

Vision Inspection Supports Food Safety Risks of Misinforming Product Content



Implementing a vision inspection solution can be an important part of a food safety program by ensuring your products are properly labeled and printed to avoid product recalls and to keep consumers safe from mislabeled products.

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1 Introduction

In the United States, food and beverage packaged products are consumed by 250 million people each day. Of these 250 million consumers, 65% refer to packaging and labels when purchasing products. The consumers rely upon the correctness of the product labels to inform them of the contents of the package, such as harmful allergens. According to the AIB report, 43% of food product recalls is due to mislabelling.

Mislabeling is now classified as a Class III recall under FDA regulations requiring a mandatory recall of all mislabeled products.

As a way to guard against such mislabeling recalls, most companies are today requiring automated vision inspection programs for their labeling operations. Vision inspection systems are able to detect 100% of the product defects they are trained to capture, eliminating the potential of mislabeled products reaching the consumer, protecting every stakeholder in the supply chain from potential recalls and liability.

Today's high speed manufacturing and packaging environment has made manual inspection nearly impossible therefore increasing the risk of a defective product reaching the retailer with improper information. When food mislabeling occurs on a production line they compromise product integrity, brand reputation, company profits, and pose a risk to the consumer. Vision systems are an extremely effective quality control tool that provides an immediate return on investment by eliminating mislabeling and its associated risks.



2 What Are Potential Labeling Hazards?



Mislabeling errors include placing the wrong label on a product, unidentified allergens on a label, missing front and/or rear labels, incorrect or incomplete product code information, and missing regulatory requirements such as, net weight and fill level. Implementing a vision inspection solution to monitor the labeling process will minimize these risks and its causes, such as operator error, unreliable manual inspectors, equipment malfunction, and system override.

It is essential to catch these errors before defective products end up on retailer shelves and in the hands of the consumer. Under Section 403 of the Federal Food, Drug and Cosmetic Act, it qualifies what is considered mislabeling or misbranding under federal regulation.¹

To learn more about food labeling procedures please visit www.fda.gov.

Contains Milk, Soya, Nuts and Egg

3 Why Labels Are Essential To Food Safety

The Food and Drug Administration (FDA) requires food manufacturers to list the eight most common ingredients that trigger food allergies on every label, even if it only contains one of these ingredients. These allergies must be easy to read so that they are easily communicated to the consumer. The eight foods included in food allergy labeling account for an estimated 90 percent of all allergic reactions. It is important to evaluate that each product label is correctly communicating the contents of these allergens.



Milk



Eggs



Peanutes



Tree nuts (i.e. almonds, cashews, walnuts)



Fish (i.e. bass, cod, flounder)



Shellfish (i.e. crab, lobster, shrimp)



Soy



Wheat

¹) See section 6- Food and Beverage Packaging Regulations for specific regulation requirements

4 Prevention Now Mandatory Under the FSMA

As of January 4, 2011, the Food Safety Modernization Act (FSMA) is starting to result in an industry-wide focus on and mandatory efforts to prevent product recalls. Beginning in July 2011, processors of all types of food, both domestic and international producers, are required to evaluate potential hazards in their processes, implement and monitor effective measures to prevent risks, and put in place a plan of action to take corrective actions when necessary.



Prevention is no longer a goal just for manufacturer's to protect their bottom line, but it is a goal for all parties involved along the supply chain, especially consumers. Soon, 19 new provisions will begin impacting all food processing industries. Several of these regulations will be increasing the demand for vision inspection solutions. Those companies not integrating vision inspection into their processing line will not only be risking perceived reputation and profitability, but possible suspension or seizure of their facilities by the FDA.

Before mandated inspections are put into action by the FDA, manufacturers are advised to perform risk assessments on their processing lines. Processors will be held accountable for putting into place reliable technical controls that minimize their risks, such as implementing a vision inspection solution. FDA inspections will also include foreign food facilities, doubling the number of facility inspections each year for the next five years.

Vision inspection can ensure accurate labeling of ingredients and support product tracking through the supply chain. A vision inspection labeling solution can be easily integrated into existing lines to supporting compliance, safety and accuracy. Implementing vision inspection can ensure defective hazards are under control as well as produce accurate records for future use in verification of FDA and HACCP (Hazard Analysis and Critical Control Points) standards.²

5 What is the Impact of a Recall to a Food Manufacturer?

According to the FDA, almost 30,000 people go to the emergency room each year with severe food allergies and an estimated 150 - 200 Americans die each year from those allergies. Following a product recall, mandatory audits & fees will be enforced by the FDA on the offending manufacturer. Recalls affect the future viability of a company, making preventive actions the key to protecting and sustaining a company's reputation and profitability.

