

Project information

Project title

Mineral Extraction in the High North – Radiological Risks, Impacts and Mitigation (MINEXRIM)

Year

2016

Project leader

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Geographical localization of the research project in decimal degrees (max 5 per project, ex. 70,662°N and 23,707°E)
Minexrim (Mikon)

Participants

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Flagship
MIKON
Summary of Results

Minexrim has strengthened the knowledge of both the presence and the relative contribution to environmental risk of Naturally occurring radioactive materials at mining sites in Northern Norway.

- Evaluated the current knowledge of legacy mining sites in Northern Norway with special attentions of potential NORM sites.
- Conducted field work to sample abiotic and biotic samples at 4 different legacy, operating or potential mining sites to evaluate the composition of metals and NORM
- Participated in the development of a risk assessment tool which may predict the cumulative risk of both metals and NORM to biota (Niva RAdbTM combined with the ERICA risk assessment tool for radionuclides).
- Now in the process of conducting two experiments to verify the results obtained by the risk assessment tool.

In addition, the project have supported the PhD-project of Frøydis Meen Wærsted and the Ms-project of Christian Schöpke, both at NMBU.

Master and PhD-students involved in the project

PhD-project of Frøydis Meen Wærsted and the Ms-project of Christian Schöpke, both at NMBU.

For the Management

In evaluating potential environmental impact from mining activities the contributions from metal and process chemical contamination are traditionally considered. Thus, only little information exists in relation to potential NORM generation from the different deposits of northern Norway, the risk posed by various ore extraction and waste handling practices or the impact of NORM

containing wastes on the environment.

In Minexrim we have:

- Evaluated the current knowledge of legacy mining sites in Northern Norway with special attentions of potential NORM sites.
- Conducted field work to sample abiotic and biotic samples at 4 different legacy, operating or potential mining sites to evaluate the sammensetning of metals and NORM
- Participated in the development of a risk assessment tool which may predict the cumulative risk of both metals and NORM to biota (Niva RAdbTM combined with the ERICA risk assessment tool for radionuclides).
- Now in the process of conducting two experiments to verify the results obtained by the risk assessment tool.

To evaluate the potential harm of mining waste deposits we need knowledge of the different contaminants at site and their respective contributions to the combined risks to biota. To evaluate correctly the risk to the environment, management needs tool that evaluates contributions from all contaminants in combination, not single stressors separately. Minexrim is hopefully a contribution to an improved management of contaminated sites, including mining sites, in the future.

Published Results/Planned Publications

Poster presentation at Arctic Frontiers, 2016

Oral presentation at NETS, 2016 (<http://www.niva.no/nets2016/scientific-program>)

Poster presentation at NETS, 2016, Christian Schöpke

Communicated Results

Scientific conferences and results are communicated to the Section managing mining sites at NRPA.

Interdisciplinary Cooperation

The project participants are all natural scientists, but the results are communicated to the Section for environmental protection and Nuclear safety which manages mining sites at NRPA.

Budget in accordance to results

The project was fully funded from the Fram Centre except from in-kind funding from NRPA.

Could results from the project be subject for any commercial utilization

Yes

If Yes

The RAdb™ is a database developed to provide improved risk assessments for management. It is owned by a private company, Niva, and is not a free assessment tool.

Conclusions

Participated in the development of a risk assessment tool which may predict the cumulative risk of multiple contaminants to biota. Here used for metals and radionuclides (Niva RAdb™ combined with the ERICA risk assessment tool for radionuclides)