



The Retail Food Industry Center
Advancing Knowledge About
Processing, Distribution,
Sales, and Food Service

Working Paper 99-01
The Retail Food Industry Center
University of Minnesota
Printed Copy \$22.50

**CURRENT PRACTICES AND REGULATIONS
REGARDING OPEN DATING
OF FOOD PRODUCTS**

Theodore P. Labuza & Lynn M. Szybist

Department of Food Science and Nutrition
University of Minnesota
St. Paul, MN 55108-6040
(612) 624-9701 Phone
(612) 625-5272 Fax
tplabuza@epx.cis.umn.edu

March 1999

Theodore P. Labuza is a professor and faculty member of the Department of Food Science and Nutrition, University of Minnesota. Lynn M. Szybist is a grad student from the Department of Food Science and Nutrition, University of Minnesota, St. Paul, Minnesota. The work was sponsored by The Retail Food Industry Center, University of Minnesota, 317 Classroom Office Building, 1994 Buford Avenue, St. Paul, Minnesota 55108-6040, USA. The Retail Food Industry Center is an Alfred P. Sloan Foundation Industry Study Center.

**CURRENT PRACTICES AND REGULATIONS
REGARDING OPEN DATING OF FOOD PRODUCTS**

By Theodore P. Labuza and Lynn M. Szybist

Theodore P. Labuza
Department of Food Science
136F ABLMS
University of Minnesota
St. Paul, MN 55108-6040
(612) 624-9701
tplabuza@tc.umn.edu

March 1999

**CURRENT PRACTICES AND REGULATIONS
REGARDING OPEN DATING
OF FOOD PRODUCTS**

Theodore P. Labuza & Lynn M. Szybist

Copyright © 1999 by Labuza and Szybist. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

The analyses and views reported in this paper are those of the authors. They are not necessarily endorsed by the Department of Food Science and Nutrition, by The Retail Food Industry Center, or by the University of Minnesota.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

For information on other titles in this series, write The Retail Food Industry Center, University of Minnesota, Department of Applied Economics, 1994 Buford Avenue, 317 Classroom Office Building, St. Paul, MN 55108-6040, USA, phone Mavis Sievert (612) 625-7019, or E-mail msievert@dept.agecon.umn.edu. Also, for more information about the Center and for full text of working papers, check our World Wide Web site [<http://trfic.umn.edu>].

CURRENT PRACTICES AND REGULATIONS REGARDING OPEN DATING OF FOOD PRODUCTS

By Theodore P. Labuza and Lynn M. Szybist

ABSTRACT

A federally regulated open dating system on food products, instead of the current somewhat random and non-uniform state mandated system, would most likely benefit today's consumers, retailers, and government agencies. Consumers have indicated a strong desire for open dates; it would enhance their ability to make educated choices about the freshness of the foods they consume. A mandatory/uniform system would also assist retail grocers with stock rotation, so that customers can be provided with the best products available. Finally, federal open dating regulations across state borders would lessen burdens on interstate commerce. The potential benefits of this dating system outweigh the opposing points-of-view. The purpose of this research is to illustrate and discuss the current practices and regulations regarding open dating of food.

Included in this study are the current federal and state regulations. Fifty-nine percent of the states (including the District of Columbia) currently mandate some sort of open dating on food products. The regulations vary on a state-by-state basis from mandatory dating of all perishable foods to open dating on a completely voluntary basis.

While most consumers want to see open dates, educating them about what the dates mean is necessary but currently not being done. A major disadvantage of an open dating system is that it may be deceiving if the food is not properly handled, i.e. the date is based on some average storage condition. There are many modes of food deterioration, and most are dependent on a time-temperature interdependence. This research acknowledges that open dating of food is useful as a guide to the end of shelf-life, but its regulated implementation used in conjunction with time-temperature integrators is a more dependable indicator of freshness and safety for the consumer.

Current Practices and Regulations Regarding Open Dating of Food Products

Table of Contents

CHAPTER 1: MISBRANDED FOODS	5
Open Dating and Misbranding of Foods	5
Possible Evidence of Misbranded Foods	7
CHAPTER 2: BACKGROUND AND RATIONALE	10
The History of Open Dating and Its Demand by Consumers	10
Efficient Consumer Response (ECR)	12
Table 1: Intangible Benefits of ECR	13
Hazard Analysis and Critical Control Point (HACCP)	13
Table 2: Storage Time of Products in Consumer Pantries	14
Potential Benefits of Open Dating	15
Table 3: Consumer Understanding of Freshness Dates	18
An Opposing Point-of-View	19
CHAPTER 3: CURRENT REGULATIONS	23
Definition of 'Food'	23
Mandatory Federal Regulations	23
Grocery Manufacturers of America v. Department of Public Health of Massachusetts ..	25
National Institute of Standards and Technology (NIST)	26
Table 4. Status of Adoption of NCWM Open Dating Standards by the States ..	28
Current State Regulations	29
Table 5: Past and Current Open Dating Regulations by State	31
Table 6: Open Dating on Pasteurized Milk Products	34
Food Safety and Inspection Service (FSIS)	36
Legal Actions	37
European Union (EU)	38
CHAPTER 4: CURRENT PRACTICES	40
Open Dating Terminology	40
Marketing Strategy	42
Table 7: Open Dating on Pepsi Products (Collected 7/8/98)	43
Refrigerated Foods and Temperature Abuse	43
Table 8: Optimum Temperatures for Chilled Foods	44
Current Open Dating Practices	48
Table 9: Current Open Dating Practices on Flavored Dip Containers	49
Table 10: Current Open Dating Practices on Yogurt Containers	50
Modes of Deterioration	51
CHAPTER 5: USE OF TIME-TEMPERATURE INTEGRATORS	58
Time-Temperature Integrators (TTI)	58
Figure 3: Three Types of TTIs	59
CHAPTER 6: CONCLUSION	63
ACKNOWLEDGMENTS	65
REFERENCES	66
APPENDICES 1-5	

CHAPTER 1: MISBRANDED FOODS

Open Dating and Misbranding of Foods

An open date on a food package implies something to a consumer. To many of them the date indicates something about the shelf-life or safety of the food. To the producers it represents the time at which the loss of desired quality occurs. To the food retailer it tells them something about how fast to move the product to get it into the consumer's home before it spoils. The date also implies that the product is going to be stored properly, e.g. that the temperature in the refrigerated cabinet is maintained below 45°F. If not maintained properly, the food may spoil before the date leading to a disgruntled consumer or to a food poisoning incident. If no date is present, consumers may sort for those that are dated or become confused as to how long to store the food at home. This report will touch on all of these concepts in depth.

The presence or absence of a date has legal implications, with respect to either being misleading or misbranded. Specifically, as stated in Section 201(n) of the Food, Drug and Cosmetic Act, the main act that controls all foods except meat, poultry, eggs and egg breaking operations, the definition of misbranding is as follows (Sec 201(n)):

If an article is alleged to be misbranded because the labeling or advertising is misleading, then in determining whether the labeling or advertising is misleading, there shall be taken into account (among other things) not only representations made or suggested by statement, word, design, device, or any combination thereof, but also the extent to which the labeling or advertising fails to reveal facts material in the light of such representations or material with respect to consequences which may result from

the use of the article to which the labeling or advertising relates under the conditions of use prescribed in the labeling . . .

Although no similar wording appears in the Meat Inspection Act, Poultry Products Inspection Act, and the Egg Products Inspection Act, it is assumed that they would follow the same principles. For these latter products, at the federal level, all labeling must have prior approval although this is changing soon.

Of critical importance, the Tenth Amendment of the U.S. Constitution allows for states to regulate areas not considered in the U.S. Constitution. Protection of public health is one such area. Although most states have delegated such regulation to the federal government because of costs, as well as to enhance commerce between the states, this delegation does not imply that state action is not warranted. For example, in recent years California promulgated a law requiring a warning label on products that contain potential teratogens and carcinogens under the State of California Proposition 65.

In the only federal court case which pertains to the open dating of foods, *GMA v. Department of Public Health* (393 NE 2d, 881, 1979), the Supreme Court of Massachusetts ruled that the Massachusetts Department of Health's statutory authority to regulate the sale of food with respect to labels that could be "misleading in any particular" includes "labels containing omissions of fact as well as sale of food with labels containing express misstatements of fact." The case was taken up by GMA (Grocery Manufacturers of America) to overthrow the Massachusetts requirement for open dates on all foods under the premise of an impediment of commerce between the states. The Court ruled that a food label which is "misleading in any particular" makes the food product misbranded (393 NE 2d 881, 1987) and thus since there was no date on the package, the food was misbranded since the purpose of the date was to protect public health.

Therefore, it may be implied under Massachusetts' regulations and in other states with similar legislation on open dating that if a food is not open dated, then it is misbranded since there is an omission of fact important to public health. A food product may also be implied to be misbranded if it is labeled with a date and then not held at proper conditions to meet the promise of that date, i.e. if abused by improper transportation and storage temperatures.

Considering Section 201(n) of the Food, Drug and Cosmetic Act, if the labeling "fails to reveal facts material in the light of such representations," a product which is purchased in good faith that it is wholesome, but without an open date, may become a non-wholesome product if stock rotation has not been effective or if the distribution temperature is not controlled. If the date does not reveal to the consumer that the product is possibly of a lower quality, then the consumer is not making an intended purchase because of this omission of information, or misbranding. Such a case has not yet reached the federal court systems but may be pending in the near future.

Possible Evidence of Misbranded Foods

On May 11-12, 1998, KMSP-TV Minnesota Nine News (UPN) aired an investigative report on shelf-life and freshness dates. The contents of this report included observations of the dating practices at twenty of the local markets of varying sizes. Outdated products were found at 19 of the 20 food stores. On April 28, 1998, refrigerated chicken dated December 1997 was found, and on April 30, 1998, packets of yeast were found that had an expiration date over two years past (April 15, 1996). Kevin Elfering from the Minnesota Department of Agriculture explained that legally, the food just needs to remain wholesome or safe to remain on the shelves even if it is past the expiration date (KMSP-TV, 1998). One exception would be eggs, which must be removed by the expiration date, because over time it will not maintain its grade and will be considered

misbranded (KMSP-TV, 1998). The United States Department of Agriculture recommends that eggs be dated with a date that is 30 days after laying; this is the time equivalent to one grade loss of the product (Federal Register, 1998).

While the dating of eggs is considered a quality and misbranding issue, it would seem reasonable to state that perishable refrigerated chicken found on a grocer's shelves four months past its printed date and yeast (which loses its functional qualities over time) for sale two years past its printed date could be considered as misbranded products. If non-wholesome foods are considered to be misbranded products, then the question is whether or not the open dates on food can be used to define that a product for sale past its recommended open date is beyond wholesomeness and therefore misbranded.

False labeling on a food package is also legally misbranded as follows according to Section 302(a) of the Food, Drug and Cosmetic Act:

A food shall be deemed to be misbranded

If (1) its labeling is false or misleading in any particular . . .

According to 9 CFR 381, raw chicken cannot be labeled as "fresh" if the internal temperature goes below 26°F (Federal Register, 1995). Many poultry processors were pre-freezing poultry to extend shelf-life as well as to ensure a safer product by distributing to grocers under frozen conditions rather than increasing the risk of potential temperature abuse in refrigerated transport which is closer to conditions where pathogens might grow. However, the United States Department of Agriculture (USDA), after complaints by some consumer groups, was forced to consider this practice of frozen distribution to be misleading to the consumer, and the product could therefore be misbranded. For this reason, the dates on poultry for some poultry processors are now shorter. In

late 1998, USDA warned a major poultry producer for still shipping frozen poultry and labeling it as fresh.

Pertaining to eggs, the Food Safety Inspection Service (FSIS) of the USDA has revised its regulations under the Egg Products Inspection Act (EPIA). It is now required that shell eggs have refrigerated transportation and storage temperatures of no greater than 45°F, including holding and display temperatures in the supermarket. This is to ensure against growth of a microbial pathogen in the egg, *Salmonellae enteritidis*. This organism causes serious illness and is the most reported cause of illness from *Salmonellae* species. Although the cost of guaranteeing proper refrigeration may be considered too expensive to be feasibly implemented by some supermarket managers, benefits of the new regulation should lead to a reduction of food poisoning, which is the cause of millions of dollars in health costs every year and possibly even death (Federal Register, 1998). The new regulation will require that the eggs will also carry a label stating that refrigeration is required. Therefore, products which are not properly refrigerated during distribution or at the retail level can be charged with misbranding because a lack of refrigeration would be misleading for customers. In addition, such foods could also be deemed adulterated if held under conditions whereby they may become adulterated, i.e. unfit as food because of the possibility that pathogens could grow under the improper storage conditions.

CHAPTER 2: BACKGROUND AND RATIONALE

The History of Open Dating and Its Demand by Consumers

The idea of using a date on packaged food to indicate when the product was packed, meant to be "sold by", or meant to be "used by" is not a new concept. In fact, such a practice, known as open dating or open shelf-life dating, has roots in the dairy industry as far back as 1917 (Minneapolis Tribune, 1979). Shelf-life can be best represented as the end of consumer quality determined by the percentage of consumers that are displeased by the product (Labuza et al., 1988). This definition accounts for the variation in consumer perception of quality and has an economic part, i.e. it is not possible to please all consumers; thus, one must establish a baseline of consumer dissatisfaction.

As America continued to urbanize in the early 1900's, the use of processed foods purchased through grocery stores increased. Consumer Reports, dating back to the 1930's, reported consumers' desires for an open dating regulation to indicate the freshness of their foods, and some supermarket chains began implementing some type of system in the early 1970's (Seligsohn, 1979). During 1979-80, although the Food and Drug Administration (FDA) had yet to propose any federally required open dating regulations, a number of consumers, processors, and consumerist groups held hearings discussing its possible future implementation (IFT, 1981).

Within the last three decades, extensive surveys and research on open dating have been more prevalent, and reports have indicated a consumer demand for open dating regulations. A Nielson report published in 1973 stated that many people looked on the food packages for some type of date to aid them in selecting the freshest food (IFT, 1981). At that time, as is also true in the present, many manufacturers preferred using code dates. The purpose of these dates is to assist supermarket employees with stock rotation and as a means of lot identification in the case of

product recalls. Although the everyday use of code dates is not directly intended for the consumers' benefit, a consumer group, the New York State Consumer Protection Board, published a book deciphering the meanings of the manufacturers' code dates; they received over 100,000 orders for this code book in the first year alone (IFT, 1981).

The Economic Research Service (ERS) of the USDA and the Consumer Research Institute (CRI) conducted a consumer survey in 1973 concerning food spoilage. The results showed a lack of consumer confidence in the products they had purchased from the supermarket. While 93% of the people surveyed reported that they had not purchased any stale or spoiled products within the past year, many of them indicated a problem with the freshness of foods. Within the last two weeks prior to being surveyed, 18% of the customers purchased food which spoiled or staled before they expected. When a food was spoiled on the day that it was purchased, most consumers reported that they threw the product out rather than returning it to the store. This is in spite of the fact that 62% of the shoppers knew about the store money-back guarantee (Labuza, 1982). In 1979, the FDA conducted its own survey concerning open dating. After surveying 1374 grocery shoppers, the FDA reported that 94% of the shoppers claimed that they had noticed the dating on various food products and that around 75% of those shoppers claimed to have used the date in making a purchase (IFT, 1981). A more recent survey published in 1996 indicated that, for consumers, peak freshness was the most important quality they looked for when shopping for perishable foods (Dowdell, 1996). In fact, fresh products in the meat department were the most important factor in determining where 73.6% of the surveyed consumers shopped (Stickel, 1996). Also, when consumers saw a "sell-by date" on a food product, it heightened their confidence about the foods' freshness (Dowdell, 1996). Although an open date system does not guarantee the consumer that a food product is not spoiled (in cases of improper handling of the product), it can

be used as an indication of freshness. Other research indicated that to increase effective communications with the consumer, simple and basic information works best. According to Joanne Gage (Vice President of Consumer and Marketing Services at Price Chopper Supermarkets, Schenectady, NY), the "sell-by" or "use-by" dates on precut packaged items, like fresh-cut salads, are the most sought after information by the consumer (Williams, 1998).

Efficient Consumer Response (ECR)

The Efficient Consumer Response (ECR) Working Group was developed in 1992 to form a "joint industry task force" among grocery retailers, distributors, suppliers and brokers to increase the competitive edge in the grocery industry. While looking at current practices in the industry, the overall goal of the group is to create potential opportunities in the grocery business and raise customers' satisfaction without a huge financial burden.

While implementing ECR will mainly require the reorganization of the internal and external structures of the grocery supply chain and changes in communication among those sectors involved, an efficient open dating system fits right into the guidelines of this project. The following is Principle 1 of the "Guiding Principles of Efficient Consumer Response:"

Constantly focus on providing better value to the grocery consumer: better product, better quality, better assortment, better in-stock service, better convenience with less cost throughout the total chain.

An efficient open dating system would actually enhance the ECR system and increase its benefits to the store. The intangible benefits of ECR for the consumer, distributor and supplier are

listed below in Table 1. Many of the benefits of ECR also mirror the benefits of open dating (which is the focus of a later section in this chapter) (Kurt Salmon Associates, 1993).

Table 1: Intangible Benefits of ECR

Consumer	Increased choice and shopping convenience, reduced out-of-stock items, fresher product.
Distributor	Increased consumer loyalty, better consumer knowledge, improved supplier relationships.
Supplier	Reduced out-of-stocks, enhanced brand integrity, improved distributor relationships.

Kurt Salmon Associates, Inc. (January, 1993)

Hazard Analysis and Critical Control Point (HACCP)

Beginning in 1959, the Hazard Analysis and Critical Control Point System was designed by Dr. Howard Bauman of the Pillsbury Company to create a system to guarantee the safety of food taken on board manned space flights by NASA. About 25 years later, the food industry seriously started looking at the system for more general implementation. The concept of identifying and controlling the source of contamination by establishing CCPs (Critical Control Points) before the product reaches the consumer allows food manufacturers to take control measures to detect and prevent the production or introduction of unsafe food (Hartman, 1997).

The FDA and the USDA have both published regulations mandating the establishment of HACCP for several distinct classes of perishable domestic and imported food processes, namely fish, meat and poultry with orange juice under consideration (Federal Register, 1996). On an international level, many countries, such as those in the European Union, Australia, New Zealand, Canada, Japan, Egypt, and South Africa are implementing or considering the HACCP system into their own food safety regulations (Bernard, 1997).

HACCP is currently being implemented to determine the CCPs needed to ensure a safe food during the processing, handling, and distribution of the product before it reaches the consumer, but consumer mishandling should also be considered part of a CCP. During the last several decades, changes in the education of children and the domestic aspects of the typical American family life have changed dramatically. For instance, students are studying less home economic-type classes at school, and most mothers have joined the work force. As a result, fast food and frozen dinners are becoming more prevalent in American homes, and food preparation in the kitchen is sometimes limited. Many of today's children are growing up with a lack of food handling knowledge in the kitchen. Therefore, a basic HACCP system must be extended to view today's kitchen as a critical factor in the food chain.

A survey was conducted in 30 households to evaluate the home storage practices of the participants (Beard III, 1991). Careless storage practices can lead to increased customer dissatisfaction in food products, stale and rancid products, the presence of insects, and the potential for the presence of foodborne pathogens. Table 2 shows the results found in this study:

Table 2: Storage Time of Products in Consumer Pantries

PRODUCTS	STORAGE TIME (WEEKS)	
	Average	Range
Canned Goods	12.3	1-104
Ethnic Foods	10.9	1-52
Condiments	11.6	1-156
Baking Products	21.6	1-260
Dry Goods/Pasta, Mixes	17.7	1-156
Breakfast Cereals	12.0	1-150
Cookies, Crackers, Snacks	7.6	0.3-26
Coffee, Juices, Beverages	36.3	1-156
Dog/Cat Food	11.0	1-28
Paper Products	--	1-52

(Beard III, June 1991)

The results indicated that the home storage rotation practices of the participants were poor, especially with nonperishable items, such as baking products, dry goods, condiments, and breakfast cereals. Also, many of the households did not date their purchases. An open date may not only assist retailers with stock rotation, but its presence would also be beneficial in managing household stocks (Beard III, 1991).

Potential Benefits of Open Dating

As with every issue, there are pros and cons associated with open dating. Some of the potential benefits of open dating include the overall increased awareness in food safety, food quality, nutrition, sensory quality, functional properties, stock control, and education.

Food Safety/Quality

An efficient open dating system may heighten awareness along the distribution chain; the open date can be used as a guide to ensure 'first in-first out' practices. Proper handling and storage of food products also are necessary to produce the highest standards in food quality and ensure food safety. With controlled temperatures and humidity levels, proper rotation practices, and proper home storage conditions, food quality and the safety of foods will be enhanced (IFT, 1981).

