Reducing Environmental Impact of Returns

By their very nature, returned goods are unwanted, and like most unwanted material, are destined for waste. Reducing the environmental impact caused by returns is often considered to be costly, especially when applied to an area of the business already viewed as an afterthought – or a necessary evil. It is the underlying premise of this study that it is possible to significantly reduce environmental impact, while augmenting recovery value of goods.

It is clear that the first step in a "green returns" program is to have a returns program as a starting point. Organizations with dedicated reverse logistics or returns management experience significantly higher rates of waste diversion. Of these, 56% also report having damage reduction programs – a significant precursor to waste diversion.[1]

This study is intended to examine the areas of environmental concern with regard to returned goods, and to propose mechanisms and programs to minimize the impact.

There are three main areas where returned goods have significant environmental impact:

1) Decommissioning and disposal of hazardous materials
2) Non-resalable products
3) Transportation and storage

Organizations with dedicated reverse logistics or returns management experience significantly higher rates of waste diversion.

These three areas not only have differing underlying causes, but also different preventative or pro-active measures and cost structures. They also have significant associated gain potential.

The prime focus of this paper is the appliance industry. Whereas best-in-class companies on average reclaim 64.3% of initial value from returns, appliance manufacturers without damage reduction processes on average experience a negative reclamation value.[2]

Decommissioning and Environmental Disposal

In the appliance industry – the sector which features the largest tonnage volume of returned goods[3], environmentally sensitive materials are commonplace. These typically include Freon, HCF (Hydro-Fluoro-Carbons), Mercury, and an assortment of heavy metals typically found in batteries.

Incidence of Freon is diminishing, and PCBs are now seldom encountered. These materials cross over all physical states, and must be collected in gaseous, liquid and solid forms. In Canada the federal government has legislated the Canadian Environmental Protection Act, the Canadian Environmental Assessment Act, the

[1] Reverse Logistics Association – April 2009
[2], [3] *Revisiting Reverse Logistics* – Aberdeen Group, September 2006

Canada Shipping Act, and the Transportation of Dangerous Goods Act, among others.[4]

Provincial powers cover all matters of a local nature and property and civil rights within the province. These powers give the provinces authority to pass most kinds of environmental laws related to disposal of goods.[5]

Until 2007, all appliance manufacturers in Canada outsourced decommissioning and environmental disposal to one of the many specialty firms. Costs for this service are on a per appliance basis, with a range of $50-75 per refrigerator (the most commonly decommissioned item). The process was to call the specialty disposal firms when a volume of product was achieved at each location. Travel charges were also added to base costs for locations outside major metropolitan zones.

Damaged goods placed into storage for periods of time prior to assessment and decommissioning have significant potential to leak these chemicals. This requires special clean-up procedures for liquids, and creates an unsafe environment for workers – especially with gaseous leaks.

Without immediate decommissioning, damaged goods pose considerable risk.

Implementing a returns assessment program upon receipt results in speedy decommissioning where required, reduced risk to workers, and manages negative public image resulting from spills and leaks.

The sensitive nature of regulatory compliance benefits greatly from increased governance gains through the tracking and metrics available from a comprehensive assessment and decommissioning program.

Non-resalable Products

Returned products lose their ability to be resold in three ways:

- Extensive damage
- Outdated styles, models or functionality
- Diminished public interest in resale goods

Addressing any or all of these areas will result in an increase in resalable product, and therefore in waste diversion (as product returns to consumers rather than landfill).

Damage reduction programs can both increase the % of goods resalable, and increase average condition of these goods. Additionally, damage reduction can decrease inadvertent toxic spills, as discussed above.

The time sensitive nature of returns is most predominant in the speed with which public appetite for product models or styles changes. The sole way to manage this factor is through expedited turnaround of resalable good, returning them to resellers

[4], [5] The Canadian Encyclopedia: Environmental Law, 2010

within weeks of initial receipt. To this end centralized processing and transportation are key. Process definition and tracking can enhance the productivity while decreasing time returned products are on site.

Diminished public interest is the most difficult factor to ameliorate. In 2010, it became nearly impossible to resell mattresses due to media coverage of the increase in bedbugs. Two main methods of managing this are in common use:

- Harvesting of parts and components for use in service scenarios rather than as complete resale products.

- Establishment of "as-new" certification programs complete with original warranty terms.

- Processes for handling returns and expediting turnaround can greatly affect the ratio of waste to resalable product.

Transportation and Storage

The procedures required to ensure timely processing and turnaround of returns will also directly affect both transportation and storage. The increased carbon footprint impact of multiple location transfers argues strongly for centralized processing of returns. Consolidation of shipping lots holds clear gains, and the carbon footprint gains are closely matched by decrease in fuel costs.

