

## **Hazardous Materials and Waste Management Division UMTRA (Uranium Mill Tailings Remedial Action) Program Issues As Low As Reasonably Achievable (ALARA)**

For gamma radiation exposure from uranium mill tailings for non-radiation workers, the limit of 100 millirem per year in the Regulations, Part 4.14.1, Radiation Dose Limits for Individual Members of the Public, is required. EPA is currently considering lowering this limit to 15 millirem per year, while the Nuclear Regulatory Commission believes that 30 millirem per year should be used (as applied in the decommissioning of facilities). The allowable exposure for radiation workers is 5,000 millirem per year. The Tailings Management Plan supports adherence to the ALARA philosophy, as stated in Part 4.5 of the Regulations, to limit exposure to levels less than the regulatory requirement.

ALARA is an approach to radiation protection to manage and control exposures (both individual and collective to the work force and the general public) and release of radioactive materials to the environment at levels as low as is practical, taking into account social, technical, economic, practical, and public policy considerations. As used in this context, ALARA is not a dose limit but a process, which has the objective of attaining doses as far below the applicable controlling limits as is reasonably achievable.

The ALARA principle will be the primary philosophy and tool for controlling radiation exposures during all activities of managing uranium mill tailings. The ALARA principle will be implemented by use of the following requirements:

### **Exposure Control**

The upper limit of gamma exposure allowed will be 15 millirem per year. A log will be kept by Colorado Department of Public Health and Environment individuals exposed in the Interim Storage Facility controlled area. Using the average tailings activity, approximately 300 hours of trench work is allowable per year under this exposure limit. The Local Governments and Public Utilities and the Colorado Department of Public Health and Environment will consider additional rotations out of trench work when any individual worker has accumulated 100 hours of work in contaminated trenches in any given year.

A 10 foot control area will be maintained around exposed tailings. Only trained personnel will be allowed into the controlled area. The Interim Storage Facility will also be considered a controlled area requiring training and exposure documentation for entry.

Individuals entering the controlled area will limit as much as possible the time spent there. Individuals will position their work as far from the contaminated areas as possible. Only necessary equipment or tools will be allowed into the controlled area.

Uranium mill tailings contaminated areas will be fenced off from the public during non work times. No unauthorized entry into the controlled areas is allowed by the public.

Dust and radioactive particulates will be controlled by spraying water. No visible dust is allowed to leave the controlled area. No eating, chewing, smoking or drinking is allowed in the controlled area.

Haul trucks will be tarped to prevent materials blowing out. A plastic sheet diaper will be positioned in the tailgate to contain wet tailings. If a spill occurs, the spill procedure will be in effect.

All equipment and personnel in contact with tailings will undergo decontamination. Haul trucks and contaminated personnel will be frisked with a radiation meter to verify decontamination.

Tailings deposits excavated from the top two feet of an excavation should not be replaced into the hole. These tailings should be removed and transported to a controlled stockpile or to the Interim Storage Facility. Clean fill should replace tailings deposits on the surface.