

Nuclear Science and Technology Division

**Status, Relevance, and Relationships among ISO Standards Initiatives
of OECD and IAEA**

Calvin M. Hopper

*Oak Ridge National Laboratory, * P.O. Box 2008, Oak Ridge, TN 37831-6170, USA*
hoppercm@ornl.gov

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Oak Ridge National Laboratory,[†]
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Within the International Organization for Standardization (ISO), Technical Committee 85 (TC85) on *Nuclear Energy*, Subcommittee 5 (SC5) on *Nuclear Fuel Technology*, there is a Working Group 8 (WG8) on *Standardization of Calculations, Procedures and Practices Related to Criticality Safety*. WG8 has developed, and is developing, ISO standards within the category of nuclear criticality safety of fissionable materials outside of reactors (i.e., non-reactor fissionable-material nuclear-fuel-cycle facilities). WG8 is comprised of various ISO member state representatives with strong backgrounds in the theoretical, operational, technical, analytical, administrative, and regulatory aspects of nuclear criticality safety of fissionable material operations, storage, and transport outside of reactors. The extant and developing standards from WG8 are based upon the professional consensus process as required by ISO requirements documents for standards development. These standards represent broad international involvement and consensus that are based upon knowledge and experience. Some of the developing ISO TC85/SC5/WG8 standards reference technical bases that have been developed by expert groups within the Organization for Economic and Cooperative Development (OECD) Nuclear Energy Agency (NEA) Working Party on Nuclear Criticality Safety (WPNCS). Other technical and administrative bases have been developed by experts within WG8. The ISO TC85/SC5/WG8 members and products serve as a sound resource for international regulatory and standards organizations to use in the development of safety guidance documents and regulations. In that regard, potential and current interactions regarding standards development among the WPNCS, WG8, and the International Atomic Energy Agency (IAEA) Fuel Cycle Facilities (FCF) are identified in this paper. With some formal collaborative planning, support, and assignment among and within organizations, it is anticipated that quality technical and administrative bases for nuclear criticality safety outside of reactors can be produced. The paper will provide background and some examples of extant and developing WG8 standards and personnel that could be a resource for further FCF safety standards and guides development, review, and comment.

As earlier implied, the WG8 standards are both of a general and specific nature – meaning that they may have broad applications. For instance, ISO 1709 and ISO 14943 have relevance for the establishment of criticality safety programs and specifications irrespective the type of a FCF (e.g., uranium fuel fabrication, mixed oxide [MOX] fuel fabrication, and uranium enrichment). These standards also provide requirements and recommendations for developing administrative and technical nuclear criticality safety evaluations/analyses for operations, storage, and transport

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of fissionable materials outside of reactors. ISO 7753 and IEC/ISO 60860 have relevance to any FCF in need of nuclear-criticality-accident detection/warning notification. The currently developing ISO standards on emergency planning, response, and analysis for criticality accidents could be of value to IAEA FCF standards development. Standard consensus values for critical/subcritical systems comprised of mixed plutonium–uranium MOX could provide reference values for IAEA draft standard DS318, “Safety of MOX Fuel Fabrication Facilities.”

Further examples of WG8 product relevance to emerging information from the WPNCS and the development of FCF standards development will be discussed.