

Research for safe and secure nuclear energy options

With increasing worldwide energy demand, the shortage at mid and long term of conventional resources and the climate change debate, the Europeans are aware that the future energy will be a mix of fossil fuels, renewable sources and nuclear energy. Recent opinion surveys show that energy research should become one of the key options for the European Union. In a scenario where the industrialised world will restrict carbon emissions, nuclear energy can play an important role. If nuclear energy has to contribute to the fulfilment of growing energy needs and to the diversification of energy sources an optimized use of safe and secure nuclear fuel has to be implemented.

With different technologies, expertise and cutting-edge scientific techniques, the JRC Institute for Transuranium Elements (ITU) work aims to improve understanding of the behaviour of nuclear fuel in reactors and beyond. Its Transuranus software can model nuclear fuel behaviour in a range of conditions. Work in this field covers both Western and Russian-designed reactors. ITU has been developing studies about the disposal of highly radioactive waste, which is one of the main issues in the debate of future use of nuclear energy and has a great impact on the public perception. In this field, it studies the long-term behaviour of spent nuclear fuel in long-term storage conditions and evaluates new concepts for nuclear waste management. ITU focuses on methods for reducing the quantity and radiotoxicity of highly radioactive waste, by separating out the long-lived nuclides and fabricating them into fuels and targets for transmutation.

The mission of ITU is to provide the scientific foundation for the protection of the European citizen against risks associated with the handling and storage of highly radioactive elements. ITU's prime objectives are to serve as a reference centre for basic actinide research, to contribute to an effective safety and safeguards system for the nuclear fuel cycle, and to study technological and medical applications of transuranium elements.

For more information:

Further information:

Website of the JRC Institute for Transuranium Elements: <http://itu.jrc.ec.europa.eu>