



Office Max

This case study highlights some of the steps OfficeMax's (formerly Boise Office Solutions) Portland distribution center has taken to reduce packaging-related waste.

The distribution center fills and ships on average 1,700-2,200 orders daily for business-to-business contract, catalog and Internet customers located in Oregon and Southwest Washington. A typical order consists of multiple items, such as file folders, pens, labels, and copy paper.

The Portland distribution center is stocked with approximately 7,000 of the more commonly ordered items. Products that are sold infrequently are not stocked in Portland but rather are shipped from larger facilities located in Washington or elsewhere.

Two different methods are used to ship orders to customers. For customers in the Portland-Salem area, OfficeMax uses its own delivery vehicles and drivers. Customers located farther away have their orders delivered by one of several contracted shipping/delivery services, such as UPS.

Total financial savings from this case study are estimated at more than \$46,000 per year. Table 1 summarizes the savings in resources and money from different waste prevention activities.

Table 1.
Summary of Savings from Packaging Waste Prevention

Activity	Annual Savings (estimated)	
	Pounds of Materials	Dollars
Use of shipping bags	97,000	\$26,500
Box reuse	11,300	\$5,700
Box optimization	Not estimated	Not estimated
Eliminating dunnage	14,100	\$5,800
Using "off spec" dunnage	14,600	\$8,000
Total	More than 68 tons	More than \$46,000

Use of Delivery Bags.

Prior to 2002, all customer orders were delivered in corrugated boxes. In 2002, the distribution center began shipping smaller, less fragile items in paper bags. The bags are similar to paper bags used in grocery stores and are typically taped shut or stapled at the top. The bags weigh between 50 and 90 percent less than corrugated boxes and ship more compactly. Like boxes, they are made of unbleached kraft, and are recyclable. But because the bags weigh so much less, their environmental burdens, such as energy use and pollution associated with manufacturing, are correspondingly smaller.

Bags are only used for local deliveries, but on average, now make up about 25-35% of outbound broken case shipments. This reduces the use of packaging materials by around 97,000 pounds and saves the distribution center approximately \$26,500 per year, just in procurement costs alone.

Land Quality Division
Solid Waste Policy
and Program
Development Section
811 SW 6th Avenue
Portland, OR 97204
Phone: (503) 229-5913
1 (800) 452-4011
Fax: (503) 229-6977
www.oregon.gov/DEQ/

Updated: 07/14/05
David Allaway
09-LQ-027

Box Reuse.

Items that aren't shipped in bags are shipped in boxes. Some items (such as a case of photocopy paper) are never repacked but rather are shipped in their original cartons. When items are repacked, the distribution center makes use of reused boxes. Most reused boxes come from the distribution center's own operations. A smaller number are obtained from its customers.

OfficeMax agreed to a pilot project with Oregon DEQ in 2004 in which participating floors at a DEQ office in Portland flattened and set aside standard stock boxes for OfficeMax to backhaul to their distribution center. This involves very little additional work for DEQ and OfficeMax. It is environmentally preferable to recycling because the boxes are reused, displacing the need to produce new boxes. OfficeMax is also able to save money on procurement.

Of all the boxes that the distribution center uses, around 5% are reused. Reuse of boxes saves the distribution center around \$5,700 per year in purchasing costs and avoids the purchase of approximately 11,300 pounds of new packaging material. This number will grow as more customers start sending their boxes back to the distribution center for reuse.

Box Optimization.

To reduce waste of new boxes purchased for outbound shipments, OfficeMax has implemented a containerization module within its warehouse management system.

Programmed into a computer are the dimensions and weight of every item OfficeMax stocks. The number and type of each shipping container (boxes and bags) as well as their internal dimensions and maximum weight are also programmed. When a "pick sheet" is prepared, telling staff which items to pull for an order, the computer recommends a shipping container based on an ideal "fill percentage" of 80 – 86 percent. Although higher fill percentages would reduce packaging use further, OfficeMax holds that they also increase the frequency of having to resize and repack boxes.

This approach reduces the use of unnecessarily large boxes. However, it isn't perfect. The distribution center uses five different sizes of shipping boxes, but has millions of possible combinations of differently-sized products, so not every box will be optimized. Increasing the number and variety of shipping boxes would allow for greater customization, but would complicate inventory and stocking.

Bugs in the system lead to a few egregiously oversized boxes, but by inviting customer feedback, the distribution center hopes to overcome this problem. "If packaging seems excessive, we want to know," says Mike Murray, the Distribution Manager. "Feedback from our customers helps us do a better job."

Eliminating Dunnage.

Until recently, every repacked box shipped to a customer from the distribution center was packed with some kind of dunnage or void fill, typically crinkled, unbleached kraft paper. The void fill was used to protect the contents of the box during shipment.

However, OfficeMax found that this level of protection was only needed for shipping with third-party carriers. For local (Portland-Salem) deliveries, OfficeMax uses its own fleet and drivers and has a high level of confidence that goods won't be damaged during transit. As a result, OfficeMax recently

DEQ's and OfficeMax's Box Reuse Program: How it Works

When orders arrive at DEQ's headquarters building in standard stock boxes, DEQ staff empty the boxes, flatten them, and set them aside in a designated location on each floor. No additional work is involved, as the boxes would normally be broken down for recycling anyways.

The flattened boxes are stored in locations separate from recycling stations, otherwise they might be taken away for recycling (repulping).

The next week, when OfficeMax makes its next delivery, the empty flattened boxes are picked up and taken back to the distribution center. Labels on old boxes are either peeled off or covered over with new labels. Of course, damaged boxes are not reused but rather are sent off for recycling.

eliminated the use of dunnage in boxes for local shipments. This reduces the use of packaging material by roughly 14,000 pounds/year while saving around \$5,800 in purchasing costs. It also saves on labor costs, since it takes less time to pack boxes without dunnage.

Using “Off Spec” Dunnage.

For boxes shipped by a third-party carrier, the Portland distribution center continues to use dunnage to protect contents during shipment. This need was previously met with purchased rolls of unprinted kraft paper.

Working with Boxes 2 Business, a packaging supplier, the distribution center has come up with a clever substitute: purchasing off-spec paper (such as paper used to make bulk napkin wrappers for restaurants) that can't be used for its original purpose because of printing errors or manufacturing flaws. Normally these rejected rolls of paper would be sent directly to a paper recycler. Now they are being used, displacing the manufacture and purchase of new paper. This saves OfficeMax around \$8,000 a year and reduces the purchase of new paper by around 14,600 pounds a year.

Alternative formats (such as large type, Braille) of this document can be made available. Contact DEQ's Office of Communications & Outreach, Portland, at (503) 229-5317