicals affect health (toxicity)?
4. What is the potential for actual risk and what level of risk is deemed acceptable?

Human health risk assessment. The screening level risk assessment conducted by the Applicants evaluated both an industrial worker and a hypothetical resident who could be exposed to contamination through ingestion, inhalation, and dermal contact with contaminants in soil. Methodologies outlined in the New Mexico Soil Screening Guidance were followed and site concentrations were compared to the 2009 Soil Screening Levels (SSLs). The resulting risk calculations indicated that both risk and hazard were below the New Mexico target levels of 1E-05 for cancer risk and 1.0 for hazard. Since a screening level approach is deemed conservative, and the results were below target risk/hazard levels, additional analysis of human health risk was not required.

Ecological risk assessment. The ecological screening level risk assessment included several indicator species: kestrel, robin, deer mouse, desert cottontail, red fox, Montane shrew, earthworm, and plants. The only identified protected species potentially present in the TA-16 area was the Mexican spotted owl. The kestrel, which is a high trophic level carnivore, was used as a surrogate receptor for the owl.

The initial screening assessment applied very conservative assumptions, to include maximum ingestion rates, an assumption that contaminants were 100% bioavailable, and use of toxicity reference values (TRVs) based on no-observed adverse effect levels (NOAELs). The results of this initial screen indicated that there were elevated hazards (above the target hazard level of 1.0) for the robin, deer mouse, earthworm, red fox, Montane shrew, and plant. The screening assessment concluded that there was no adverse risk for the kestrel, Mexican spotted owl or desert cottontail.

Following NMED, Environmental Protection Agency (EPA), and the Applicant's own guidance, area use and population use factors were applied. These factors account for how much of actual home range of each receptor is included in potentially impacted areas. The adjusted hazard quotients indicated acceptable risk for all receptors with the exception of the deer mouse, Montane shrew, plant, and earthworm, which had hazards indicative of low to moderate risk.

Using the site maps of soil sampling results, there was an area where contaminant concentrations were clearly elevated compared to the rest of the TA-16 site. In order to assess potential risk to this area of highest impact, a spatial assessment was conducted for the deer mouse and Montane shrew. These two receptors were selected as they appear to be the most sensitive species. The results of the spatial analysis indicated slightly elevated hazard (1.9) for the deer mouse but acceptable hazard for the Montane shrew.

All of the levels of assessment applied conservative TRVs based on NOAELs. The NOAEL is the maximum quantity of a chemical that results in no detectable adverse effect. Use of NOAELs results in a conservative estimation of risk and is useful in initial screening level assessments. However, if the NOAEL-based assessment results in a hazard quotient greater than the target level of 1.0, additional refinement is needed using a lowest-observed adverse effect level- (LOAEL) based TRV to more accurately determine potential impacts to receptors. The LOAEL is the lowest concentration at which an adverse effect is observed. LOAELs are often more representative of population risks and the potential for an adverse effect can not be ruled out without first looking at the risk using a LOAEL. The results of the ecological risk assessment indicated elevated risk (low)

to the deer mouse based on the use of NOAEL-based TRVs, but as a more refined analysis using a LOAEL was not provided by the Applicants, the assessment is considered incomplete, resulting in uncertainty. An overall conclusion of risk therefore can not be made based on the application and other documents submitted by the Applicants.

Comparison of levels to other canyons: Dioxin/furan levels detected at TA-16 were compared to levels detected in other canyons at LANL, including Los Alamos Canyon, Pueblo Canyon, and Pajarito Canyon. Biota studies are being conducted in these canyons and to date the results of these studies have not shown adverse impacts to small animals (such as the deer mouse). The range of dioxin/furans detected in these areas was approximately 2E-10 to 5E-06 milligrams per kilogram (mg/kg). The Applicants indicated that the 95% upper confidence level of the mean (UCL) for TA-16 was 6.65E-06 mg/kg, which is similar to other areas. The Department agrees that for most of TA-16, detrimental impact to small animals would most likely not occur. However, the area of elevated contamination identified by both the model and soil sampling predicted dioxin/furan concentrations an order of magnitude higher than either the TA-16 UCL or the other LANL canyons, adding uncertainty to assessment of the areas of highest impact around the burn units.

Conclusions Concerning the Applicant's Risk Assessment. Evaluation of the human health risk assessment and soil data indicates there are no adverse impacts from exposure to current levels of contamination to either residential or industrial receptors. The air modeling indicated elevated risk in close proximity to the burn units, but on a site-wide basis, confirmed that risk above target levels to human receptors is not likely from continued operations of the burn units.

The Department's evaluation of the ecological assessment as submitted by the Applicants shows a low to moderate ecological risk to non-protected species, including the deer mouse, Montane shrew, and earthworm. A more refined site-specific assessment, incorporating LOAELs, and potentially an assessment of bioavailability and evaluation of routes of ingestion, is needed to determine whether past operations at TA-16 combined with continued burn operations at TA-16 would result in adverse ecological risk.

Public Opposition

The Department has received considerable comment from members of the public concerning the open burning operations at LANL. Approximately 1,400 individuals registered their opposition to continued open burning. The principal objection has been to the use of unconfined burning to treat high explosives and high-explosive contaminated waste, causing uncontrolled releases to the atmosphere. Citizens have cited the health risks to wildlife, public health, and the environment. Open burning is particularly objectionable to persons with allergies or other sensitivities to airborne pollutants.

Alternatives to Open Burning

LANL submitted assessments of various alternatives to open burning to the Department in August 2002 and March 2007. Those assessments identified the existence of alternatives, including the shipping of the applicable waste off-site. The Department believes that the Applicants should reevaluate the alternatives to open burning, considering the recent ecological risk findings and their own ability to reduce HE waste streams.

Conclusion

Because the Applicants have not provided sufficient demonstration that continued operation of the burning units would not result in adverse risk to the environment, the extensive public opposition to open burning, and the Department's belief that there may be preferable and viable alternatives to burning the HE waste, the Department intends to deny a permit to the Applicants to open burn wastes at LANL's TA-16.

CLOSURE OF THE UNITS

A consequence of the denial of a permit application for the TA-16 open burn units is that the units must close in a timely manner in accordance with the applicable hazardous waste regulations. To facilitate a timely closure of the TA-16 open burn units, the Department is, at the same time notice of its intent to deny if made, noticing the availability of the closure plans for the TA-16 open burn units for public comment and review of those closure plans.