An in-store experiment conducted by the USDA supported the concept of increased consumer confidence in food quality when open dating was introduced. In foods commonly cited for spoilage or staleness, such incidence complaints at the experimental store were reduced by 50 percent after open dating was implemented. The store also experienced decreased financial losses and package rehandling. The spoilage complaints decreased in both the open-dated and non-open-

dated products. Although the open dating system did not reduce food spoilage, it may have attributed to the consumers' increased confidence in the overall freshness and food quality of the food products sold at that store (OTA, 1979).

Nutrition

Environmental conditions leading to nutrient losses are identical to those factors affecting loss of quality. Open dating assists as well as forces more precise distribution practices, so products can reach store shelves before nutritional degradation occurs. An increased awareness would decrease the losses of several vitamins (such as A, B and C) and some essential amino acids (IFT, 1981). Under normal conditions, the open date can be set as the time when the nutrient level goes below the legal level stated on the label for the most labile nutrient, e.g. vitamin C in refrigerated orange juice.

Sensory Quality

A decrease in food quality also includes the undesirable decline in sensory quality. Sensory quality refers to changes in the color, odor, flavor and texture of the food product that leads to consumer dissatisfaction. Measuring the extent of sensory quality losses over time is more subjective than measuring nutrient losses (OTA, 1979). Schmidl and Labuza (1988) have discussed techniques for doing this.

Functional Properties

Some foods, such as baking yeast, lose their functional properties over time (Rutgers, 1971). Open dating on such foods is necessary. In addition, pre-emulsified salad dressings will separate if

temperature abused, and uncracked whole eggs will lose part of their whipping functionality after 30 days of storage, as noted earlier, with respect to a decrease in grade level.

Stock Control

With over a hundred thousand different code dates being used by the food industry, it is unreasonable to expect food distributors and supermarket employees to be able to decipher every one of them. In 1972, a consumer group involved in food safety found that 44% of the infant formulas on the shelves in stores were over age. An astounding 64% of the store managers could not read the date codes on the products and, therefore, they were not rotating the stock to allow for selling of the oldest product before it expired (Labuza, 1982).

The recent policy change by Procter & Gamble (P&G) Co. may increase retailers' need of understanding code dates. The company will no longer be responsible for goods that the retailers cannot sell, including those items with limited shelf-life. Instead, P&G will pay initial lump sums to retailers on a quarterly basis to cover the cost of old or damaged goods. As Narisetti writes, ". . . it's likely that P&G's payment plan will seem like a bonus to efficient retailers and prove costly for those with poor ordering or handling systems." Other companies are expected to follow P&G's lead (Narisetti, 1997). If other food industries begin to implement the P&G practice, there will be an increased need for a legible open date printed on prepackaged food, which would improve inventory control (IFT, 1981). Readable dates not only assist supermarket personnel in stock rotation but also lessen the chances of a consumer purchasing foods of lower quality (Minneapolis Tribune, 1979).

Education

The educational value associated with open dating is significant. In a 1979 FDA survey, only 1.3% of the participants responded that they were confused about what the date on food products represented; however, further questioning revealed that most of the respondents actually did not know what the date really meant (IFT, 1981). With an increased understanding about the time period of a foods acceptable quality, a trust will form among the consumers, retail store managers, food store personnel, and the food industry (IFT, 1981). But even here, the experts sometimes make statements that lead to confusion. The Institute of Food Technologists (IFT) put out a press release to newspaper editors (Dec. 15, 1998) in which they gave some food safety tips. One of the tips stated "Don't debate the date. Don't buy food past its expiration or sell-by date, or food that will not be used by its sell-by date." Unfortunately, the tip implies that all products consumed before its date is safe, which, of course, might not be true if the food is temperature abused in transportation or storage. In addition, the tip implies that the food becomes unsafe at the end of the sell-by or use-by date, which is not what manufacturers base their dates on, certainly not with respect to the sell-by date which was intended to help retailers in stock rotation.

A 1979 study by the Office of Technology Assessment (OTA) measured consumers' understanding of open dates as shown in Table 3:

Table 3: Consumer Understanding of Freshness Dates
(Percentage of Respondents)

	MILK	BREAKFAST CEREAL	GROUND BEEF
<i>When it was packaged...</i>	9	8	34
<i>Last day it should be sold...</i>	74	35	31
<i>Last day it should be used or eaten...</i>	15	26	9
<i>Have never noticed a date on a package of this product...</i>	2	31	26

Note: Percentages in boldface indicate correct answers (OTA, 1979).

The participants' results were mixed as to what they understood the date to mean on milk, breakfast cereal, and ground beef packages. Interestingly, about three-quarters of the shoppers correctly identified the date on milk; only one-quarter of the answers for breakfast cereal and one-third of the answers for ground beef were accurate. A subsequent study conducted under a grant from the Minnesota/South Dakota Dairy Center in 1992 confirmed that this misunderstanding continued (Sherlock et al., 1992). They reported that 94% of those surveyed stated that the date label was extremely important in the purchase of milk; however, about 25% of them doubted the reliability of the date, while 61% of the participants claimed that they did not even understand the date (Sherlock et al., 1992).

Based on these findings, a uniform open dating system at the federal level would help to decrease consumers' confusion and build their confidence in product freshness. As a start, the focus should probably be on refrigerated perishables, since recent evidence suggests that 50% of the consumers' dollar is spent on food in this category (Anon., 1998b). This would also force the food processing industry to improve its control over product quality through distribution, including better control during holding in refrigerated cabinets in the supermarket (Minneapolis Tribune, 1979). Thus, it is also up to the grocery store managers to be better managers in their part of the food chain. With consumers' understanding that an open date is only an indication of freshness and that the date written on the product is not necessarily the end of product quality, this may lead to a reduction in food waste and perhaps less outbreaks of foodborne illness.

One note of caution is the tying together of the date and an assurance of food safety. A date alone cannot do this, but in August of 1997, a joint survey by Prevention Magazine and NBC Today

suggested that most people thought the dates were related to either the last date to safely sell the product or the last date to safely eat it (Anon., 1997).

An Opposing Point-of-View

Not everyone is in favor of a mandatory open dating system. About 41% of the states (including the District of Columbia) still do not require an open date on any food products, and there is also a minority of Americans against such a regulation. Drawbacks of an open dating system may include the premise that it is a guarantee of food safety protection as well as a greater expense for consumers.

Concerning food safety, an open date cannot prevent failures during or after processing or improper practices in the distribution chain, such as temperature abuse (IFT, 1981). As stated in a University of Minnesota study on food shelf-life-time temperature indicators. . ."if the food is temperature abused, an open date is meaningless and in fact is a false sense of security" (Taoukis et al., 1991). In other words, an open dating system would provide little to no help in indicating that levels of microbial pathogens were present in abused food products (IFT, 1981). The date itself may be used as justification to sue when a food poisoning outbreak occurs irrespective of the actual cause of the outbreak.

The financial aspects of implementing open dates are a necessary consideration. In 1979, experts were consulted to discuss the costs of open dating at the request of the Office of Technology Assessment (OTA). At that time, OTA was the research branch of the U.S. Congress under the control of Senator Ted Kennedy (Chair of the Committee), who was interested in making some mandatory open dating law at the federal level similar to the law in his State of Massachusetts (see court case discussed earlier). The group brought together by OTA was comprised of

consumer representatives, food retailers, processors, wholesalers, scientific experts, and state and federal government officials (OTA, 1979). The issues that were investigated included the costs of establishing the shelf-life of the food, the cost of putting the date on the package, and any potential enforcement costs.

Shelf-life determinations were estimated to cost about \$100,000 per item for perishable foods. This included costs for an investigator, a technician and a one year facility charge. Non-perishable foods would have cost approximately \$200,000 per food item because shelf-life testing would require about two years, and there are many more variables to consider (e.g. see Labuza et al., 1998). Although these costs would be one-time costs, shelf-life adjustments would be necessary with changes in product formulation, packaging, and mode of distribution.

Dating a package would most likely require additional printing equipment, especially if not combined with the printing of the code date which is generally not in an easy-to-see location on the package. The type and design of the food package and location of date would affect costs. The estimated costs for open dating on cans was about \$1000-\$3600 per machine. Equipment for perishable foods varied in costs between \$1500-\$15,000 per food product (OTA, 1979). Now with laser printer technology, however, these costs might be less today.

Enforcement costs would be difficult to estimate without knowing the enforcement system in need of being implemented. One option would be a self-enforcing system, where there are no penalties for out-of-date products. Instead, customers would enforce the open dating system by refusing to pay full price for such items. Obviously, however, if the product was temperature abused, this could lead to food safety problems. If legal penalties were to be enforced, the costs were estimated to be over \$500,000 per year and perhaps much more. Note that all of these



Figure 1: Sorting for Freshness Dates

financial figures were calculated around 1979, so some of the costs could be considerably higher in 1998 (OTA, 1979).

From the supermarket standpoint, the costs of stock rotation might be considerable to prevent people from sorting for the freshest date and increasing food waste (see Figure 1). Dairy and bakery products are two of the largest contributors to food loss because products which are still safe to eat and of acceptable quality are often removed from supermarket shelves once reaching the 'sell-by' date. In a 1971 study, 62% of 628 people in the survey stated that they sometimes sort through packages to find the freshest product. From that same group, 74% claimed that while sorting through dated products, they would usually find some products that were fresher than others (Rutgers, 1971).

Finally, small companies and food producers may not favor the "inconvenience" of open dating. As one baker quoted when asked about supermarket codes, "Open dating is useless. Fresh bread isn't good for you anyway - it's not healthy " (<http://www.sfbayguardian.com> . . .).

CHAPTER 3: CURRENT REGULATIONS

Definition of 'Food'

As defined in the Food, Drug and Cosmetic Act (as amended), the term "food" refers to the following: "(1) articles used for food or drink for man or other animals, (2) chewing gum, and (3) articles used for components of any such article" (21 USC 321f). Regulations pertaining to food are under the authority of the Food and Drug Administration (FDA), which is within the Department of Health and Human Services.

Fish is considered a food, but meat, poultry, whole eggs and alcohol are not included in this definition. Meat is covered under the Meat Inspection Act (21 USC 601 et seq.); poultry is under the Poultry Products Inspection Act (21 USC 451 et seq.), egg inspection of whole eggs and egg breaking operations are under the Egg Products Inspection Act (21 USC 1031 et seq.); all of which are under the control of the Department of Agriculture. Alcohol is regulated by the Bureau of Alcohol, Tobacco and Firearms, which is a branch of the Department of Commerce.

Mandatory Federal Regulations

Open dating on all food products is mandated in many countries, such as the countries of the European Union, many South American countries, many of the Arabic States, the Scandinavian countries, Israel and Taiwan. As of early 1999, the only federal regulations for open dating in the United States pertain to prescription and over-the-counter drugs and infant formulas. Under 21 CFR 107.20 (c), infant formulas must adhere to the following:

A "Use by ____" date, the blank to be filled in with the month and year selected by the manufacturer, packer, or distributor of the infant formula on the basis of tests or other information showing that the infant formula, until that date, under

the conditions of handling, storage, preparation, and use prescribed by label directions, will: (1) when consumed, contain not less than the quantity of each nutrient, as set forth on its label; and (2) otherwise be of an acceptable quality (e.g., pass through an ordinary bottle nipple).

An article in a 1997 edition of Supermarket News stated that an increase in consumer pressure and media attention have strengthened the overall awareness of infant formula dating (Moore, 1997). Depending on the volume of sales in a store, employees should be restocking these products on a daily to weekly basis and supposedly checking the expiration dates each time. According to the article, however, infant formulas within days before their expiration dates were discovered on grocery store shelves. There is no law regulating how far in advance of their expiration dates products must be removed from the shelves, but most grocery chains claimed to remove the products within a month beforehand. As President and Executive Director of the Infant Formula Council in Atlanta, Georgia, Robert Gelardi recommends checking the formulas on a monthly basis to ensure only high quality products. He also commented that "if a retailer inadvertently sells outdated infant formula to a customer, there are no serious health risks for the child. The effectiveness of the product is minimized, because vitamins begin to deteriorate after a certain period of time (Moore, 1997)." In actuality, this is an inaccurate statement because there can be serious health risks if a young child is deprived of essential nutrients, which deteriorate over the whole storage time. Perhaps this practice will change though, because in many stores, infant formula is being kept under lock and key as this category has been the target of pilferage; the product subsequently is sold off the street.

In late 1998, a bill was introduced into both chambers of the U.S. Congress which would prevent state enforcement "relating to food safety warnings that are not identical to requirements in

the Federal Food, Drug, and Cosmetic Act". In this bill (HR 4383 and S2356), food safety issues that have been under the control of state regulations will continue to be exempt from any federal regulations as was the consideration in the GMA vs Massachusetts case discussed earlier. This exemption was specifically stated in the proposed bill to include current open dating policies. Food industry representatives believe that the bill would benefit the industry, as well as consumers, because warning labels determined only at the federal level would become more meaningful and consistent across the states (Dern, 1998). The objective of this proposed law was to act as a means to make the California Proposition 65 legislation illegal, i.e. an attempt to pre-empt state regulation of public health under the guise of inhibition of interstate commerce. Such uniformity across the state borders pertaining to open dating would benefit the industry and consumers in much the same way, but this bill goes against that principal of allowing states to regulate public health. It should be noted that no action was taken by the end of Congress, but the bill most likely will be reintroduced in 1999.

Grocery Manufacturers of America v. Department of Public Health of Massachusetts

Since the federal government does not regulate any type of open dating regulations on foods besides infant formulas, such policies have been created by some of the states. In the state court action discussed earlier in this paper, the Grocery Manufacturers of America (GMA) Incorporation verses the Department of Public Health (393 NE 2d 881, 1979), an argument went to the Supreme Judicial Court of Massachusetts to challenge the validity of an open dating policy mandated by the Massachusetts Department of Health. It should be noted as stated earlier, the Tenth Amendment of the U.S. Constitution gives the states power over areas not covered in the Constitution, i.e. "The powers not delegated to the United States by the Constitution nor prohibited by it to the States, are

reserved to the States respectively, or to the people". This specifically allows states to mandate laws related to public health. The Massachusetts policy required food vendors to disclose a "last date of use" or "pull date" on all food products. While the GMA, which is an association of food manufacturers, insisted that the legislation imposed an improper burden on interstate commerce because the manufacturers in other states did not have such stringent regulations, the court ruled in favor of the State's authority. It held that "evidence failed to establish that operation of regulation would impose impermissible burden on interstate commerce" and that the open dating regulation "bore reasonable relation to goal (sic) of consumer protection" (393 NE 2d 881, 1979). Since the Massachusetts Department of Health held that out-of-date products have an increased risk of non-safe agents, the stricter state law related to health had power granted under the U.S. Constitution. This is the only court case related to the dating of food but substantiates the ability of states to mandate such a practice.

National Institute of Standards and Technology (NIST)

Established at the start of this century, the National Institute of Standards and Technology (formerly known as the National Bureau of Standards (NBS)) is an agency of the U.S. Department of Commerce's Technology Administration (NIST URL, 1997). According to Joan Koenig, Weights and Measures Coordinator at NIST, it is the responsibility of this agency to create uniformity among the States concerning local weights and measures laws, standards and practices.

In 1973, the NBS devised the Model State Open Dating Regulations, which were later adopted by the National Conference on Weight and Measures (NCWM). NCWM is a "standards" writing organization consisting of federal government representatives, U.S. State and local weights and measures officials, industry representatives, and consumers. In these voluntary regulations,

recommendations were made to use pull/sell-by dates for perishable/semiperishable foods with a spoilage risk within 60 days of packaging (IFT, 1981).

NCWM continues to update its model systems regulations, and NIST assists them by publishing this information. Open dating regulations are found in NIST Handbook #130. On page 115 of NIST Handbook #130, NCWM states its concern about the lack of uniformity between state jurisdictions and the potential impediment on the orderly flow of commerce. This handbook also contains a Uniform Regulation pertaining to open dating (representing an updated version of the 1973 Model State Open Dating Regulations). The regulation suggests two options concerning open dating: (1) requiring open dating on all perishable foods, or (2) allowing for the voluntary usage of open dating of perishable foods as regulated by the Uniform Regulation (NIST, 1997).

In 1973, none of the 50 states had yet to adopt the NCWM regulations (IFT, 1981). By 1997, NIST reported that Handbook 130 had been adopted in some form by 16 out of 53 U.S. states and territories. Table 4 summarizes the status of the NCWM Uniform Regulation in the 53 states and territories with a "YES/NO" type of answer in the columns labeled "LAW." Note that there are three styles used for the word "YES" and two styles for the word "NO" to indicate different levels of the states' participation.

Table 4. Status of Adoption of NCWM Open Dating Standards by the States

STATE	LAW	STATE	LAW
Alabama	NO	Nebraska	NO
Alaska	NO	Nevada	NO
Arizona	NO	New Hampshire	YES
Arkansas	Yes	New Jersey	NO
California	NO	New Mexico	Yes*
Colorado	NO	New York	NO
Connecticut	Yes*	North Carolina	NO
Delaware	No	North Dakota	NO
District of Columbia	Yes*	Ohio	NO
Florida	Yes*	Oklahoma	YES
Georgia	Yes*	Oregon	Yes*
Hawaii	NO	Pennsylvania	NO
Idaho	NO	Puerto Rico	Yes*
Illinois	NO	Rhode Island	Yes*
Indiana	NO	South Carolina	NO
Iowa	NO	South Dakota	NO
Kansas	NO	Tennessee	NO
Kentucky	NO	Texas	NO
Louisiana	NO	Utah	NO
Maine	NO	Vermont	NO
Maryland	Yes*	Virginia	NO
Massachusetts	NO	Virgin Islands	Yes
Michigan	Yes	Washington	NO
Minnesota	Yes*	West Virginia	YES
Mississippi	NO	Wisconsin	NO
Missouri	NO	Wyoming	NO
Montana	NO		

<http://ts.nist.gov/ts/htdocs/230/235/stlaw.htm>

- **"YES"**: The capitalized letters represent states which have fully adopted the NCWM regulations. The state regulations keep current with each edition of Handbook 130.
- **"Yes"**: This style represents states that have adopted an NCWM recommendation in whole or in part from a particular year. Updates in Handbook 130, however, are not automatically incorporated.
- **"Yes*"**: The star next to the "Yes" represents states which have adopted an open dating regulation, but their respective regulation is NOT based on NCWM standards. This tends to be

the case for most states that have adopted state open dating legislation before the development of the NCWM model.

- **"NO"**: Such states do not regulate any form of open dating regulations on a state level.
- **"No"**: Delaware was listed with an italicized "No". This indicates that there is no required open dating regulation in this state, but the uniform regulation is used as a guide. If a manufacturer were to ask the Delaware Weights and Measures Office for guidance about open dating, the office would refer them to Handbook 130 containing the Uniform Open Dating Regulation.

The NCWM updates this table annually by contacting each state's Weights and Measures Office.

The results show that just 16 states mandate some form of open dating under the NCWM code, and only New Hampshire, Oklahoma, and West Virginia fully comply with NCWM open dating regulations and its annual updates. However, when Joan Koenig was questioned about the status of Oklahoma, she verified that the state does follow the model regulations, but it has selected the second option of voluntary usage of standard regulations. She also noted that the state does not update its open dating regulations annually; therefore, Oklahoma should have indicated a lower case "Yes" in the chart.

Current State Regulations

In 1979, OTA published a summary of state mandated open dating regulations in practice in the United States. In this present study, an updated analysis has been developed with several modifications. Discrepancies in the state regulations stated in the present study compared to the NIST data may stem from the fact that different state departments are responsible for open dating.

The dating can be controlled in states by the State Department of Health, Department of Agriculture, Department of Weights and Measures, Department of Commerce, etc. While the NCWM contacts States' Weight and Measures officials, data in this study was collected by phoning state regulators listed in the Interstate Milk Shippers (IMS) List. Since 20 out of 22 of the open dating regulations from the 1979 data pertained to milk or milk products, the IMS List was used as the first step to contact state officials. Questions regarding open dating regulations were often directed to the state's respective departments, such as public health or standard weights and measures.

In some cases, an open date is applied by the manufacturers strictly on a voluntary basis irrespective of where the product is shipped. Some of the comments from state officials whose states only had voluntary open dating policies tended to defend the fact that the government is more concerned with safety issues of food, where the goal of high quality should be left to the food processor.

