Evaluation of Methyl-mercury production and decomposition by using Hg-197 radiotracer produced out of mercury enriched in Hg-196 isotope

Fact Sheet

Project Information

HG-197 MEHG ASSESS

Grant agreement ID: 221724

Project closed

Start date
1 November 2008

End date
31 October 2009

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
€ 93 988,54

EU contribution
€ 93 988,54

Coordinated by
INSTITUT JOZEF STEFAN
Slovenia

This project is featured in...

Objective

Mercury (Hg) is in the form of monomethylmercury (MeHg) a biological neurotoxin, harmful to the wildlife and to humans. MeHg species is produced from Hg2+ by natural processes occurring within the water bodies. MeHg can also be degraded by natural processes; therefore, the net MeHg production arise form the combination of both kind of processes. The analytical tools to assess these processes consist in the use of labelled Hg in laboratory experiments to trace Hg transformations. One of the factors affecting Hg transformations is its concentration. MeHg production studies performed up to present in the water column are few and limited, due to the limitation of existing techniques in simulating natural levels or real environmental contamination situations that involve levels of Hg2+ from 0.1 to 50 ng.L-1 while most studies in sediments involve unrealistic Hg2+ additions, since Hg concentrations at natural or low contaminated levels range from 10 to 200 ng.g-1 with a bio-available fraction for MeHg production from 0.1 to 10 %. Recent collaboration between the author and the DES of the Jozef Stefan Institute (JSI), Slovenia, showed the feasibility of these studies using the short-lived radiotracer Hg-197 produced out of Hg enriched isotopically in Hg-196, allowing realistic Hg2+ additions to study MeHg production both in the water column and sediments. This project propose the development of analytical techniques to study de-methylation processes in water and sediments, by using traced MeHg in laboratory experiments. These processes are currently assesed using either C-14 and Hg-203 radiotracers, but the use of Hg-197 radiotracer will allow much lower MeHg additions, and hence realistic simulations of natural de-methylation processes. The project also consider the application of the Hg-197 radiotracer in the evaluation of MeHg production, including reduction of Hg2+ to Hg0, in different real situations in environmental studies on going in the DES of the JSI.

Fields of science (EuroSciVoc)

natural sciences > chemical sciences > inorganic chemistry > **transition metals**

Keywords

Natural sciences | Water quality monitoring | de-methylation of Hg | methylation of Hg | radiotracer 197Hg | reduction of Hg | sediments | stable isotope 196Hg | water

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

PEOPLE-2007-4-2.IIF - Marie Curie Action: "International Incoming Fellowships"

Call for proposal

FP7-PEOPLE-2007-4-2-IIF
See other projects for this call

Funding Scheme

MC-IIF - International Incoming Fellowships (IIF)

Coordinator

INSTITUT JOZEF STEFAN

EU contribution

€ 93 988,54

Total cost

No data

Address

Jamova 39
1000 Ljubljana
Slovenia

Region

Slovenija > Zahodna Slovenija > Osrednjeslovenska

Activity type

Research Organisations

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

Last update: 16 July 2019

Permalink: https://cordis.europa.eu/project/id/221724