

# More research needed into substitution principle and the regulation of potentially hazardous chemical materials

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Professor Ragnar Lofstedt, Professor of Risk Management and the Director of the King's Institute for Risk Research, King's College London and Editor of the Journal of Risk Research, has published a paper suggesting that the substitution principle is not the "white knight" as described by a number of regulatory agencies and NGOs and proposes that chemical substitution can only work effectively on a case-by-case basis.

The paper, published in the Journal of Risk Research, highlights how the Chemical Substitution Principle (where a potentially harmful chemical used in manufacturing or industry, is substituted for less dangerous alternative) has grown in popularity with chemical governing bodies and organizations in recent years. It highlights how a number of bodies are currently working on "substitution databases" to aid companies in reducing the amount of harmful chemicals they use. The paper draws on three key case studies and states that the chemical substitution principle is a "blunt and imprecise regulatory instrument" that is "surprisingly under-researched" and 'in need of further rigorous academic and regulatory analysis before it can be further used and promoted satisfactory in the chemical control area.'

Lofstedt uses evidence discussed in the paper to make recommendations for the future use of the chemical substitution principle, including the abolition of numerical targets set by regulatory bodies such as the

European Chemical Agency for listing chemical substances of very high concern (SVHCs), and that, if the substitution principle is to be properly implemented, there is a need to do 'comparative risk evaluations or risk-ranking exercises, to uncover how great the [risk](#) profile of the chemical in question actually is'.

The paper further suggests that greater support for evidence-based substitution and academic research into the scientific underpinnings of the chemical substitution principle is needed, along with a need for clear case studies and scientifically informed debates to help politicians become better informed about the pros and cons of the substitution principle.

The paper gives an example of where the principle has been used rashly, without due scientific investigation. In the 1990s, BPA (a synthetic form of Oestrogen) was removed from the plastic used to make baby bottles in Canada, following some small scale and incomplete scientific research. The replacement chemicals suggested have since been found to be carcinogenic, and toxic to marine life. The paper suggests that in order to avoid situations where the ban of [chemical substances](#) is based on influences from the media, stakeholders, and member state pressures, there needs to be a transparent scientific case for the substitution of one chemical for another demonstrating that there is a clear environmental and public health alternative.

Lofstedt concludes that 'we cannot, however, give up on the substitution principle even if it is so woefully under researched' and acknowledges that the principle is a 'reality in EU chemicals policy' but is in need of scientific direction 'so that unintended consequences are avoided and the principle of achieving a high level of environmental and health protection can be adhered to.'

The *Journal of Risk Research* has also published a number of

commentaries in response to Lofstedt's article, including a response from the Royal Society of Chemistry.

**More information:** Ragnar Lofstedt, The substitution principle in chemical regulation: a constructive critique, in the *Journal of Risk Research*, [DOI: 10.1080/13669877.2013.841733](https://doi.org/10.1080/13669877.2013.841733)

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