

## Episode 142: The Science of Sustainability

**This episode of Waste360’s NothingWasted!, we bring you a dynamic session called “The Science of Sustainability.” This session features speaker Bryan Staley, president & CEO, Environmental Research & Education Foundation (EREF).**

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Here’s a sneak peek into the discussion:

Staley set the stage by speaking about sustainability from a conceptual standpoint and noted that humans create a variety of burdens on the Earth in areas like water, energy, smog, acidification, and litter in waterways and elsewhere. “Our actions have costs which can detrimentally impact long-term sustainability,” he said. But, “remediating these consequences is what we define as sustainability” — so that things can be prepared for future generations. And it’s important to determine the relative importance of each type of burden that stems from our actions.

Staley went on to note that, “Practically, sustainability efforts need to be demonstrate-able, they need to be actionable and quantifiable.” And he reminded the audience that there is a great deal of nuance in sustainability topics; “it’s only in the nuance that we’re able to create

create significant impact. He pulled up some data from a recent EREF study that evaluated the impact of recycling various materials across the U.S., by burden type. Naturally, “different materials have different sustainability footprints.” When looking at greenhouse gas emissions and glass, for instance, there are some situations where recycling it is “worse than landfilling.” But for aluminum, “There are virtually no circumstances where it is better to landfill it.” “The point here,” he notes, “is that there is variability that can result in recycling being more detrimental than landfilling.” This is caused largely by variables “beyond our control, such as the energy grid we’re in.” And, these assessments can differ based on the burden type. Also, the end use matters as far as impact — “We can’t just assume that if something gets recycled that it will go back to the same material or same use as before.” For instance, a plastic bottle is recycled into a new plastic bottle only a third of the time. So, “It’s very important to understand what the environmental burdens are for the end uses.”

Staley went on to look at “how much could we realistically recycle?” and how we might increase the current capacity. He identified a couple of key drivers including technological advancements (related to areas like AI and chemical recycling) and package design. He also asked, “Should packaging be designed to minimize environmental impact when it’s properly disposed of or when it’s improperly disposed of?” He said that the answer may depend on which environmental burden is being addressed, and he acknowledged that those might be in conflict with each other — hence the nuance in both the science and policy conversation.

Staley left the audience with the reminder that, “When we talk about making one consumer product more sustainable, that one product doesn’t exist by itself in a vacuum. The entire waste-management system really is an integrated system — so we need to evaluate how does this work, realistically speaking.”