

Toward a more water-based chemicals industry

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While all areas of human activity have an impact on the environment, the chemicals industry is often singled out as a particularly poor environmental performer, associated with high energy consumption and the generation of large quantities of toxic waste products.

Thus, as chemical production continues to increase, the global industry faces both economic and environmental pressures, and growing regulatory constraints. Much of the concern revolves around the widespread use of powerful and dangerous solvents.

EU project AQUACHEM ('Transition metal chemistry and catalysis in aqueous media') was established to examine the substitution of dangerous solvents with chemical catalytic processes compatible with water-based media - and also to provide young scientists with more experience in the field.

The network, led by Italy's National Research Council, allowing scientists, including those just starting their careers, to conduct research at some of Europe's top laboratories. The project also included labs in the UK, France, Germany, Spain, Hungary and Israel.

Together, labs in the network provided training facilities and allowed researchers to study and exchange knowledge in a wide range of areas, from analyses of substrate activation and stoichiometric reactivity to physico-chemical studies of complex-solvent interactions, and the development or improvement of analytical instrumentation.

The results included more than 150 papers published in peer-reviewed journals and conference proceedings, along with several books and dissertations. The project also resulted in the filing of five patent applications.

AQUACHEM partners say chemical reactions in aqueous media - where water is used as the solvent - are of particular interest for 'green chemistry'. Water is safe, harmless, and environmentally benign, and it's cheap, making it attractive economically.

The network's researchers advanced the development of water-based

chemicals, helping the EU chemical industry become more competitive, and reduce potential impacts to the environment and people's exposure to potentially harmful chemicals.

The AQUACHEM network received about EUR 1.9 million in EU funding and completed its work in December 2007.

More information: www.iccom.cnr.it/aquachem/

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