LANL TA 16 2001


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# MEMORANDUM

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FROM: Kirby Olson, Environmental Scientist and Specialist O, KO
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**SUBJECT: REVIEW OF TA 16 BURN TRAY CLOSURE FOR TA 16 PERMITTING**

DATE: Dec 5, 2001

In order to help assess the possibility for exposure to personnel/wildlife to contaminants released to the surrounding soil during and after burning at TA-16 open burn units, I have reviewed the LANL TA16 Closure Certification Report for the TA-16-394 Burn Tray. The closure report includes some sampling of the soil surrounding the tray to be closed; I compared those sample results to NMED SSLs and LANL ESLs for terrestrial receptors.

According to the closure plan and the closure report, the TA-16-394 Burn Tray handled the same waste streams as the other open burn areas within TA 16 currently handle. The burning method was different; the materials were placed in an elevated tray and several hundred pounds of wood were placed around the tray and burned to evaporate away liquids and decompose the remaining explosives (current areas use propane burners). Four sets of perimeter samples were taken within 5 feet of the concrete pad for the burn tray prior to any soil removal (but after the pad itself was removed). Each set consisted of a surface (0-1 ft), intermediate (1-1.5 ft) and deep (3-4 ft) sample. Slightly different suites of analyses were done for the different depths of samples.

I compared the inorganic (metals) sampling results to the approved LANL background numbers for these constituents. All the detected metals were present at or below the background levels except for zinc. Zinc at 1.5 to 2 times background occurred in half the perimeter samples at both surface and deep samples. Even at these elevated concentrations, the Hazard Quotient generated for comparison to the NMED zinc SSL from the maximum detection of zinc is 0.004. Selenium was elevated above background in one surface perimeter sample, but generated an HQ of only 0.008 using the NMED SSL. A number of organic compounds were detected at low levels in the soil surrounding the burn area; these organic constituents were present at levels substantially below

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the corresponding NMED SSLs. The exception is the detection of over 1,000 ppm of RDX in perimeter sample 1; the SSL for RDX is 44 mg/kg for residential and 190 mg/kg for industrial; this detection exceeded both SSLs (this area was excavated as part of the closure). The comparisons of sampling results to SSLs would seem to indicate that there is a potential for human health risks associated with explosives in soil in these open burn areas. In addition, the sampling did not include perchlorate (often associated with explosives) or cadmium (not in the TAL metals suite, but often seen in incinerator emissions).

I compared the organic detections and the metal detections above background with the newest version of LANL ESLs for soil (November 2001). For zinc, the highest concentration seen in the perimeter sampling was well below the ESLs for invertebrates, robins, kestrels, cottontail, and mouse. The zinc level exceeded the plant ESL of 10 ppm, but this ESL is below the LANL background concentration. The highest detection of selenium is below the LANL ESLs for invertebrate, kestrel, cottontail, and fox. The selenium exceeds the ESLs for plant, robin, mouse, and shrew, but these ESLs are all at or below the background level of selenium for LANL. Comparisons of the metals results with ESLs therefore do not indicate a potential ecological risk from these constituents. I compared the LANL soil ESLs for HMX and RDX to the levels seen at the two perimeters sampling locations. At perimeter sample 1 surface HMX and RDX exceeded ESLs for all receptors; levels at 3-4 ft were below ESLs. Levels of explosives at perimeters sample 3 were below ESLs for HMX and RDX at all levels.

I compared the LANL soil ESLs for other organic compounds detected in the soil at the site. SVOCs (mostly PAHs) at sample #2 were well below ESLs for all receptors, as were the VOCs at sample #4. ESLs are not available for the dimethylphenols at sample #4, but detections of these compounds were all at or below 1 ppm.

Risk recommendations for permitting of other burning areas: 1.require sampling at closure for metal, VOCs, SVOCs, and explosives- make certain cadmium and perchlorate are included. 2. Possibly require spot sampling for explosives as a permit condition? (Explosives at this burn tray may have originated from spills prior to burning or from prior history as wash filter, but the concentrations are high enough to indicate a potential ongoing risk). 3. As part of permitting process review results of ash sampling done after burns to determine if there are other potential contaminants such as cadmium).