Database on Naturally Occurring Radioactive Material

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Abstract

We collected NORM samples, and measured the activity concentration in them using ICP-MS (inductively-coupled plasma mass spectrometry) and gamma ray spectrometry. Furthermore, we developed a database of activity concentration in NORMs using their results as well as investigation in literatures, and published the database on the web. (NORM database; http://www.nirs.go.jp/db/anzendb/NORMDB/ENG/index.php). The purpose of the database is to dispel anxieties among the general public and to provide extensive data regarding NORM to researchers and regulators. The database is providing the activity concentration in more than 900 NORMs at no fee. The database is freely available to the web.

1. NORM DATABASE

Activity concentration

- NORM samples
  - More than 900 materials
  - Ash, Ore, Rock, Industrial Product
  - Literature surveys
  - Experiments

- Method of measurement
  - ICP/MS, HPGe

- Description of NORM

Material flow

- Radiation effects

Effective dose

- System for estimation of effective dose
  - Exposure scenarios for workers
  - Doze evaluation
    - Transport, storage, construction, etc.
    - External, inhalation, ingestion

Users can search NORM system by using a search system.

2. Activity concentration

Users can see the activity concentration in more than 900 materials such as rock, industrial product by using a search system.

Data Input
- Name of materials
- Local origin
- Country of origin
- Method of measurement
- Activity concentration of 239Pu, 237Pu, 232Th, 226Ra, 40K

Result

- Users input the name of material & its location, and get the activity concentration.

3. Effective dose

Users can obtain the effective dose to workers handling NORM by using a dose assessment system.

Data Input
- Type of material
- Name of material
- Usage condition
- Annual Work hours

Result
- Users input just four items, “Type of material”, “Name of material”, “Usage condition”, & “Annual work hours”, and get the effective dose.

Some data of activity concentration in more than 900 materials

- The classification of materials was performed using HS ( harmonized system) code defined by the WCO (World Customs Organization).
- Annual amount of import in Japan was obtained from foreign trade statistics of MoF (Minister of Finance) of Japan.
- It is assumed that U-238 series nuclides were in radioactive equilibrium and their activities are equal. The same is true for the Th-232 series.
- The average value of activity concentration is arithmetic average.

Please try the NORM DATABASE

Free of charge, and No registration