Impact of Basic Process Chemistry Issues on Process Safety

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ABSTRACT

The greatest opportunities for development of an inherently safer chemical manufacturing process occur at the earliest stages of research and development in the selection of the chemical synthesis route for the product. Research and development chemists need to be aware of the safety, health, and environmental (SHE) consequences that their early decisions will have on the ultimate SHE characteristics of a commercial manufacturing plant. Inherent SHE characteristics of manufacturing process options must be measured and evaluated at an early stage in development, and these characteristics must be included in the route selection decision process. Tools for characterizing and understanding inherent SHE consequences early in process development will be discussed, along with some examples of the potential benefits of inherently safer chemical synthesis routes.