

Public Abstract

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Department:Nuclear Engineering

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Title:Maximum Hypothetical Accident Analysis for HEU to LEU Fuel Conversion at the University of Missouri Research Reactor

As a part of the Global Threat Reduction Initiative (GTRI) and the Reduced Enrichment for Research and Test Reactors (RERTR) programs, the University of Missouri Research Reactor (MURR) intends to convert from highly-enriched uranium (HEU) fuel to low enriched uranium (LEU) fuel. As a part of the conversion, the maximum hypothetical accident (MHA) analysis had to be done to determine dose consequences for both radiation workers and members of the public. For the dose to the radiation workers inside the containment building, the committed effective dose equivalent (CEDE) was 0.889 mrem and the total effective dose equivalent (TEDE) was 1403 mrem using the 10 CFR 20 default derived air concentration (DAC) and 403 mrem using the pre-2007 version of 10 CFR 835 DACs. For the dose to a person outside the exclusionary boundary area (EBA) of MURR, the CEDE was 0 mrem and the TEDE was 8.58 mrem using the 10 CFR 20 default DAC and 2.45 mrem using the pre-2007 version of 10 CFR 835 DACs. These doses to both the radiation workers and the general public are lower than the 10 CFR 20 guidance for dose consequences.