

Elimination and control of hazardous substances

We use more than 100,000 chemicals to sustain our modern way of life. We do not know the toxicity or pollutant properties of the great majority of these, which has prompted the EU's draft REACH Regulation, aiming at a system of registration, evaluation and authorisation of chemicals to be in place progressively over an 11 year period from the time REACH comes into force. This will help us to determine a full list of which chemicals do not break down in the environment (are *persistent*), whether those that do dissolve into harmless constituents, which chemicals *accumulate* in the environment, and which are *endocrine disrupting* (interfering with hormones) and *cell damaging* (cancer, DNA damaging, or causes of reproductive problems). Of course, we already know about some of them, contained in the EU's red list and other categorisations. The process of developing REACH has estimated that chemicals cause about 1% of disease in EU countries.

Biomimetics provides a short cut to addressing these issues, because plants and animals mainly do not use chemicals which are either polluting or toxic to life or environmental systems. When they do, they are chemically bound, dissipated and in small quantities, so they have a targeted, functional and so limited impact (e.g. for defence), and can be captured or rebound when the material containing them is broken down. Biomimetics can therefore provide an easier and more comprehensive way of meeting legal requirements, potentially lower costs, and provide a competitive novel position for new products and services.

Key Links

None of these work explicitly from a biomimetic approach to chemicals, but their outputs cover some of the field.

Crystal Faraday Partnership (green chemistry): [Crystal Faraday](#)

Pro-Bio Faraday Partnership (biocatalysts): [Pro-Bio Faraday Partnership Homepage](#)

National Non-Food Crops Centre: [National Non-Food Crops Centre](#)

SusChem EU Technology Platform: [SusChem \[Home\]](#)

EPEA: [Introduction- EPEA](#)

Centre for Sustainable Engineering: [Centre for Sustainable Engineering](#)

CSEng does work from an explicit biomimetics approach, but is not specialised for chemicals.