Reputation

Building and sustaining a positive reputation with buyers is established through strong product integrity and a quality product that is always safe and reliable. However, reputations can be easily undermined if companies sell consumers a hazardous product due to mislabeling or misprinted codes.

²) See section 6- Food and Beverage Packaging Regulations for specific regulation requirements

United States retailers' estimate 17% of faulty packaged goods are due to labeling errors. Types of labeling errors that will harm a brand's reputation and profitability are folded, flagged, torn, missing, skewed, incorrect labels, missing printed codes, etc. Under new regulations, an unreadable label or incorrect label will result in a mandatory product recall and even worse potential liability. For example, a dangerous ingredient or allergen that is unreadable due to a defective product or mislabeling error. Due to increased interest by government groups and consumers, manufacturers can be faced with serious consequences if they do not implement programs to minimize the hazards that cause recalls to occur.

Company Profitability

The ramifications of a recall are far reaching and can be devastating to a company brand and shareholder value. Trends have shown:

- 21% of consumers state they will never buy anything from that company again
- 50% will switch brands temporarily
- 14% will completely discontinue purchasing the product

According to a Deloitte study on recall Execution Effectiveness, a food recall can cost in total up to \$10 million dollars or more. They also found that on average, a company's stock price declines up to 22% within two weeks after a recall is announced.

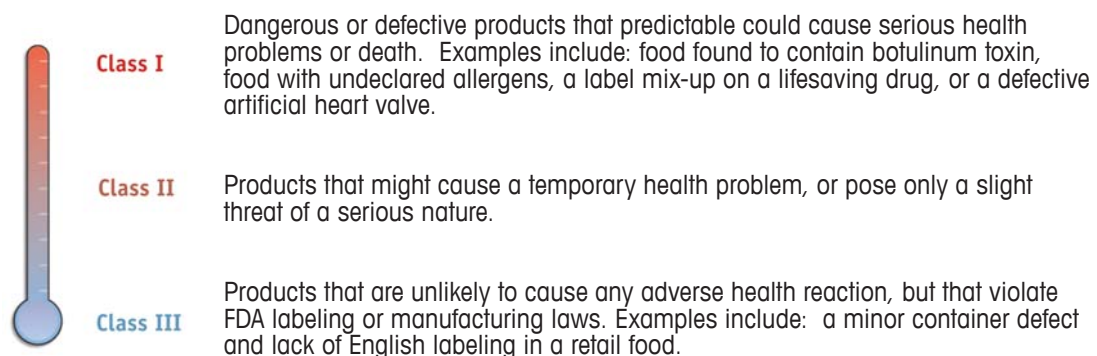
According to Zebra Technologies, the size, scope, and expense of a recall depend greatly on the established level of product traceability. Being able to trace the defective product using readable lot codes and barcodes can greatly minimize costs associated with a recall.

FSMA Consequences

Once enacted, the law enables the FDA the power to directly issue a mandatory food recall. The FDA will have the power to suspend a food production facility if a possible health risk is suspected. A new registration process will take place twice a year and companies must meet updated requirements or risk suspension. In addition to the cost of the product recall itself, the companies will also be assessed a fee followed by a strict audit. Prevention of mislabeling is a proactive way to continually improve and maintain consumer safety and regulatory compliance.

Recall Classifications

These guidelines categorize all recalls into one of three classes, according to the level of hazard involved.



6 Food and Beverage Packaging Regulations

Food and beverage safety regulations are driving food, beverage and dairy manufacturers to adopt machine vision in their manufacturing processes. These safety regulations in the US and Europe have become more stringent over the past few years due to greater consumer concerns for health and hygiene. The table below illustrates a broad overview of the North American and Europe regulations.