Most companies will view the storage impact from a view of opportunity cost – space used by inbound product detracts from the ability to manage goods destined for market. However heating, lighting and other "maintenance" carbon costs associated with storage of returns may be virtually eliminated, with accompanying reductions in the dollar cost for these services. While the warehouses will still be heated and lit, the per product cost is lowered as throughput increases.

Reduction of carbon footprint associated with returns will be dramatically lowered through centralization, and efficient returns processing.

Remedial Actions

1) An immediate assessment upon receipt of returns will ensure that high value goods are quickly identified and processed. High risk goods can also be quickly identified and be isolated for decommissioning and environmental disposal.

2) A comprehensive decommissioning and environmental disposal program will minimize negative public exposure due to spills and leaks, enhance worker safety, and increase monitoring and metrics for compliance and corporate governance.

3) Damage reduction programs will provide benefits in the increase of resaleable product, with the commensurate increase in waste diversion. Secondary benefits will include increase in average product condition, and therefore in reclamation value. Decrease inadvertent spills and leaks from damaged goods will also decrease/be eliminated.

4) Time-sensitive procedures for receipt, handling, refurbishment/repair and resale will prove one of the best levers for ensuring speedy return of goods to the consumer marketplace. This can dramatically reduce the volume of goods which cannot be resold because it is outmoded or out of style. Fast turnaround of goods will also reduce the carbon costs for warehousing returns.

5) Parts harvesting will directly impact waste diversion, by reclaiming goods which are useful for service and refurbishment. This can also provide an outlet for goods which have fallen out of public favor.

6) Establishment of 'As-New' certification can restore consumer confidence in products which might otherwise be destined for landfill. The resultant increase in reclamation value can offset any certification costs.

7) Centralization of returns processing, and consolidation of shipping routes and schedules can have dramatic results in reducing both fuel costs, and the associated carbon footprint. There can also be significant gains in turnaround time and regularity of shipments to resellers.

Case Study:

Environmental Impact Management

Case Study in Environmental Impact Management

Initial situation

A major appliance manufacturer received an average of 25406 returned appliances monthly to their Eastern Canada facilities.

- Of these, two thirds (66.3%) ended in landfill. This represented 185 tons of waste monthly.
- There was no separation of recyclables from landfill.
- Accidental environmental spills and leaks were occurring on the warehouse floor, with incidence unrecorded.
- A third party would travel to each warehouse location to decommission refrigerators, at a cost of $50 per unit plus travel. All procedures and documentation remained with the third party.
- Original packaging, if received, was discarded.
- Returns would remain in storage for up to two years before being processed.
- There were no documented returns processes, including for environmental management.
- Reclamation value was negative, with a cost in excess of 20% of MSRP absorbed in processing and disposing of returns.

The Green Returns Program

A 15 month "green returns" program was initiated in January 2009, through March 2010. The program has continued in place as modus operandi since that time.

The program included the following aspects:

- Centralization of processing and storage
- Implementation of an immediate assessment program
- On-site decommissioning and environmental disposal
- On-site repair & refurbishment
- Damage reduction processes and monitoring
- Establishment of parts inventory
- "As-new" certification program

Baseline Determination

No data existed on inbound vs. outbound returns prior to January 2009. The first quarter of 2009 was used as the baseline, even though some gains were made over this time as initial stages of the green returns program were implemented. The first quarter of tracking indicated that only 40% of returns were resold in any form. All other product went to landfill, with no recycling or harvesting of parts.

Project duration: 15 months[7]

[6] 53,313 over 18 months
[7] 01/2009-03/2010

Total # of appliances tracked: 38,050

The extended scope and considerable volume render this sampling statistically relevant, as it represents 54% of the estimated national total.[6]

Quarterly baseline: (taken from 01-03/2009)

	9-Jan	9-Feb	9-Mar	09Q1 Total
Returns	2823	1829	3134	7786
Resold	952	893	1837	3142
Waste %	66.30%	51.20%	58.60%	59.60%

In order to account for seasonal variation in volume and condition, the same three month period was selected to chart condition after implementation of the damage reduction program.

