

## The Feasibility of Nuclear Waste Management in Saudi Arabia Coming from Nuclear Power Plant

Nuclear energy is not sustainable if its waste is not effectively managed, considering its global significance, accounting for 10% of electricity generation and climate change mitigation efforts. Saudi Arabia's entry into nuclear power underscores this shift towards a cleaner energy future.

This poster discuss the type of the nuclear waste coming from the nuclear power plant, and presents a case study focused on nuclear waste generated by two Pressurized Water Reactors in Saudi Arabia. It outlines three essential waste management phases: Fuel Pool, Dry Storage, and Deep Geological Disposal. Calculations were made to size the fuel pool and discuss the type of the dry storage cask.

Recommendations from the study include keeping spent fuel in a pool for at least five years, proximity of dry storage facilities to the power plant, horizontal casks for safe transportation, and deep geological disposal as a long-term solution.

To make DGD feasible, stable site selection, stringent regulation, long-term containment, adherence to global guidelines, secure waste transport, and adaptability are necessary. Ensuring nuclear waste is efficiently managed is crucial for the continued use of nuclear energy as a sustainable, clean power source.

### Speaker Bio

**Primary author:** ALHAJJI, MOHAMMED (Mechanical Engineering)

**Co-authors:** ALMALKI, ABDULLAH (Chemical Engineering); SHAMS, Afaque (Mechanical Engineering); ALGAZLAN, OSAMAH (Chemical Engineering)

**Session Classification:** Day 2- Poster Competition

**Track Classification:** Student competition