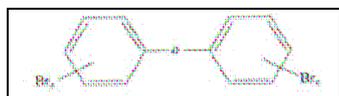


## Environment – Solids : various matrices



### Metals (Cd, Hg, Ni, Pb) and PBDEs in sewage sludge



pentaBDE  
C<sub>12</sub>H<sub>5</sub>Br<sub>5</sub>O

One of the key missions of the [Chemical and Biological Metrology Laboratory](#) of LNE is to establish the metrological traceability and to assess the uncertainty of analytical measurements. To this end, LNE implements primary reference methods and produces Certified Reference Materials (CRMs), for various applications in the field of industrial, environmental and health analysis.

CRMs are metrological tools to achieving the traceability of measurement results and therefore ensuring reliability and comparability of results of chemical analyses everywhere in the world. Ensuring traceability is moreover a requirement of ISO/CEI-17025 standard.

CRMs are mainly used to carry out analytical instruments calibration and analytical procedures validation.

All reference materials produced by the [Chemical and Biological Metrology Laboratory](#) of LNE are **Certified** Reference Materials, meaning that the traceability to SI (International System of Units) is fully ensured through primary methods of measurement. The quality of each CRM is fully documented in the certificate describing the way the traceability is established and providing the uncertainty of the certified value.

Most of the CRMs produced are covered by CMCs (Calibration and Measurement Capabilities) published in the BIPM (Bureau International des Poids et Mesures) database ensuring the equivalence of LNE capabilities with the other National Metrology Institutes worldwide. Accreditation against ISO Guide 34 for CRMs production is currently in progress.

Sludge originates from the process of treatment of waste water. Due to the physical-chemical processes involved in the treatment, the sludge tends to concentrate heavy metals and poorly biodegradable trace organic compounds as well as potentially pathogenic organisms present in waste waters. Sludge is, however, rich in nutrients such as nitrogen and phosphorous and contains valuable organic matter that is useful when soils are depleted or subject to erosion.

Directive 86/278/ EEC was adopted over 20 years ago with a view to encourage the application of sewage sludge in agriculture and to regulate its use, so as to prevent harmful effects on soil, vegetation, animals and humans. The European Commission is currently assessing whether the current Directive should be reviewed – and if so, the extent of this review. For example, Directive 86/278/EEC sets limit values for seven heavy metals. Since its adoption, several Member States have enacted and implemented stricter limit values for heavy metals and set requirements for other contaminants. Among the organic contaminants that are of great interest are the PAHs, PCBs, pesticides and PBDEs.

The analysis of PBDE in sewage sludge being very challenging in such a complex matrix, a strong need of a matrix certified reference material for PBDEs arose from the French “GT substances” group discussions in 2008.

In order to cut costs down for laboratories of environmental analysis, the idea of developing a CRM for both metals (Cd, Hg, Ni, Pb) and PBDEs in sewage sludge was proposed. The development of the CRM will be carried out in collaboration with BRGM.

**Concentration range:**

**Availability:** On going

**Conditioning:**

**Price:** On request

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