**Technical protocol**

**COOMET supplementary international comparison
of activity measurement of Co-60, Cs-137, Eu-152, Am-241
in point gamma sources (OSGI)**

**Introduction**

The main application of point gamma sources (OSGI) is the calibration of high-resolution gamma spectrometers. These spectrometers are used in the nuclear industry, and for checking the radioactivity content of foodstuffs and the environment – as a consequence, all nuclear sites and independent environmental monitoring laboratories have a set of such instruments.

**Sample description**

The source design based on thin polyimide films in order to minimize gamma photons absorption. Active spot: < 3 mm. Active spot is sealed between 2 or 4 50 μm thick polyimide films. Sealed films are mounted into aluminum ring with diameter 25 mm and 3 mm high. Approximate activity: 50 kBq.



**Measurement**

Participants will be required to report activities [in Bq] of Co-60, Cs-137, Eu-152, Am-241 in the samples. Full uncertainties budged and methods descriptions should be included in the report. Report form will be sent to participants later. Uncertainty estimation shall be performed according to GUM. A reference date of the measurement is set at October 1st, 2020.

**Control procedure**

After a visual inspection, there should be a wipe test for detecting surface contamination. The surface to be wiped should be not directly the source’s surface but the surface of the source package closest to the source itself. Another alternative could be to measure that surface directly in the gamma spectrometer for detecting any surface contamination, when feasible. If contamination is detected, then the sources will be no longer able to be used for the comparison.

**Nuclear Data**

It is recommended to use the nuclear data from BIPM Monographie BIPM-5.

**Time schedule**

Distribution of the samples will be in October 2020.

Reporting deadline: 15th January 2022

Draft A distributed: 30th February 2022

**VNIIM role**

VNIIM will serve as a pilot laboratory. The VNIIM will be responsible for buying the point gamma sources and dispatching them to the participants. VNIIM will prepare the reporting form for the comparison results.

VNIIM will cover expenses of the sources purchase and logistics expenses of dispatching the sources set to the first participant. The participants will cover logistics expenses of dispatching the sources set to the next participant or to VNIIM in case of the last participant. The participants cover all extra expenses, which may arise during comparison activities in their countries.

**Participants**

List of participants:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N | Country | NMI | Contact person | Contact |
| 1 | Russia | VNIIM | Grigoriy Zhukov | g.v.zhukov@vniim.ruOffice: +7 812 323 96 12Mob: +7 911 217 1649 |
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| 5 | Slovakia | SMU | Matey Krivosik | krivosik@smu.gov.sk |
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| 7 | Brazil | Instituto de Radioproteção e Dosimetria - IRD | Mr. Carlos Jose da Silva,Ms. Estela M. de Oliveira | carlos@ird.gov.brestela@ird.gov.br |
| 8 | Mexico | National Institute of Nuclear Research of Mexico - ININ | Ms. Olga Garcia Díaz | olga.garcia@inin.gob.mx |

**Transportation**

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| --- | --- | --- |
| Participants | Date of receiving | Date of shipment |
| VNIIM |  | 10 2020 |
| BelGIM | 11 2020 | 12 2020 |
| RSE “KazinMetr” | 01 2020 | 02 2021 |
| SMU  | 03 2021 | 04 2021 |
| CNEA | 05 2021 | 06 2021 |
| IRD | 07 2021 | 08 2021 |
| ININ | 09 2021 | 10 2021 |
| CENTIS | 11 2021 | 12 2021 |
| VNIIM | 01 2022 |  |