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Development and Licensing of SFU Neutron Generator Facility

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Subcritical Intense Multiplier Of Neutrons (SIMON) is a proposed neutron generator facility in the Department of Chemistry at Simon Fraser University. The facility aims to support a research program including production and separation of radioisotopes for medical applications, as well as studies of nuclear structure, neutron induced fission, neutron activation for non-destructive elemental analysis of materials, and to study the feasibility of subcritical accelerator-driven multiplication of neutrons.

As part of the SIMON facility licensing process with the Canadian Nuclear Safety Commission, dose rate predictions were computed via Monte-Carlo methods using the GEANT4 (GEometry ANd Tracking 4) simulation framework. Annual dose rate contributions to personnel-occupied work areas surrounding the neutron generator vault are predicted to be less than half of the Health Canada limit of 1 mSv/yr for members of the public. Recent and upcoming developments, including receipt of the license to construct the facility, ongoing construction of the facility, and independent verification of the dose rate predictions, will be discussed.

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