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**Assessment of the Total Effective Dose Equivalent for Hypothetical Accidental Release  
from the LEU GHARR-1 Core**

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**ABSTRACT**

In this study, health physics code Hotspot was used to calculate the total effective dose equivalent due to the release of radionuclides from hypothetical MNSR Ghana Research Reactor-1 (GHARR-1). Calculations have also been done for the proposed LEU core inventory, source term, and atmospheric dispersion. Radiation doses were assessed in different environmental pathways; ground deposition, inhalation and submersion. Radiological dose assessment for 16 cardinal directions from different distance at GHARR-1 due to the release of <sup>90</sup>Sr, <sup>131</sup>I and <sup>137</sup>Cs from the core were found to be less than 0.5 $\mu$ Svhr<sup>-1</sup> proposed by IAEA for the members of the public. The total dose rates for different pathways were directly proportional to the air concentration. The result showed that conversion of the GHARR-1 reactor from HEU to LEU will therefore pose no significant radiological hazard for the members of the public and environment within the safety perimeter of the reactor.