Table 5 contains the updated data of state regulations:

Table 5: Past and Current Open Dating Regulations by State

1979				1998	
<i>State</i>	<i>Primary Products</i>	<i>Form of Open</i>	<i>Effective Since</i>	<i>Primary Products</i>	<i>Source</i>
Alabama	Dairy	Sell-by	1975	Potentially Hazardous Foods	Department of Agriculture and Industries Agricultural Chemistry: ss. 80-1-22-.28
Alaska				Voluntary	
Arizona				Eggs	ALIS Online: ss. 3-719(E) (URL: http://www.azleg.state.az.us/cgi-
Arkansas				Voluntary	
California	Dairy	Sell-by	1973	Milk and Milk Products	California Annotated Codes (1986): Division 15, ss.36004
Colorado				Voluntary	
Connecticut	Milk	Sell-by	1973	Milk and Milk Products	Connecticut General Statutes Annotated (1985): ss. 22-197b
Delaware				Voluntary	
District of Columbia	Perishable Products	Sell-by	1974	Perishable Products	District of Columbia Municipal Regulations (1997): Title 23, ss.2505
Florida	Dairy	Sell-by	1976	Milk and Milk Products	Florida Statutes Annotated: ss 502.042
Georgia	Milk and Eggs	Sell-by	1973	Food Products in Package Form	Rules of Georgia Department of Agriculture: ss. 40-7-1-.26
Hawaii				Milk and Milk Products	Hawaii Administration Rule: ss. 11-15-39 (c)
Idaho				Voluntary	
Illinois				Voluntary	
Indiana				Voluntary	
Iowa				Refrigerated Foods in Reduced Oxygen Packages	Iowa Code(1997): 481-31.11 (137A)
Kansas				Voluntary	
Kentucky				Milk and Milk Products	Department for Health Services-- Open Dating Requirements for Milk Products (902 KAR 50:080)
Louisiana				Voluntary	
Maine				Voluntary	
Maryland	Milk	Sell-by	1971	Milk Products	Annotated Code of Maryland (1996) (1997 Supplement): ss. 21-426
Massachusetts	Perishable and Long Shelf Life	Sell-by or Use-by	1979	Perishable and Semi-Perishable Food Products	Code of Massachusetts Regulations: 105 CMR 520.119 (D)

1979				1998	
<i>State</i>	<i>Primary Products</i>	<i>Form of Open</i>	<i>Effective Since</i>	<i>Primary Products</i>	<i>Source</i>
Michigan	Perishable Products	Sell-by	1969	Milk and Milk Products	Michigan Department of Agriculture: R 285.408.2 (URL: http://www.state.mi.us/execoff/admincode)
Minnesota	Perishable Products with Shelf	Sell-by or Use-by	1973	Perishable Products	Minnesota Statutes Annotated (1996): ss. 31.781-31.784
Mississippi				Eggs	Mississippi Egg Marketing Law and Regulations--Regulation No.1
Missouri				Voluntary	
Montana				Milk and Milk Products	Administrative Rules of Montana (1987): ss. 32.8.202
Nebraska	Eggs	Pack	---	Eggs and Reduced Oxygen Packaged Food	ss. 81-2,272.27 (URL: http://www.agr.state.ne.us) & Nebraska Graded Egg Act and Rules & Regulations
Nevada	Dairy	Sell-by	1973	Voluntary	
New Hampshire	Cream	Use-by	1973	Refrigerated Prewrapped Sandwich and Perishable Products	New Hampshire Department of Agriculture, Markets & Food: ss. Agr. 1413.04 and NIST Handbook
New Jersey	Dairy	Sell-by	---	Milk and Milk Products	New Jersey State Department of Health (1994): ss.8:21-10.1
New Mexico	Milk	Sell-by	1977	Milk and Milk Products	URL: http://www.nmdaweb.nmsu.edu
New York				NYC - Milk and Milk Products	New York City Health Code: ss. 111.33
North Carolina				Smoked Fish	North Carolina Administrative Code: ss. .0507e(5)
North Dakota				Voluntary	
Ohio	Perishable Products	Sell-by	1977	Perishable Products	Ohio Department of Agriculture: Regulation 901:3-57-04
Oklahoma	Meat and	Sell-by	---	Voluntary	
Oregon	Perishable Products	Pack or Sell-by	1975	Packaged Perishable Products	Title 49: ss. 616.815
Pennsylvania	Milk	Sell-by	1975	Milk and Milk Products	Pennsylvania Code: Title 7, Part III: ss. 59.22
Rhode Island				Voluntary	
South Carolina				Voluntary	

1979				1998	
<i>State</i>	<i>Primary Products</i>	<i>Form of Open</i>	<i>Effective Since</i>	<i>Primary Products</i>	<i>Source</i>
South Dakota				Eggs	South Dakota Department of Agriculture: Law 39-11: ss.12:26:10
Tennessee				Voluntary	
Texas				Voluntary	
Utah				Voluntary	
Vermont				Voluntary	
Virginia	Dairy and Infant Formula	Sell-by	1974	Milk and Milk Products	ss. 2VAC5-490-40 (URL: http://leg1.state.va.us/000/reg.TOC02005.HTM#C0490)
Washington	Dairy and Others	Sell-by	1974	Perishable Packaged Foods	RCW 69.04.905
West Virginia				Perishable Products	West Virginia Code (1996):ss. 47-1-9
Wisconsin	Smoked Fish	Pack	1971	Smoked Fish	Wisconsin Administrative Code (1998): ATCP 70.22
Wyoming				Voluntary	

The left half of Table 5 has the data that was collected and published by OTA in 1979. The differences among the states regarding 'primary product' and 'form of dating' were significant, but even more interesting were the differences among the same products. For example, the law in New Mexico stated that fluid milk and cream containers "were to be labeled with a legible sell-by date not to exceed 14 days including the date of packaging for pasteurized products and 5 days for raw products." Maryland's law pertaining to pasteurized milk products also required a "sell by" date, but this date was to be "7 days after the day of pasteurization." (OTA, 1979).

The updated data in Table 5 was collected within the past year, thus representing the open dating regulations as they stand in 1997-98. Currently, 30 out of the 51 states and the District of Columbia mandate some sort of open dating system. Among these regulatory regions, just as in 1979, there are many differences. Table 6 illustrates some of the present differences in sell-by dates for milk products as they vary across state borders:

Table 6: Open Dating on Pasteurized Milk Products

State	Sell-by/Pull Date
California	Established by the processors/manufacturers
Connecticut	12 day maximum
Florida	Established by the processors/manufacturers
Hawaii	Established by the processors/manufacturers
Kentucky	Established by the processors/manufacturers
Maryland	14 day maximum
Michigan	Established by the processors/manufacturers
Montana	12 day maximum
New Jersey	Established by the processors/manufacturers
New Mexico	Established by the processors/manufacturers
New York City	96 hour maximum (pasteurized milk); 15 day maximum (ultra-pasteurized milk)
Pennsylvania	14 day maximum
Virginia	96 hour minimum; Maximum number of days established by the processors/manufacturers

The data above shows that New Mexico and Maryland still differ in their legislation with respect to the maximum shelf-life of milk, but New Mexico eliminated the maximum number of days of shelf-life while Maryland doubled its set amount to 14 days. A major discrepancy is also found between the regulations of New York City and Virginia. While New York City has a maximum expiration date of 96 hours for milk, this same amount of time is the minimum number of hours to be placed on a milk container in Virginia.

Appendix B gives extensive information on each of the state's current open dating regulations. Minnesota and Washington States' statutes are two of the more stringent open dating regulations. Listed as "Quality Assurance Dating" in Minnesota, the legislation states the following:

Perishable foods which bear a quality assurance date of 90 days or less from the date of packaging shall be dated in accordance with the rules adopted pursuant to sections 31.781 to 31.789 (Minnesota Statutes, 31.7783, Subdivision 2).

The statute defines "perishable food" to include "food intended for human consumption (other than meat and poultry, frozen food, or fresh fruit or vegetables)". Meat and poultry products are under the laws of the USDA and are not legally defined as food. Fresh fruit or vegetables are not dated because too many factors will affect the shelf-life of these products, such as, the degree of ripeness when picked, the initial quality of the products, etc. One of the largest growing areas in the supermarket is pre-cut salads, estimated at over \$1 billion. These products are packed under modified atmosphere to extend shelf-life, and this brings up the question of whether exempting fresh produce that is somewhat processed is reasonable. Certainly, the extended shelf-life is critical to the quality and the perceived freshness by consumers.

The regulations of Washington also require open dating on perishable packaged food, but their definition applies to perishable packaged food with a shelf-life of only thirty days or less:

All perishable packaged food goods with a projected shelf life of thirty days or less, which are offered for sale to the public after January 1, 1974 shall state on the package the pull date (RCW 69.04.905 Perishable packaged food-Pull date labeling-Required).

The definition of "perishable packaged food goods" as defined in RCW 69.04.900(1) is as follows:

. . . includes all foods and beverages, except alcoholic beverages, frozen foods, fresh meat, poultry and fish and a raw agricultural commodity as defined in this chapter, intended for human consumption which are canned, bottled, or packaged other than at the time and point of retail sale, which have a high risk of spoilage within a period of thirty days, and as determined by the director of the department of agriculture (sic) by rule and regulation to be perishable.

Irrespective of New Hampshire and West Virginia, which both mandate the open dating regulations published by NIST, no other states have exactly the same regulations. Differences in the products to be dated, the form of the date, the maximum length of shelf-life, and definitions of key words (such as "perishable foods") did not hold the same over state borders when pertaining to an open date. This type of variation among states has a significant impact on both producers in interstate commerce and supermarkets with stores in different states, creating a significant problem in dealing with consumer satisfaction.

Food Safety and Inspection Service (FSIS)

Meat, poultry and whole uncracked eggs fall under the jurisdiction of the USDA. Ensuring the safety, wholesomeness, and proper labeling and packaging of these products are the responsibility of one of USDA's public health agencies called the Food Safety and Inspection Service (FSIS). Under the authority of this agency, an attempt to implement consumer involvement in food handling has begun. The following is an example illustration of a Safe Handling Label, which was started soon after a major outbreak of food poisoning in hamburgers resulted in the deaths of several children (Federal Register, 1993):



Figure 2: USDA Safe Handling Label

Although the federal government does not mandate an open dating system on meat, if a date is printed on the package, it must be accompanied with an explanatory phrase, for example, "Full Freshness 10 Days Beyond the Date Displayed, When Stored at 40°F" (IFT, 1981). The county of Los Angeles, California, is the only exception to this regulation. The county's local authorities have assured that their meat is under "a rigid local inspection program", therefore, an explanatory statement in that county is not required (USDA, 1996).

According to the FSIS, a retailer may sell meat and poultry products that are still wholesome even if they have gone beyond the expiration date on the label. It is illegal, however, for retailers to alter, change, or cover up the expired date with a new date (FSIS, www.fsis.usda.gov).

Legal Actions

Legal action most likely has been taken against open date offenders at the state level, but it is difficult to determine how often this occurs since most cases do not go past the local court systems, and there is very little published documentation. In one example, a Sainsbury store (a

large supermarket chain in the United Kingdom) was charged for unethical open dating practices. The store was fined \$14,000 for selling foods past their "use-by" dates and trying to conceal the original open date with a new sticker. The food items included crab, beef burgers, ostrich goujons and chocolate roulade. This issue was brought to the attention of the authorities by a consumer who noticed the October 29 "use-by" label on the crab meat that he purchased covering another label stating October 27 as the "use-by" date. The Sainsbury store admitted to the offense, but they stressed that all of the products would have been safe to eat and would not have invoked any potential threats (Butler, 1998). This may be true, but it is not the key point of open dating; this defense only confuses the matter. In another example (Besfamille 1998), the "Direction Generale dela Concommation et de la Repression des Fraude", which is the French public agency in charge of the quality of goods sold to the consumer, found 115 cases of relabeling of out-of-date meat during 1200 inspections at the grocery store level. In France, meat must have a use-by date which is set discretionally by the seller. No cases have been reported in the legal literature, however consumers commonly feel that this practice also occurs in the U.S.

European Union (EU)

In 1972, dedicated countries of the European Community committed themselves to achieve an 'ever closer union among the European peoples'. Their aim was to create the European Union (EU) to integrate and strengthen the political and economic communities of its members (Pryce, 1987).

Within the EU legislation, open dating (or durability dating) was amended in Directive 97/4/EEC of the European Parliament and of the Council; it is found in Article 9 of 79/112/EEC.

Article 9 mandates the use of "Best before" and "Use by" dates. The following are excerpts of the EU open dating legislation:

1. The date of minimum durability of a foodstuff shall be the date until which the foodstuff retains its specific properties when properly stored. It shall be indicated in accordance with the provisions of this article.

2. The date shall be preceded by the words:

- "Best before . . ." when the date includes an indication of the day,***
- "Best before end . . ." in other cases.***

The following excerpt was taken from Article 9a:

1. In the case of foodstuffs which, from the microbiological point of view, are highly perishable and are therefore likely after a short period to constitute an immediate danger to human health, the date of minimum durability shall be replaced by the "use by" date.

Thus in the EU, the use-by date, at least for refrigerated perishable foods, has a specific food safety meaning, which is something not considered in the U.S. Uniform legislation among the EU members will simplify food regulations across the continent's borders. It will also allow the European people to understand the dates on their food products in any supermarket chain in any country of the Union. This increased confidence in an open dating system is a luxury yet to be afforded by the American people across this country's state borders.

CHAPTER 4: CURRENT PRACTICES

Open Dating Terminology

The following terms are commonly used in open dating as explanatory words to the date. These definitions were modified from OTA (OTA, 1979), the book *Shelf-life Dating of Foods* (Labuza, 1982), and the FSIS web site (FSIS, www.fsis.usda.gov).

Production Date or Pack Date:

A production or pack date has historical meaning; it gives the date on which the product was manufactured or put into the final package, e.g. use of stored frozen juice concentrate in large tanks to make reconstituted frozen-fresh orange juice. It could be used on prepackaged fresh fruits and vegetables, where the shelf-life would depend on the freshness of the product when harvested, or on fish to indicate the day they were caught, which would help restaurants to validate their infamous claims of "Fresh Catch of the Day".

Sell-by:

The sell-by date is used by grocery stores to help in stock rotation and to get the products out so the consumer can purchase the product at a point which will still give them adequate time for home storage before the end of shelf-life. There is no scientific basis for the choice of the date and very little data as to in-home holding practice, thus such dates are either very good guesses or industry practice. Presumably, they help supermarkets in terms of shelf movement.

Best-if-Used-by Dates:

A best-if-used-by date is frequently estimated as the point where product quality loss reaches a level still generally acceptable but after which it fails to meet the high quality standard.

At this point in shelf-life, the product is not considered inedible or unfit to consumers and thus is not legally adulterated or misbranded. A best-if-used-by date thus is an ambiguous date as to when the product should be taken off of the supermarket shelves, so it is confusing for the stock rotators. Consumers, however, seem to prefer the "best-if-used-by" date. It gives the recommended amount of time for consumption of a food at its best quality and flavor, but it is not a safety date and does not represent when the product is no longer acceptable.

Combination Date:

The two phrases, "sell-by" and "best-if-used-by," can be combined to form a "best if used within __days of (date) ." The "__ days of" part makes this phrase a "best-if-used-by" date, while the "date" given represents a "sell-by" date.

Use-by Date:

A "use-by" date tends to be interpreted as the date "it dies or you die if you eat it (Labuza, 1982)." This dating system is actually determined by manufacturers as the end of the useful quality life of the product. At this point, it probably has spoiled.

Freeze-by Date:

A freeze-by date is often used on meat or poultry in conjunction with another date, such as a use-by date. The meat or poultry should be frozen if it is not to be used by the printed date. This has been very helpful to consumers and helps the store in terms of product movement.

Closed or Coded Dates:

The use of closed or coded dates on packages are actually numbers used by the industry that indicate production lots. Sometimes these codes may represent a packing date, but they are not written for the consumers to understand. They are useful in keeping track of products, which is important in cases of food recalls.

Many processors use open dates that have self-explanatory statements as to what the date means. For the products with only a printed date, it is difficult for the grocer or the consumer to determine if the date represents a "pack" date, "sell-by/best-by" date, or a code date.

Marketing Strategy

With a high consumer interest in freshness, several food companies have taken advantage of an open dating system through advertisements. Since 1996, the message by Anheuser-Busch that "Fresh beer tastes better" has been highly publicized. The company uses a "Born-on Date" to boast their product's freshness. While several other breweries also insist that old beer tastes stale, many small breweries see open dating on beer as just a campaign by larger breweries to capitalize on the consumers' perception of "quality" (Anon., 1997).

In the battle of the colas, Pepsi-Cola displays an open date while Coca-Cola does not. The following chart demonstrates the dating practices found on the Pepsi products. The method of obtaining this data is similar as described for Tables 9 and 10 later in this section.

Table 7: Open Dating on Pepsi Products (Collected 7/8/98)

PEPSI-COLA PRODUCTS		
<i>Pepsi-Cola</i>		
<i>Somers, NY 10589</i>		
<i>Product</i>	<i>Open Date</i>	<i>Date</i>
Pepsi	For best taste drink by date on bottle	SEP 28 98
Caffeine Free Pepsi	“	SEPT 21 98
Wild Cherry Pepsi	“	AUG 17 98
Diet Pepsi	“	SEP 21 98
Caffeine Free Diet Pepsi	“	SEP 21 98

Regular sodas are shelf-stable, but the diet sodas have a limited shelf-life due to aspartame (the artificial sweetener) degradation. Most diet beverages will have an acceptable shelf-life of 90 days after manufacture when stored at room temperature, around 73°F (Stamp, 1990). The Pepsi-Cola Hotline Representatives claim that the regular products are dated with a 90 day shelf-life, while the diet products are given 30 days. According to Table 7, the Pepsi drinks were all dated similarly with one to two months until their end of shelf-life, whether the product was regular or diet. Regular and Diet Dr. Pepper products, recorded on the same day as the Pepsi products, also had similar dates of August 24, 1999 and September 7, 1999. Interestingly, the Diet Dr. Pepper product had the longest shelf-life left of all of the products, which exceeded the usual 90 day shelf-life.

Refrigerated Foods and Temperature Abuse

As stated by Dr. T. Labuza, "Shelf-life is not a function of time alone, rather it is a function of the environmental conditions and the amount of quality change that can be allowed (Labuza, 1982)." The "environmental conditions" he refers to often relates to the temperature of food products during storage and distribution.

The maximum temperature recommended for chilled foods in warehouses, trucks, and retail displays by the National Food Processors Association is 40°F (Brody, 1997). This association has also published the following information for the optimum temperature ranges of various food products during distribution and storage:

Table 8: Optimum Temperatures for Chilled Foods

<i>Food Product</i>	<i>Optimum Temperature Range</i>
Dairy Products	32-40°F
Meat	30-34°F
Poultry	30-34°F
Seafood	30-34°F
Salads	32-40°F

(Brody, 1997)

In the revised Food Code (1997), the FDA established 41°F as the recommended maximum temperature for retail establishments which handle meat, fish, poultry, delicatessen products and pre-cut produce (Brody, 1997).

Unfortunately, whether due to carelessness or expense, current practices do not always correlate with the recommendations. Besides the possible expense of having to employ new technology to maintain proper temperatures, retailers and distributors face the financial responsibility of a 10% increase in total energy costs for every 5°F their refrigeration level is lowered (FNQEB, <http://www.fnqeb.com.au/index.html>). The economic costs should not overstep the boundaries of safety, but studies show that the safety issue is not being taken seriously and proper steps in temperature control are needed.

A 1989 Audits International Survey, reported startling results after temperature measurements were recorded of 1000 refrigerated food items at three points: at the retail level,

when the products reached the consumers' homes, and after 24 hours. Delicatessens in the study had refrigerated foods stored at temperatures ranging from 34 to 71°F; the average was 47°F. The average home refrigeration was 43°F (R. Daniels Association, 1990). Both of these averages are above the recommended 40-41°F temperatures for refrigerated food, meat, poultry, and eggs. Almost 10 years later, Dr. Daniels of Audits International reported a follow-up study at the International Fresh Cut Produce Conference in San Diego, California (Anon., 1998). In a sample of 98 supermarkets, the mean temperature in the refrigerated deli case was 46°F with 10% of them at a mean of 58°F, a totally unacceptable level both from a quality and safety standpoint. In the produce section, packaged salads were also at a mean of 46°F, again a safety and quality problem. In both cases, this will cause more rapid deterioration of prepackaged foods and could lead to growth of pathogens.