One year later results: (taken from 01-03/2010)

	10-Jan	10-Feb	10-Mar	10Q1 Total
Returns	2566	4091	2937	9594
Resold	1245	3335	4249	8829
Waste %	51.50%	18.50%	-44.70%	8.00%

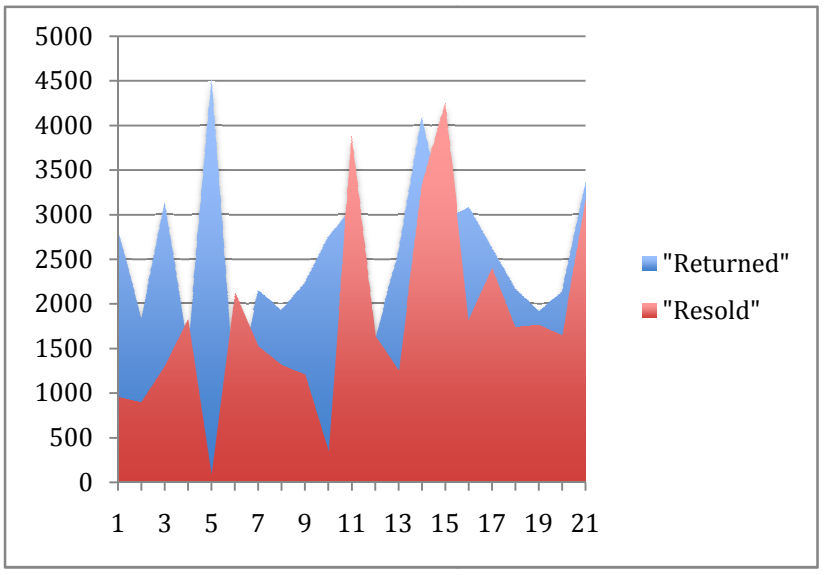
It will be immediately apparent that volumes increased by 20% over the course of the project. It is also evident that peak returns periods experience a time lag in return to the resale market. This makes viewing results over a quarter (with clearly delineated financial and operational goals) the best indicator.

Results

Damage Reduction

Products with no reclamation value were reduced to 9.1% of the total.

- Of these, parts were harvested to further reduce the volume sent to landfill.
- Repair and refurbishment processes resulted in 7% more products in the highest reclamation value class.



Resold goods

Average turnaround time from initial return authorization by the customer, to shipping to resellers was reduced to 14 days.

[6] CANSIM - Table 080-0019

This, combined with improved procedures, centralized processing & transport, and onsite repair/refurbishment increased volume of resold good from 40% to 92%.

The following chart indicates the progress over the 15 month project period, and the stability achieved over the subsequent 6 months post-implementation:

Decommissioning and Compliance

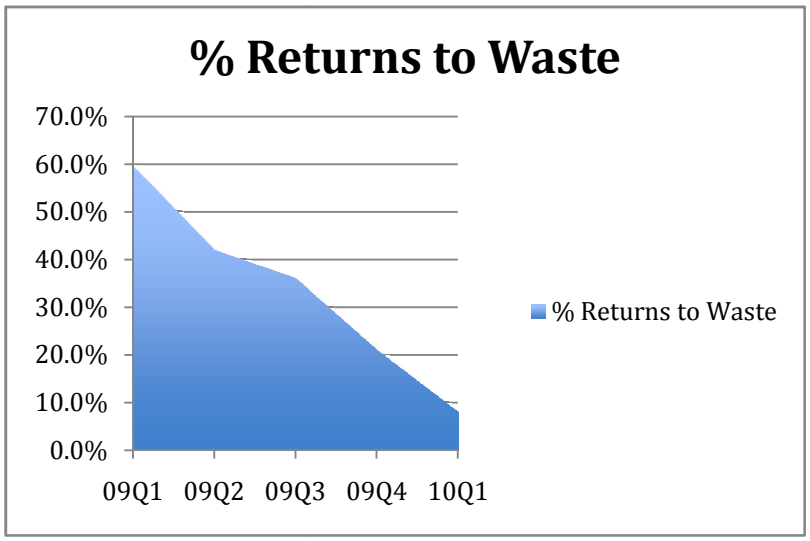
Cost of decommissioning was reduced by 50%, primarily through use of on-site resources, and centralized processing which eliminated travel costs.

Accidental spills and leaks on the warehouse floor were reduced to zero. This is primarily attributable to the assessment program, which identifies damaged products for immediate triage.

The documentation of this program's processes, and the accompanying monitoring and metrics have simplified compliance with legislation, and increased visibility of environmental waste to corporate governance. Tonnage is reported to include breakout by recycling, wholesale, retail, landfill.

Waste Diversion

The progress in waste diversion was both dramatic and continual over the course of the project. It is illustrated by quarter, below:



Packaging of corrugate and corner posts is now reused.

Additionally, recyclables are fully separated from landfill, further increasing the overall waste diversion. The year over year increase in waste diversion was 85%.

Transportation and Storage

Centralization of processing to a single external facility had the immediate benefit of freeing up loading docks from returns into the outbound warehouse. This also allowed for staff to be redeployed to forward logistics. The lack of returns in the warehouse allowed for better use of the existing footprint, with all material outbound.

