



## Goodyear's Journey to Zero Waste to Landfill

### The business case for Zero Waste to Landfill

Reducing waste to landfill conserves resources, reduces potential future liability and decreases costs. As a global manufacturer, Goodyear began looking at ways to reduce the amount of waste sent to landfills in 2001 and established a global baseline for waste generation per unit of product. Using 2001 as the base year, Goodyear reduced the amount of waste disposed in landfills by 34 percent per unit of product by 2006 as a result of focusing on recycling activities and reducing the creation of waste.

Although we had made significant progress in reducing the amount of waste sent to landfills by 2006, we decided to make a bold change to improve our global waste stewardship while further reducing future waste management costs. We believed so strongly in these opportunities that a corporate directive was sent to every Goodyear manufacturing plant with a mandate to eliminate waste sent to landfills by the end of 2007.

### Goodyear's waste situation in 2006

When the corporate directive was issued, Goodyear's global footprint consisted of 100 manufacturing facilities within our tire manufacturing, engineered products, and chemical operations—our three business sectors at the time. Our global operations comprised four geographic regions: North America; Latin America; Asia Pacific; and Europe, Middle East and Africa. We had manufacturing plants in 29 countries around the world.

In 2006, Goodyear sent waste to landfills around the world. At the time, we defined "waste" generally as anything we no longer needed, and we employed a common approach to handling and disposing of most of that waste. To change, we realized we needed to gain a better understanding of our waste, and we subsequently came to understand that much of our waste could be of value to other parties. Our challenge then became how to better handle and segregate our waste so it could be used by others as valuable raw materials.

### The Zero Waste to Landfill corporate mandate

The new mandate required regions and plants to determine the best way to eliminate waste sent to landfills and empowered them to implement the specific changes required by each facility. This mandate also acknowledged that individual plants may incur additional costs while working towards the goal with the belief that revenues from the sale of waste would eventually exceed costs.

### How Zero Waste to Landfill was achieved

Achieving Zero Waste to Landfill required us to change our culture. We transitioned from a mindset where we believed our waste had no value and needed to be discarded to a mindset where we recognized that many of our waste streams could have value to other parties if properly segregated and handled. This culture change happened through communication, research, education, and commitment to the ultimate goal.

We began our culture change through communications to all plant associates. We released newsletters, videos, and other environmental communications with the purpose of engaging and motivating associates around our Zero Waste to Landfill initiative. We asked for associate

support and assistance, and encouraged them to constantly look for opportunities for improvement.

To successfully achieve Zero Waste to Landfill, we knew each plant had to learn everything about its waste materials. Each plant was required to create a detailed waste matrix to identify every type and amount of waste leaving their facility. Based on these initial waste studies, plants then developed waste management plans that identified the proper way to handle and manage each type of waste so it could be made valuable to buyers.

Detailed waste matrixes and waste management plans were put in place by analyzing containers of waste to determine what types of materials were included. Our first discovery was that we were not strong at segregating waste, even items “easy” to recycle, like wood, glass, and metal.

We learned a fundamental lesson by analyzing our waste: When our waste materials were combined in a container, they had no value to us or anyone else. However, once separated, these waste materials had value to other parties as a raw material. This lesson resulted in the establishment of better segregation containers throughout each facility. More importantly, the containers were strategically placed near locations where those wastes were generated.



An example of waste segregation containers used in Goodyear’s Zero Waste to Landfill initiative.

Proper segregation required training and communication to all associates and became part of each associate’s annual training. The subject of waste management was part of daily team meetings and focused on the three Rs—reduce, reuse and recycle. We found most associates quickly related to the subject when we compared Goodyear’s waste to their waste at home. At home, most of us don’t need empty glass jars, old newspapers or cardboard and view them as “waste.” If we look at that “waste” in a new light—as items that can be recycled or used as a raw material—we realize they can have value to other parties.

To help share the message of proper waste management and ensure we could achieve our goal, Goodyear assigned “waste captains” at each facility. These associates were responsible for the waste generated, segregated and handled in their production areas. We also established a formal way for plants to share best practices and vendor opportunities with other plants around the world.

