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Coordinated Research project on Uranium/Thorium Fuelled High Temperature Gas Cooled Reactor Applications for Energy Neutral and Sustainable Comprehensive Extraction and Mineral Product Development

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Around the world the demand for mineral commodities is growing strongly and high-grade, easily extractable resources are being depleted. Thermal processes are often the most appropriate for production from low-grade and some unconventional mineral resources; these in turn depend on the availability of large amounts of energy. These thermal mineral extraction processes are usually cleaner and generate lower quantities of wastes than current chemical processes. The availability of affordable and responsibly-produced energy would, in many cases, also promote value addition and allow the production of higher end products, which would improve the overall economics of the project.

Thermal processes using high temperature nuclear heat could be a more sustainable and environmentally friendly alternative to heat generated by other means and conventional chemical processes. Many mineral deposits contain low concentrations of uranium and thorium; these could be recovered and used as, or be equivalent of, fuel in the reactors. The IAEA's Coordinated Research Project generates basic data on the availability and characteristics of various potentially-suitable mineral resources and process residues, and conducts conceptual and pre-feasibility studies on appropriate thermal processes in which thorium/uranium fuelled high temperature gas cooled reactors (HTGRs) provide the required energy.

Country or International Organization

IAEA

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