

By Holly Elmore

The Journey to a Zero-Waste Supply Chain

With a goal of sending as little material as possible to landfill, the zero-waste movement can bring bottom-line savings — or even profits — to sustainability initiatives.

The phrase “zero waste” is at the forefront of corporate social responsibility discussions in many organizations, and is a buzzword in media coverage of sustainability. Yet, confusion remains about the definition of zero waste, and how it is accomplished. Is it actually an achievable goal? How does one begin the process? Will zero-waste practices add cost, or improve the bottom line?

With total product life cycles a concern to consumers and, ultimately, to supply management, the goal is to

find ways to send less waste material to landfill. A commonly used definition for zero waste is the diversion of 90 percent of disposed items from the landfill to an alternative destination.

There is confusion with the term zero waste, as most people assume zero means zero, not 90

percent. In the zero-waste movement, the focus is on companies taking action to get as close to zero waste as possible.

As industries and technology continue to evolve, the journey of zero waste is one without a specific destination. In most cases, the percentages of achievable landfill diversion depend on a number of factors, including local recycling infrastructure, type and quantity of material generated in a company’s operations, and commodity markets.

Local infrastructure.

The local infrastructure refers to recycling companies that accept specified, presorted materials and the hauling companies that transport material from the generating company to the recycler. If single-stream recycling (where all recyclable materials are mixed together for collection) is a local option, then material recovery facilities (MRFs), where mixed material is separated for transport to recycling companies, are integral to the infrastructure.

Commodity markets.

When it is baled, or otherwise

aggregated on-site, contaminate-free material may be sold either directly to a manufacturer or a recycling broker. Pricing is determined via the commodity markets, fluctuating with market movements. For direct sale, a significant volume must be generated at the business; otherwise, recycling brokers play a valuable role in consolidating material from various generators into sufficient quantities for sale.

When necessary, waste materials can be refined to separate components or elements (for example, lead from batteries or precious metals from electrical contacts). However, some materials cannot be recycled or reused for a variety of reasons, and may be sent to incineration. Controversy arises when incinerated material is included as part of the 90 percent landfill diversion claims made for zero waste.

Beginning the Zero-Waste Journey

As with most initiatives, the first step on the zero-waste



journey is to secure top management buy-in. Zero-waste initiatives go beyond changing business practices; they require a conscious shift in corporate thinking, focusing on three initial shifts necessary for zero waste to replace landfill waste.

First, the “pay and forget” era is over. Today, companies must take responsibility for the byproducts generated from their activities and ensure materials are reused, repurposed or recycled. In other words, it’s no longer an option to simply pay for trash removal services without regard for its destination.

Second, the term waste management is replaced by “materials/byproducts management.” In nature, “waste” does not exist; rather, a perpetual life cycle rearranges molecular structures so the finished product for one use is the basis for its next life. Understanding there is no true trash, only materials and their byproducts traveling within their respective life cycles, redefines a company’s viewpoint and helps in developing its logistics and material disposition methods.

Third, once a company accepts the first two shifts, the mind-set must move from the singular “I” to “we.” The impact of our actions extends beyond our organizations to the entire community and beyond. Collective action accomplishes more profound results than singular efforts. All components of the recycling value chain are integral to the “we” consciousness, and each company involved must make

a reasonable profit to create a sustainable system.

Eliminating Energy Waste

Most executives are astounded by the amount of valuable material currently treated as waste that leaves company premises at a cost. Conducting a waste audit determines a company’s current baseline, including type, quantity and frequency. The next step is comparing the material generated with the local recycling options available.

Companies pay for removal of trash and single-stream recycling. The general trash charges are threefold: 1) compactor rental fee, 2) pull charge per collection and 3) tipping fee (tonnage charges assessed by the landfill). Single-stream recycling collection charges typically include a compactor rental and a pull charge with no tipping fee.

In locales with strong recycling markets, companies with significant volume are paid by recyclers for clean, baled material — cardboard, plastic film, aluminum, paper or other items. Material that is separated on-site yields higher revenue yet requires increased labor and baler or other equipment investment. Equipment leasing programs are abundant and eliminate upfront capital investment. A company must assess if the recycling revenue justifies the additional labor and equipment costs. With an on-site source separation approach, companies may create a recycling profit center

rather than using a waste and recycling cost center approach.

The key to developing successful disposal systems is finding balance between the material value and the energy/cost required to recycle material. Nonprofit group Elemental Impact coined the term “recycling integrity” — maintaining maximum material value with minimal energy expended — to define the balance. The energy expended during the material life cycle is an important reality check. Energy is defined as labor hours and effort, transportation and electricity/water required in processes within the recycling chain, and other unique energy used within the system. Organizations determine their unique thresholds, where material volume results in revenue sufficient to cover costs. For smaller organizations, collective effort with industry partners and neighbors may result in the necessary volume that would warrant creating a recycling profit center.

Making It to 90 Percent

What about the remaining unrecyclable byproducts generated by companies? In many instances, the majority of remaining “trash” often relates to transport packaging for office items and raw material from production. Within the “we” consciousness, zero-waste companies across the board work in partnership with their suppliers to create reusable and/or recyclable transport packaging. Reusable packaging is often collected by the supplier upon the subsequent delivery

of future shipments, creating a win-win-win scenario. The company reduces waste hauling charges, the supplier lowers packaging costs and less waste goes to the landfill.

An example is Subaru of Indiana Automotive (SIA), a zero-waste manufacturing plant in Lafayette, Indiana, that worked closely with several suppliers to make significant changes to eliminate waste. To reduce packaging, SIA associates collaborated with corporate teams at the Japan headquarters and suppliers to create a no-cut box with five sides instead of six. Next, the lid was eliminated once the teams determined which items could ship safely without a cover. The no-cut box reduces the amount of packaging material along with labor necessary to cut open boxes, while maintaining packaging integrity. Additionally, polystyrene packaging for parts shipped from Japan is returned empty for reuse in future part deliveries. After five to six uses, the polystyrene packaging is recycled.

With improved bottom lines and consumer demand for product responsibility, the zero-waste company develops a competitive edge on many fronts. Embarking on the zero-waste journey may seem daunting, yet it’s a growing expectation among consumers as recycling viewpoints evolve. **ISM**

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