With all products bound for a single location, consolidation of loads reduced return trucks from multiple sellers. The client, who manufactures under several different brand names, agreed to consolidation of loads for brands as well, further reducing shipping loads and costs.

At the external facility, turnaround time was reduced to 14 days. This encompassed all work from:

- customer return authorization (RA), through
- receipt and processing of returns,
- repair, refurbishment and decommissioning as needed,
- lotting by grade, and
- subsequent shipping to reselling channel.

For customers returning goods, turnaround time on receipt of credits was reduced from 14 days to 48 hours, greatly increasing customer satisfaction.

Conclusion

While most environmental and compliance endeavors are anticipated to be at best cost neutral, the Green Returns Program **improved returns profitability by 60%**.

Implementing the Green Returns Program had significant gains in three distinct areas:

- Reclamation value and cost reduction
- Environmental footprint
- Productivity and governance

Reclamation value and cost reduction

The results of the changes here are consolidated into a single view: What value still remains in an average product.

⇒ At the start of the project, and additional 20% was required to account for the cost of processing and handling returns.

⇒ At the conclusion of the project, almost 40% of the MSRP was being recovered. That figure continues to grow steadily as process improvements are continual.

This represented a **59% increase in reclamation value**.

Environmental footprint

There were multiple contributing factors for the increase in waste diversion:

- Increase in resaleable product through condition improvements
- Increase in product actually returned to market while it still has value

These two components alone resulted in **converting 78% of material previously destined for landfill being into resaleable goods**.

Incremental gains were made in several other places, including:

- Addition of a recycling program
- Reuse of packing materials
- Parts harvesting to decrease volume of landfill waste

The combined effect of these was an **85% increase in waste diversion**.

The transportation cost gains have already been accounted for in the increased reclamation value. There was a **$400,000 reduction in storage costs** devoted exclusively to returns. The carbon footprint gains of both of these changes were not measured.

Accidental spills on the warehouse floor were **reduced to zero**. Risks to staff health and safety were reduced accordingly.

Productivity and Governance

The process improvements include constant monitoring and tracking to enable management to analyze and react to short term changes. Daily status updates are reported in a dashboard format, indicating lot status, availability of materials for resale, days in process, and associated costs and reclamation value.

From an environmental governance perspective, the following tracking and reporting was instituted:

- Decommissioning
- Disposal of environmentally sensitive material
- Accidental spills and leaks
- Damage reduction
- Shipment consolidations
- Warehouse footprint
- Overflow storage cost reductions

Compliance reports are prepared for all federal and provincial legislated requirements and guidelines.

Productivity gains were made principally in the ability to redeploy personnel and resources to forward moving product. While the gains from this were not tracked within these project guidelines, they are easily reflected in the commensurate increase in returns volume – **20% year over year** from 2009 to 2010.

At the external facility, turnaround time from RA to resale shipment was **decreased to an average of 14 days**. While this was not previously tracked, at project initiation, returns stock had been stored for up to two years without processing.

Customer return credit turnaround was **reduced from 14 days to 2 days**.

Appendix – Data

The following data is referenced in the report above. Included below is data from the Eastern Canada facilities only, over the 15 month project duration, and the subsequent six month "normalized process" period. This latter six months is included to illustrate that the gains are ongoing, and not the result of "cleaning house".

2009												
	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
Returns	2823	1829	3134	1489	4524	934	2148	1925	2228	2743	3061	1618
Resale	952	893	1297	1827	82	2124	1519	1309	1201	342	3888	1633
Waste	1871	936	1837	-338	4442	-1190	629	616	1027	2401	-827	-15
Waste %	66.30%	51.20%	58.60%	-22.70%	98.20%	-127.40%	29.30%	32.00%	46.10%	87.50%	-27.00%	-0.90%
			09Q1			**09Q2**			**09Q3**			**09Q4**
Returns			7786			6947			6301			7422
Resale			3142			4033			4029			5863
Waste			4644			2914			2272			1559
Waste %			59.60%			41.90%			36.10%			21.00%

2010									
	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sept*
Returns	2566	4091	2937	3081	2615	2160	1914	2128	3365
Resale	1245	3335	4249	1810	2398	1735	1761	1641	3176
Waste	1321	756	-1312	1271	217	425	153	487	189
Waste %	51.50%	18.50%	-44.70%	41.30%	8.30%	19.70%	8.00%	22.90%	5.60%
			10Q1			**10Q2**			**10Q3**
Returns			9594			7856			7407
Resale			8829			5943			6578
Waste			765	8829		1913			829
Waste %			8.00%			24.40%			11.20%

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