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Performance Assessment and Inventory

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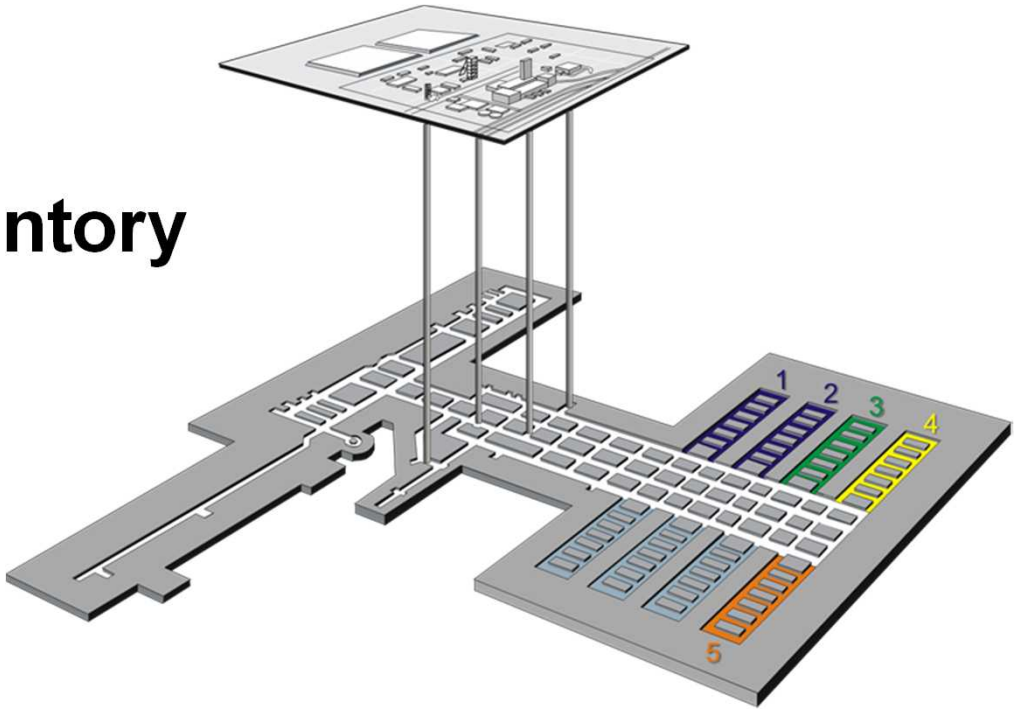
Outline

- Introduction to Performance Assessment (PA)
- Radionuclide inventory in PA
- Non-radionuclide inventory in PA
- Summary



