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Characterisation of Radioactive Boundary Wastes: A Bayesian Solution

Bayesian statistics is highly complementary to the Data Quality Objectives approach due to their underlying iterative principles. For waste characterisation this provides an opportunity for greater information for decision makers when analytical data approaches a waste boundary. The Bayesian t-test is analogous to the current statistical approach advised by CL:AIRE (Contaminated Land: Applications in Real Environments) with the benefit of more completely using Prior information and allowing for the introduction of adaptive sampling strategies based on developing knowledge. This iterative approach provides a more fully underpinned justification for sampling numbers and provides increased flexibility for the DQO team than the more traditional statistical approach. Developed in a UK regulatory context and translated to a specified waste stream (fallen trees) from the Fukushima Daiichi Nuclear Power Station, this paper demonstrates potential benefits of this methods for a waste nearing the characterisation boundary and shows how the approach can be used to support decision making on radioactive waste disposal in a global context.

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