Expired Product Project

Developed for
The Joint Industry Unsaleables Steering Committee

Prepared by
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Resource Network, Inc.

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Expired Product Project

In early 2003, a group of consumer packaged goods manufacturers and retailers launched a project aimed at improving product inventory practices. The focus of their attention was inventory with expiration dates printed on it.

Recognizing that many benefits exist for posting this information about the useful life of consumables, the joint industry work group wanted to publish information that other companies could use to improve product freshness and reduce the occurrence of code life expiration in the supply chain.

This report contains the information that was assembled during May and June, 2003 from manufacturers and retailers participating on the Joint Industry Unsaleables Steering Committee.

Report Objective

The objective of this report is to communicate practices that manufacturers, retailers, wholesalers and sales agencies can use to reduce the amount of date-expired and unsaleable products. This is expected to result in increased consumer satisfaction with the total supply chain.

The Opportunity

It is important to note that, across the broad spectrum of consumer packaged goods categories, date coding practices are intended to ensure that products are safe to consume and meet quality control specifications of the manufacturer for some time beyond the actual expiration date. Clearly, this is very different from category to category. For example, refrigerated orange juice will deteriorate much faster after date of expiration than will shelf-stable dry dog food.

However, manufactures, retailers, wholesalers and sales agents are quick to point out that expiration dates are uniformly meant to indicate when products should be removed from the supply chain. They also agree that “days of life remaining” data can fuel several valuable tools for those responsible for inventory control and that opportunities exist to apply those tools more often.
About the Subject

For purposes of this report, expired products are defined as consumer packaged goods on which a date code exists which has passed in time and which is meant to be the end of the distribution life of those products.

Across the vast array of products, many variations exist for language and graphics used to display expiration date codes. Alternately, some products contain a date that relates to when they were manufactured, such as the “born on” language used in the beverage category.

The best estimate of the amount of expired product that is removed from the supply chain can be developed from data collected annually in the Joint Industry Unsaleables Benchmark Survey. Based on samples collected by several independent field auditors and on other industry data in the 2002 report, about $900,000,000 worth of inventory was removed from the supply chain in 2001 due to date code expiration.

The above estimate excludes products distributed through the Direct Store Delivery supply chain, which is projected to be about 55% of the total ACV.

Due to the complexity and reach of the supply chain, it is often impossible to pinpoint exactly where and why these products expire. Instead, the Joint Industry Expired Product Working Group focused on methods that have proven successful in minimizing this expense.

<table>
<thead>
<tr>
<th>$585 billion</th>
<th>Total U.S. ACV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>45%</td>
<td>Portion warehouse delivered.</td>
</tr>
<tr>
<td>$263 billion</td>
<td>Warehouse delivered ACV.</td>
</tr>
<tr>
<td>.95%</td>
<td>Weighted average unsaleables rate.</td>
</tr>
<tr>
<td>$2.5 billion</td>
<td>Total unsaleable “ACV”.</td>
</tr>
<tr>
<td>36%</td>
<td>Portion expired (26%), seasonal (10%)*.</td>
</tr>
<tr>
<td>$900,000,000</td>
<td>Expired product in 2001.</td>
</tr>
</tbody>
</table>

Source: 2002 Unsaleables Benchmark Study, GMA, FMI, FDI.

*Source for Percent expired, seasonal: Damage Recovery Systems, Damage Research Inc. Starategy Solutions Inc. and Universal Solutions.
Acknowledgements

The following individuals actively contributed to this report and provided the information contained herein.