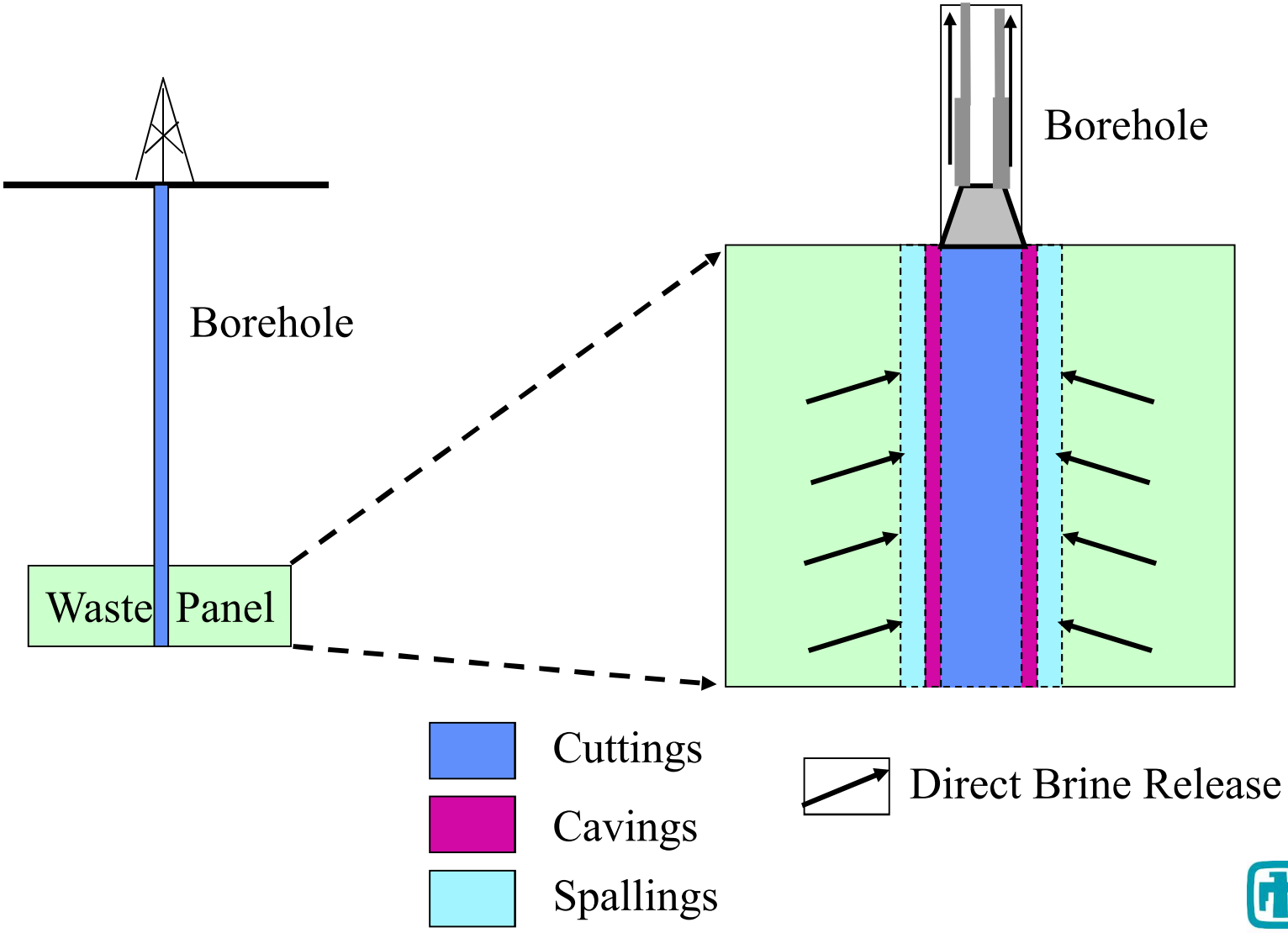
Performance Assessment

- **What is WIPP PA?**
  - ***WIPP PA is the probabilistic modeling framework that DOE uses to demonstrate compliance with EPA containment requirements.***