Regulations	
North America	Europe/International
<p>Hazard Analysis and Critical Control Point (HACCP) A US government mandate for food manufacturers. HACCP is a process control system that identifies the possible occurrence of hazards in the food production process and puts into place stringent actions to take to prevent the hazards from occurring. The 7 HACCP Principles include:</p> <ol style="list-style-type: none"> 1. Conduct a hazard analysis 2. Identify critical control points 3. Establish critical limits for each critical control point 4. Establish critical control point monitoring requirements 5. Establish corrective actions 6. Establish record keeping procedures 7. Establish procedure for verifying the principles are working 	<p>International Food Standards (IFS Food) Recognized by the Global Food Safety Initiative (GFSI) and HACCP required, IFS requires control programs for labelling. These regulations include:</p> <ul style="list-style-type: none"> • 4.5.8 A procedure for label checking is put in place, such as: competences and responsibilities, declaration within the law, layout, inspection frequency • 4.5.9 The conformity of the product with its labelling shall be continuously insured during the production process
<p>Federal Food, Drug, and Cosmetic Act & Nutrition Labeling and Education Act Applying to domestic and international manufacturers, these Federal laws govern food products under the FDA's jurisdiction. Both Sec. 403. [21 USC §343] of the FD&C Act and the Food Labeling Guide, include such requirements:</p> <ul style="list-style-type: none"> • Label statements must be placed on the front label panel • The statement of the food's identity, name, net quantity, and amount of product must appear of each label • Use letters that are at least one-sixteenth (1/16) inch in height based on the lower case letter "o". Lettering must contrast sufficiently with the background so as to be easy to read 	<p>Safe Quality Food (SQF) Program Also recognized by the GFSI and HACCP Required, SQF is the most globally recognized and trusted food safety and quality certification program. SQF labelling regulations include:</p> <ul style="list-style-type: none"> • LEVEL 2 Food Safety Plan: 2.6.1 Product Identification systems shall be implemented to ensure finished product is labeled to the customer specification and/or regulatory requirements • 2.8.2.2 Provisions must be made to clearly identify on labels of products that were produced on lines on which foods containing allergens were manufactured. *See top 8 allergens list
<p>FDA Food Safety Modernisation Act (FSMA) Put into place last January 2011. Companies will be required to ensure the prevention of recalls by implementing controls and methods for mislabeling such as Vision Inspection Systems. Examples of new these compliance requirements include:</p> <ul style="list-style-type: none"> • Misbranding food include not declaring certain ingredients or major food allergens, and not complying with nutrition information content on labeling • Under the new law, the agency can order a recall if there is reason to believe that the food is adulterated or misbranded. • The FDA will establish offices in at least five foreign countries and double the number of foreign food facilities inspections each year for 5 years 	<p>British Retail Consortium (BRC) In order to gain BRC Certification labeling requirements include:</p> <ul style="list-style-type: none"> • 5.2.10 an effective system of documented checks shall be in place on line, following product changeover and changes in batches of packaging to ensure that the labels applied are correct for the products packaged • 5.1.5 All products shall be labelled to meet legal requirements for the designated country of use and shall include information to allow for safe handling, display, storage, preparation and use of the product. There shall be a process to verify that ingredient and allergen labelling is correct based on the product recipe
Food & Beverage Packaging Resources	
North America	Europe/International
US Food & Drug Administration http://www.fda.gov	BRC Global Standards http://www.brcglobalstandards.com
Global Food Safety Initiative http://www.mygfsi.com	International Food standard http://www.bsi-emea.com
FSMA http://www.fda.gov/Food/FoodSafety	European Food Safety Authority http://www.efsa.europa.eu

7 Why Vision Helps Certify Your Food Safety Program

Today, label quality and accuracy can be easily controlled through the use of vision inspection technology. With an understanding of where the labeling issues occur on the line, a production manager can implement a reliable vision-based mislabeling prevention program. A successful vision inspection solution will prevent mislabeling from occurring and ensure reliable high-speed label and accurate print & code inspection, communicating that the correct information is being displayed everytime.

Your label is your last line of communication to your consumer, therefore ensuring accurate and quality labels every time is essential. A vision inspection solution can provide label and print applications, making sure preventative actions are being taken during manufacturing, such as support tracking through the supply chain with print vision in order to verify that printed date lot codes, barcodes and 2D matrix codes are present, correct, and readable. Label and print vision applications include:



Double Label

Label Presentation

- Confirm proper labelling and decoration for all branded products
 - Ensures brand image is maintained
- Inspections include, label presence, position and skew, double labels, flagged label, wrinkled label and barcode presence and validity etc, regardless of labelling material



Potential nut allergen covered by a wrinkled defect

Presence of Allergen Information

- Verifies allergen and nutritional information is displayed on every label
- Ensures information is easy to read and displayed according to regulation standards



