DOE STD-1027 Clarification and Revision

- **DOE Letter to DNFSB**
  - intent to address all DNFSB issues
  - form Working Group
  - clarify/revise STD-1027
- **DOE Working Group – Dec. 06, Jim O'Brien/DOE-HSS**
  - 29 Issues Identified by 4 Subgroups – potential benefit
  - Supplementary Guidance – addressed most issues (conservative relative to STD)
  - Standard Revision
- **Supplementary Guidance**
- **Revise Standard?**

SAWG May Workshop – STD-1027 Panel

- **Bob Nelson (DOE-HQ/EM-60)**
  - **Current STD practices**
- **Andy Pritchard (PNNL)**
  - **Criticality and changes to STD**
- **Carol Sohn (DOE/SC-PNNL)**
  - **Benefit and cost perspective of possible changes to STD, 830, etc.**
- **Mukesh Gupta (WSMS, SAWG AA Chair)**
  - **Cat. 2 & 3 Threshold Quantities and Methodology**
- **Jim O'Brien (DOE-HQ/HS-22)**
  - **Working Group chairman perspective**

STD-1027 Issues Identified in Working Group

- Additional guidance on the adjustment from HC-2 to HC-3 (including the use of alternate airborne release fractions in determining the final hazard category and consideration of accident conditions for shipping caskets and sealed sources). (HIGH)
- How and when to address potential changes of hazard category in final categorization (MEDIUM)
- Further guidance on the transition from a HC-3 facility to a radiological NSTP 2000-2. (HIGH)
- Outlining generation and approval process for hazard categorization (HIGH)
- Clarification of how assumptions used in calculating threshold quantities are to be applied including situations where the public site boundary is much closer than 300 meters and whether the hazard categorization and/or facility materials at risk (MAR) inventory can be based on ensuring doses are consistent with these values rather than using the threshold quantity values (HIGH)

STD-1027 Issues Continued

- Application of final hazard categorization, what is this used for? (HIGH)
- Clarification of credible energy source and any other site specific, unique issue interpretation (HIGH) includes
  - Credible source
  - Site boundary
  - Final dose
  - Location? (segmentation and proximity to credible energy sources)
  - Unmitigated definition
- How should CTAs be involved in final hazard categorization? (LOW)
- Application to Environmental restoration and inactive waste sites (HIGH)

STD-1027 Issues Continued

- Should criticality be addressed by DOE-STD-1027 (HIGH)
  - Criticality as a potential event in HC-3 facilities
  - Segmentation and the nature of the process as related to criticality, including evaluation of seismic events when considering criticality;
  - Addition of sub-critical limits for other fissionable isotopes addressed in ANSI/ANS-8.15**.**
  - Critical Assemblies application
  - the minimum theoretical mass necessary for criticality accidents,
  - the minimum theoretical mass necessary for nuclear criticality to occur with moderation and reflection, and
  - criticality determined to be incredible by "nature of process."

STD-1027 Issues Continued

- Consistent methodology for derivation of HC-2 and HC-3 threshold quantities or clarification on how and when they are used, including the technical basis. (HIGH)

- Updating of HC-2 and HC-3 threshold quantities in Table A.1 based on later International Commission on Radiological Protection (ICRP) information (e.g., ICRP 68/72) and an allowance to use the latest available dose conversion factor information available at the time of the hazard categorization effort (regardless of whether Table A.1 is actually updated or not). (HIGH)
  - Updating the standard to reflect the latest dose conversion factors from ICRP 68, 71, and 72 as discussed in Federal Guidance Report (FGR) 13. –continuous updating of ICRPs (HIGH)

STD-1027 Issues Continued

- Expansion of the threshold quantities to cover the missing isotopes that are currently contained in a supplemental LANL document (referenced in 1027). (MODERATE)
- Changing the threshold gram limit for Fe-59 given in Table A.1. (MODERATE)
- 1000 CURIES of fission products clarification (MODERATE)
- Consideration of more realistic exposure pathways for HC-3 facilities. (MODERATE)

STD-1027 Issues Continued

- Permissible use of segmentation for events which, by their nature, will affect all portions of the facility (e.g., seismic event). (HIGH)

- Treatment of sealed sources exclusions. (HIGH)
  - Additional clarification of sealed source exclusion, particularly as it relates to acceptable certifications of the sources.

STD-1027 Issues Continued

- Discussion of the relationship between the hazard analyses performed for hazard categorization and safety basis for 10 CFR 830 and hazard analyses and/or categorizations performed for Emergency Preparedness (EPHAs), Environmental Impact Statements, and Process Safety Management requirements. (OUT OF SCOPE)
- Updating the standard to reflect issuance of 10 CFR 830, Subpart B, and retirement of DOE Order 5480.23, as well as to update other references. (HIGH)
- Stricter guidance that prohibits the use of Type B containers for projects under design as a means of controlling MAR. (MODERATE)

STD-1027 Issues Continued

- Whether DOE-STD-1027 should be consistent with DOE-STD-3009 in allowing credit for passive safety systems that will survive the accident conditions. (MODERATE)
- Clarification of commercially available products exemption (MODERATE)