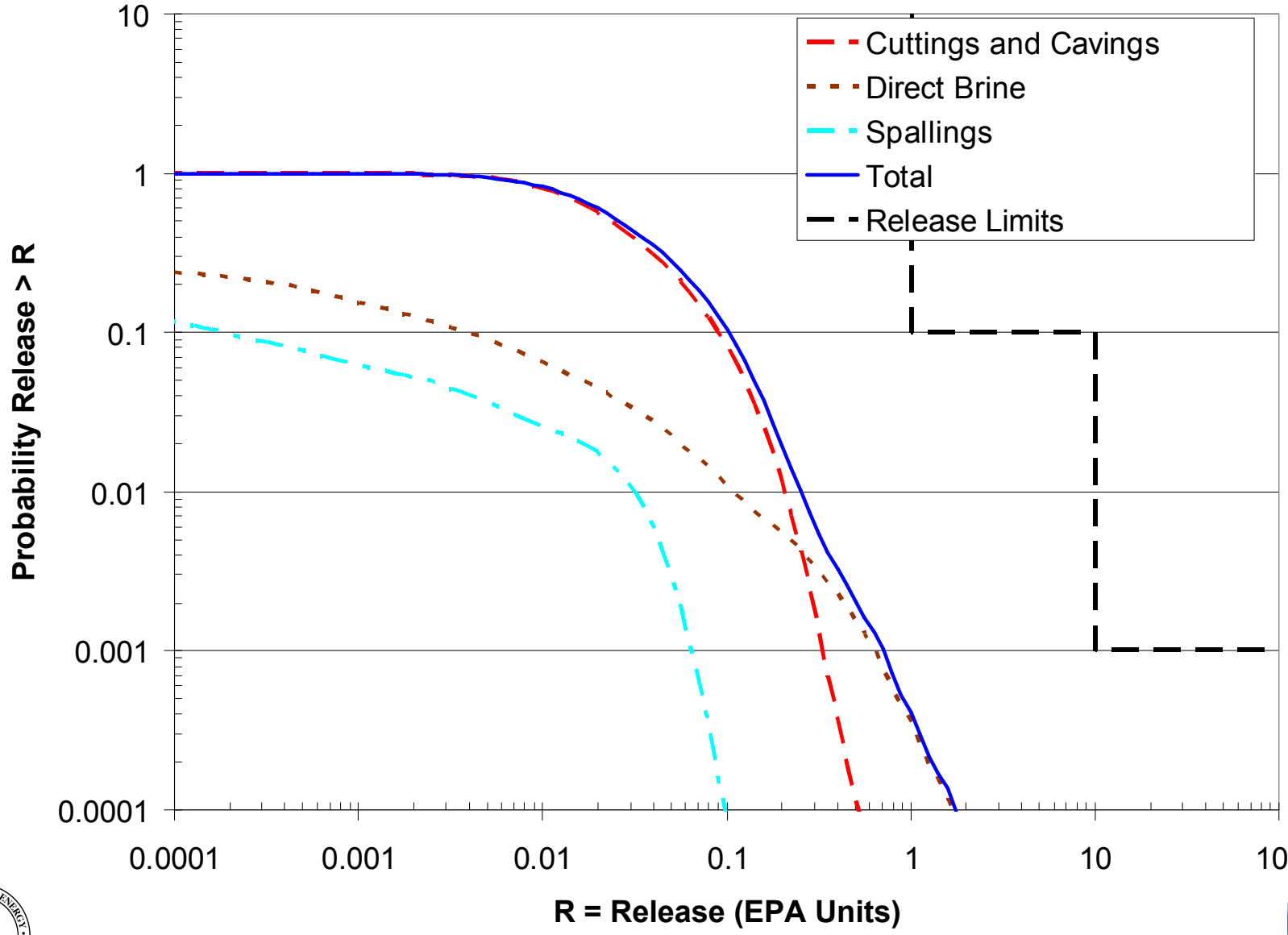
WIPP PA Objectives

- WIPP PA uses twenty-four conceptual models to describe possible pathways for releases to the land withdrawal boundary.
- PA answers three questions about a repository system:
  - What can happen after permanent closure?
  - How likely is it to happen?
  - What can result if it does happen?
- And one question about the analysis:
  - What level of confidence can be placed on the estimate?