Incorrect Barcode

1D/2D Barcode Verification

- Verify that non-human readable information is properly decoded and understood by your quality system
- Supports product tracking through supply chain and recalls



Smeared expiration date

Printed Date Lot Number Verification

- Ensures the readability of date lot codes
- Prevents consumption of expired products and supports product recall activities



Incorrect Label--Baby food is peaches not peas

Graphical ID

- Ensures branded products are properly displayed and the consumer is receiving the correctly labeled product - protecting manufacturer against litigation



This product is Caesar dressing & contains a potential fish allergen mislabeled as Ranch

Label ID Inspections

- Confirms that each label matches the product inside the package
- Prevent litigation due to mislabelled product and eliminate rework costs

8 Mislabeled Prevention Case Studies

Major US Manufacturer of Condiments Prevents Mislabeling

Vision Inspection Ensures Label Quality

This large family owned condiments manufacturer, markets more than 400 varieties of bottled salad dressing, marinades and sauces to large retailers such as, Wal-Mart, Kroger and other large North American grocery chains. Mislabeled is a huge concern to them and their retailers due to the deadly risks associated with allergens. Without the correct label a product recall could result.

In order to protect against mislabeling, they decided to implement vision inspection solutions to further enhance their food safety program. They implemented 2 label vision inspection solutions in the Georgia plant, which currently inspects 13 million cases of product annually. Each inspection solution is NEMA 4X stainless steel and inspects at an average speed of 400 bpm for the presence and skew of the bottle's front & back labels, neck label and cap presence. Even with over 2,000 different label SKUs, CI-Vision reliably detects if the correct label has been applied to the correct product before leaving the manufacturing floor.

French's Mustard Cap, Label and Date Code Inspection

Versatile CI-Vision System Inspects Bottle Labels



After years of inefficient manual inspection of labels on its French's Mustard bottles, Reckitt Benckiser replaced manual inspection with the implementation of a METTLER TOLEDO CI-Vision 3-camera inspection solution. Accurate inspections for label presence, quality, correctness and readability are now installed on the company's high speed lines inspecting un-oriented French's bottles, making production schedules feasible and the risk of label mix-up nonexistent.

Following installation, the CI-Vision system has virtually eliminated customer complaints due to defective packages reaching retailer's shelves, as well as saving the labour cost of manual inspection. In addition, Reckitt Benckiser's plant managers are now given useful statistical feedback on labelling issues, thereby enabling continuous improvement of line productivity and quality control.

9 The METTLER TOLEDO CI-Vision Inspection Advantage

METTLER TOLEDO CI-Vision inspection solutions are designed to be simple to operate and maintain, thereby making it easy for line operators to take “ownership” of your quality initiative. Once a new CI-Vision System has been installed and adjusted to specific customer needs, it requires minimal maintenance and can easily be operated by existing line personnel.

Should there be any need for assistance after the system is installed, tested and commissioned, CI-Vision maintains a network of technical assistance centers around the world. CI-Vision offers multiple levels of vision inspection training for operator, maintenance and administrative personnel. The goal is to make everyone involved with a quality assurance program as comfortable and competent as possible with the installed vision application.



Since 1979, CI-Vision has designed, built and installed turnkey vision inspections solutions to inspect a variety of products and processes. Each standard solution is configured specifically to the individual customer’s needs. Many of today’s less sophisticated vision inspection solutions do not offer the ability to automate changeovers, which limits them to performing on dedicated lines.

Brand owners whose lines package a variety of products should be sure that the system they buy does enable automated changeovers. Purchasers of vision inspection systems need to be aware that rapidly changing technology may leave them behind if they choose a system or a manufacturer not adaptable to those changes. As you evaluate the system you are considering, evaluate the company that stands behind it as well.

A vision inspection solution is able to provide you the means of being able to detect defective products accurately and reliably before continuing in your process. CI-Vision is an expert in vision technology and has been perfecting this craft for over 30 years. When considering implementing a vision inspection program, consult CI-Vision to discover what solutions can be provided for your beverage manufacturing process.

10 About METTLER TOLEDO CI-Vision

METTLER TOLEDO CI-Vision is a leader in the design, manufacture and installation of vision inspection solutions for a wide variety of applications, ranging from molding operations to high-speed beverage and food packaging lines. CI-Vision inspection systems include all hardware, software, installation, startup, training and documentation.

www.mt.com/ci-vision

For more information

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