Another study sponsored by The Refrigeration Research and Education Foundation reported that approximately 20% of retail chilled display cabinets operate at temperatures above 50°F. The same research also indicated that over two-thirds of the chilled food retailers do not monitor the expiration dates on their products (Brody, 1997). These studies illustrate a potential for growth of pathogens that might cause food poisoning, especially in abused chilled food products that are minimally processed. At temperatures above 40°F, pathogenic anaerobic microorganisms are capable of growth and toxin production. Between the temperatures of 40 and 55°F, nonproteolytic anaerobic microorganisms may grow. Such spoilage is not detectable by virtue of smell (Brody, 1998).

Those groups most susceptible to food poisoning include the elderly, the young, immunocompromised individuals and pregnant women. The group representing the highest risk of mortality from food poisoning, however, is the elderly. A study lead by Dr. Angela Johnson of

The University of Nottingham, England, looked at the food safety knowledge and practices of elderly people living at home. While the participants' overall understanding of the "sell-by" and "use-by" dates was decent, 45% of them could not read the dates because of poor eyesight and because of small and hard-to-read print. Of even greater concern, however, was the fact that 70% of the participants' refrigerators were too warm to safely store food (Johnson et al., 1998).

In 1995, because of these concerns with regards to lack of proper refrigeration, the U.S. Department of Transportation and FSIS of the USDA put together a Transportation Analysis Group (TAG) to discuss potential solutions based on the HACCP concept. After an open meeting in Washington DC in June 1996, the FDA announced an advanced notice of proposed rulemaking jointly with the FSIS and DOT (Federal Register, 1996). In this document, they noted that ". . . post processing transporters, storage operators and retail stores, restaurants and other food service sectors are important links in the chain of responsibility for food safety." Because of this and the noted lack of control, these regulatory agencies proposed six possible steps that could be taken. Note that this includes holding at the grocery store level:

1. Setting mandatory temperature performance standards, e.g. a maximum of 41°F or 45°F for potentially hazardous foods.
2. Requirement of shipper record keeping.
3. A mandatory HACCP-type system.
4. Voluntary guidelines such as in the AFDO "Guidelines for Transportation of Food."
5. A combination of approaches.
6. No federal initiative.

These three agencies have sought comments on the six alternatives, all of which have an impact on open dating however, as of early 1999, there has been no proposed regulation. It should be noted that in 1990, Dr. Ted Labuza (University of Minnesota), in a comment to a USDA/FSIS advanced proposed rulemaking on safety of chilled (refrigerated) foods, suggested that one method that would solve part of the problem of temperature abuse was the implementation of time-temperature integrating tags (Anon., 1990). This would fall under the HACCP approach above.

An open date will not protect consumers from microbial threats, but it can be useful as a guide. If the product is kept at ideal temperatures and conditions throughout its life-span, then the food will most likely be safe. As published in the September 1998 edition of Newsweek, to guarantee that temperature abuse has not occurred, "tell the truth" tape or time-temperature indicators or integrators (TTIs) are being designed to signal a premature end of shelf-life due to temperature abuse (Springen, 1998). The TTIs are mentioned in greater detail in Chapter 5 of this report. After consumers check the TTI, they will feel confident that their product has not been temperature abused, and with an open date they will know approximately how long the product will remain fresh under proper conditions. Such information may be useful at both the retail and consumer levels since many consumers may not be aware of the actual storage conditions in their own homes.

A task force set up at Nabisco Food Company, found that most consumers are also not aware of the importance of keeping a proper refrigerator temperature and its effect on food stability and performance of the ingredients. They discovered that out of 14 home refrigerators and 11 freezers that they checked, only 7 refrigerators and 1 freezer had a thermometer. In the

refrigerators, temperatures ranged from 32°F to 55°F; in freezers, the temperatures ranged from 5°F to 20°F (Beard III, 1991).

Studies done by Tropicana Products, Inc., illustrated the effects of temperature abuse on their products (Kalish, 1991). In the 1980's, the company discovered that 72% of the consumer complaints on chilled juices was connected with temperature abuse. When examining this problem, it was found that the temperatures during the distribution of the juice reached 45°F in some cases. The recommended temperature range for proper storage of the juice is 32-38°F so as to maintain high quality. Within the retail stores, only 37% of the products were stored at the proper temperature. During storage, the average temperature of the juice was about 44°F and went as high as 56°F. The rotation practices in the display cabinets were also found to be poor.

The Tropicana Co. also conducted a time-temperature experiment measuring the flavor quality. The juice was rated on a scale of 1-9 with scores below 5 being unacceptable. The results showed dramatic differences in quality with temperatures only 10°F different in holding conditions. These changes of the shelf-life as a function of time-temperature is a function of its temperature sensitivity factor (Q_{10}). Juice held at 45°F fell to a 5.1 score after only 49 days, while juice held at 35°F, i.e. 10°F lower, remained above 6.0 for the entire 63-day shelf-life (Kalish, 1991). It should be noted that lack of temperature control is not just a problem in the food distribution chain. Bishai et al. (1992) found that of 50 pediatric clinics in the Los Angeles area, only 16% of vaccine (measles, mumps rubella) storage coordinators could site appropriate storage temperatures for vaccines. Close to 18% of clinics were unaware that temperature abuse would destroy the effectiveness of the vaccine. Refrigerator thermometers were checked once a week in about 20% of the offices, 22% of the refrigerators were above the required temperature range, and 16% of the offices stored vaccine unrefrigerated.

Current Open Dating Practices

Current data on open dating practices at the supermarket level was collected in this present study. The observations of label information was done in a large supermarket on the outskirts of St. Paul, Minnesota. The information collected was 'Name of Product', 'Product', 'Company Name and Address', 'Dating System', the actual 'Date' written on the package, and any 'Additional Comments' related to the open date system. Table 9 illustrates some of the different explanatory phrases for open dating found on flavored dips and taken from this supermarket data:

Table 9: Current Open Dating Practices on Flavored Dip Containers
(Collected on 5/31/98)

FLAVORED DIPS		
<i>Product & Address</i>	<i>Open Date</i>	<i>Printed Dates</i>
(12 oz) Gourmet Award Blue Cheese Dip & Dressing Gourmet Award Foods St. Paul, MN 55114	When properly refrigerated between 33 & 40 this product will retain its wholesomeness for one week beyond date on carton.	6 22
(8 oz) Old Home's Pride (Various Flavors) Dip Old Home Foods, Inc. St. Paul, MN 55103	Quality assured 7 days beyond date on bottom if properly refrigerated (33-44).	June 2, 1998 to June 30, 1998
(8 oz) Old Home's Pride (Variety of Flavors) Snack Dip Old Home Foods, Inc. St. Paul, MN 55103	Quality assured 7 days beyond date on bottom if properly refrigerated (40-44).	June 25, 1998 to July 9, 1998

It is interesting to note the temperature ranges given for storage of the products. On Old Home's Pride Dips (of various flavors), the temperature range on the labels spanned over 11 degrees. The products' change in quality as a function of temperature would be significant, and there would be a significant difference in shelf-life as seen with the Tropicana products. Therefore, if two containers of dip are dated June 2, and one is held at 33°F while the other is held

at 44°F, the former product will actually have a longer shelf-life than its identical product stored at a higher temperature, perhaps by as much as two fold.

Table 10 shows current dating practices on yogurt. Once again the recommended storage temperature on the date labels ranged significantly among the products (even those from the same manufacturer). As seen, Dannon yogurt only displays a date without an explanatory phrase;

Table 10: Current Open Dating Practices on Yogurt Containers

YOGURT		
<i>Product & Address</i>	<i>Open Date</i>	<i>Printed Dates</i>
(5 oz) Kemps Nonfat (Various Flavors) Yogurt Marigold Foods, Inc./General Offices Mpls., MN 55414	Remains wholesome one week after date on carton.	JAN.28 to FEB.17
(32 oz) Kemps Nonfat Vanilla Yogurt Marigold Foods, Inc./General Offices Mpls., MN 55414	When properly refrigerated between 33 & 44°F, this product will retain its wholesomeness for 1 week beyond date on carton.	FEB.05
(8 oz) Gaymont Lowfat (Various Flavors) Yogurt (Old Home Foods) Old Home Foods St. Paul, MN 55103	Quality assured 7 days beyond code date on side if properly refrigerated (40-44).	FEB.05 to FEB. 19
(24 oz) Gaymont Lowfat (Various Flavors) Yogurt Old Home Foods St. Paul, MN 55103	Quality assured beyond code date on side if properly refrigerate (35-40).	FEB.5 to FEB.12
(8 oz) Dannon Yogurt Dannon Company, Inc. Tarrytown, NY 10591	---	JAN.17 to FEB.8

however, an explanation of the date was provided through the phone hotline number printed on the package. Dannon sends its customers who make inquiries about the printed date an informative pamphlet that states the following:

Although the yogurt will remain fresh for at least a week beyond this date when properly refrigerated, its flavor changes and the yogurt becomes more tart with prolonged refrigeration.

Although proper refrigeration is mentioned, no suggested temperature was given.

Modes of Deterioration

The following section describes potential forms of food deterioration, an important factor to consider when establishing an open date and managing the distribution chain including holding practices at the supermarket level. The food's primary mode of deterioration will depend on a variety of characteristics: food composition, chemical constituents, enzymatic activity, processing technique, packaging used, and distribution conditions. In some cases the process of deterioration may be prolonged by proper handling techniques by grocers and consumers or by manipulations by the food industry.

Senescence

Senescence refers to the natural enzymatic activity of aging of a harvested or slaughtered product that utilizes carbohydrate and nutrient stores within the food. This process is a major influence on determining the open date for fruits and vegetables, whole grain cereals, meat,

poultry, fish and sometimes even dairy products. Concerning fruit, it is a beneficial process when the product must be transported over significant distances, since these products are picked before peak quality. During distribution, senescence allows the fruit to age as well as repair itself from postharvest damage and to reach maturity; whereas if the fruit is picked at optimum ripeness, the product would rot before reaching the marketplace. Senescence is also involved in the aging process leading to meat reaching a desirable level of tenderness.

The fate of these raw foods, however, is the enzymatic biochemical process leading to degradation (loss of color, flavor, texture, and nutrients). This breakdown leads to tissue damage and increases the products susceptibility to microorganisms and quicker decay.

The following are common methods used to decrease the rate of degradation due to senescence:

- Decrease temperature to slow down senescence (Labuza, 1982).
- Use of controlled atmospheric/modified atmospheric packaging (CAP/MAP) technologies.
- Use of edible barriers.
- Control of ethylene (a plant growth stimulant-hormone).

Because of the variable nature of the fresh product and how it is handled in distribution, it is generally not dated. However, the recent growth of the fresh pre-cut salad business (estimated to be greater than one billion dollars) makes mandatory some type of dating. Pre-cut mixed products have a shorter shelf-life due to the senescence and microbial decay, unless some of the above technologies are employed as well as control of temperature in distribution. Because of the short experience of grocers and consumers with these products, some type of open date will help to move product from production to table more rapidly.

Microbiological Decay

Microbiological decay is a major consideration when establishing an open date, especially for perishable foods, such as fresh bakery goods, fresh and ground meats, fresh poultry, fresh fish, dairy products, cured meats (e.g. hot dogs and bacon), pasteurized fruit juice drinks, fresh and precut fruits and vegetables and salads, and extended shelf-life pasta products. Most deli items including salads are included in this category of spoilage. Preservation methods used to control or destroy spoilage microbes include the following:

- Decrease temperature to slow down growth.
- Pasteurize followed by refrigeration.
- Reduce moisture to slow down microbial growth.
- Add acid to lower pH and slow down or prevent microbial growth.
- CAP/MAP technology including addition of carbon dioxide which slows growth.
- Incorporate active packaging technologies such as oxygen scavengers that reduce microbial growth (e.g. in refrigerated pasta dishes).
- Use edible barriers or packaging that releases an antimicrobial agent.

Temperatures below 45°F, a pH less than 4.5, and a reduction of moisture to a water activity less than or equal to 0.8 are usually sufficient conditions to prevent microbial growth. It is the responsibility of manufacturers to ensure absolute control over the presence of microbes because some microorganisms are pathogenic to humans, such as *E. coli* in ground beef and *Salmonellae* and *Campylobacter* on chickens. This can result in illness or death if consumed. However, consumers must be educated to use open dating as a guide for quality and not as a guarantee of safety (Labuza, 1982). Proper use of open dating, control of temperature in distribution, and efficient stock rotation should ensure that consumers are purchasing goods of high quality that gives them an adequate time of use in the home.

Chemical Deterioration

Tissue damage that occurs during food processing will release food chemical constituents. These constituents enter an atmosphere of cellular fluids and react with each other or with other external factors such as oxygen leading to food deterioration and decreased shelf-life. The following are the major reactions which can occur and cause a decrease in quality and nutrient levels:

- ***Enzymatic:*** Cell damage releases enzymes which enhance deterioration. The browning of damaged produce, such as bananas and peaches, demonstrates enzymatic deterioration which is enhanced at room temperature. The methods for retarding degradation are similar to senescence and microbial decay.
- ***Lipid Oxidation:*** Lipid oxidation is a mode of deterioration for fried snacks, nuts, dried meats, dried vegetables, dried fish, dried poultry, some dairy products, semi-moist meat products, pre-cooked refrigerated meats and fish, cured meat and fish, coffee, cooking and salad oils, margarine, and spices. This process results from oxygen attacking unsaturated fats. As a result, rancid off-flavors (such as occurs with potato chips), color changes (such as bleached dry vegetables), decreased quality, and the production of toxic substances are a factor. Lipid oxidation can be controlled by manipulating oxygen levels or by adding antioxidants (BHA, BHT, and EDTA). The oxygen permeability of the packaging material must be considered in determining an open date. Handling instructions for the consumer should be provided on the extent and control of such reactions to better maintain the quality of the food.
- ***Non-enzymatic Browning (NEB):*** NEB is the result of certain sugars reacting with proteins during processing and storage in products like powdered dairy products, dry

eggs, dry drink juice mixes, semi-dry meat and fish, non-acid canned goods, breakfast cereals, cake mix, fortified pasta, semi-moist breakfast bars, and frozen concentrated juices. In the latter, vitamin C degradation also leads to unacceptable darkening. Besides darkening, NEB also results in off-flavors and a decrease in protein nutritional quality. Both storage temperature and humidity are critical with respect to external relative humidity. This affects the rate of moisture permeating through packaging for dry goods and the rate of browning, therefore, affecting shelf-life. For the most part, manufacturers of these longer shelf-life products either put no date on their products, or if they do, they assume some average distribution condition and hope that most product is consumed before that date rather than sitting on the shelf. With canned goods, because the product is in a hermetically sealed container which is impermeable to oxygen, moisture, and light, the major mode of deterioration is browning which is very slow at typical room storage temperature. Thus, some manufacturers date such products three years beyond the production date. Most likely, this date has never been verified in testing, but is likely to be the limit of consumer storage.

- ***Other chemical reactions:*** Other chemical reactions affecting shelf-life of food products include loss of vitamins and light oxidation of pigments. As with the other chemical reactions, temperature, oxygen level, moisture content and light are all important factors to consider in predicting shelf-life (Labuza, 1982).

Physical Degradation

- ***Physical Bruising/Crushing:*** Although not equated into shelf-life determinations, physical abuse of a food (especially of fruits and vegetables) will lead to microbial growth

and product decay because of the damage to cells allowing for invasion by spoilage bacteria.

- **Wilting:** The problem of wilting is most prevalent in fresh leafy vegetables (whole or pre-cut) and tuber vegetables. This results in decreased crispness or an increase in the rate of senescence reactions. Good moisture barrier packaging prevents this because most refrigerators have a relative humidity lower than 50%, which causes moist products to dry-out. The use of sprays, such as used on fresh produce during grocery display, can reduce this loss especially if the product is unpackaged. Too high a barrier to moisture loss can lead to package fogging and subsequent microbial growth. No data is available to tie shelf-life to moisture loss because of all the variables.
- **Texture/Stickiness:** The moisture level in a product will have a major impact on candy, semi-moist pet foods, cake and bread products. A decrease in moisture levels will increase the hardening of semi-moist products, so high moisture barrier packaging is required. With high levels of external humidity, potato chips, dried or fried snacks and crackers will become soft due to moisture gain (Labuza, 1982). High humidity and temperature also cause foods and convenience dry meal mixes, instant coffee, instant tea and dried drink mixes to become sticky and caked. In baked high moisture wheat flour products, such as bread and cake, staling is an important mode of deterioration to consider. This is the result of starch/protein interaction. Unlike many other reactions, the rate of this reaction is actually increased with lower temperatures, thus bread stales faster when refrigerated than when at room temperature. Freezing bread, however, ceases the physical change. In order to predict the end of shelf-life, the moisture permeability of the package and the temperature/relative humidity conditions as a function of time during

distribution must be considered (Labuza et al., 1988). In general, most food processors do not have enough information to set a reliable date for such products, except perhaps for fried, baked or extruded snacks.

- ***Temperature Induced Texture Changes:*** Many texture changes in food are caused by continuous temperature fluctuation. This can lead to a loss of quality in many foods. In frozen foods, for example, products will lose tissue moisture and the rate of chemical reactions will increase under continuous thawing and freezing conditions. Temperature fluctuation also leads to the undesirable formation of ice crystals in frozen dairy products like ice cream and freezer burn or discoloration on the surface of a food as occurs with meats. Another effect of temperature fluctuations is evident in emulsified products, for example, salad dressing and mayonnaise (Labuza, 1982). An emulsion is a homogenous mixture consisting of liquid droplets dispersed into another liquid in which it is immiscible (McWilliams, 1993). The stability of such products are jeopardized if temperature control is not done, resulting in the undesirable physical separation of the product. It is obvious that without good data of the distribution conditions, dating of such products is a guess.

CHAPTER 5: USE OF TIME-TEMPERATURE INTEGRATORS

Time-Temperature Integrators (TTI)

Time-temperature integrators or indicators (TTI) are small, physical devices that are placed on the food package to measure the temperature history of a product and indicate a definitive change at the end of shelf-life through "integration" of the time-temperature exposure. TTIs are reliable indicators of end of shelf-life for food products if they have similar temperature sensitivities (Q_{10}) as for the food deterioration mechanism (Taoukis et al., 1991). The devices are used on individual consumer packages, so they establish a control system because not all products will receive uniform handling, distribution and time-temperature effects (Taoukis, et al., 1991). As a result, TTIs can increase the effectiveness of quality control in distribution, stock rotation practices of perishable foods in grocery stores, and efficiency in measuring freshness by the consumer (Sherlock, 1991). Taoukis and Labuza (1982 a, b) showed that for the most part, the commercially available TTIs are both reliable and applicable for use in combination with open dating of refrigerated foods. Malcata (1990), in addition, showed that although the tags respond more quickly to temperature abuse than the actual food because they are on the surface of the package, the response is on the conservative side of safety, i.e. the tag shows an endpoint before the food is spoiled. The Campden Food and Drink Association in the United Kingdom has developed technical standards for the evaluation of TTIs (Campden, 1992).

The three major manufacturers of TTIs are 3M, Lifelines, and VITSAB as shown in Figure 3.

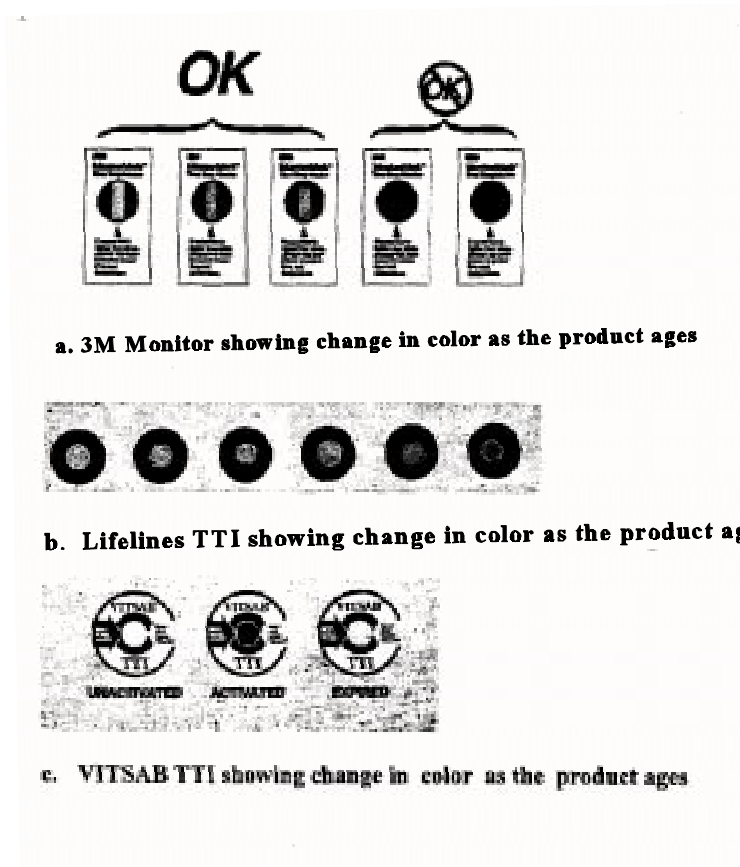


Figure 3: Three Types of TTIs

As early as 1988, Find SVP, a marketing consulting firm, concluded that the use of TTIs had the greatest potential in the food business (Find SVP, 1988). Although studies have shown that consumers believe in the validity of an open date and freshness, a survey by the Business Marketing Research Inc. found that consumers would prefer clear, consumer-readable indicators of time and temperature to measure the freshness and safety of their perishable food products (Sherlock, 1992).

