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## **Prediction of specific activity in concrete of accelerator facilities for long-term operation using the Na-24 measurement method**

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Na-24 measurement method

Content

The advanced zoning of activated/non-activated concrete in accelerator facilities is very important for planning the decommissioning of an accelerator. In a previous study, we found that long-half-life radionuclides, such as Eu-152 and Co-60, should be considered when decommissioning concrete. However, a method that directly measures Eu-152 and Co-60 has some difficulties. Therefore, in a previous work, we proposed a method to nondestructively predict the specific activity of Eu-152 + Co-60 in concrete for long-term operation. This method is based on the specific activity determination of a short-half-life radionuclide, Na-24, instead of Eu-152 and Co-60. In this study, this method was applied to predict the Eu-152 + Co-60 specific activity in the concrete floor at various facilities of electrostatic accelerators and synchrotron radiation sources. The concrete in the investigated facilities was found to be non-activated because the predicted specific activities of Eu-152 + Co-60 were much lower than the Japanese clearance limit.

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