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## Investigation of residual nuclide inventory of the storage ring of the Swiss Light Source (SLS)

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The Swiss Light Source (SLS) is a third-generation synchrotron light source which employs electrons with energy of 2.4 GeV. The accelerator is currently being refurbished after 23 years of operation with an average annual operating time of more than 250 days, delivering X-rays for various applications.

Information about residual nuclide inventory of materials is required for the radiological classification. In addition, this information can be used to calibrate measuring devices that are used for classification and triage measurements.

At the SLS, residual activation is expected due to the beam losses in the storage ring near the vacuum chamber, where extensive studies have been carried out to investigate the beam loss pattern and spatial distribution of residual activity. This work describes the results of the radiological characterization of the accelerator component material at the identified beam loss locations. The nuclide inventory was determined using various methods, including in-situ measurements in the beam loss region within the accelerator vault. Various samples were taken from the representative materials and analyzed in the laboratory. Additionally, activation studies were carried out with certified metal specimens in the area of localized beam losses.

The results of the experimental studies described in this work are currently used for a replacement and upgrade of the storage ring.

### Scientific Topic 1

### Scientific Topic 2

### Scientific Topic 3

### Scientific Topic 4

### Scientific Topic 5

Induced radioactivity and decommissioning

### Scientific Topic 6

## **Scientific Topic 7**

## **Scientific Topic 8**

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