The use of TTIs on dairy products has been studied extensively. For example, Mistry and Kosikowski (1982) found the 3M and I point products to be very effective and stated that TTIs "makes it possible to replace the sell-by date on market milk." Cherng and Zall (1989) also demonstrated the benefits of using TTIs on refrigerated dairy products. They recorded the distribution temperatures of pasteurized milk taken from two dairy plants. The products needed to be kept at temperatures no higher than 4.4°C. The first plant's products, however, were distributed at temperatures ranging from 6.5 to 8.8°C, while the second plant's products were kept around 3.4 to 3.9°C. Although the milk distributed at higher temperatures will have a shorter shelf-life, both of the products were similarly dated (Cherng et al., 1989). A TTI in this situation would have been able to detect the faster rate of deterioration for the temperature abused product and ensure that the consumer was not going to purchase a spoiled product. Well and Singh (1988) also showed that a TTI was useful in predicting the quality of fresh tomatoes undergoing a variable temperature distribution.

Concerning the effectiveness of TTIs and the dairy industry, a study by Duyvesteyn concluded that, "Although the tags did not sufficiently predict the sensory endpoint it is still thought that tags would be beneficial to the dairy industry when used along with a "use-by date" (Duyvesteyn, 1997)." Duyvesteyn focused on the reliability of the TTIs, but its use in conjunction with a "use-by" date will not be effective if there are no standards in determining a proper date.

An open date may be used to indicate a problem with distribution if the TTI expires much faster than the printed date. To quickly identify such a problem can decrease the food waste in this country. In the United States there is an incredible amount of food wasted each day. According to the USDA, 5.4 billion pounds of food at the retail level and 91 billion pounds of food by consumers and foodservice were estimated to be wasted in 1995 (Kantor, 1997). Milk,

for example, is a highly perishable product, and it contributed to approximately 17.4 billion pounds of edible food loss in 1995 (Kantor, 1997). According to observations made in this present study on November 25, 1997, the "sell-by" dates on milk containers ranged from November 28 to December 12. The dates in this case are useful in determining whether the product should be sold within three days or seventeen days to still maintain a reasonable time before reaching the end of shelf-life. In most cases, the open date could be extended if the milk product was constantly handled under the proper temperature. On the other hand, an open dating system may actually contribute to the larger milk waste. To eliminate some of this waste, the open date could be used as a guide to end of shelf-life, but time-temperature integrators would be more effective in this case to determine the actual time of the products' unacceptability.

Besides consumer acceptance and food waste reduction, TTIs may play a critical role in food safety. There are potential dangers with controlled atmosphere packaged (CAP/MAP) prepared meals and temperature abuse. Improper conditions can lead to the growth of harmful pathogens such as *Clostridium botulinum*, *Listeria monocytogenes*, and *Salmonellae enteritidis*. In one reported case, four people became ill from *Clostridium botulinum* (a potentially lethal pathogen) from a CAP/MAP packaged shredded cabbage product that experienced temperature abuse (Sherlock et al., 1992).

The military is presently looking into the use of VITSAB tags. The U.S. military spends about \$1.7 billion annually to feed its active duty troops. An efficient indicator of microbial growth in temperature-sensitive and perishable foods is necessary to feed the troops in various conditions, such as desert weather to arctic conditions (Cox, 1998). The FSIS has recommended monitoring the temperature of meat in the processing room during the entire grinding process of meats as established in the "Guidance for Beef Grinders to Better Protect Public Health"

(Guidance for Minimizing Impact Associated with a Food Safety Hazard in Raw Ground Meat and Other FSIS Regulated Products). The document specifically mentions the use of TTIs on packages as an indicator of adequate temperatures of the meat during storage, distribution, and display of the products in grocery and other retail establishments (FSIS [<http://www.usda.gov/fsis/oahaccp/guideb.pdf>]). The Lifelines TTIs are presently being implemented on refrigerated deli products in the Monoprix food chain in France. As of November of 1998, CUB stores in the Minneapolis/St. Paul, MN, area are doing a market testing of the 3M tags on prepackaged CAP/MAP hamburger. A dairy products manufacturer has also expressed interest in the use of TTIs on specialty milk products. Also Eatsy's (Dallas, Texas) were scheduled to begin using Lifelines Tags on their deli and refrigerated items starting sometime in early 1999.

CHAPTER 6: CONCLUSION

In the 1979 OTA study, the committee concluded that the industry did not have the data at that time to properly implement an efficient open dating practice. A significant problem with open dating is that the loss of quality and "freshness" are not solely a function of time, but depend on the control of temperature, humidity and light during distribution. Both knowledge of the mode and rate of deterioration and the product's history of exposure, including temperature abuse, must be incorporated into shelf-life dating (OTA, 1979). Almost twenty years later, the industry faces the same problems, but today's technology with TTIs is providing a solution at least with respect to temperature abuse.

Although some of the open dating surveys in this study cited consumers' confusion almost twenty years ago, current studies do not suggest that state regulated open dating laws have improved the consumers' understanding of the dates over that time range. One solution suggested by Dr. Ted Labuza at the University of Minnesota was to follow the guidelines as used by the meat industry. In other words, let the industry decide on what open date to use but require specific dating explanations when any date is used (Minneapolis Tribune, 1979). This would allow industry to choose whether or not they would take the effort to satisfy consumers' demands and assist with supermarket stock rotations.

Since 1979, some states have added mandatory open dating legislation to suggest that there has been a growing awareness of its potential benefits; an awareness consumers have been conscious of since the beginning of the century. However, the lack of uniformity among state laws is still apparent. It is only a matter of time before the inaccuracy or omission of an open date leads to a complicated lawsuit against a food industry or grocery chain. As the grocery industry is striving towards more efficiency in their distribution and internal structure, the implementation of

open dating would complement the goal of ECR. At the same time, the technology of TTIs used in conjunction with an open date is increasing the chances of a wholesomeness guarantee for high quality food products. As for now, if carefully implemented, the manufacturers' inconvenience of adding a uniform open dating system to their products would be minimal compared to the benefits of educating consumers and building consumer trust with respect to the grocery stores and the supermarket industry.

ACKNOWLEDGMENTS

This research was supported, in part, by the University of Minnesota Retail Food Industry Center (TRFIC) which is funded by the Alfred P. Sloan Foundation, in part, by the Minnesota/South Dakota National Dairy Foods Research Center and the University of Minnesota Agricultural Experiment Station.

REFERENCES

- Anon. "Time temperature devices USDA requirement urged," in *Food Chemical News*, October 15, 1990, pp 36.
- Anon. "Born-on Dating: A Fresh Strategy," in *Food Processing*, February 1997, pp. 29.
- Anon. "Prevention Magazine-NBC Today Survey" 1997.
- Anon. "Retail Temperature Control Lags Food Code" : IFPA Seminar Speakers in *Food Regulation Weekly*, Vol. (2): 3-4 1998.
- Anon "How \$100 is spent in the supermarket," in *Food Processing*, November 1998, pp 12.
- Beard III, T.D. "HACCP and the Home: The Need for Consumer Education," in *Food Technology*, June 1991, pp.123.
- Bernard, D.T. "Hazard Analysis and Critical Control Point System (Use in Controlling Microbiological Hazards)," in M.P. Doyle, editor, *Food Microbiology Fundamentals and Frontiers*. Washington D.C.: American Society for Microbiology, 1997, pp. 740-741.
- Besfamille, M. Univ Toulouse, France. Personal Communication, 1998.
- Bishai, D.M., Bhatt, S., Miller, L.T., and Hayden, G. "Vaccine Storage Practices in Offices of Pediatrics," in *Pediatrics* 88:193-196, 1992.
- Brody, A.L. "Chilled Foods Distribution Needs Improvement," in *Food Technology*, October 1997, pp.120.
- Brody, A.L. "Minimally Processed Foods Demand Maximum Research and Education," in *Food Technology*, May 1998, pp. 66.
- Butler, J. "Sainsbury's Fined for Selling Stale Food," in *PA News*, June 23, 1998, pp.2.

Campden Food and Drink Association. "A Food Industry Specification for Defining Technical Standards and Procedures for Evaluation of Time Temperature Indicators," Technical Manual No. 35, February 1992.

Cherng, Y.S. and Zall, R.R.. "Use of Time-Temperature Integrators to Monitor Fluid Milk Movement in Commercial Practice," in *Dairy, Food and Environmental Sanitation*, September 1989, pp. 439.

Code of Federal Regulations. The Office of the Federal Register National Archives and Records Administration (1998).

Cox, J. "U.S. Armed Services Consider Food Safety; Leading-Edge Technology is Featured," (Press Release) Boston, MA, October 26, 1998.

Dern, A. "California's Proposition 65 would feel the heat of National Uniformity for Food bill," in *Food Chemical News*, August 10, 1998, pp. 22-3.

Dowdell, S. "Looking for a Date," in *Supermarket News*, June 17, 1996, pp.27-36.

Doyle, M.P., L.R. Beuchat, and T.J. Montville. *Food Microbiology Fundamentals and Frontiers* (1997) American Society for Microbiology, Washington, DC 20005.

Duyvesteyn, W. *Integration of the Time-Temperature History Effect on the Shelf Life of Fluid Milk*. University of Minnesota: Food Science M.S. Thesis, May 1997, pp. 224.

Federal Register. "Mandatory Safe Handling Statements on Labeling of Raw Meat and Poultry Products," in Vol. 58, August 16, 1993, pp. 43478-43489.

Federal Register. "Use of the Term "Fresh" on the Labeling of Raw Poultry Products," in Vol. 60, January 17, 1995, pp. 3454-3462.

Federal Register. "Transportation and Storage Requirements for Potentially Hazardous Food," in Vol. 61, November 22, 1996, pp. 59372-59382.

Federal Register. "Refrigeration and Labeling Requirements for Shell Eggs," in Vol. 63, August 27, 1998, pp. 45663-45675.

Find SVP. "Time-Temperature Monitoring Products. A Comparative Intelligence Report," New York, N.Y. 175 pages, 1988.

FNQUEB Webpage. (URL: <http://www.fnqeb.com.au/index.html>).

Food, Drug, Cosmetic Law Reports. Commerce Clearing House, Inc. 1998.

Food Safety and Inspection Service (FSIS). "Guidance for Beef Grinders to Better Protect Public Health," in URL: <http://www.usda.gov/fsis/oa/haccp/guideb.pdf> (March 1998).

Food Safety and Inspection Service (FSIS) URL: www.fsis.usda.gov (March 1995).

Hartman, P.A. "The Evolution of Food Microbiology," in M.P. Doyle, ed., *Food Microbiology Fundamentals and Frontiers*. Washington D.C.: American Society for Microbiology, 1997, pp. 10.

Institute of Food Technologists (IFT). "Open Shelf-life Dating of Food," in *Food Technology*, February 1981, pp. 89-96.

Institute of Food Technologists (IFT). "Hark! The Herald Food Microbiologists Sing!" *IFT News* release, December 15, 1998.

Johnson, A.E., Donkin, A.J.M., Morgan, K., Lilley, J.M., Neale, R.J., Page, R.M. and Silburn. R., "Food Safety Knowledge and Practice Among Elderly People Living at Home," in *Journal of Epidemiology and Community Health*, November 1998, pp. 745-748.

Kalish, F. "Extending the HACCP Concept to Product Distribution," in *Food Technology*, June 1991, pp. 119.

Kantor, L.S., Lipton, K., Manchester, A., and Oliveira, V. "Estimating and Addressing

- America's Food Losses," in *Food Review*, January-April 1997, pp. 2-12.
- KMSP-TV Minnesota Nine News. "Food Shelf-life," May 11-12, 1998.
- Kurt Salmon Associates, Inc. *Efficient Consumer Response (Enhancing Consumer Value in the Grocery Industry)*, Washington, DC: The Research Department (Food Marketing Institute), January 1993.
- Labuza, T.P. *Shelf-life Dating of Foods*. Westport, Ct: Food & Nutrition Press, Inc., 1982.
- Labuza, T.P. and Schmidl, M.K. "Use of Sensory Data in the Shelf Life Testing of Foods: Principles and Graphical Methods for Evaluation," in *Cereal Foods World*, February 1988, pp. 193-205.
- Malacata, F.X. "The Effect of Internal Temperature Gradients on the Reliability of Surface Mounted Full History Time-Temperature Indicators," in *J. Food Prosc. Preserv.* 14:481-487, 1990.
- McWilliams, M. *Foods: Experimental Perspectives* (2nd Ed). New York, NY: Macmillan Publishing Company, 1989.
- Minneapolis Tribune. "Open Dating and Food Waste," in *Cereal Foods World*, October 1979, pp. 504-513.
- Mistry, V.V. and Kisikowski, F.V. "Use of Time Temperature Indicators as Quality Control Devices for Market Milk," in *J Food Protection* 46(1):52-57, 1983.
- Moore, Amity K. "Dated Thinking," in *Supermarket News*, March 24, 1997, pp. 40.
- Narisetti, R. "P&G's New No>Returns Policy Tells Retailers to Keep Damaged Goods," in *The Wall Street Journal*, March 24, 1997.
- National Institute of Standards and Technology (NIST): (<http://www.nist.gov/>) and

Handbook 130 NIST.

Office of Technology (OTA). *Open Shelf-Life Dating of Food*. Washington DC: U.S.

Government Printing Office, 1979.

Pryce, R. *The Dynamics of European Union*. New York, NY: Croom Helm, 1987.

Richard Daniels Associates, Inc. "1989 National Retail Food Product Cold Temperature Evaluation," in *Audits International (USA)*, 1990.

Rutgers University Food Science Department. *Food Stability and Open Dating*. Rutgers University: New Brunswick, NJ, 1971.

Seligsohn, M. "Smashing the Open-Dating Myth," in *Food Engineering*, October 1979, pp. 20-25.

Sherlock, M., B. Fu, Taoukis, P.S., and T.P. Labuza. "A Systematic Evaluation of Time-Temperature Indicators for Use as Consumer Tags," in *Journal Food Protection*, Vol. 54, November 1991, pp. 885-889.

Sherlock, M. and T.P. Labuza. "Consumer Perceptions of Consumer Type Time-Temperature Indicators for Use on Refrigerated Dairy Foods," in *Dairy, Food and Environmental Sanitation*, August 1992, pp. 559-565.

Springen, K. "Safer Food for a Tastier Millennium," in *Newsweek*, September 28, 1998, pp. 14.

Stamp, J.A. *Kinetics and Analysis of Aspartame Decomposition Mechanisms in Aqueous Solutions Using Multiresponse Methods*. University of Minnesota: Food Science PhD. Thesis, September 1990.

Stickel, A.I. "Values that make cents," in *Supermarket News*, July 1, 1996, pp. 15-18.

Taoukis, P. and Labuza, T.P. (1989 a). "Applicability of Time Temperature Indicators as Shelf Life Monitors of Food Products," in *J Food Science* 54:783-788.

Taoukis, P. and Labuza, T.P. (1989 b). "Reliability of Time Temperature Indicators as Food Quality Monitors under Non-isothermal Conditions," in *J Food Science* 54:783-788.

Taoukis, P.S., Fu, B. and Labuza, T.P. "Time-Temperature Indicators," in *Food Technology*, October 1991, pp. 70-82.

United States Code (1994 Ed.) US Government Printing Office, Washington, 1995, pp. 51.

United States Department of Agriculture (USDA). Food Standards and Labeling Policy Book, August 1996.

Wells, J. H. and Singh, R.P. "A Kinetic Approach to Food Quality Prediction using Full History Time Temperature Indicators," in *J Food Science* 53(6): 1866-1893, 1991.

Williams, M. "Simple Advice," in *Supermarket News*, July 13, 1998, pp. 31-2.

Uniform Open Dating Regulation

as adopted by
The National Conference on Weights and Measures*

1. Background

Numerous State and local jurisdictions have provided for, or are considering, mandatory open dating of certain packaged commodities. Additionally, many commodities in the marketplace are now voluntarily open dated. Lack of uniformity between jurisdictions could impede the orderly flow of commerce.

In 1985 the National Conference on Weights and Measures, in concert with the Association of Food and Drug Officials, wrote a new Uniform Regulation. It resolved the differences which existed between the versions previously developed by the two organizations independently.

The regulation provides two options for implementation by the States. One requires open dating on all perishable foods. The other permits voluntary open dating of such foods. In the latter (voluntary) case, the open dating must then conform to the uniform regulation. Notes to § 1.1. and 3.1. indicate the alternative wording for the voluntary version of the Regulation.

**The National Conference on Weights and Measures is sponsored by the National Institute of Standards and Technology in partial implementation of its statutory responsibility for "cooperation with the States in securing uniformity in weights and measures laws and methods of inspection."*

Uniform Open Dating Regulation^[NOTE 1, see page 119]

Section 1. Purpose, Scope, and Application

- 1.1. Purpose.**^[NOTE 1, see page 119] – The purpose of this regulation is to prescribe mandatory uniform date labeling of prepackaged, perishable foods, and to prescribe optional uniform date labeling that must be used whenever a packager elects to use date labeling on prepackaged foods that are not perishable. Open dating is intended for use and understanding by both distributors and consumers when judging food qualities.

Note 1: Alternatively, this regulation may be adopted to require uniformity of open dating of perishable foods whenever a packager voluntarily elects to use date labeling. In such instance, Sections 1.1. and 3.1. are reworded in the following manner:

1.1 Purpose. The purpose of this regulation is to prescribe uniform date labeling that must be used whenever a packager elects to use date labeling on a prepackaged food. Open date labeling is intended for use and understanding by both distributors and consumers when judging food qualities.

3.1 “Sell By” Date. If a retail food establishment elects to sell or offer for sale a prepackaged perishable food identified with a “sell by” date, the “sell by” date used must be as prescribed by this regulation.

- 1.2. Scope and Application.** – This regulation prescribes the manner of date labeling, the method of determining the appropriate date, required records, responsible persons, and the foods subject to this regulation. This regulation provides for the permissible sale of a regulated food after the expiration of the date on the label. This regulation does not apply to any food that is not prepackaged or is exempted by § 8.

Section 2. Definitions

- 2.1. “Sell By” Date.** – “Sell by” date means a recommended last date of sale that permits a subsequent period before deterioration of qualities described in 2.2., 2.3., and 2.4.
- 2.2. Perishable Food.** – “Perishable food” means any food having a significant risk of spoilage, loss of value, or loss of palatability within 60 days of the date of packaging.
- 2.3. Semi-perishable Food.** – “Semi-perishable food” means any food for which a significant risk of spoilage, loss of value, or loss of palatability occurs only after a minimum of 60 days, but within 6 months, after the date of packaging.
- 2.4. Long Shelf-life Food.** – “Long shelf-life food” means any food for which a significant risk of spoilage, loss of value, or loss of palatability does not occur sooner than 6 months after the date of packaging including foods preserved by freezing, dehydrating, or being placed in a hermetically sealed container.
- 2.5. Prepackaged.** – “Prepackaged” means packaged prior to being displayed or offered for retail sale.
- 2.6. “Best If Used By” Date.** – “Best if used by” date means a date prior to deterioration of qualities described in 2.3. and 2.4.

2.7. **Person.** – “Person” means an individual, partnership, association, or corporation.

Section 3. Sale of Perishable Food and Date Determination

3.1. **“Sell By” Date.** ^[NOTE 1, see page 119] – A retail food establishment shall not sell or offer for sale a prepackaged perishable food unless it is identified with a “sell by” date as prescribed by this regulation.

3.2. Sale after Expiration of “Sell By” Date

3.2.1. **Advertisement.** – Perishable food shall not be offered for sale after the “sell by” date unless it is wholesome and advertised in a conspicuous manner as being offered for sale after the recommended last date of sale. The placement of a sign, sticker, or tag is acceptable for such advertising if it is easily readable and clearly identifies the perishable food as having passed the recommended last date of sale.

3.2.2. **Responsibility for advertisement.** – The retailer or final seller is responsible for the advertisement, described in § 3.2.1., of a perishable food offered for sale after the recommended last date of sale.