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>Robert Altfest</td>
<td>Americas Confectionary</td>
</tr>
<tr>
<td>Ernest Argenio</td>
<td>Mott’s Inc.</td>
</tr>
<tr>
<td>Peter Bannochie</td>
<td>General Mills, Inc.</td>
</tr>
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<td>Daniel Bushey</td>
<td>Grocery Manufacturers of America</td>
</tr>
<tr>
<td>Mike Gadbois</td>
<td>Hannaford Bros. Co.</td>
</tr>
<tr>
<td>James Langenhan</td>
<td>Campbell Soup Company</td>
</tr>
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<td>Ted Lechner</td>
<td>HEB Grocery Company</td>
</tr>
<tr>
<td>Gary Piwko</td>
<td>Kellogg Company</td>
</tr>
<tr>
<td>Richard Poling</td>
<td>The Procter &amp; Gamble Company</td>
</tr>
<tr>
<td>Gary Regina</td>
<td>Winn-Dixie Stores, Inc.</td>
</tr>
<tr>
<td>Peter Reynolds</td>
<td>Kmart Corporation</td>
</tr>
<tr>
<td>Joe Scaccia</td>
<td>Kraft Foods, Inc.</td>
</tr>
<tr>
<td>Carol Snyder</td>
<td>Nestle Purina PetCare</td>
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<tr>
<td>Kenneth Todd</td>
<td>Food Lion, LLS</td>
</tr>
<tr>
<td>Laura Trappe</td>
<td>Unilever Bestfoods North America</td>
</tr>
<tr>
<td>Patrick Walsh</td>
<td>Food Marketing Institute</td>
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This report was authored by Dan Raftery, President, Raftery Resource Network, Inc. Legal review was provided by James Skiles VP and General Counsel, GMA.
Primary Factors

Five primary factors are generally believed to re-occur throughout the supply chain that drive product expiration.

- **Inventory rotation does not occur 100% of the time.** Whether it is at the warehouse storage slot or the store shelf, newer product may not be inserted behind older product every time. Several reasons exist for this condition and no one segment in the supply chain is more to blame than another. Each segment, however, has a “span of control” that could be reviewed for improvement opportunities.

- **Product date-coding practices are not standardized.** Some products are “open-coded” i.e., the date is shown in a way that consumers can understand it, such as 03/05/03. Some products are “closed-coded.” i.e., the date can only be understood by someone who understands the coding system, such as 3064 which is the Julian date for 03/05/03. Finally, some products are not date-coded at all.

- **Case date-coding practices are also not standardized.** However, voluntary guidelines for other case markings have been in place in the grocery industry since 1996 when a consortium of industry associations first published them. The most recent updated guidelines are available at [www.gmabrands.com](http://www.gmabrands.com).

- **Warehouse inventory management systems do not easily and accurately capture date-code data.** While advances in the control applications for WMS programs have been significant, the ways in which expiration dates are used are not consistent from facility to facility.

- **New product development practices may shorten available life remaining.** In some cases, production capacity limitations mean that inventory must be stockpiled prior to a national rollout. In other cases, quality control may require an abbreviated shelf life for initial production runs. In either case, a paradoxical condition exists when a recently launched product reaches expiration before sell-through.

The Joint Industry Expired Product Work Group identified several suggestions for how supply chain partners can address these factors together or separately.
Product Inventory Rotation

Individuals who manage product inventory throughout the supply chain generally point to inventory rotation practices as the foundation for maximizing product freshness. The Joint Industry Unsaleables Steering Committee offered several recommendations and suggested several incentives for improving inventory rotation practices.

### Recommendations for Improvement

<table>
<thead>
<tr>
<th>Inventory Rotation – In-store</th>
<th>Inventory Rotation – Warehouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rotate one different category each week. Schedule 2-3 full store rotations annually.</td>
<td>• Capture expiration date in Warehouse Management System.</td>
</tr>
<tr>
<td>• Include product rotation in major planogram resets.</td>
<td>• Set and reinforce inbound product life-remaining standards.</td>
</tr>
<tr>
<td>• Involve supplier, sales agent and retailer associates.</td>
<td>• Halt shipment when remaining life in warehouse is below standards.</td>
</tr>
<tr>
<td>• Pay special attention to slow moving categories and products.</td>
<td>• Involve supplier, sales agent and retailer associates.</td>
</tr>
<tr>
<td>• Perform special “post holiday round up” of seasonal items.</td>
<td>• Pay special attention to slow moving categories and products.</td>
</tr>
<tr>
<td>• Use special case design or shelf systems that force rotation.</td>
<td>• Perform special “post holiday round up” of seasonal items.</td>
</tr>
<tr>
<td>• Design visual symbol on consumer package to aid in rotation.</td>
<td>• Use special storage rack systems that force rotation.</td>
</tr>
<tr>
<td>• Adopt store practices used in fresh categories (e.g. dairy) to shelf stable categories.</td>
<td>• Clearly display expiration date on outside of shipping container, following GMA guidelines.</td>
</tr>
<tr>
<td>• Use reset teams traveling between stores for major planograms.</td>
<td>• Adopt warehouse practices used in fresh categories (e.g. dairy) to shelf stable categories.</td>
</tr>
<tr>
<td>• Schedule specific days of the week or month for rotation.</td>
<td></td>
</tr>
</tbody>
</table>