Schematic of Direct Releases



Typical CCDF

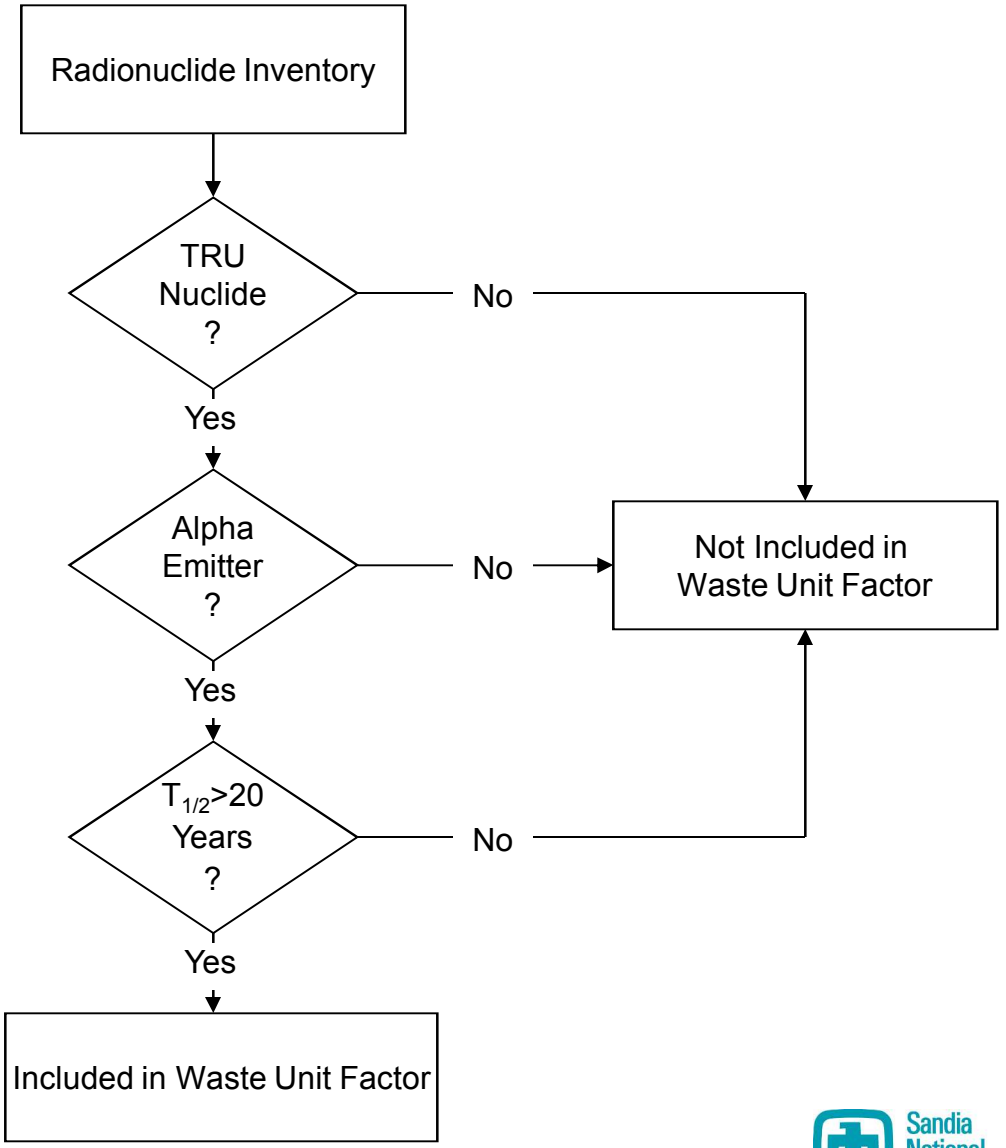


Inventory in WIPP PA

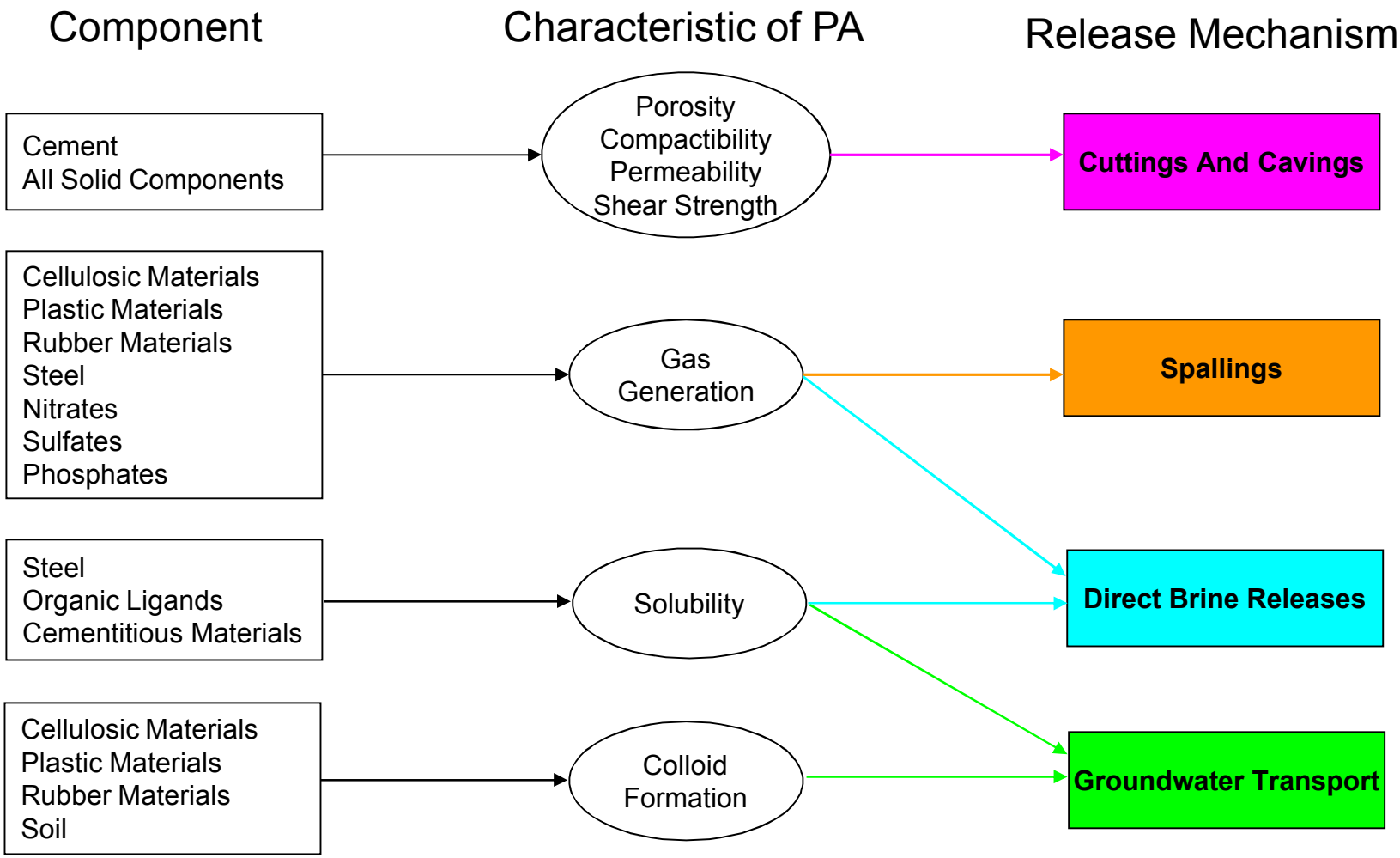
- **How is the inventory used in WIPP PA?**
  - ***The inventory is used in PA to calculate long-term release from the WIPP and to determine the chemical and physical states of the repository.***

