

Waste Not - Want Not

Budapest 2014

Abstract

Chlorination and Sulfonation - Surprisingly Sustainable

Chlorination and sulfonation are classical chemical reactions which are not usually considered when talking about modern chemical methods. In addition, these technologies are not primarily associated with the term “sustainable.” Furthermore, performing these reactions involves using mainly hazardous reagents and often the resulting products are also hazards. Nothing, one would consider as green or sustainable chemistry.

The logical hypothesis for Green Chemistry is to avoid using hazardous reagents wherever possible. However it is preferable to use hazardous reagents in one step, if the total synthesis can be performed more efficiently and sustainably, than taking a less hazardous but much more material and energy consuming route. Ultimately, it is not the single step but the total synthesis which should be considered as the most efficient and sustainable as possible.

In particular, chlorinations are such fundamental chemical reactions that often substitutions or circumventions, to prevent the use of chlorination reagents, may either not be possible in many cases or may involve higher input of materials, resources and energy.

If using hazardous reagents is the most sustainable way, then they should be used in the safest manner with exposure to the environment reduced to a minimum.

The presentation will show comprehensible examples of these chemical reactions and includes case studies of efficient and sustainable chlorination and sulfonation reactions and continuous processes.

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