

Replacing harmful chemicals – the American way

INTERVIEW OF DR. JOEL A. TICKNER BY IRENE POZA LATORRE, SEPTEMBER 2015

Replacing substances of very high concern (SVHCs) with safer alternatives plays an important role in protecting human health and the environment in the European Union. But do non-EU countries share the same aims and how do they go about it? Looking at a different approach to substitution, ECHA Newsletter spoke with Dr Joel A. Tickner, Director and Associate Professor of Community Health and Sustainability from the University of Massachusetts Lowell, who has experience in helping US companies find safer and suitable alternatives to chemicals of concern.

Substitution in Europe vs substitution in the United States

The main driver for substitution in the United States is consumer and business pressure. “We see an evolving consumer who is concerned about the chemicals in the products they buy,” Dr Tickner says and continues: “consequently, retailers and brands are demanding safer products from suppliers.”

However, when an American company is considering substitution, the government bodies have a more involved role, particularly in Massachusetts, where the evaluation of alternatives is mandatory for manufacturers using toxic chemicals.

“We work very closely with industry on the implementation phase to make sure that substitution really happens and the toxic reduction is real. We also focus more on the process, application and implementation, while the EU approach focuses more on the outcome,” Dr Tickner compares.

The US way of performing alternative assessments has been more about the hazardous properties of substances and less about exposure and risk. The Americans have also had a more prescriptive approach when guiding companies on how to substitute a substance of concern. “The public doesn’t necessarily trust the industry science,” says Dr Tickner. In fact, in the United States the assessment of alternatives has rested more with governments, while in Europe the responsibility lies primarily on industry.

Different but complementary

Even if the approaches to substitution are different, Europe and the United States can learn from each other. “What the United States could learn from Europe is how to design policies that enforce substitution and also how to engage companies in data collection through the supply chain to evaluate and apply alternatives,” Dr Tickner highlights.

He also points out that one of the biggest barriers for substitution is poor information flow in the supply chain. “Those who are lower in the supply chain, often the retailers, don’t have information on what chemicals are in their products, or they may not have the technical ability to understand what alternatives exist.”

On the other hand, there are lessons that the Europeans could learn from the United States. “We have a lot of experience in developing partnerships with other organisations such as industry or NGOs to evaluate the alternatives and to implement them.”

The collaborative approach is important especially for small and medium-sized companies (SMEs), who may not have the capacity or the money to adapt or do research on alternatives. "At the University, we overcome these barriers by facilitating partnerships, by carrying out collaborative research and by testing the alternatives," Dr Tickner explains.

Avoiding regrettable substitution

The University of Massachusetts Lowell has been involved in assessing safer alternatives for more than 25 years – they identify, compare and help companies to select safer alternatives to chemicals of concern. There has been a significant evolution in frameworks, tools and initiatives to support "informed" substitution in recent years in the United States. The goal is to gain and share knowledge about the advantages and disadvantages of chemical or nonchemical alternatives. "This knowledge is essential as we don't want to end up with regrettable substitution," advises Dr Tickner. "On one hand, it is important to evaluate whether there is a safer alternative, but on the other hand, you must consider how you can make it work for industry".



Consumers are the main drivers for substitution in the US, says Dr Joel Tickner from the University of Massachusetts Lowell.
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The University of Massachusetts Lowell collaborates with the State of Massachusetts through the Massachusetts Toxics Use Reduction Program, aiming to support local companies to find safer alternatives. This programme requires the firms that manufacture, process or use toxic chemicals in amounts over five tonnes per year, to understand how and why they are using toxic chemicals. Every two years, these companies undertake prevention planning to identify alternatives to gradually reduce the use of these chemicals.

The companies also pay a fee that funds a regulatory programme, a technical assistance programme through the Massachusetts Office of Technical Assistance, and a research and education programme on safer alternatives through the Toxics Use Reduction Institute at the University of Massachusetts Lowell.

"We at the University educate the people who will be doing the assessment and conduct research on safer alternatives to help Massachusetts companies substitute hazardous chemicals," Dr Tickner explains.

Examples of substitution

According to Dr Tickner, the European regulations are also driving substitution in the United States.

For example, because the Massachusetts electronic industry exports to Europe, they had to find a suitable alternative due to the restriction of the use of lead in electronic products under the ROHS Regulation.

"Companies started a pre-competitive collaboration to identify and test the alternatives among themselves, and to work out the technical difficulties. The combination of the collaboration and the regulatory driver forced that substitution to happen."

A successful example of collaborative research and partnership with SMEs is the work carried out in the State of Massachusetts to reduce the use of trichloroethene (TCE), one of the most widely found chemicals in contaminated sites in the United States. “We worked together with SMEs testing alternatives and helping them to take away the technological risk to substitution,” says Dr Tickner.

As a result, they reduced the use of trichloroethene by 95 percent, saving industry millions of dollars. In the end, the companies were able to find alternatives that provided the function of TCE (i.e. degreasing metal parts) without the risks.

Further information:

University of Massachusetts Toxics Use Reduction Institute:
<http://www.turi.org/>

ECHA's web pages on substitution:
<http://echa.europa.eu/regulations/substituting-hazardous-chemicals>

Video on substitution:
<https://www.youtube.com/watch?v=Zs8oPSXdU5U>