Enclosure 2

DOE's Position on Dose Rate "Measurement Uncertainty"

The basis for EPA's measurement uncertainty concerns, as cited in their Technical Support Document (TSD), "Review of DOE Planned Change Request for Shielded Containers for RH TRU," December 29, 2010, (Section 10.4, page 57), is "to ensure that the legal limit of 200 mrem/hr is not exceeded." The TSD further cites examples of assay data used to characterize waste prior to shipment to the WIPP. Data collected from laboratory analytical instruments or systems used for assaying waste have different measurement and uncertainty standards than for the portable radiation survey instruments used to measure radiation dose rates in the field from waste containers and transportation packages. Furthermore, the results from analytical instruments play an important role in assuring compliance with the disposal standards by quantifying the radionuclides that are placed in the disposal system. Therefore, some knowledge of the uncertainty is important in determining the overall uncertainty in the performance assessment results. Surface dose rate measurements play no role in compliance with the disposal standards and uncertainty in dose rate measurements do not figure into the overall uncertainty of the long-term releases from the repository. The accuracy of surface dose rate measurements is controlled by standard industry practice which generally specifies that instruments be calibrated to a traceable standard and that they be used within their intended measurement range. This practice is sufficient to satisfy the nuclear safety requirements associated with the management of the containers of waste prior to disposal. The 200 mrem/hour surface dose rate limit is a nuclear safety provision to meet shipping requirements and to limit dose to workers. Instruments commonly used for this purpose are specified to be calibrated (traceable to a national standard) and be used within their intended range. No further provisions for uncertainty are needed to provide this protection to workers. The purpose of these surface dose rate measurements for shielded containers is not to determine if the waste is RH TRU or CH TRU, this determination has already been made at the generator site and the waste has been characterized as RH TRU. The measurements are to determine if the waste is appropriate to ship and handle as CH TRU waste. The criterion for making this determination is the surface dose rate on the surface of the shielded container.

Since the 200 mrem/hour is a safety and Land Withdrawal Act criterion used to distinguish between CH TRU and RH TRU waste, it is left up to the DOE, under their responsibility for determining nuclear safety for defense generated TRU waste, how this criterion is met. The DOE uses standard instrumentation used in accordance with sound industry practice.

The DOE practice is consistent with other federal agencies responsible for nuclear safety of workers and the public. The NRC and DOT have codified standards that address the requirements of measuring radiation dose rates near waste containers and transportation packages and that are directly relevant to EPA's concern. The NRC regulation is found in 10 CFR 71.47, "External radiation standards for all packages" and the DOT regulation is found in 49 CFR 173.441(a), "Radiation level limitations and exclusive use provisions". Both of those regulations limit external surface radiation dose rates to 200 mrem/hour. The DOE's proposed measurement procedure for shielded containers is consistent with the NRC and DOT regulations, which do not contain a requirement to express the measurement uncertainty. The value measured by the portable instrument is the value used to demonstrate compliance. No "ranges of accuracy" are included with those values. The conclusion being that the process of documenting dose rates associated with waste containers and transportation packages does not require recording the measurement uncertainty. This is both consistent with DOT and NRC requirements and industry practice over the last half century.

Process for Dispositioning Drum Configurations >200 mrem/hour

At WIPP, surveys are performed on the payload assemblies at 30 centimeters for the purpose of worker protection in accordance with approved procedures. WIPP surveys the entire payload; individual containers are not surveyed at WIPP. WAC compliance is met at the generator sites. The survey of record is performed on the single container at the generator site prior to it being placed in a payload assembly.