

Air quality and geothermal projects

POLICY BRIEF

The GEOENVI project identified the need for environmental protection as the cornerstone to address any potential environment effect from a geothermal project in Europe.

Air quality standards are key to **supporting investment in geothermal energy, climate mitigation and environmental protection**. But it is essential to have a standardised approach to monitoring and control of air quality across the EU.

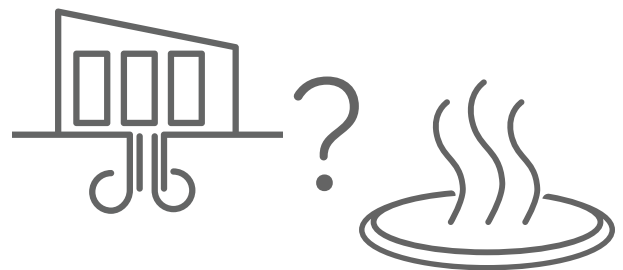
CURRENT CHALLENGES

The **potential release of natural gases** from geothermal fluids during drilling and testing of wells or during plant operation is a concern in some European countries. A clear relation between geothermal projects and the modification of total natural emissions in the geothermal areas has not been established.

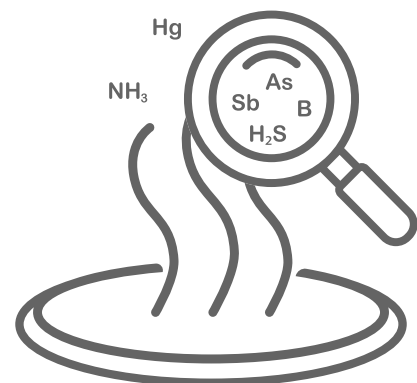
Although the EU and the national air quality **legislation regulate most substances**, some of those naturally contained in the geothermal fluids are missing. The potential effects of these aeriform emissions are regulated mainly through **best practices of operators and regional guidelines**.

However, the management of these emissions is undertaken by individual countries and varies considerably. Furthermore, monitoring parameters are not harmonised. **A harmonised approach is required** to ensure uniform application and implementation across the EU.

Relation between geothermal projects and the modification of natural emissions not established



Some substances natural for geothermal fluids not regulated

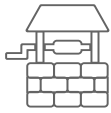


Management of emissions missing, harmonised approach is the answer to air quality control



RECOMMENDATIONS

WELL DRILLING AND TESTING



Defining air quality baseline by monitoring it at the plant site and the surrounding area before starting any geothermal operation.

Enforcing air quality monitoring during drilling in the project yard.

Enforcing air quality monitoring during well flow tests beyond the project area.

Always equipping the drilling rig with tools (e.g. Blow Out Preventer) **to prevent accidental gas flow.**

Enforcing mitigation plans to prevent accidental emissions release, which includes certified trained personnel, safety exercises, well design and implementation to face the risk.

Data reporting to the controlling authority for each drilled well, including flow test schedule and duration, and total emitted volume.

PLANT OPERATION



Establishing air quality standards for air emissions currently not covered by the EU regulations.

Enforcing continuous or frequent air quality check during plant operation.

Monitoring and, where significant emissions are predicted, **initiating abatement plan to contain emissions.**

KEY TAKEAWAYS

There is a consensus among stakeholders that several pre-identified **strategic areas deserve a deeper insight in the form of research and innovation**, e.g. zero emission plants and total reinjection, perturbed natural aeriform emissions, abatement systems, circular economy or health and well-being.

Main focus must be put on **setting up unified air quality standards** on the EU level and harmonising the monitoring and control system based on the established best practices.



Detailed overview of the recommendations and countries comparison can be accessed [here](#).

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GE ENVI

This policy brief is part of a series conducted in the framework of the GEOENVI project. Its aim is to respond to the need for harmonisation of environmental regulations and to address concerns about potential environmental effects of geothermal projects in Europe. GEOENVI strives to facilitate the incorporation of geothermal strategy in Europe's energy transition, while respecting sustainability and creating a robust strategy to answer environmental concerns. The project developed a unique Life Cycle Assessment methodology for evaluating geothermal projects.



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