3.3. Determination of “Sell By” Date

3.3.1. **Reasonable period for consumption.** – A manufacturer, processor, packer, repacker, retailer, or other person who prepackages perishable food, shall determine a date that allows a reasonable period after sale for consumption of the food without physical spoilage, loss of value, or loss of palatability. A reasonable period for consumption shall consist of at least one third of the approximate total shelf life of the perishable food.

3.3.2. **Responsibility for “Sell By” date.** – A retailer who purchases prepackaged perishable food may upon written agreement with the person prepackaging such food determine, identify, and be responsible for the “sell by” date placed on or attached to each package of such food.

3.4. Manner of Expressing Date

3.4.1. **Month and day, or day of week.** – A person described in § 3.3.1. or 3.3.2. shall place or attach to each package of perishable food a date by month and day. However, bakery products with a shelf-life of not more than 7 days may be dated with the day of the week representing the last recommended day of sale.

3.4.2. **The term “Sell By”.** – The “sell by” date shall be displayed with the term “sell by” or words of similar import immediately preceding or immediately over the designated date unless a prominent notice is on the label describing the date as a “sell by” date and indicating the location of the date.

3.4.3. **Abbreviation of weekday.** – If the day of the week is solely designated as provided in § 3.4.1., the name of the day may be abbreviated by the use of either the first two or first three letters of the name of the day.

3.4.4. **Expression of month and day.** – Except as provided for in § 3.4.1., the date shall be designated by:

- (a) the first three letters of the month, preceded or followed by a numeral indicating the calendar day, or
- (b) the month represented numerically followed by a numeral designation of the calendar day.

The month and day designation shall be separated by a period, slash, dash, or spacing. When a numeral designation of the first nine days of the month is used, the number shall include a zero as the first digit; for example, 01 or 03.

(Amended 1987)

3.4.5. Expression of the year. – The “sell by” date may include the year following the day if such year is expressed as a two or four digit number separated as described in § 3.4.4.

Section 4. Sale of Semi-perishable and Long Shelf-life Food

4.1. “Best If Used By” Date. – A manufacturer, processor, packer, repacker, or other person who prepackages semi-perishable or long shelf-life food may place upon or attach to the package an open date providing it is designated by the “best if used by” date.

4.2. Sale after Expiration of “Best If Used By” Date. – A retail food establishment may sell or offer for sale food beyond the designated “best if used by” date providing the food is wholesome and the sensory physical quality standards for that food have not significantly diminished.

4.3. Manner of Expressing Date. – The “best if used by” date as required by § 4.1. shall be placed upon or attached to each container or package and be limited to the terms “best if used by” or words of similar import followed by or immediately over the date designated by the month and year unless a prominent notice is on the label describing the date as a “best if used by” date and indicating the location of the date. The date shall be designated by the first three letters of the month followed by a numeral indicating the year. The use of the day of the month is permissible provided that the day of the month is placed prior to the month; for example, 30 Jun 81.

Section 5. Placement of the Date

The date, whether “sell by” or “best if used by,” shall be printed, stamped, embossed, perforated, or otherwise shown on the package, label on the package, or tag attached to the package in a manner that is easily readable and separate from other information, graphics, or lettering so as to be clearly visible to a prospective purchaser. The date shall not be superimposed on other required information or obscured by other information, graphics, or pricing. Regardless of the type size used, the date shall be easily readable. These requirements do not preclude a supplemental notice elsewhere on a package describing and/or indicating the location of the date.

Section 6. Factors for the Date Determination

A person who, as provided for in this regulation, places either the “sell by” date or “best if used by” date shall determine the date by taking into consideration the food quality, characteristics, formulation, processing impact, packaging or container and other protective wrapping or coating, customary transportation, and storage and display conditions. For purposes of calculating this date, home storage conditions shall be considered to be similar to those in the usual retail store except that the date for refrigerated food may be calculated by using a home storage temperature standard of 40°F (4.4°C).

Section 7. Records

A person responsible for establishing the date for perishable, semi-perishable, and long shelf-life food shall keep a record of the method used for the determination of that date. A record revision is necessary whenever a factor affecting date determination is altered. Such record shall be retained for not less than 6

months after the most recent “sell by” or “best if used by” date and be available during normal business hours for examination upon request by (insert agency name).

Section 8. Exemptions

- 8.1.** This regulation does not apply to perishable fruits or vegetables in a container permitting sensory examination.
- 8.2.** This regulation does not apply to prepackaged perishable foods open dated according to requirements of Federal law or regulation.

Section 9. Preemption of Local, County, and Municipal Ordinance

A municipality or county shall not adopt or impose standards or requirements other than those provided for in this regulation.

Section 10. Effective Date

This regulation shall become effective on and after (insert appropriate date).

EXTENDED LIST OF STATE REGULATIONS ON OPEN DATING

As of September 1998

ALABAMA

Department of Agriculture and Industries Agricultural Chemistry

80-1-22

Rules Governing Foods, Drugs and Cosmetics

80-1-22-.27 Special Requirements for Potentially Hazardous Foods

- (1) For the purposes of this Rule, “Potentially hazardous food” means any food that consists in whole or in part of milk or milk products, eggs, or egg products (including inshell eggs), meat, poultry, fish, shellfish, edible crustacea or other ingredients in a form capable of supporting rapid and/or progressive growth of infectious or toxigenic microorganisms.

Statutory Authority: Code of Alabama (1975)

§20-1-2. Adoption of rules and regulations

80-1-22-.28 Special Requirements for Potentially Hazardous Foods Regarding Open Dating

- (1) For the purpose of this Rule Open-Date Statement shall mean the terms “Sell by”; “Not To Be Sold After”; “Best If Used By”; “Expiration”; or words of similar import; or a date without additional words shall be considered under the jurisdiction of this Rule.
- (2) Potentially hazardous foods as defined under Rule 80-1-22-.27 in package form which are sold, offered for sale, or stored for sale at retail or wholesale and having an open-date statement shall comply with the following requirements.
- (3) Prohibitive Acts
 - (a) Packages of potentially hazardous foods bearing an open-date statement are not to be sold or offered for sale at retail or wholesale after the date stated on the label.
 - (b) Packages of potentially hazardous foods bearing an open date are not to be repacked or relabeled or otherwise altered in a manner that would change the open-date statement originally placed on the package.
 - (c) Foods offered for sale in violation of this Rule shall be deemed misbranded under the provision of Code of Alabama, 1975, Section 20-1-25.

Statutory Authority: Code of Alabama (1975)

§20-1-2. Adoption of rules and regulations

Section 20-1-25. When articles deemed misbranded generally—Food.

ALASKA

Voluntary

ARIZONA

ALIS Online

<http://www.azleg.state.az.us/cgi-bin/wais...ction=retrieve&W AISdocID=6640713770+0+0+0>

<http://www.azleg.state.az.us/cgi-bin/wais...tion=retrieve&W AISdocID=6675513826+81+0+0>

3-701. Definitions

10. “Expiration date” means the words “sell by” or “buy thru” followed by a date, including the month and day, which is not more than twenty-four days after the eggs were candled and includes the date the eggs were candled.

3-719. Reuse of standard cases and other containers; identification of eggs; expiration date markings; exceptions

- E. Cases, half cases, cartons or containers marked grade AA or grade A shall be marked with an expiration **date**. Months shall be abbreviated Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov or Dec.
- F. The expiration **date** marked on a case, half case or container holding fifteen dozen eggs or more shall be plainly and conspicuously marked in bold-faced type not less than three-eighths inch in height on one outward end of the case or container.
- G. The expiration **date** marked on a carton or container holding less than fifteen dozen eggs shall be plainly and conspicuously marked in bold-faced type not less than one-eighth inch in height on one end of the outward top face of each carton on one outward end or the outward top of each container.
- H. Only one description of the size and grade of eggs and one expiration **date** shall appear upon any carton, container, subcontainer or case of eggs.

ARKANSAS

Voluntary

CALIFORNIA

California Annotated Codes (1986)

Div. 15 Milk and Milk Products

§36004. Quality assurance date; listing required on retail packages or containers; exceptions; regulations

- (a) At the time of sale to the consumer by a retail store of any product designated in this section there shall appear upon the package or container of such product the date established by the processor as the date upon which, in order to insure quality, such product is normally removed from the shelf or similar location from which the product is offered for sale to the consumer.
- (b) This section applies to the following products:
 - (1) Market milk.
 - (2) Market cream.
 - (3) Any milk product which is required by any provision of this code, or by any regulation adopted by the director pursuant thereto, to be made from market milk or any component or derivative of market milk.
- (c) This section does not apply to any milk or milk products processed, packaged, and sold by distributors directly to consumers.
- (d) This section does not apply to any bulk shipments of milk or milk products between distributors.
- (e) The director shall, in compliance with applicable provisions of this code and Chapter 4.5 (commencing with Section 11371) of Part 1 of Division 3 of Title 2 of the Government Code, and after public hearing or hearings, adopt regulations pertaining to (1) responsibility for affixing to packages or other containers the quality assurance date provided for in this section; (2) the manner, style, form, and place of affixation of such date to packages and other containers in a conspicuous place in a form which is readily seen and easily understood by the buyer; and (3) the administration and enforcement of the requirements of this section.

(Added by Stats.1972, c. 703, p.1284, § 1. Amended by Stats. 1974, c. 1155, p. 2452, § 2.)

COLORADO

Voluntary

CONNECTICUT

Connecticut General Statutes Annotated (1985)

§22-197b. Dating of containers of milk, cream, yogurt, cream cheese, cottage cheese, ricotta cheese or sour cream

- (a) In addition to the requirements of sections 22-135 and 22-197, each container of milk or cream, yogurt, cream cheese, cottage cheese, ricotta cheese or sour cream sold or

offered for retail sale to consumers, on and after January 1, 1982, shall be clearly marked with the last date on which such item may be sold or offered for sale. If such milk or cream was pasteurized at a temperature of two hundred twelve degrees Fahrenheit or less, the last sale date shall not exceed twelve days from the day on which such milk or cream was pasteurized except as provided in subsection (b) of this section.

- (b) The milk regulation board shall adopt regulations in accordance with chapter 54¹ establishing a uniform method of displaying such date on such containers and a procedure which the commissioner of agriculture shall follow for approval of a last sale date for milk or cream in excess of twelve days for milk or cream pasteurized at a temperature of two hundred twelve degrees Fahrenheit or less. The regulations shall include but not be limited to procedures for verification of an extended last sale date and review of the appropriateness of such date. The commissioner may authorize an extended last sale date for milk or cream upon request of a milk processor.

(1973, P.A. 73-269, § 1; 1981, P.A. 81-161, § 1, eff. Jan. 1, 1982; 1982, P.A. 82-102, § 1, eff. May 4, 1982; 1984, P.A. 84-19, § 1.)

¹Section 4-166 et seq.

§ 22-135. Labeling

§ 22-197. Labeling of receptacle containing pasteurized milk or cream

DELAWARE

Voluntary

DISTRICT OF COLUMBIA

District of Columbia Municipal Regulations

June 1997

Title 23: Alcoholic Beverages and Food

2505 Open Dating

2505.1 All pasteurized fluid milk, fresh meat, poultry, fish, bread products, eggs, butter, cheese, cold meat cuts, mildly processed pasteurized products, and potentially hazardous foods sold in food-retail operations which are pre-wrapped and not intended to be eaten on the premises of the food operation shall have easily understood pull dates prominently displayed on their containers.

2505.2 The pull date is the date after which the food may not be sold unless isolated and prominently labelled as being beyond the last date on which the food should be sold without a significant risk of spoilage, loss of value, or loss of palatability if stored by the consumer after that date for the period and in the manner which the food can reasonably be expected to be stored.

- 2505.3 The display area where the isolated items are kept shall be marked in a manner which will advise the consumer that the goods in the area have been isolated due to the passing of the pull date.
- 2505.4 The Director shall publish a list, after public hearing, of other foods to be pull-dated.
- 2505.5 The pull date list established in accordance with §2505.4 shall be reviewed annually and revised as necessary.
- 2505.6 If any food which has a pull date is rewrapped, the new package shall retain the original pull dates and the package shall be prominently with the word **“REWRAPPED.”**

SOURCE: Commissioners’ Order 67-1303 effective August 22, 1967, §8-6:106(a)-(c); as amended by Regulation No. 74-1 effective January 19, 1974, §8-6:106(d); 8 DCRR.

FLORIDA

[West’s Florida Statutes Annotated](#)

502.42. Labeling of shelf life

To ensure consumers full disclosure of the date beyond which milk or milk products may no longer be offered for sale, all dairy processors shall establish, and legibly label as prescribed by rule of the department, the maximum shelf-life period during which milk and milk products may be offered for sale. For purposes of this requirement, to “legibly label” means to label the package or container with conspicuous and easily readable boldfaced print or type in distinct contrast to the background, by color. The department shall periodically conduct shelf-life studies to review the keeping quality of milk and milk products and shall sample periodically the products of the dairy processors to determine if the shelf-life dating used by the processors complies with the minimum standards of quality.

GEORGIA

[Rules of Georgia Department of Agriculture](#)

[Chapter 40-7-1](#)

[General Rules](#)

40-7-1-.26 Labeling.

- (2) Open Dating on Food Products in Package Form. All food products in package form and labeled as defined in the Georgia Food Act, Section 26-2-28; which are sold, offered for sale or stored for sale at retail or wholesale and having open dating shall comply with the following requirements. This regulation does not apply to food products which are required to be open dated under other regulations.
- (a) Definitions.

1. Open dating. Means the voluntary use of letters (for the month) together with number(s) (for the date of the month) and or a number which designates the last digit of the year.
2. Pull date. The use of a pull date means the last date on which the food in package form shall be sold at retail or wholesale.
 - (b) Open Date Statement. The terms “Sell by _____”; or “Not To Be Sold After _____”; or “Best If Used By _____”; or Expiration _____” or words of similar import; or a date without additional words shall be considered to fulfill requirements of this regulation.
 - (c) Manner of Expressing the Pull Date. Open dating shall consist of a combination of three letters (for the month abbreviation) and number(s) for the date of the month; the year may be stated by the last digit of the year. Example: 6-10; or Jun 10; or June 10-8; or 6-10-8.
 - (d) Location of Stating the Open Date. The open dating information shall be prominently placed on the label with such conspicuousness (as compared with other words, statements, designs, or devices on the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.
 - (e) Prohibited Acts. The following acts and the causing thereof are hereby prohibited:
 1. Food products in package form are not to be sold or offered for sale at retail or wholesale after the expiration date stated on the label.
 2. Food products in package form shall be removed from sale after the pull date stated on the label. These food products may be voluntarily destroyed or returned to the manufacturer, packer or distributor provided the food shows no evidence of spoilage and is not suspected of being a health hazard.
 3. The alteration, mutilation, destruction, obliteration, or removal of the whole or any part of the labeling of, or the doing of any other act with respect to a food if such act is done while such article is held and results in such product being adulterated or misbranded.
- (3) Expiration Date of Infant Formula Products.
 - (a) Infant Formula. Expiration Dating.
 1. Each and every container of liquid or powdered infant formula made from two or more ingredients and represented as or intended as a replacement or supplement for milk, shall conspicuously show in common and express terms the calendar month and year after which the product is not to be sold or used for human consumption.
 2. The expiration date, or the date after which the product is not to be sold or used for human consumption, shall be determined by the manufacturer based on empirical data, or other verifiable scientific means.
 3. If the Commissioner or his authorized agent has prohibited the sale of a product still within date, after notice, the manufacturer shall for each and every brand, variety, or formulation of infant formula intended to be sold or offered for sale in Georgia, submit scientific data establishing the expiration date to comply with Section (a)2 of this regulation. Such data shall include, but is not limited to, physical, nutritional, and chemical properties. In the absence of empirical data on any specific formulation, the manufacturer shall provide such scientific data to reasonably substantiate the expiration date, if the data submitted does not in the opinion of the

Commissioner justify the expiration date, the Commissioner shall prohibit the sale of the product until a new expiration date consistent with data is applied to the food product.

4. Each and every shipping carton container, and consumer package shall in like manner show the calendar month and year after which the product is not to be sold or used. This section will be complied with if the information is not contained on the shipping carton, container, and consumer package, but is easily legible by virtue of the transparency of the outer wrapper or container.
5. Any manufacturer, distributor, dealer, or other person who offers for sale or sells infant formula not showing an expiration date or who offers for sale or sells infant formula on a date after the expiration date shown, shall be deemed to be offering for sale a product unfit for food within the meaning of part 26-2-28 of the Georgia Food Act.
6. Knowingly filing with the Commissioner incorrect or unverifiable date or placing an expiration date upon a shipping carton, container or any consumer package, which date is inconsistent with the data filed with the Commissioner shall be deemed to be misbranding under part 26-2-28 of the Georgia Food Act provided, however, that it shall not be deemed misbranded if the expiration date shown is an earlier date than the filed data would warrant.
 - (b) Special Formulation. The provisions of this regulation shall not apply to any special formulation manufactured on request of any licensed physician for the express purpose of meeting dietary needs of a specific individual.
- (4) Sandwiches.
 - (a) For the purpose of this section, prepackaged sandwiches shall be classified as Type A, Type B, or Type C.
 1. Type A sandwiches are those prepackaged sandwiches which are handled and sold as non-refrigerated sandwiches. Type A sandwiches shall not contain foods defined as potentially hazardous in fold or as an ingredient.
 2. Type B Sandwiches are those prepackaged sandwiches which are handled and sold as refrigerated sandwiches.
 3. Type C Sandwiches are those prepackaged sandwiches which are immediately hard frozen after manufacture and which are kept at zero degrees Fahrenheit until the time of sale to institutions or individual retail firms. A 10 degree rise in temperature will be allowed during delivery of frozen sandwiches from the truck into an individual firm.
 - (b) Type A Sandwiches which are stored, transported and offered for sale in a non-refrigerated state shall be labeled with a conspicuous expiration date not later than two (2) days from the date of manufacture.
 - (c) Type B Sandwiches which are labeled “Keep Refrigerated” and which are stored, transported and offered for sale under refrigeration shall be held after preparation continuously at or below 40 F, and shall be labeled with a conspicuous expiration date not later than fourteen (14) days from the date of manufacture.
 - (d) Type C Sandwiches shall be dated when sold by a retail store account for resale to individual customers, the expiration date, not to exceed fourteen (14) days, shall be stamped on each individual sandwich label when the sandwich is removed from the freezer, placed under refrigeration at or below 40 F, and made ready for sale to

individual customers. The shelf life date of the sandwich shall be preceded by a statement: “Not to be sold after (date)””; or words of similar intent. If sandwiches are intended to be maintained in a non-refrigerated state after removal from the freezer, a conspicuous expiration date not to exceed two (2) days from the date of such removal shall be stamped on each individual sandwich. The date at the end of the shelf life of the sandwich shall be preceded by a statement: “Not to be sold after (date)””; “Sell By (date)””; or words of similar intent.

- (e) Type B & C Sandwiches intended to be sold as refrigerated sandwiches shall be labeled “Keep Refrigerated”.
- (f) The date shall be conspicuously located on the front of the wrapper.
- (g) The expiration date for sandwiches shall state the last day of the sale in terms of the month or its abbreviation and numerical day or the month (e.g. 6-6). The expiration day shall be preceded by an explanatory term, such as “Expires”, “Sell-By”, or similar wording. Other codes or dating methods are prohibited.
- (h) When improved packing methods including but not limited to “Nitrogen Flushed” and “Vacuum Packed” are developed and become economically feasible, an extended expiration date may be granted by the Commissioner upon application by the manufacturer with proof of the safety of such an extended shelf life. The time of such extension will be decided by the Commissioner based upon such proof from the manufacturer.

Authority Ga. L. 1956, p. 195 as amended; O.C.G.A. Sec. 26-2-1 et. Seq

[Georgia Food Act](#)

Section 26-2-28. **When food deemed misbranded.**

HAWAII

[Hawaii Administrative Rule](#)
[Title 11. Department of Health](#)
[Chapter 15. Milk](#)

§11-15-39 Labeling.

- (c) Every container of processed milk and milk product held in retail and wholesale stores, restaurants, schools, or similar establishments for sale shall be conspicuously and legibly marked by the milk plant with the designation of the month and day of the month after which the milk shall not be sold for human consumption. If the director determines that the quality of a milk or milk product deteriorates to the extent that the product becomes unmarketable prior to its designated shelf-life, the director shall notify the milk plant to conduct a full and complete review of the shelf-life of the product. If the review confirms that the designated shelf-life of the product is improper, the milk plant shall immediately shorten the designated shelf-life of the product in order to maintain the quality of the product throughout its intended shelf-life.