Radionuclides in PA

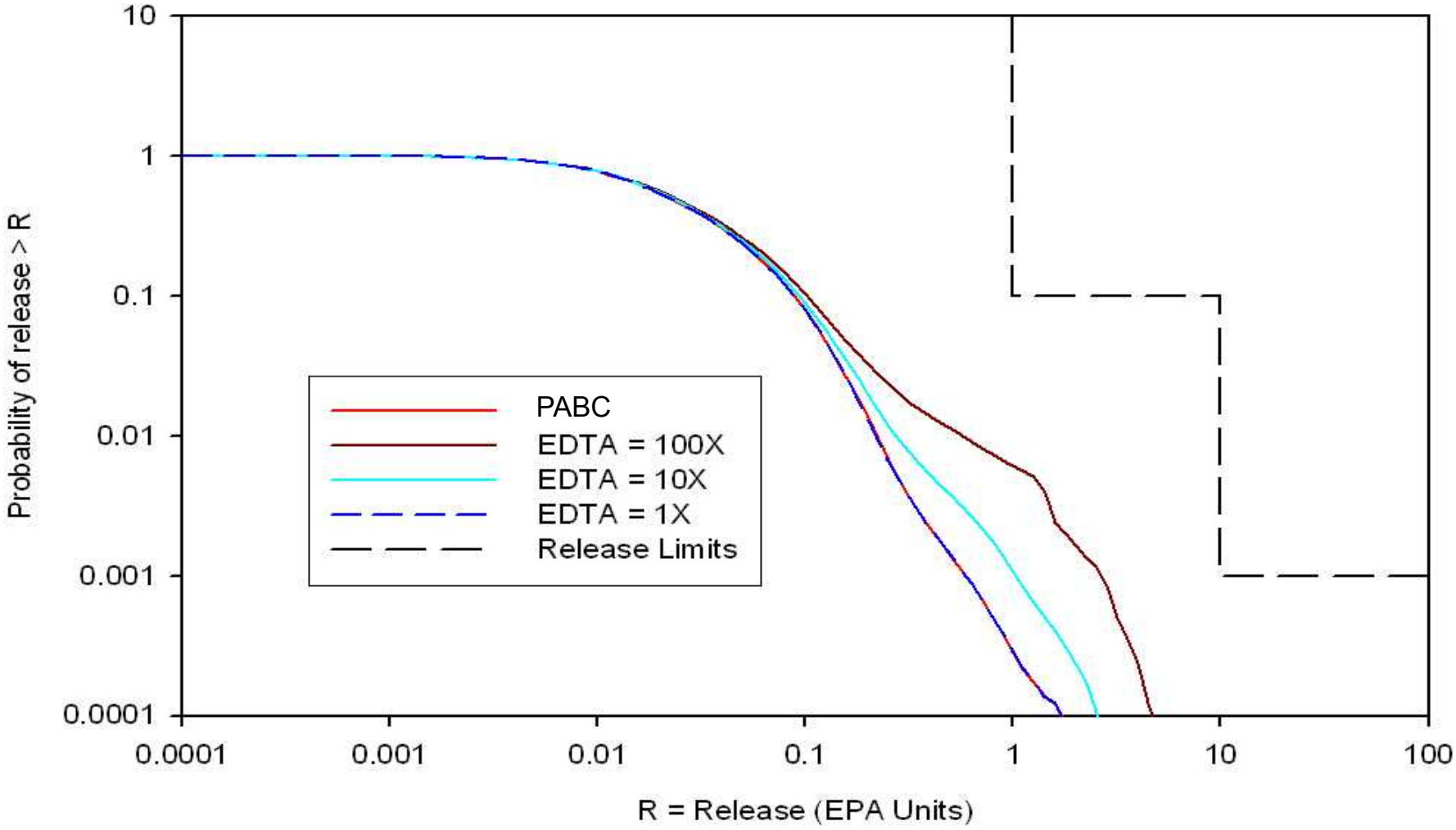
- **The Waste Unit Factor (WUF) is the number of millions of curies (Ci) of α-emitting TRU radionuclides with half-lives longer than 20 years (40 CFR Part 191, Appendix A), based on the TRU waste inventory to be disposed.**



Non-Radionuclide Materials in PA



EDTA Sensitivity Analysis Results



Summary

- PA in general is a quantitative, probabilistic estimate of the future performance of a system that is required by regulation to evaluate long-term performance.
- The inventory in PA is used to determine
  - Long-term releases
  - Physical and Chemical state of the repository
- PA relies on the inventory to produce an accurate model to evaluate performance.