Suggested incentives for product inventory rotation are as follows:

- Reimburse stores for unsaleables at less than 100% of cost.
- Reward “aisle captains” or department heads for reducing the amount of out-of-codes sent to reclaim center.
- Deny credit to stores that do not rotate inventory.
- Train sales force, sales agents and store personnel to rotate inventory as a mandatory part of the job.
- Conduct field audits.
- Hire service providers to do shelf resets and inventory rotation.

Individual companies may practice additional actions and policies that have also proven to be successful.
In-store Audits

In-store audits have become a popular method for improving inventory conditions in recent years. Retailers, manufacturers and sales agents are often involved in these audits. The general consensus about retail audits of product inventory is as follows:

- Beyond the fresh categories such as dairy, eggs, refrigerated juice and meat, to name a few, inventory rotation practices are generally found to be inconsistent.

- Closed-date coded products are often more poorly rotated than open-dated products.

- Low volume products are more likely to have the greatest number of dates on the store shelf. Some inventory for these products is also likely to have passed expiration.

- Audits can reinforce the importance of inventory rotation with store personnel.

- Inventory rotation practices generally improve where in-store audits occur, but this activity can be expensive.

Companies experienced with in-store audits report that their greatest successes come when the audit data are integrated with follow-up actions. They also include audits in larger initiatives involving remaining shelf-life inventory management.

Some manufacturers also collect data about inventory in customer warehouses on an audit basis. Others regularly view this information through Vendor Managed Inventory partnerships with wholesale and retail customers. Sales agencies and special third-party auditing firms are available to provide these services.

Consumer Hotlines

Consumer hotlines are often maintained by retailers and manufacturers of consumer packaged goods. Types and frequency of questions about product date codes are mixed.

- For some companies, questions frequently deal with closed-coded products and with how to read those codes.

- For other companies, few questions arise about close-coded products.

Safety and product quality are the general issues often addressed during hotline conversations. Both manufacturers and retailers in this project treat safety questions as top priority for resolution and follow-up regardless of the type of date code used.
Date Code Methods

An example of the diversity of date code practices that exist in the industry today can be shown through a summary of the practices of nine CPG manufacturers.

- Eight use the open-date method on an average of 61% of their products.
- Seven use the closed-date method on an average of 53% of their products.
- Three use one of the methods on 100% of their products.

The most popular language used by the eight manufacturers that print open date codes is “best when used by.” Four companies report using it on all of their open coded products and two use it on some products.

Other phrases used are: “best purchased,” “best when purchased by,” “buy before,” “best by,” and “expired date.”

Several benefits and risks of the two general types of date-coding are shown on the following tables. The effects of changing from one method to the other are excluded from this discussion.

<table>
<thead>
<tr>
<th></th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consumers easily see product freshness.</td>
<td>Increases the potential for unsaleables.</td>
</tr>
<tr>
<td></td>
<td>Inventory rotation is easier at store and warehouse.</td>
<td>Does not guarantee accurate inventory rotation.</td>
</tr>
<tr>
<td></td>
<td>Directly benefits consumers, building confidence in the supply chain.</td>
<td>Does not indicate if product should not be consumed.</td>
</tr>
<tr>
<td></td>
<td>Helps prevent sale of expired product.</td>
<td>Requires product rotation.</td>
</tr>
<tr>
<td></td>
<td>Helps prevent consumption of expired product.</td>
<td>Expired product may still be good.</td>
</tr>
<tr>
<td></td>
<td>Reduces number of product questions from consumers.</td>
<td>Consumers may cause counter-rotation or package damage, looking for freshest product.</td>
</tr>
</tbody>
</table>

