

Compilation of a European database of in-vitro dosimetry services for use in emergencies

Dear colleagues,

Short version:

We want to compile a database of European laboratories for radioactivity in biological samples and their capabilities for alpha and beta emitters. Information about these capabilities and the contact details of these laboratories shall be provided at short notice when a radiological incident occurs and internal dosimetry for a large number of persons is required.

Please contact me at omeisenberg@bfs.de if you want to participate.

Long version:

In radiological emergencies, the internal exposure of members of the public may need to be determined and a large number of biological samples may need to be analysed in a limited period of time. For example, following the Litvinenko poisoning (a malevolent act against a single person), 753 urine samples were analysed in the UK, 59 samples in Germany, and 31 samples in the United States [1-3].

We believe that in such an event the measurements of biological samples cannot be conducted by a single internal dosimetry service and possibly not even by the internal dosimetry services in one country. Therefore, we would like to strengthen the international collaboration of internal dosimetry services in radiological emergencies by setting up a database of contact details and capabilities of internal dosimetry services in Europe (EU and adjacent countries).

Such databases have been compiled before for scientific reasons [4-5]. We have been in contact with the responsible persons and we have seen that these databases do not meet the criteria for our intended purpose or that they have never been updated. The database that we will compile

- will contain all information that we deem necessary for use in a radiological emergency,
- will be updated by us every 2 years,
- and will be made available at short notice (generally within 24 hours also on weekends, in most cases earlier) when measurements of a large number of biological samples are required in an emergency.
- Its existence will be communicated within the community of internal dosimetry services in Europe, in particular via EURADOS WG7.

The project is endorsed by EURADOS Working Group 7 "Internal Dosimetry" and it will be carried out as a EURADOS project. The database will be known under the acronym SHIELDS - Services for Human Internal Exposure: Laboratories & Dosimetry Services.

The following institutions have been informed about the project:

- the European Commission, Directorate-General for Energy,
- the Article 31 Group of Experts, in which delegates from the EU member states meet,
- IAEA together with their RANET Team.

All of them agree with us on the importance of the database.

Only in the event of an emergency those database entries that are relevant for the respective radionuclide shall be made available to the persons that are responsible for organising the measurements of biological samples in public authorities, internal dosimetry services or EURADOS WG7. This means: no dissemination of the entire database, no dissemination to the public, no general dissemination before an emergency has occurred. No one who provides their contact details and measurement capabilities will be obliged to conduct measurements in the event of an emergency; it must be clear that all entries are only indications of the general capabilities.

The database will contain, among other things, the contact details of the internal dosimetry services. These contact details are personal data, which are protected under the General Data Protection Regulation. How we handle these data is described in a privacy statement (https://www.dropbox.com/scl/fi/mpzpqnaw9nqv300r7pwtg/Privacy_statement.pdf?rlkey=3ikp3vfyb2n1etlcald4l3bhd&st=9lb9w39b&dl=0). Most important, you have the right to have your data deleted at any time. The tool for collecting the data is Lamapoll, a certified platform that complies with European data protection regulations.

Besides, the data regarding the capabilities of the internal dosimetry services might be sensitive because they indicate for which radionuclides the capabilities across Europe are poor. Therefore, the database will be designated as “for official use only”. Under German law, this designation has a defined meaning. Among other things, this definition strictly requires that only those people that need to know the information must be granted access to it and that these people must delete their copy of the information as soon as they no longer need to know the information.

We would be glad if you would support our endeavour by providing the contact details and capabilities of your laboratory. The reported capabilities should not be limited to rapid emergency methods; this is because we have seen in previous enquiries that for some relevant radionuclides hardly any internal dosimetry service has fast methods available and we need to rely on standard methods. The database will focus on methods for alpha and beta emitters. This is because gamma spectrometry is widely available in a large number of radiometric laboratories.

There is no deadline for completing the questionnaire since we will supplement the database continuously. However, we would like to have a first version ready by mid-November.

We are sure that the database will assist also you when a radiological emergency occurs in your region and when you are responsible for organising the measurements that are required then.

If your laboratory does not measure radionuclides in biological samples or if you believe that your laboratory cannot accept samples in radiological emergencies, we would be glad if you could send us a short reply.

As soon as the database is compiled (in ca. 6 months), we will inform you how also you can obtain the relevant information from the database in cases when you are responsible for organising a large number of measurements in a radiological emergency. Besides keeping the database available for emergencies, we will also publish a summary of its content (without disclosing possible weak points in the system of internal dosimetry). Please indicate at the end of the questionnaire whether you agree with your institution being mentioned in this report (with or without contact details) or whether your contact details shall be made available only in an emergency.

Parallel to the setup of the database, we would like to organise an emergency exercise for internal dosimetry services. Therefore, you might receive a second e-mail from us in the near future or have already received it.

Thank you very much for assisting us with this project

on behalf

Oliver Meisenberg (he/him)

Section Head

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Information concerning data protection in pursuance of section 13 GDPR

[1] Bailey et al., HPA-RPD-067: Individual Monitoring Conducted by the Health Protection Agency in the London Polonium-210 Incident, <https://www.gov.uk/government/publications/polonium-210-individual-monitoring-after-an-incident>

[2] Kirchner and Kröger, The Litvinenko Polonium-210 Case – German Experiences, <https://inis.iaea.org/records/2nabk-1d667/files/41092724.pdf>

[3] Miller et al., Murder by Radiation Poisoning: Implications for Public Health, https://www.researchgate.net/publication/227340254_Murder_by_Radiation_Poisoning_Implications_for_Public_Health

[4] Li et al., GHSI Emergency Radionuclide Bioassay Laboratory Network – Summary of the Second Exercise, <https://pmc.ncbi.nlm.nih.gov/articles/PMC5723924/>

[5] Sierra et al., Guidance Report on Screening and Rapid Methods for In Vitro Emergency Bioassay, <https://eurados.sckcen.be/en/news-overview/eurados-report-2025-03-published-guidance-report-screening-and-rapid-methods-vitro-emergency-bioassay>