ABSTRACT

Shielding design calculations will produce high uncertainty because they involve many variables, especially if the calculations are done using hand calculations, which technically take a lot of time. Therefore, shielding designs are usually calculated semi-automatically using Spreadsheet applications. There are applications that offer automatic and more interactive calculations, namely Radshield and IndoXShield. However, both applications are not popularly used, and the calculation results need to be verified. This study aims to evaluate shielding calculations using the Dose Length Product (DLP) method in Spreadsheet, Radshield, and IndoXShield applications. Shielding is calculated based on the DLP data set and other shielding parameters. Shielding parameters were determined by measuring the CT room and observing the room adjacent to the CT room. Shielding was then calculated using the three applications, and then the calculation results of Radshield and IndoXShield were compared with the calculation results of the Spreadsheet. Radshield calculation errors are d1 (31.13%), d2 (11.73%), d3 (48.14%), and d4 (100%). While IndoXShield calculation errors are d1 (10.33%), d2 (5.94%), d3 (29.17%), and d4 (47.54%). Large errors make Radshield and IndoXShield unable to replace the role of Spreadsheets because determining the thickness of shielding based on calculations that are not in accordance with standards will increase the risk of radiation workers and members of the public