*The date which product is to be removed from distribution is printed on the consumer package in a way that can be understood by consumers. For example: 03/05/03, or March 5, 2003.*

Conclusion: Although not a guaranteed solution, open date codes are generally expected to improve product freshness.
Date Code Methods (cont’d)

Several valid reasons exist for using both types of date coding in the consumer packaged goods supply chain. Individual companies are responsible for determining which method is most appropriate for their products. For companies with very large product varieties, this may mean that variations of both methods are used.

*The date which product is to be removed from distribution is printed on the consumer package in a way that can only be understood by someone who knows how to read the coding system. For example 3064, is the Julian date for March 5, 2003.*

Conclusion: Several supply chain efficiencies can result by using the closed date coding technique. However, some products might not be appropriate. Some appropriate applications include shelf-stable products with long lives, products not consumed by humans and seasonal items to name a few.
New Item Launches

The joint Industry Unsaleables Steering Committee offered several observations about successful new product launches where the amount of available self life was maximized.

**Recommendations for New Item Launches**

- Treat each product launch (or product family launch) uniquely.
- Reinforce normal guidelines for product shipment.
- Partner with retail customers to gain rapid distribution.
- Focus on “speed to shelf” in measuring performance of sales force, agencies, distributors and retail customers.
- Consider using special retail coverage teams to install major changes, rotate inventory if needed and implement in-store promotions if used.
- If practical, use special pre-assembled pallets of new products for cross-dock distribution to stores.
- Support launch with consumer marketing and coordinate delivery with in-market support.
- Distribute short-dated product through closeout channels.

While most of the recommendations listed above fall under the manufacturer’s “span of control”, wholesalers, retailers and sales agents can directly enhance or inhibit the success of a new item launch. In summary, multiple steps of communication involving these recommendations need to be made in order to increase the likelihood of success.
Days of Life

Sometimes referred to as “remaining life” or “remaining shelf-life,” this value is simply a product’s expiration date minus today’s date. For example, on March 5, 2003 a product date-coded March 5, 2004 would have 364 days of life remaining before it expires and is removed from distribution.

The Joint Industry Unsaleables Steering Committee recommends that individual companies – manufacturers, wholesalers, retailers and sales agencies – increase their knowledge base of this data and increase their use of inventory management applications using Days of Life data.

For purposes of illustration, the following flow diagram shows a simplified supply chain for consumer packaged goods. Some products will experience fewer steps in distribution; others will experience more. The example data shown are aggregated from a confidential survey in which five manufacturers provided average days of life remaining for nine categories (shelf stable, dry grocery).

![Flow Diagram]

Note: These example data represent optimal averages provided by a select sample of companies. Other companies, or these companies at different times, may experience shorter days of life remaining for the same categories or for other categories.

*Median number of days of life remaining from sample of nine shelf-stable dry grocery categories.

Although the sample size for the above days of supply is small, relative to the total number of categories in the grocery supply chain, it provides the opportunity for the following observations:

- Normal store inventory turns should be adequate to pull through product before expiration.
- In-store inventory rotation practices are critical in the prevention of product expiration.
- Additional inventory holding locations (e.g. alternative sources) can be expected to diminish the number of days of life remaining for the retailer D.C. and the store.
- Inventory purchased on promotion may also diminish the number of days of life remaining in the retailer D.C. and store, depending on factors such as when it was purchased (e.g. at the end of the promotion).

Companies on the steering committee are representative of the grocery industry, but do not claim to have experienced all the variations that exist. In general, however, they observe that industry practices which cause an excessive build up of inventory at any point in the total supply chain can be expected to erode days of life remaining and may contribute to product date code expiration.
Selected Case Studies

**Retailer A** has evolved an inventory control system over the last two years that uses days of life remaining. As part of the warehouse receiving process, the expiration date is entered into the inventory database for each SKU.

