

# **EU KAVA-PROJECT (RIS)**

## **RAPHOSAFE URBAN MINING OF PHOSPHOGYPSUM**

**PHOSPHOGYPSUM, AS OF YET AN UNWANTED BYPRODUCT OF THE FERTILIZER INDUSTRY, MAY SERVE AS A SOURCE FOR BOTH CRITICAL RAW MATERIALS AND CONSTRUCTION MATERIALS.**

Phosphoric acid for the fertilizer industry is produced by the treatment of phosphate rock (apatite) with sulfuric acid. During this “wet process”, 4 to 5 tons of phosphogypsum (PG) are produced on average per ton of phosphoric acid.

Since the phosphate rock deposits contain radionuclides, the derived products are slightly radioactive as well. Hence, PG is unwanted on stockpiles; the radionuclides present (in PG mainly Radium-226) are a sought-after resource used in cancer treatment however and contained REE are considered to be critical raw materials by the European Union. In order to reduce stockpiles, the MUL and partners from the fertilizer industry and other research organizations, are working on the raPHOSafe project, led by DMT GmbH & Co KG and supported by EIT Raw Materials. The possibility of the separation of material with above-norm radioactivity from non-critical material is



explored. Consequently, precious elements may be extracted, while the uncritical gypsum can be reused, for instance as a construction material (e.g. wallboard, cement, plaster). The study focusses on PG tailings in eastern and southeastern Europe.

While other partners conduct a geochemical and mineralogical examination of PG tailings as well as a risk analysis; and DMT develops a conveyor belt classification system, MUL focuses on the analysis of the gypsum market. This includes an investigation of applications of gypsum, international trading and production data of both natural gypsum and other sources of synthetic gypsum (e.g. FGD gypsum). The determination of the current situation and development of supply and demand allows the subsequent identification of potential processors of PG and their annual consumption.



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