

### **35a Designing Material Systems in the Anthropocene**

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Chemistry and chemical engineering have in some sense always been environmentally and socially responsible; in many ways, the history of the industry can be seen as a process of turning wastes from existing processes into feedstocks for new products. But the combination of globalization, rapid technological evolution, and the emergence of an anthropogenic planet (leading some to dub this age the "Anthropocene") has changed the implications of chemistry and material science for the environment and society, suggesting the need for a broader "earth systems engineering and management" view of the intellectual and industrial practice of chemistry. As the example of chlorofluorocarbons suggests, such an approach recognizes that, in a globalized economy, chemical technologies operate at scales which have the potential to significantly affect global systems. This shift has significant conceptual, institutional, and ethical implications for chemical engineering and the individual chemical engineer.