Prior to receipt, each item is given a target benchmark which is set at the sub-category level. The targets are reviewed regularly and agreed-upon by manufacturers and are driven by the items with the lowest days. As part of the system’s evolution Retailer A creates new sub-categories frequently.

If the inbound shipment contains product with days of life below the target, Retailer A contacts the manufacturer and may refuse the shipment. Alternately, a new sub-category could be created with a lower target.

On the outbound side, Retailer A places an order hold on items that reach 45 days of life remaining. Shipment is halted at 15 days. These values are set by this retailer for shelf-stable dry grocery products and are not indicative of practices at other retailers or for other categories.

**Retailer B** has an in-store program that involves consumers and store personnel. If a consumer finds a product that has passed its expiration date, the consumer receives the product for free. Retailer B keeps the outdated product and gives a fresh one to the consumer.

Since the store receives no revenue for this “sale,” and two products are involved, gross margin is severely affected. As a result, Retailer B reports that store personnel are highly motivated to rotate shelf inventory and to send outdated product to the reclamation center.

**Manufacturer A** prints open date codes on shelf stable products. However, the dates are only visible if the packages are removed from the shelf and inspected. This is a common condition in the CPG industry and it is often driven by production limitations on where the date can be printed on the package.

In order to aid shelf rotation, Manufacturer A modified package graphics slightly. Without perceptively affecting the label design, the new graphics contain marks that can be seen by a person standing in front of the shelf before any product is removed. This way sales agents can quickly see which SKUs need rotation. Time is saved and rotation labor is directed to where it is needed.

**Manufacturer B** also prints open date codes and uses an additional visual aid to help the sales force rotate retail inventory. On the top and one side of the package, Manufacturer B prints a colored bar that can be seen from the front of the shelf. The color changes every three months.

This technique helps by batching the expiration dates in a similar fashion to Manufacturer A’s technique. This is a new program, which started in 2003.

Both of the manufacturer case studies show creative thinking in adding simple, color-coded markings to existing packaging. Other manufacturers are also developing these visual clues to make the job of inventory rotation easier for all parties.
General Conclusions

The opportunity exists to increase knowledge about the number of days of life remaining for products at each inventory location in the supply chain. Armed with this new data, manufacturers, wholesalers, retailers and sales agents can apply inventory management technology to increase general product freshness in the supply chain.

These data are readily available for open-date coded products and obtainable for closed-date coded products. However, capturing these date codes is labor intensive and may not even be appropriate for some warehouse management systems. The greatest challenge appears to exist at the wholesaler or retailer warehouse. This is also the most crucial point in the supply chain for monitoring days of life, as this point is where decisions are made that affect store inventory.

Emerging technologies such as Radio Frequency Identification (RFID) and the Electronic Product Code (ePC) hold the promise of simplifying data capture, potentially including date codes. However, the application of the data will still need to be focused on inventory controls, regardless of the input methodology.

The Joint Industry Unsaleables Steering Committee offers the following suggestions for companies to consider when developing applications:

- Provide targets for number of days of life remaining by SKU when received at the customer warehouse. This should be less than the full shelf life (at manufacturing plant) so that customers’ expectations match their experiences.

- Capture days of life remaining data upon receipt at the warehouse.

- Use the data to prioritize inventory for shipment. FIFO may not be correct if product is received out of sequence.

- Include store shipment history in determining inventory levels and benchmarks for days of life remaining.

- Consider limiting distribution of products that experience excessive returns due to expired date code.

- Consider lowering finished goods inventory levels for SKUs that experience excessive aging before shipment to customers.

- Follow Category Management principles to determine shelf inventory levels. For slow movers, consider reducing shelf inventory through the use of “blockers” or “dummies.”

The link between food safety and product freshness has been strengthened with the passage of the Bio-terrorism Act of 2002. Increasing communication through the supply chain about target and actual days of life remaining is expected to improve product freshness for the benefit, safety and comfort of consumers.
Recommended Reading


- *CPFR Baseline Study: Manufacturer Profile*, Grocery Manufacturers of America, 2002.


- *Getting it Right at Retail*, 2001, Association of Sales and Marketing Companies.


