

Training for Improving Plastics Circularity (TIPC): Innovative approaches to developing a circular plastics workforce

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Abstract:

Transforming the plastics industry from a linear model (take-make-use-dispose) into a circular economy is essential for building a safer and more sustainable plastics industry. Achieving circularity in plastics requires a comprehensive approach, including safer material design, improved end-of-life collection and recycling systems, and systemic changes to manufacturing and business practices. As societal and regulatory expectations push companies to adopt these practices, there is a growing need for a workforce equipped with skills to support circular economy initiatives.

In response, the National Institute of Standards and Technology (NIST) awarded grants to 11 universities in 10 states to incorporate circular economy principles into polymer science programs. These grants enable a variety of educational initiatives, including integrating circularity into course and lab curricula, developing case studies, and partnering with local industry. This talk will highlight initial outcomes from activities that directly engage the local workforce across the plastic value chain. The first, certifications for industry professionals, will include findings from three certification programs for the plastic production and recycling workforces. The second is the development of co-ops and internships for students and local industries; results from one school in the Southeast and another in the Midwest's engagements with local industries will be discussed, as will perceived successes and issues. Finally, two summer programs—one for local community college students and the other for plastic industry professionals—will explore the tools and methods for maximizing the impact of one- or two-day trainings.

The Training for Improving Plastics Circularity (TIPC) grants can be a model for further undergraduate and workforce development initiatives, but only once persistent challenges are addressed. These challenges include, but are not limited to, sustaining these programs once initial funding lapses, recruiting workforce participants, and bridging technical gaps. Educational programs like TIPC are key to creating an emerging plastics workforce that understands the problems created by the linear economy and create innovative solutions to support a more circular one.