IDAHO

Voluntary

ILLINOIS

Voluntary

INDIANA

Voluntary

IOWA

[Inspections and Appeals\[481\]](#)

[Chapter 31. Food Establishment Inspections](#)

481—31.11(137A) Reduced oxygen packaging of food. All places which engage in reduced oxygen packaging: cook-chill, vacuum packaging, sous vide, modified atmosphere packaging, or controlled atmosphere packaging, shall comply with standards provided by the Association of Food and Drug Officials Retail Guidelines: Refrigerated Foods in Reduced Oxygen Packages of 1990. Existing reduced oxygen packaging operations will have until January 1, 1996, to comply with this rule. This rule is intended to implement Iowa Code sections 137 A.5, 137B.3 and 137B.6. These rules are intended to implement Iowa Code chapter 137A...

[Association of Food and Drug Officials](#)

[Retail Guidelines](#)

[Refrigerated Foods in Reduced Oxygen Packages](#)

LABELING—“USE BY” DATES

Each package of refrigerated retail processed food in a reduced oxygen atmosphere must bear a “use by” date. This date cannot exceed 14 days from retail processing. Also, the date assigned by the retailer cannot go beyond the manufacturer’s recommended “Pull Date” for the food. The “use by” date must be listed on the principal display panel in bold type on a contrasting background. Foods that remain frozen before, during, and after processing are exempt from this requirement.

KANSAS

Voluntary

KENTUCKY

OPEN DATING REQUIREMENTS

For Milk Products
Issued by the Cabinet for Human Resources
Department for Health Services
Division of Consumer Health Protection
Milk Control Branch
(902 KAR 50:080)

Relates to KRS 217.010 to 217.990
Pursuant to KRS 13.082, 194.050, 211.090(1)(c)

Necessity and Function: The Cabinet for Human Resources is directed by KRS Chapter 217C to regulate the production, transportation, processing, handling, sampling, examination, grading, labeling, standards of identity, sale and such other matters relating to milk and milk products as may be necessary to protect the public health. This regulation establishes uniform standards for the open dating of Grade A pasteurized milk and milk products in Kentucky and requires that a consumer information or purchase guide date be legibly applied to retail packages offered for sale to the final consumer.

Supersedes: MMP-6

Section 1. Open Date Required.

No person shall sell or offer for sale any Grade A pasteurized milk or milk product in this state in a consumer package that does not bear the open date as required by this regulation.

Section 2. Open Date Labeling.

- (1). The open date shall appear in such form as to be conspicuous, legible and commonly understandable. It shall be boldface print in contrast to the background, by typography, color, embossing, debossing or molding of other matter on the package, and shall be placed on that part of the container most likely to be displayed, presented, or shown, or examined under customary conditions of display for retail sale, and shall not interfere with legibility of other mandatory labeling requirements of the product.
- (2). The open date shall be expressed by the first three (3) letters of the month followed by or preceded by the numeral or numerals constituting the appropriate calendar date, or expressed numerically by the number of the month preceding the number of the day. (For example: June 1 may be expressed "Jun 1", "1 Jun", "06 01" or "06-01.")
- (3). The open dating of Grade A pasteurized milk and milk products bottled in glass containers for home delivery are exempt from this regulation.

Section 3. Certification of Open Date Required.

- (1). Each distributor or processor manufacturing, processing or packaging Grade A pasteurized milk and milk products for sale within this state shall comply with the provisions of this regulation and file and certify with the cabinet the open date for each product. The processor or distributor requesting an open date certification for a product

shall provide the cabinet with the research data used to support the product open date certification request.

(2). Samples of products for open date evaluation may be obtained at the processing plant, delivery truck, distributors or from retail outlets. The temperature and open date shall be officially reported at the time of sample collection.

Section 4. Enforcement.

In the event a product is not sold within the period specified in the open date, the cabinet shall take appropriate action necessary to remedy the condition consistent with applicable public health laws and regulations.

EFFECTIVE DATE: January 8, 1975

LOUISIANA

Voluntary

MAINE

Voluntary

MARYLAND

[Annotated Code of Maryland \(1996\)](#)
[1997 Supplement](#)

Subtitle 4. Milk Products.

Part III. Standards and Handling Requirements for Milk Products

§ 21-426. Grade A milk product dating.

- (a) *“Sell-by period” defined.*—In this section, “sell-by period” means the length of time a Grade A milk product may be kept for sale.
- (b) *Container markings.*— (1) After a public hearing, the Secretary shall adopt rules and regulations that establish a method for conspicuously marking, on the Grade A milk product container, the last date on which the product may be sold.
- (2) Each Grade A milk product container shall be marked as required by rules and regulations adopted under this subtitle.
- (c) *Sell-by period established.*— A Grade A milk product that is cooled to, packaged, and stored at 45 degrees Fahrenheit or less before it is purchased by or delivered to the ultimate consumer has a sell-by period of 14 days.

(An. Code 1957, art.43, § 574; 1982, ch.240, § 2; 1987, ch.306, § 2; 1989, ch..461; 1996, ch.691.)

Effect of amendments. – The 1996 amendment, effective June 1, 1996, deleted former (b), (d)(2) and (e); redesignated former (c) as present (b) and former (d)(1) as present (c); and substituted “14 days” for “7 days” in present (c).

MASSACHUSETTS

The Commonwealth of Massachusetts
105CMR 500.000-529.000

520.119: Food, Open Date Labeling

- (A) **Purpose.** The purpose of 105 CMR 520.101 through 520.205, is to cause certain food products offered for sale in the Commonwealth of Massachusetts to be identified relative to physical sensory qualities for the information of consumers, distributors, and retailers.
- (B) **Scope.** 105 CMR 520.101 through 520.205 prescribe the method of posting an identification date, date determination, required records, responsible persons and foods subject to 105 CMR 520.119. In addition, 105 CMR 520.101 through 520.205 provide for exemption of certain foods and for sale of foods, under stipulated conditions, after the expiration of an identifying open date.
- (C) **Definitions.** For purposes of 105 CMR 520.101 through 520.205, the following definitions shall be applicable:
- Best If Used by Date:** A date no later than the expiration of the estimated shelf life of a food product.
- Frozen Food:** A food product which has been packaged and preserved by freezing.
- Long Shelf-Life Food:** A food product having an estimated shelf life of 90 days or more, including foods preserved by dehydration or packaged in a hermetically sealed container, but excluding frozen foods.
- Perishable Food:** A food product having an estimated shelf life of 60 days or less.
- Person:** An individual, partnership, association, or corporation.
- Prepackaged:** Packaged prior to being displayed or offered for sale at retail.
- Sell by Date:** A recommended last date of retail sale of a food product which provides for a reasonable subsequent period of home shelf life.
- Semi-Perishable Food:** A food product having an estimated shelf life greater than 60 days but less than 90 days.
- Shelf Life:** A period of time after the date of packaging during which a food product has no significant risk of spoilage, loss of value, or loss of palatability, given compliance with recommended conditions of storage and handling as disclosed on the label of such product.
- (D) **Open Dating of Perishable and Semi-Perishable Food Products.** No person shall sell, offer for sale, or have in his possession with intent to sell, prepackaged perishable or semi-perishable food products unless they are identified with a “sell-by-date” or a “best if used by date” determined by manufacturer, processor, packer, repacker, retailer, or other person who had packaged such food products and displayed in the form specified in 105 CMR 520.119 (G).
- (E) **Open Dating of Frozen and Long Shelf Life Food Products.** A manufacturer, processor, repacker, retailer, or other person who prepackages frozen or long shelf

life food products may mark the individual retail packages of such products with a “sell by date” or a “best if used by date,” but shall be subject to the requirements as to form outlined in 105 CMR 520.119(G).

- (F) Sale of Past Date Food Products. No person shall offer for sale in the Commonwealth any food product after the expiration of a “sell by date” or a “best if used by date” unless:
- (1) It is wholesome and its sensory physical qualities have not significantly diminished; and,
 - (2) It is segregated from food products which are not “past date”; and,
 - (3) It is clearly and conspicuously marked either on the package or through the use of shelf markers or placecards, as being offered for sale after the recommended last date of sale or best use.
- (G) (1) Placement of the Date. A date shall be displayed with the term “sell by” or “best if used by” in reasonable proximity to the designated date.
- (2) Such a date shall consist of the common abbreviation for the calendar month and numerals for the day and year, e.g., Feb. 10, 1980; or numerals for the month, day and year, e.g., 2/10/80, except that:
 - (a) Perishable food products need not have the year identification included in the date, and frozen and long shelf life foods need not have the day identification included in the date.
 - (b) Fresh bakery products may be dated with only the day designation, e.g., Monday, or an abbreviation thereof, e.g., Mon.
 - (3) A date shall be accompanied by disclosure of recommended product storage conditions, if such conditions significantly affect the validity of such a date.
 - (4) A date and any recommended storage conditions shall be printed, stamped, embossed, perforated, or otherwise shown on the retail package, a label on such package, or a tag attached to such package in a manner that is easily readable and separate from other information, graphics, or lettering so as to be clearly visible to a prospective purchaser.
 - (5) If a date and recommended storage conditions do not appear on the principal display panel, the information panel, or on another conspicuous portion of the individual retail package, a statement must appear on the principal display or information panel indication where such information can be found elsewhere on the package.
 - (6) An individual prepackaged food product which is not labelled in accordance with the provisions of 105 CMR 520.119 shall be deemed “mis-branded” pursuant to M.G.L. c. 94, § 187.
- (H) Product Rotation, Storage and Handling Information. Any person who prepackages a food product for sale in the Commonwealth shall disclose to the retailer of such product:
- (1) Whether or not such product is open dated
 - (2) Any required or recommended storage or handling conditions.
 - (3) Information to facilitate the sequential rotation of product inventory. Information shall be conveyed in a readily understandable form.
- (I) (1) Factors for Shelf-Life Determination. A person who is responsible for placing a “sell by date” or a “best if used by date” on a food product as required or permitted by these regulations, shall estimate the shelf life of such a product, taking into

- consideration the quality, characteristics, formulation, processing impact, packaging or container and other protective wrapping or coating, typical transportation and storage and display conditions of such a food product.
- (2) Considerations should also include those of the retail store and consumer; and for purposes of estimating shelf life, home storage conditions shall be considered similar to the usual retail store, except that refrigerated food may be calculated using a home temperature storage standard of 40 ¼°F or 4.4 ¼°C.
 - (3) Such factors shall be measured or otherwise determined utilizing testing and sampling procedures customarily utilized by the food industry for such purposes.
- (J) (1) Required Records. A person responsible for estimating the shelf life of a food product shall keep a record of the method used for the determination of such shelf life and the corresponding “sell by date” or “best if used by date.” A record revision is necessary whenever a factor affecting such date determination is altered. Such record shall be retained for not less than six months after the most recent “last date of sale” or “best if used by date” and be available upon written request by the Department.
- (2) If, after conducting an investigation, the Department determines that the date selected is not supported by such records, it may direct the responsible person to change the date in accordance with such findings. Any person aggrieved by such an order shall be afforded the opportunity for hearing; but the order shall not be overturned unless the appellant establishes by clear and convincing evidence that the date originally selected is, in fact, justifiable. The order shall be considered final unless reversed upon such review; and pending review, the affected product may not be offered for sale, unless the date is modified in accordance with the order of the Department.
- (K) (1) Exemptions. 105 CMR 520.101 through 520.205 do not apply to:
- (a) Fresh meat, fresh poultry, fresh fish, fresh fruits, and fresh vegetables offered for sale unpackaged or in a container permitting sensory examination.
 - (b) Salt and crystallized refined sugar.
 - (c) Food products shipped in bulk form for use solely in the manufacture of other foods and not for distribution to the consumer in such bulk form or container.
 - (d) Individually packaged food products which are prepackaged as components of a larger food item, if the larger food item is identified with a date no later than the corresponding date for any such components.
 - (e) Food products prepackaged for retail sale with a net weight of less than 1 ½ ounces.
 - (f) Food products manufactured for sale outside the Commonwealth, processed for sale outside the Commonwealth, or stored for sale outside the Commonwealth.
- (2) Any person may apply to the Department for an exemption from the provisions of 105 CMR 520.000, which exemption shall be granted if the product for which the exemption is sought:
 - (a) Is open dated in accordance with the regulations of another agency; and, compliance with the regulations of another agency; and, compliance with the regulations of the other agency will result in the disclosure of substantially the same information as is required by 105 CMR 520.000; or,

- (b) Has been voluntarily open dated prior to the promulgation of 105 CMR 520.000 in a manner which will result in the disclosure of substantially the same information as is required by 105 CMR 520.000.
- (L) Effective Dates. Notwithstanding any other effective dates set forth in 520.119(L) shall take effect in accordance with the following schedule:
- (1) For perishable food, 105 CMR 520.119(C), the effective date shall be the date on which 105 CMR 520.000 are published March 12, 1981.
 - (2) For semi-perishable foods, 105 CMR 520.119 (C), effective date shall be May 1, 1982.
 - (3) For frozen foods, 105 CMR 520.199(C), the effective date shall be December 1, 1981.
 - (4) For long shelf life foods, 105 CMR 520.119(C), the effective date shall be May 1, 1982.

MICHIGAN

Department of Agriculture

Dairy Division

Regulation No. 408. Fluid Milk and Milk Products

<http://www.state.mi.us/execoff/admincode/data/AC00285/s00408.txt>

(By authority conferred on the department of agriculture by section 1 of Act No.233 of the Public Acts of 1965, as amended, being S288.21 of the Michigan Compiled Laws)

R 285.408.1 Definitions.

Rule 1. (1) “Container” includes the closure.

(2) “Department” means the department of agriculture.

(3) “Date” means the recommended last day of sale.

(4) “Milk and milk products” means and includes cream, light cream, coffee cream, table cream, whipping cream, heavy cream, heavy whipping cream, whipped cream, whipped light cream, whipped coffee cream, whipped table cream, sour cream, cultured sour cream, half-and-half, cultured half-and-half, reconstituted or recombined milk and milk products, concentrated milk and milk products, skim milk, skimmed milk, nonfat milk, lowfat milk, fortified milk and milk products, vitamin D milk and milk products, homogenized milk, flavored milk and milk products, buttermilk, cultured milk, cultured whole milk buttermilk, yogurt, lowfat yogurt, acidified milk and milk products, grade A cottage cheese, grade A lowfat cottage cheese, grade A dry curd cottage cheese, grade A egg nog, and other milk products which may be defined in the future under Act No, 233 of the Public Acts of 1965, as amended, being S288.21 et seq. of the Michigan Compiled Laws.

History: 1954 ACS 89, Eff. Oct. 21, 1976; 1979 AC.

R 285.408.2 Last day of sale.

Rule 2. (1) Each processor and manufacturer of milk and milk products sold in this state shall place on each container of milk and milk products a recommended last day of sale by month and day.

- (2) The date shall be expressed by the first 3 letters of the month followed by the numeral designating the appropriate calendar day, or by designating the calendar month numerically followed by a numeral designating the calendar day. For example, September 9 may be expressed as "Sep. 09" or "9.09." When the numerical expression is used, a day numbering less than 10 shall be shown with a zero as the first digit; for example 01 or 03.
- (3) The date shall appear on that part of the container that is most likely to be displayed, presented, or shown under customary display conditions of sale. However, a cup container may have the date placed on the bottom.
- (4) The date on the container shall be legible and shall not interfere with the legibility of other information required to be on the product.

History: 1954 ACS 89, Eff. Oct. 21, 1976; 1979 AC.

R 285.408.3 Time interval of date.

Rule 3. Processors and manufacturers of milk and milk products shall register the following information with the department on forms provided by the department:

- (a) The assigned date of each milk and milk product processed and the length of time between production and the date. This length of time shall be substantiated by plant records of a testing program conducted by the processor or manufacturer.
- (b) The method of application, and location of the date, for each size and style of container.
- (c) Changes in the time interval of the date prior to the effective day of the change.

History: 1954 ACS 89, Eff. Oct. 21, 1976; 1979 AC.

R. 285.408.4 Flavor.

Rule 4. (1) Milk and milk products shall maintain nutritional levels and shall not have a flavor change before the date.

- (2) The department shall periodically sample and analyze milk and milk products to determine if the flavor has changed by the date. Milk and milk products obtained for analysis by the department prior to the date shall be stored at a temperature of 44 degrees Fahrenheit, plus or minus 1 degree, until analyzed.
- (3) The processor or manufacturer of milk or milk products which do not maintain their flavor until the date shall, upon receipt of written or verbal notice from the department, make the changes necessary to improve product quality or alter the date so as to comply with these rules. The processor manufacturer is not responsible for milk and milk products when the nutritive value loss of flavor deterioration of those products can be determined to be caused by mishandling, improper storage, or lack or refrigeration at points beyond his control.

History: 1954 ACS 89, Eff. Oct. 21, 1976; 1979 AC.

R 285.408.5 Sale after date.

Rule 5. (1) Milk and milk products shall not be offered for sale after the date, unless they are advertised to the final consumer in a prominent manner as being beyond the recommended last day of sale.

(2) The final seller is fully responsible for the proper advertisement of milk and milk products sold beyond the date.

History: 1954 ACS 89, Eff. Oct. 21, 1976; 1979 AC.

MINNESOTA

[Minnesota Statutes Annotated \(1996\)](#)

[Quality Assurance Dating](#)

31.781 Declaration of Policy.

The legislature recognizes the entire food industry in the nation as leaders in the world in providing wholesome, nutritious, fresh and clean food to its citizens and to others. The Minnesota department of agriculture is hereby authorized and directed to promulgate rules which provide for a quality assurance date on perishable foods, to assure this industry's continuation and the degree of improvement reasonable and feasible, so as to provide people with wholesome, nutritious, fresh and clean food.

History: 1973 c 686 s 1; 1985 c 28 s 70

31.782 Definitions.

Subdivision 1. As used in sections 31.781 to 31.789, the following terms shall have the meaning ascribed to them.

Subd. 2. [Repealed, 1996 c 310 s1]

Subd. 3. "Perishable food" means any food intended for human consumption (other than meat and poultry, frozen food, or fresh fruit or vegetables), which has a quality assurance date.

Subd. 4. "Quality assurance date" means any date after which the manufacturer or processor reasonable determines that the product may, by spoilage, wiltage, drying or any other foreseeable and normal natural phenomenon, lose its palatability or its desired or nutritive properties. The date shall include the day, month, and if appropriate, the year.

History: 1973 c 686 s 2

31.783 Rules, Scope.

Subdivision 1. The commissioner shall administer and enforce the provisions of sections 31.781 to 31.789 by rules adopted prior to October 1, 1973 pursuant to the administrative procedure act.

Subd. 2. Perishable foods which bear a quality assurance date of more than 90 days or less from the date of packaging shall be dated in accordance with the rules adopted pursuant to sections 31.781 to 31.789.

Subd. 3. Perishable foods which bear a quality assurance date of more than 90 days from the date of packaging may require dating in accordance with rules adopted pursuant to sections 31.781 to 31.789.

Subd. 4. Whenever the commissioner has reason to believe that any rule adopted pursuant to sections 31.781 to 31.789 is inappropriate or unsuitable to any particular perishable food product or products, the commissioner may, in accordance with the administrative procedure act, waive the application of such rules as to such product or products.

History: 1973 c 686 s 3; 1985 c 248 s 70

31.784 Expiration of Quality Assurance Date.

Nothing contained in sections 31.781 to 31.789 or any rule adopted pursuant hereto shall require the removal from sale of the perishable food product after the expiration of the quality assurance date on the product nor imply that after the expiration of the quality assurance date on the product, the product is not wholesome or save for consumption.

History: 1973 c 686 s 41 1985 c 248 s 70

31.785 Regulations of Other States and the Federal Government.

If any other state, or the federal government, adopts an open dating statute or regulation which provides for information and enforcement equal to or greater than that of sections 31.781 to 31.789, the commissioner may, by rule, exempt any product from the provisions of sections 31.781 to 31.789 if it is in compliance with such other statute or regulation.

History: 1973 c 686 s 5; 1985 c 248 s 70

MISSISSIPPI

[Mississippi Egg Marketing Law and Regulation](#)
[Mississippi Department of Agriculture and Commerce](#)

Regulation No. 1— Date beyond which eggs may not be sold.

All eggs offered for sale in consumer packages (cases, boxes, baskets, or containers) shall be legibly dated (month and day or consecutive day of the year) the day the eggs were packed and may bear an expiration date of no more than (30) days from date of pack, excluding date of pack. Provided, however, notwithstanding a labeled expiration date, all eggs subject to the provisions of the Mississippi Egg Marketing Law shall not be offered for sale or sold when thirty (30) days shall have lapsed since the eggs were packed, excluding date of pack.

