

Hazardous Materials and Waste Management Division UMTRA (Uranium Mill Tailings Remedial Action) Program Issues Excavation Procedures

Radiation Survey

A gamma radiation survey instrument will be accessible to excavation crews. The instrument will be provided by the Colorado Department of Public Health and Environment and will be capable of detection of uranium mill tailings in the range of 0-1000 microrentgen per hour ($\mu\text{R/h}$).

A field operations check on the instrument will be performed before surveying for uranium tailings contamination.

Identifying Contaminated Material

Contamination from uranium mill tailings will be identified as areas 30 percent above the normal gamma radiation background. Fifteen $\mu\text{R/h}$ shall be considered the average meter reading for western Colorado soils. The background gamma plus 30 percent is 20 $\mu\text{R/h}$, which shall be considered contaminated with uranium tailings.

Uranium mill tailings contamination may be in surface deposits or buried in utility trenches. The DOE (Department of Energy) supplemental standards maps may be used to identify potential areas of contamination. Prior to surface penetration, a check shall be made with the meter. After a trench is excavated, the meter shall be lowered for spot checks along the length. Suspicious gray or purple sands should be checked. Tailings are often mixed with soils and appear to be normal dirt.

Excavation

Controlled Areas

If tailings are identified, a controlled area shall be considered extending 10 feet from the edge of the deposit. At that time, tailings excavation procedures and ALARA principles immediately become effective. The supervisor is responsible for enforcement of the procedures.

ALARA Principle

The ALARA Principle (As Low As Reasonably Achievable) will be the overall philosophy and procedure for controlling radiation exposures while managing uranium mill tailings.

Hazardous Wastes

Uranium mill tailings contaminated areas shall be inspected for visible discoloration, odd smells, or for materials such as batteries or transformers. Mixing of hazardous wastes with the tailings may cause the deposit to be considered a commingled waste. Commingled wastes, if above regulatory limits and untreated, cannot be hauled to the Cheney disposal site. Such wastes are regulated with specific handling and storage requirements. The Colorado Department of Public Health and Environment shall be notified immediately upon suspicion of such wastes. These deposits shall not be excavated unless absolutely necessary and then shall be segregated and stored separately from the other tailings or soils.

Avoiding Over Excavation

Disturbance or excavation of tailings shall be avoided if possible. If uranium mill tailings need to be excavated, the minimum should be disturbed or removed. Over excavation causes extra handling costs and fills the limited permanent storage room available in the Cheney disposal cell. Equipment appropriate for the job size is required.

Uncontaminated overburden shall be removed and segregated from uranium mill tailings below. Only uranium mill tailings contaminated materials shall be transported to the Interim Storage Facility or Cheney. Care shall be taken to avoid mixing contaminated soils with uncontaminated soils. The radiation meter shall be used to identify soils in question.

The uranium mill tailings contaminated areas considered for removal shall be visibly marked for the machine operator. This is to segregate the contaminated material and avoid mixing. Spray paint, colored flags or fencing are appropriate to delineate the uranium mill tailings contaminated areas.

No trash, wood, or tires shall be shipped to the Interim Storage Facility or Cheney. Such materials shall be decontaminated and disposed of in the local landfill. Uranium mill tailings contaminated concrete or asphalt shall be sized properly to allow compaction at Cheney. No debris shall be larger than 3 feet cubed in size. No pipe shall be longer than 10 feet in length.

Tailings excavated shall be returned to the hole if possible. An exception is for surface deposits. Tailings removed from the top two feet of the surface should not be replaced. Clean fill will replace the contaminated soils removed.

Stockpiling

Stockpiling of uranium mill tailings contaminated material should be avoided if possible, but is allowed. Stockpiling may cause concerns to property owners. The owner's permission shall be sought before stockpiling on private property. Stockpiled material shall be fenced from public access.

Asphalt

When rotomilling asphalt over uranium mill tailings contaminated soils, care shall be taken to not penetrate into the tailings. If tailings are mixed with the asphalt, the asphalt should be inspected with a meter. If the mixture shows a meter reading of 30 percent above the radiological soils gamma background, it is considered contaminated. Asphalt removed in chunks over uranium mill tailings contaminated soils should be inspected on the underside with the survey meter.

Water Main Breaks

If uranium mill tailings are washing away due to a water line break, controlling dams shall be established to halt the spread of contamination. A meter survey downstream should be conducted to insure that any contaminated materials spread by the break have been cleaned up.

Decontamination

All equipment used for excavation or hauling of tailings shall be inspected and decontaminated. Visible tailings shall be swept or sprayed away. Uranium mill tailings contamination removed shall be returned to the excavation or placed in the Interim Storage Facility.

Workers in contact with tailings shall be decontaminated. Visible tailings shall be swept or washed away. These workers shall be frisked with the beta-gamma meter for verification of decontamination. If clothing will not pass the frisk, the workers shall change into clean coveralls. Contaminated clothing shall be taken to the Interim Storage Facility for further decontamination and frisking.

Cease Work

Work shall cease when the supervisor or Colorado Department of Public Health and Environment determines that the procedures are not or cannot be followed. An example is high winds making it impossible to control dust, a truck that leaks tailings or non-cooperation of workers.