

# The Safety Case for Deep Geological Disposal of Radioactive Waste

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## ABSTRACT

The aggregation of evidence to support waste disposal facilities is known as the “safety case”. It addresses the scientific and design basis and extends beyond the development and application of numerical models. At DOE’s Waste Isolation Pilot Plan, knowledge of features, events, and processes (FEPs) have formed the basis of 24 conceptual models integrated into the performance assessment (PA) to simulate site conditions over the 10,000-yr regulatory period. This presentation discusses the migration from a conservative assumption-based PA to an evidence-supported PA in large part because of additional, refined data on repository conditions and access to high-performance computing. Today, some 22 years after receiving its first waste shipment, completing the fourth quinquennial recertification, and having some changes to the repository design, many of WIPP’s original bounding PA assumptions demonstrating compliance remain valid.



## BIO

Andy holds a Bachelor of Science Degree from the University of The West Indies, and Masters and Doctorate degrees from the University of Guelph, Ontario, Canada. Prior to joining the DOE in 2015, he spent 3 years as a visiting geohydrologist at the Caribbean Institute for Meteorology and Hydrology in Barbados. Before Barbados, he spent 17 years as the senior scientist for vadose zone hydrology at the Pacific Northwest National Laboratory in Richland WA, and served as an adjunct professor in Civil and Environmental Engineering at Washington State University. He is Project Manager for the Carlsbad Environmental Monitoring and Research Center (CEMRC), a reviewer in the DOE’s Low-Level Waste Disposal Facility Federal Review Group (LFRG), and adjunct Full Professor in the Department of Geology and Geological Engineering at the University of Mississippi.