**MUSA** is a joint project between SETEMIP-Environnement (French SME) and the Laboratory of Animal Ecology from VU-Amsterdam, supported by the ADEME (France) and SKB (The Netherlands) under the SNOWMAN ERA-NET call (6th EU framework program).

The overall purpose of MUSA is to provide a framework for characterising in a one assessment the impacts on ecosystems of contaminated sites (including remediation) at different scales using both Life Cycle Assessment (LCA) and Ecological Risk Assessment (EcoRA).

The use in parallel of Ecological Risk Assessment EcoRA and Life Cycle Assessment (LCA) for contaminated site management.

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- **Context**
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**Context**

Soil contaminations affects large sites or landscape worldwide, nevertheless, remediation strategy does not provide a broad overview of the impacts resulting from the site itself and the remediation strategy. Moreover, when a Life Cycle Assessment (LCA) and an Environmental Risk Assessment (ERA) are performed in parallel for one site, it gives typically contradictory indications. This is likely due to the differences in concept and uncertainty between the two assessment tools; nevertheless, there is a strong need of integrating Life Cycle Assessment and Environmental Risk Assessment in a one decision support tool, improving the environmental efficiency of the remediation strategy.

**MUSA** aims at providing a tool assessing impact on ecosystems (aquatic and terrestrial) using both LCA and ERA, and applying it in a case study of the "Ronde Venen", a Dutch contaminated landscape.

**Aims and Objectives**

By focusing on the impact on ecosystems, **MUSA** aims at building up an efficient decision support tool integrating Environmental Risk Assessment (ERA) and Life Cycle Assessment (LCA) for contaminated soils management.

1. Identifying and describing the similarities and discrepancies between Life Cycle Assessment (LCA) and Environmental Risk Assessment (ERA);
2. Calculating uncertainty results associated for impact assessment on Ecosystems as a change in biodiversity for LCA and ERA
3. Addressing the issue of speciation and bioavailability of metals in LCA and ERA
4. Providing an approach integrating LCA and ERA for assessing impact of contaminated soils on ecosystems
5. Applying the proposed methodology to the "Ronde Venen" Case study.
Key features

1. Integrating Life Cycle Assessment (LCA) and Environmental Risk Assessment (ERA) in a one tool. Although these tools address typically different time and spatial scales and are based on different concepts.
2. Providing a framework and a guideline for Contaminated sites management.
3. Providing a coherent assessment for cations, oxyanions especially addressing the issue of speciation and bioavailability.
4. Addressing biodiversity endpoint, especially giving a better understanding of the interface between ecotoxicology and ecology in a multiple stressor assessment.

Strategy

To address these points, the actions below will be done in the project following the strategy here described.

Perspectives

Beyond the project and its case study, **MUSA** will provide a guideline enabling the use of LCA and ERA at the same time for assessing impacts of organic or inorganic contaminants at different assessment scale in contaminated site management.
Research team

- **Dr Jerome Payet** is in charge of the integration of LCA and EcoRA in a one tool and building the link with the damage assessment on biodiversity for aquatic and terrestrial ecosystems.
- **Dr Kees van Gestel** is in charge of building up the framework for the assessment of bioavailability and ageing of metals for impact assessment for contaminated site management.
- **Helene N. Beauchamp** is addressing the issue of impact assessment of metals in soils for cations and oxyanions and the quantification of the associated uncertainty.
- **Francesca Gambazzi** is in charge to the application of Life Cycle Assessment (LCA) to the Ronde Venen Case study, and will also address the uncertainty assessment within LCA.

What is **MUSA**?

MUSA is a research project transnationally funded under the SNOWMAN umbrella by: France and the Netherlands (http://www.snowman-era.net).

The project partners are:

- **SETE-MIP SAS, Givors/France (SETE-MIP Environment)**
- **FALW: Vrije Universiteit Amsterdam,(link FALW) Department of Animal Ecology** Amsterdam/Netherlands

**Funding partners**

ADEME for France
SKB for the Netherlands

**Duration:**

14 months (September 2007 - November 2008)

**Participants:**

Dr Jerome Payet, Dr Kees van Gestel, Helene N. Beauchamp, Francesca Gambazzi.