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

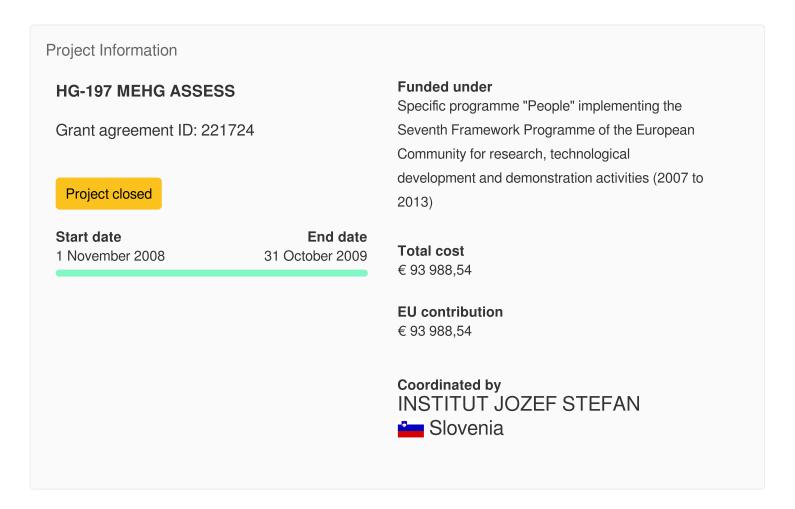


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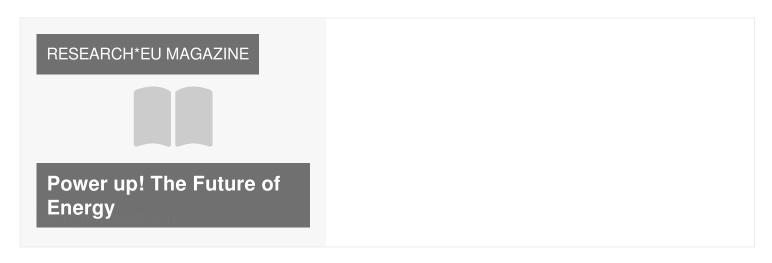


# Evaluation of Methyl-mercury production and decomposition by using Hg-197 radiotracer produced out of mercury enriched in Hg-196 isotope

#### **Fact Sheet**



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## **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 JSL

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#### **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)

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

## 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

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Total cost

No data

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Region

Slovenija > Zahodna Slovenija > Osrednjeslovenska

Activity type

**Research Organisations** 

Links

Contact the organisation Website Medicipation in EU R&I programmes Medicipation in EU R&I programmes Medicipation network Medicipation

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