

Generation of Waste Streams in Small Model Reactors

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Abstract : The nuclear industry is a technology that can fulfill future energy needs but requires special attention to ensure safety and reliability while minimizing any environmental impact. To meet these expectations, the nuclear industry is exploring different reactor technologies for power production. Several designs are under development and the technical viability of these new designs is the subject of many ongoing studies. One of these studies considers the radioactive emissions and radioactive waste generated during the life of a nuclear power production plant to allow a successful license process. For all the modern technologies, a good understanding of the radioactivity generated in the process systems of the plant is essential. Some of that understanding may be gleaned from the performance of some prototype reactors of similar design that operated decades ago. This paper presents how, with that understanding, a model can be developed to estimate the emissions as well as the radioactive waste during the normal operation of a nuclear power plant. The model would predict the radioactive material concentrations in different waste streams. Using this information, the radioactive emission and waste generated during the life of these new technologies can be estimated during the early stages of the design of the plant.

Keywords : SMRs, activity transport, model, radioactive waste

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