

There are a number of 2109 waste packages currently in the certification review process where gamma spectroscopy has been used as the principal method for characterization. Over the past several months numerous questions have been raised regarding the validity of the characterization techniques and extent of documentation. Upon consideration of recent questions, comments and reviews of gamma spectroscopy methods and results by both outside subject matter experts and BJC, it appears the interests of LMER will best be served by ensuring the waste packages (employing gamma spectroscopy methodology) that are transmitted to BJC meet a minimum set of criteria. Consequently, certification of in-process waste packages employing gamma spectroscopy as the principal means of characterization will be based (in part) on satisfactorily meeting the following four criteria.

- 1) Gamma spectroscopy data must include an 'unidentified peaks' report associated with the spectral analysis. All unidentified gamma peaks reported by the gamma spectroscopy software shall be reviewed. Each unidentified peak will be evaluated and annotated by the gamma spectroscopy provider. An explanation as to the unidentified peak's association with the radioactivity contained in the waste package shall be provided (e.g. secondary peak, primary peak of unidentified library peak, background activity, single escape peak, annihilation peak, etc.).
- 2) If the gamma spectroscopy software provides an output which identifies the radionuclide based upon a nuclide library and/or calculates the radionuclide content of the waste package, primary and secondary radionuclide reported peaks will be reviewed to ensure the appropriate branching ratios exist to substantiate radionuclide identity determinations, etc. For instances in which a short-lived daughter in a decay chain has been identified that is in secular equilibrium with the parent and the long-lived parent has not identified, the gamma spectroscopy shall be annotated to attribute the activity to the long-lived parent.
- 3) Gamma spectroscopy data will be reviewed for detector dead time. If the detector dead time is greater than 10%, the generator will provide a explanation for any activity compensations as a result of the increased detector dead time or provide justification that the reported activity values do not need to be compensated for due to detector dead time.
- 4) Provide analytical data or technical justification to substantiate the fact that no pure beta or pure alpha emitters are present in the waste other than those which may already be identified.

There is an additional item that needs attention. For SLLW and TRU (not mixed) waste types, the determination that RCRA/TSCA contaminants are not present needs to be documented on the PK (WSPS) forms [NOTE: not all the previously completed forms, just the PK (WSPS) forms that are currently being used or those used in the future]. A simple statement declaring that none are present is acceptable (but remember that there must be a defensible rationale to support that claim should it be challenged in an audit).

Also please note that with respect to the concerns that have recently been raised about documentation/records and its location/identification, further guidance will be issued shortly under a more general heading.

Please let me know if further clarification is needed.