SINGLE-USE AND SUSTAINABILITY: CONTINUED STUDIES USING LCA TOOLS

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The issue of plastic materials in our environment has been of recent interest. The biotechnology community has responded by examining the effects of single-use systems employed in biomanufacturing. It is natural to emphasize a particular set of environmental concerns over others, and especially the more visible ones. But, in supporting truly sustainable manufacturing systems, it is important to consider all relevant types of pollution or environmental stress. The Life Cycle Assessment (LCA) is a science-based approach for evaluating the environmental impacts, benefits, trade-offs, and burden shifts of a process in an objective format. It considers production process' materials, equipment and facilities over their entire life cycle, "from cradle to grave." GE Healthcare has performed a second, extended LCA study of biomanufacturing that considers additional equipment scale, product types, production modes, and installation placements. It compares traditional stainless steel, single-use, and hybrid facilities in the production of Monoclonal antibodies (MAb) and Adenovirus vaccines (Adv), across the full process train including upstream and downstream operations. It includes the effect of many new parameters, including 1) such regional distinctions as shipping distances and power and water sources, and 2) various end-of-life disposal options.