



Department of Energy
 Carlsbad Area Office
FACSIMILE TRANSMITTAL
ROUTING SHEET
 TELEFAX NUMBER 887-1855

Pages: (including cover)

3

Date:

7/18/96

Time:

12:00

To: Mark Weidner, Secretary
 Location: NMED, Santa Fe
 FAX No.: (505) 827-2836

→ cc Ed Kelly

From: GEORGE E. DIALS
 Location: CAO
 Phone: (505) 234-7300

Special Instructions: Background info on the lead in
brine/water issue; it is not a significant
enviro concern or uncertainty. Call me if
you need more info or have questions

Carlsbad, New Mexico

GED



LEAD IN WIPP WASTE SHAFT SUMP BRINE WATER BACKGROUND

ISSUE:

Accumulation of brine water in the WIPP Waste Shaft Sump, and subsequent removal and disposal of this water, has routinely occurred since shaft construction. Water infiltration into the WIPP underground is minimal compared to most mines and is not at all unexpected. Prior to removal and disposal on June 16, 1995 a routine analysis indicated that concentrations of lead exceeded a hazardous waste limit of 5mg/L thus requiring the disposal of this waste water at an offsite hazardous waste facility rather than the past practice of onsite disposal in the WIPP sewage lagoon as permitted by the New Mexico Environmental Division (NMED).

HISTORY:

Most of the brine accumulation in the Waste Shaft Sump results from water flowing down the Exhaust Shaft, filtering through salt at the shaft base, and then about 400 feet down gradient through Marker Bed 139 to the Waste Shaft Sump. Since all WIPP underground ventilation flows up the Exhaust Shaft, the major source of water in this shaft comes from condensate. The amount of condensate corresponds closely with seasonal humidity in the area. In addition there is a minor inleakage of approximately 0.2 gallons per minute occurring about 75 feet down the shaft through a typical crack in the concrete shaft liner.

During normal operations with ventilation to the underground, virtually none of the condensate or inleakage reaches the base of the shaft, however when ventilation is shutdown as an energy cost savings measure over weekends, both the condensate and the inleakage can flow down shaft. During these periods water can leach lead from both installed galvanized chainlink fencing materials and lead packing used during shaft construction.

ACTIONS TO DATE:

A catch basin has been installed at the base of the exhaust shaft that precludes any flow to the Waste Shaft Sump and allows for easier analysis and management of the waste water. Since installation of the basin, analysis of lead is almost 50 times less than the 5mg/L limit, and brine accumulation in the Waste Shaft Sump is negligible. In addition, the source of the inleakage will be determined and mitigated if practical. Also being considered is a resumption of full ventilation flow over weekends as it appears that energy cost savings are offset by the cost of disposal of lead contaminated water.

CONCLUSIONS:

The CAO considers both the water inflow and associated lead concentrations to be minor operational issues that will have no impact on the environment, or human health and safety throughout the operational life of the WIPP. Likewise there is no conceivable way in which this extremely minor water inflow with minute concentrations of lead could influence long term repository performance. This is especially true when considering that after the operational phase all shafts will be totally sealed eliminating any possibility of water or brine flow to the repository level from any possible source above the Salado.

July 11, 1996

Brine Inflow data per the Request of the New Mexico Environment Department**1. What is the total amount of brine?**

Water infiltration into the WIPP is minimal compared to most mines, and appears to have a seasonal impact. Per the attached chart, water removed from the WIPP, either from the Waste Shaft Sump (prior to 1996) or from the Exhaust Shaft catch basin (installed in March 1996) ranges from 0 gallons to a maximum observed 4700 gallons per month.

Water accumulation occurs during periods when the mine ventilation is reduced from a typical single-fan rate of 240,000 cubic feet per minute. Normal ventilation is adequate to evaporate the small amount of water entering the Exhaust Shaft. On weekends, ventilation is reduced to approximately 60,000 cfm. This lower rate is inadequate to evaporate seepage, and also does not appear to provide enough velocity to prevent moisture in the air from precipitating as the air rises in the Exhaust Shaft.

Total water removed from the WIPP underground was 5,850 gallons in 1994, 10,980 gallons in 1995, and 6,115 gallons to date in 1996. As a basis for comparison, the WIPP Air Intake Shaft had an estimated inflow of 10,000 gallons per week prior to grouting between the host rock and the shaft liner.

2. What is the total amount of brine per day?

As noted above, the collected amount is zero gallons per day when normal ventilation is maintained. During a typical weekend (from Friday afternoon through Monday morning), the maximum accumulation has been 1835 gallons.

3. What are the analytical results?

Attached are the analytical results for lead from sump and catch basin water dating back to 1990. All samples have been tested for TCLP metals and zinc, although only lead has been identified as a concern.

4. How often are samples taken?

Since the installation of the catch basin in March 1996, sampling has been conducted monthly. With the indication of lead in excess of 5 mg/l in the 6/10/96 Exhaust Shaft catch basin sample, the frequency has been increased to weekly.