

10 years of REACH: achievements, scientific challenges and research needs

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This year's tenth anniversary of the European Chemicals Agency ECHA is an excellent opportunity to reflect on the main achievements of the REACH Regulation (Registration, Evaluation, Authorisation and Restriction of Chemicals). It is also timely to consider the scientific (environmental) challenges and research needs identified from working with this chemicals legislation. Several achievements of REACH will be highlighted in the presentation: increased availability of data, phasing out the most hazardous substances... Under REACH, industry is responsible for collecting information on the properties and uses of the substances they manufacture or import. New animal testing must only be done as a last resort and registrants can make use of alternatives methods and approaches. However such 'surrogate' data must be scientifically robust to be able to replace the standard in vivo tests that REACH prescribes. When examined many read-across and weight of evidence cases are inadequate, i.e. poorly documented &/or with inadequate scientific justification. This dilemma forms a challenge for regulatory science: regulators and the research community should work together to solve knowledge gaps and develop improved methods and approaches. One area to explore is to develop more integrated approaches between human health and environmental effects. For example mechanistic knowledge for human health effects could provide insight into mechanisms of action in ecotoxicology and could facilitate grouping and read-across approaches to predict properties of substances. Furthermore, 'new approaches' could be integrated with existing approaches: '-omics', systems biology, bioinformatics, standardised ecotox studies... are all valuable in themselves, but a coherent and integrated approach is needed to support efficient and effective regulatory decision making. Collaborative approaches between academia, regulators and industry can strengthen new developments and enhance their usability for reliable prediction of the long term effects of hazardous chemicals on human health and the environment and thereby contribute to the regulatory framework that can ensure safe use of chemicals.