Our research also revealed that certain types of waste—those typically difficult to recycle—needed to be handled differently in order for them to be utilized as a raw material by another party. For example, we quickly came to realize that uncured scrap rubber could not be stored in large quantities as it would form into a large mass and become difficult to handle. New handling methods were devised to separate the rubber into small quantities so it retained its value as a potential raw material for another company.

Once we learned how to properly segregate and handle our waste, we had meaningful discussions with recycling and reprocessing vendors, leading to the development of strong relationships with existing and new waste vendors to recycle and reuse all waste materials. In addition, we:

- Developed close business relationships with other industries to become a source of raw materials;
- Established long-term agreements with vendors to ensure a supply of waste materials and enable them to develop or implement new processing opportunities;
- Worked with vendors to refine waste handling methods so that waste could be received in a form that was conducive for reprocessing; and
- Encouraged vendors to identify new uses for waste such that it could be a raw material for a new product.

A small amount of our waste was determined to have no opportunities for recycling or reuse, but we recognized that these materials had some BTU content when burned, making them attractive to waste-to-energy facilities.

#### The challenges – waste handling

During implementation of our improved waste segregation and handling procedures, it became immediately apparent that we faced some challenges. These included:

- Additional internal labor was required to effectively handle and manage the various segregated materials;
- More space was needed for the storage of segregated wastes;
- Additional space on loading docks was required for the shipment of wastes;
- More containers were required for segregation and storage;
- More compactors and bailers were required; and
- New vendors were required to handle the various segregated materials.

#### The challenges – cost containment

Each facility also encountered cost hurdles:

- We recognized that sending waste to landfills is typically the least expensive waste disposal method;
- Recycling and waste-to-energy can sometimes be higher cost options;
- Many segregated or special wastes require longer hauling distances, resulting in higher costs for their recycling; and
- There were a limited number of specialized vendors for certain wastes, in many cases requiring special contractual arrangements with these vendors to generate maximum lower costs or higher revenues.

The only solution to offset these higher costs was to generate increased revenue by selling the wastes that had value and could be used as a raw material to other parties. It was also

necessary to identify vendors who would be willing to enter into longer-term contractual arrangements to maximize the value of the recyclable materials.

#### The results

During the transition year of 2007, while the Zero Waste to Landfill initiative was being implemented around the world, Goodyear sent 87 million pounds of waste to landfills, a 38 percent reduction over 2006. By the end of the year, no waste was going to landfills with the exception of one facility that soon closed.

Goodyear achieved Zero Waste to Landfill as a company by the end of the 1<sup>st</sup> quarter of 2008 and has worked to maintain the Zero Waste to Landfill program ever since.

While it was initially more expensive to implement the Zero Waste to Landfill program at many facilities, every Goodyear region now receives more money for the sale of its recyclable materials than the costs associated with the recycling program. For example, in our North America region, the operating cost of Zero Waste to Landfill doubled the region's waste management costs in 2008. However, in the years since, revenues generated from the sale of recycled materials has increased every year and, by 2012, exceeded costs associated with the Zero Waste to Landfill program. The increased revenue is due to proper segregation and handling, and the identification of new vendors, lower-cost outlets for waste materials, and alternate waste processing options. We anticipate increased revenues in the coming years as we continue to refine our recycling efforts and identify higher revenue outlets for our segregated materials—we no longer refer to them as “waste.”

#### Current status

- Goodyear continues to require all manufacturing facilities to maintain Zero Waste to Landfill, and all manufacturing facilities continue to do so with the goal of reducing the amount of waste used as heat recovery.
- Associates continue to drive the continuous improvement approach used to implement Zero Waste to Landfill.
- A global requirement is in place for continual monitoring and auditing to ensure compliance with our Zero Waste to Landfill goal. If any deviation from the program is discovered, Goodyear takes immediate action, up to and including corrective action and the termination of vendor contracts.
- Goodyear continues to find more beneficial uses for reusable scrap material, and the sale of this material generates revenue and helps fund further improvements.

Further information  
[ehs@goodyear.com](mailto:ehs@goodyear.com)