MILDOS-AREA Verification

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The MILDOS-AREA computer code is used to estimate the radiological impacts of airborne emissions from uranium mining and milling facilities. The code allows users to consider both conventional uranium ore operations and operations associated with in-situ leach (ISL) facilities. The code is used by license applicants and U.S. Nuclear Regulatory Commission (NRC) staff to perform routine radiological impact and compliance evaluations for various uranium recovery operations. As part of a major code update, the following improvements and additions were made to the code: support for ores containing Thorium 232 (Th-232) and its daughter radionuclides in addition to the currently supported Uranium 238 (U-238) and its daughter radionuclides, a revised area source model, the capability to perform sensitivity analysis on specific input parameters, the capability to use current meteorological data provided by the National Climatic Data Center, and an interactive results module. MILDOS-AREA 4 has undergone beta testing at the NRC and is currently being prepared for public release, anticipated in late summer 2014. In parallel with the beta testing process, model calculations performed by the code were verified “by hand” (implemented on spreadsheets). Hand calculations were performed for all aspects of the models in MILDOS-AREA, including those for material release (e.g., the wind-blown dust (erosion) model involving storage piles at hard-rock uranium mill facilities or the irrigation land application model associated with ISL facilities), plume rise, air dispersion, downwind ground concentrations (deposition, resuspension, radioactive and environmental decay), concentrations of foodstuffs, and human exposure (inhalation, external exposure from groundshine and cloudshine, and ingestion). The verification report is slated for release in late fall 2014.