Shell eggs labeled AA or Fresh Fancy shall bear in distinctly legible form an expiration date of no more than ten (10) days from date of pack, excluding date of pack. The expiration date shall be stated as the “month” and “day” (i.e., April 3 or 4-3) preceded by the letters EXP or SELL BY. (Adopted March, 1988)

MISSOURI

Voluntary

MONTANA

[Administrative Rules of Montana](#)
[Fluid Milk and Grade A Milk Products](#)
[Sub-Chapter 2](#)
[Milk Freshness Dating](#)

32.8.201 Scope of Rules

- (1) These rules apply to whole milk, low fat milk, nonfat milk, chocolate milk, whipping cream, half and half and/or any other liquid milk product designed to be consumed in the form in which it is packaged, except buttermilk. For purposes of this sub-chapter “milk” means any of the above products.

History: Sec. 81-2-102 MCA; IMP, Sec. 81-2-102 MCA; NEW, 1980 MAE p. 1603, Eff. 7/1/80.)

32.8.202 Time from Processing that Fluid Milk may be Sold for Human Consumption

- (1) No grade A pasteurized milk may be sold, offered for sale, or otherwise disposed of for human consumption at retail or wholesale more than 12 days after pasteurization is completed.
- (2) No grade A raw milk may be sold, offered for sale, or otherwise disposed of for human consumption at retail or wholesale more than 12 days after the bottling is completed.
- (3) For purposes of this rule, the 12 day period ends on the first midnight following 12 consecutive 24 hour days. In no instance may the period be less than 288 hours.

- (4) No grade A pasteurized milk or grade A raw milk may be put in any container marked with a pull date which is more than 12 days after pasteurization or bottling of the milk, whichever is applicable, without notification to the department of both the amount of and state destination of the milk. The department will provide necessary forms for detailing the amount and destination of the milk.
- (5) No grade A pasteurized milk or grade A raw milk put in any container marked with a pull date which is more than 12 days after pasteurization or bottling of the milk, whichever is for human consumption at retail or wholesale in Montana.
- (6) Unless otherwise agreed upon, the person who offers the milk for sale to the public is responsible for removing the milk at the expiration of the 12 days.

History: Sec. 81-2-102 MCA; IMP, Sec. 81-2-102 MCA; NEW, 1980 MAR p. 1603, Eff. 7/1/80; AMD, 1986 MAR p. 50, Eff. 1/17/86; AMD, 1987 MAR p. 698, Eff. 5/29/87.

32.8.203 Labeling of Milk Containers to Show Last Day of Legal Sale

- (1) Each container into which grade A pasteurized or grade A raw milk is placed for sale for human consumption must be marked with a pull date. The date will state in arabic numerals or standard abbreviations for months, the month and day which is the last day the milk may be sold as set forth in ARM 32.8.202.
- (2) Language in substance the same as “sell by” or “not to sold after” must be placed by the date in a manner which clearly shows that the milk must be sold by the data on the container.
- (3) No person, other than the packager of the milk, may mark the package with a pull date without permission of the department of livestock.

History: Sec. 81-2-102 MCA; IMP, Sec. 81-2-102 MCA; NEW, 1980 MAR p. 1603, Eff. 7/1/80; AMD, 1987 MAR p. 698, Eff. 5/29/87)

32.8.204 Exemption from Labeling Requirement

- (1) Licensed grade A raw milk dairies are exempt from the labeling requirements imposed by ARM 32.8.203 when all milk packaged for human consumption is sold directly to the consumer either at the licensed retail raw dairy or through a delivery route directly operated by the licensed retail raw dairy.

History: Sec. 81-2-102 MCA; IMP, Sec. 81-2-102 MCA; NEW, 1980 MAR p. 1603, Eff. 7/1/80.)

32.8.205 Manner, Positioning, and Size of Labeling

NEBRASKA

www.agr.state.ne.us

(66) Reduced Oxygen Packaging

- (a) “Reduced oxygen packaging” means the reduction of the amount of oxygen in a PACKAGE by mechanically evacuating the oxygen; displacing the oxygen with another gas or combination of gases; or otherwise controlling the oxygen content in a PACKAGE to a level below that normally found in the surrounding atmosphere, which is 21% oxygen.
- (b) “**Reduced oxygen packaging**” includes methods that may be referred to as altered atmosphere, modified atmosphere, controlled atmosphere, low oxygen, and vacuum PACKAGING including sous vide.

81-2,272.27. Food establishment; reduced oxygen packaging method; when.

- (2) A food with a high level of competing organisms such as raw meat, raw poultry, semi-soft cheese containing live active starter culture organisms may be packaged using a reduced oxygen method. Such products shall be labeled with a “sell by” or “use by” date not to exceed fourteen days and shall be discarded if not sold by that date.
- (4) Except as provided in subdivision (2) of this section, products packaged using a reduced oxygen method shall be discarded if not sold within thirty days from processing if the food is processed by a food processing plant that has been repackaged by the food establishment shall be discarded if not sold within fourteen days from packaging by the food establishment or the original manufacturers “sell by” or “use by” date, whichever occurs first.
- (5) Except as provided in subdivision (2) of this section, products packaged using a reduced oxygen method shall be labeled with a “sell by” or “use by” date which is not more than thirty days from the date it was processed by the food establishment. Food processed by a food processing plant that has been repackaged by the food establishment shall be labeled with a “sell by “ or a “use by” date which is not more than fourteen days from the date it was repackaged by the food establishment or the original manufacturer’s “sell by” or “use by” date, whichever occurs first.

[Nebraska Graded Egg Act and Rules and Regulations](#)

2-3509 Shell eggs; sold without designation of date packed; unlawful.

It shall be unlawful to sell shell eggs in any carton or container which fails to show the date of the year on which the egg were packed.

NEVADA

Voluntary

NEW HAMPSHIRE

New Hampshire Department of Agriculture, Markets & Food Weights and Measures Rules

Chapter 1400

PART Agr 1413

Dating Prewrapped Sandwiches

Agr 1413.03 Definitions. The following words shall have the meanings indicated when used in this chapter:

- (c) “Expiration date” means the last day of sale, printed or stamped on a prewrapped sandwich, determined in accordance with these rules.
- (f) “Prewrapped sandwich” means any sandwich containing meat, poultry, seafood, vegetables, cheese or mayonnaise, enclosed in a wrapper, stored in a refrigerator for future consumption and offered for sale or sold to the public, which is not intended or expected to be consumed within 36 hours after wrapping. This does not include sandwiches which are sterilized and vacuum packed.

Agr 1413.04 Expiration Date

- (a) The expiration date for a refrigerated prewrapped sandwich shall be a maximum of 7 days from the date the sandwich is made, but can be less than 7 days, as determined by the vendor in accordance with 1413.04 (d) & (e).
- (b) The expiration date for a frozen prewrapped sandwich shall be a maximum of 14 days from the date the sandwich is made, but can be less than 14 days, as determined by the vendor in accordance with 1413.04 (d) & (e).
- (c) The expiration date shall be printed or stamped on the sandwich wrapper, at the time it is wrapped, by stating “expiration date: or “sell by: followed by the month and day.
- (d) The expiration date shall be determined by the vendor who makes the prewrapped sandwiches. The vendor shall determine a date which allows a reasonable period after sale for consumption of the food without physical spoilage. This determination shall take into consideration the food quality and characteristics, packaging and other protective wrapping, coating or container, transportation and storage conditions, and retail storage and display conditions. The temperature and humidity of storage and display areas for perishable food, at all stages prior to retail sale, shall also be factors in determining the expiration date.
- (e) The determination of a reasonable period for consumption shall be based upon refrigeration temperatures of less than 40 degrees Fahrenheit, or 4.4 degrees Celsius or, if frozen, less than 0 degrees Fahrenheit, or -17.8 degrees Celsius.
- (f) A retailer who purchases prewrapped sandwiches may, upon written agreement with the vendor, determine, identify and be responsible for the date placed on each prewrapped sandwich.
- (g) The person responsible for establishing the date for perishable food shall keep a record of the method of determination of the date. Such record shall be retained for at least 6 months.

Agr 1413.05 Complaint

A complaint may be filed by any person, in accordance with the following provisions:

- (a) A complaint shall be sent by first class mail to the department of agriculture, containing the following:
 - (1) The complainant's name and address;
 - (2) The alleged violator's name and address;
 - (3) The specific fact and circumstances which constitute a violation shall be as follows:
 - (a) No stated expiration date on a prewrapped sandwich; or
 - (b) The prewrapped sandwich is for sale past the expiration date.
 - (4) The signature of the complainant.

Agr 1413.06 Investigation.

Upon receipt of a complain, the commissioner shall inspect the alleged violator's premises, in accordance with Agr 1413.07, to determine whether there is or was a violation of RSA 438:26-b, or an rule or order of the commissioner.

Agr 1413.07 Right of Inspection.

- (a) The commissioner shall enter the premises of any vendor or retailer, stop any person on the premises and seize any packages sold in violation of the law, without a formal warrant, pursuant to RSA 438:15.
- (b) The commissioner shall inspect the premises of a vendor or retailer at any time during business hours to determine whether there is a violation of RSA 438:26-b or a rule or order issued thereunder.

Agr 1413.08 Orders.

- (a) The commissioner shall issue an order when there is no stated expiration date on a prewrapped sandwich or the prewrapped sandwich is for sale past the expiration date.
- (b) The order shall require elimination of the violation by removal of the noncomplying prewrapped sandwich, in accordance with RSA 438:12.
- (c) The order shall state a proposed administrative fine, not to exceed \$1000 for each violation, pursuant to RSA 438:40 (IV).
- (d) If the recipient of the order has no expiration date printed on the prewrapped sandwiches, the commissioner shall issue a stop-use order. The prewrapped sandwiches shall be allowed back on sale if the recipient of the stop-use under establishes within 4 hours an appropriate expiration date and prints it on the prewrapped sandwich(es).

- (e) If the recipient of the order has kept the prewrapped sandwich(es) on the refrigerator shelf past its expiration date, the commissioner shall issue a stop-removal order, in accordance with RSA 438:13. The recipient of this order shall remove the offending sandwiches from his/her premises within 24 hour of its issuance.

Agr 1413.09 Appeal

After an order has been issued by the commissioner the violator may appeal, pursuant to RSA 438:7 III, to the commissioner or to the superior court.

[Uniform Open Dating Regulation](#)

[As adopted by The National Conference on Weights and Measures](#)

[\(Attached to the back of these regulations\)](#)

Mandatory compliance to the Uniform Open Dating Regulation.

NEW JERSEY

[Regulations Establishing Definitions and Standards of Identity for Designated Fluid Milk Products, and Sanitary Requirements for the Production and Processing of Milk and Fluid Milk Products \(Effective December 29, 1993\)](#)

SUBCHAPTER 10. DESIGNATED FLUID MILK PRODUCTS

8:21-10.1 Definitions and products standards

The following words and terms, when used in this chapter, shall have the following meanings unless the context clearly indicates otherwise. The following standards of identity conform to the Code of Federal Regulations for milk and cream (21 CFR 131).

8:21-10.12 Dating of milk and fluid milk products

- (a) Fluid milk products as defined in N.J.S.A. 24:10-57.1 and all types and varieties of cottage and soft cheeses designated by the Department, intended for direct sale to consumers, shall be legibly marked with a “shelf-life expiration date.” This date shall be determined and applied on the final consumer package or container by the initial processor or manufacturer. Prior to determining this date, each processor or manufacturer shall notify the Department of the intended date selected by him for each fluid milk product. All data and material used by the processor or manufacturer in his determination of this date shall be made available to the Commissioner upon request. If the data and material submitted does not, in the opinion of the Commissioner, justify the “shelf-life expiration date,” the Commissioner shall prohibit the sale of the product until such time as satisfactory data is supplied or until

a new “shelf-life expiration date,” the Commissioner shall prohibit the sale of the product until such time as satisfactory data is supplied or until a new “shelf-life expiration date” consistent with the data is applied to the product.

- (b) The packages or containers shall be marked with the legend “not to be sold after,” or “sell by,” or any other clearly understandable legend approved by the Department, followed by the “shelf-life expiration date”. The designation of the month and date of the month after which the product shall not be sold may be numerical, such as “9-15” or 09 15” for September 15 or with the use of an abbreviation for the month such as “Sep 15” or “Se 15”.
- (c) The shelf-life expiration date “shall appear in a clear and legible manner and shall be placed on the part of the package or container most likely to be displayed, presented, or shown or examined under customary conditions of display for retail sale, and shall not interfere with the legibility of other mandatory labeling requirements of the product. However, cup containers that are labeled with the date on the bottom of the container shall have displayed on the cap or other conspicuous position information indicating the location of the date. The same provision applies for dates molded into plastic containers. Individual portion-pak containers not intended for direct resale to consumers shall be exempted, provided the bulk container which they are distributed is properly date. Containers and packages of frozen cream and frozen desserts mixes not intended for resale to consumers shall also be exempted from the provisions of this regulation.
- (d) No milk product referred to in this regulation shall be sold or offered for sale after 11:59 P.M. of the date appearing on the package or container. Products delivered prior to the “shelf-life expiration date” may be consumed on the premise beyond the date appearing thereon.

[New Jersey Statutes Annotated](#)
[Dairy Products](#)

24:10-57.23. Containers for milk and fluid milk products; dating and labeling; shelf life expiration date; shelf-life tests

Containers of milk, certified milk, Vitamin D milk, homogenized milk, low fat milk, protein fortified low fat milk, skim milk, protein fortified skim milk, nonfat milk, protein fortified nonfat milk, flavored milks and dairy drinks, buttermilk, cultured buttermilk, yogurt, eggnog, creams, half-and-half and all other fluid milk products designated by the department shall be marked with the name and address of the processor or the pasteurizing plant number as assigned by the department or the state of origin and the name and address of the distributor. All containers of fluid milk products, including those products which are sterilized and package in hermetically sealed containers”, shall be marked with a legend “NOT TO BE SOLD AFTER”, or “SELL BY”, or any other clearly understandable legend approved by the department, followed or accompanied by the first three letters of the month where possible, but in no instance less than two letters, or numerical designation approved by the department to designate the month and the day of the month which shall be a date established by the processor and which shall be based

on consideration of wholesomeness and consumer palatability of the product. If two letters are used the letters MR shall mean MARCH and MY shall mean MAY; JN shall mean JUNE and JL shall mean JULY. No fluid milk product listed in this section shall be sold or offered for sale after 11:59 p.m. of the date appearing on the containers so marked.

The processor, prior to determining the date beyond which any such fluid milk product may not be sold or offered for sale, shall notify the department of the intended “shelf-life expiration date” selected by him for such fluid milk product intended for sale. All data and material used by the processor or manufacturer in his determination of this date shall be made available to the commissioner upon request. If the data and material submitted does not, in the opinion of the commissioner, justify the “shelf-life expiration date” the commissioner shall prohibit the sale of the product until such time as satisfactory data is supplied or until a new “shelf-life expiration date” consistent with the data is applied to the product.

The department shall periodically review the keeping quality of milk and milk products by scientific shelf-life tests, recognizing the different methods of pasteurization, processing and packaging, to determine that shelf-life expiration dates stated on the containers assure the consumer of acceptable quality milk and milk products when kept under normal storage conditions. Samples for shelf-life evaluation will be obtained at the processing plant, from delivery trucks or from retail outlets. The temperature of the sample at the time of collection shall be officially recorded by the collector. Nothing herein contained shall be construed to prohibit the department from taking special samples for analysis and making special tests in order to assure all milk and milk products comply with the minimum standards of freshness, quality and palatability. In the event the department determines a processor’s or manufacturer’s shelf-life for a given product is improper, the department shall immediately take such samples as are necessary for full and complete recheck of the shelf-life of the product. If the full and complete recheck confirms that the shelf-life of the product is improper, the department shall serve written notice on the processor or manufacturer and the processor or manufacturer immediately upon receipt of such notice shall alter the shelf-life expiration date of the product to comply with the department findings. Compliance shall be with the next processing of the product after receipt of such department notice. This rule does not apply to containers of fluid milk products which are not to sold in the State of New Jersey.

L.1964, c. 62, § 23, eff. May 18, 1964. Amended by L.1967, c. 92, § 1, eff. June 8, 1967; L.1972, c. 52, § 3, eff. June 1, 1972, operative Dec. 1, 1972; L.1979, c. 330, eff. Jan. 21., 1980; L.1992, c. 151, § 1, eff. Nov. 24, 1992.

NEW MEXICO

www.nmdaweb.nmsu.edu

5.OPEN DATE LABELING FOR DAIRY PRODUCTS

- a. Definitions: As used in this regulatory order:
- (1) “pull date” means the last day on which a product is to be sold or offered for sale for human consumption.
 - (2) “cultured product” means the product resulting from the souring by lactic acid producing bacteria or similar culture of a milk product.
 - (3) “sterilized product” means a product that has been heated to a temperature of two hundred twelve (212°) degrees Fahrenheit or higher for a length of time sufficient to kill all organisms present.
 - (4) “hermetically sealed product” means a product packaged in such a way as to be impervious to air and gasses, thus preventing microbial spoilage.
 - (5) “ultra-pasteurized” means a product thermally processed at two hundred and eighty (280°) degrees Fahrenheit or higher for at least two (2) seconds followed by aseptic packaging so as to produce a product which has an extended shelf life under refrigerated conditions.
 - (6) “dairy dessert mixes” means a product in fluid form intended to be used for dessert purposes and shall include, but not be limited to ice milk mix, ice cream mix, mellorine mix, yogurt mix, eggnog, or other product of similar nature.
- b. Labeling Requirements for Dating: Superseded by NMDA Rule No. 93-1.
- c. Dating Expression: The pull date shall be expressed numerically or by the first three letters of the month followed by the numeral or numerals constituting the appropriate calendar date. For example: December 1 may be expressed “Dec 1” or “12 01.” A space, slash, or dash shall appear between the month and day.
- d. Dating Location: The pull date shall appear in such a location on the container to be easily located and seen by the purchaser. The method of dating shall not interfere with legibility of other mandatory labeling requirement of the container.
- e. Exempt Products: Those products sold directly to the consumer by a processor or producer distributor and all cultured, sterilized, ultra-pasteurized, or hermetically sealed products and dairy dessert mixes shall be exempt from pull date requirements. At the option of the processor, exempt products may be labeled with a pull date determined by the processor.
- f. Compliance: Dairy products required to be labeled with a pull date, and those dairy products labeled with an optional pull date, except frozen, dried, condensed, or evaporated products may not be sold or offered for sale for human consumption by any person after the pull date.
- g. Emergency Waiver: Any or all of the provisions of this regulation may be temporarily waived by the Director when he determines, in his discretion, that an emergency warrants such waiver.

NEW YORK

New York City Health Code

Article III Milk and Milk Products

111.33 Standards generally; time of delivery

No person shall possess, store, offer for sale, sell, give away or distribute milk, low sodium milk, low fat milk, skimmed milk, modified milk, cream or half and half after the expiration date indicated on the label required pursuant to Section 111.61. No person shall possess, store, offer for sale, sell, give away or distribute any such product the label of which bears an expiration date beyond the period specified in this section. The expiration date shall not be more than 96 hours after six a.m. following pasteurization. However, in the case of such milk and milk products which have been ultra-pasteurized pursuant to subsection (d) of Section 111.25, the expiration date shall not be more than fifteen (15) calendar days after six a.m. following ultra-pasteurization. This section does not apply to cans of milk or cream to be used for manufacturing purposes or to milk or milk products which are not to be sold in the City of New York.

NOTES: This section was originally derived from S.C. §156 Regs.51 and 155 (4). The new Health Code which became effective on October 1, 1959 contained a §111.33 which read the same as it did prior to the amendment hereafter referred to which was adopted on June 14, 1966. That section was repealed by resolution adopted on May 20, 1960 after §1400 of the Public Health Law was amended by the State Legislature so as to prohibit local boards of health from adopting and enforcing milk dating regulations. When that section was again amended by the State Legislature during the 1962 session by removing such prohibition this section was reenacted by resolution adopted on March 6, 1962.

The section was amended by resolution adopted on June 14, 1966, which changed the dating requirement in relation to the period beyond which milk and other milk products may not be possessed or sold. Formerly such period was 54 hours after the day of distribution in the case of milk and 72 hours after distribution in the case of cream and half and half. Under the section as amended such period is 66 hours from the day of pasteurization and the former distinction in this respect between milk, cream and half and half was eliminated. In addition, the dating requirement was made inapplicable to the products enzyme milk, flavored milk and flavored drink.

This section was further amended by resolution adopted on January 16, 1975 to add a dating requirement for ultra-pasteurized milk and milk products for which Federal standards of identity and quality were recently promulgated (21 CFR Part 18, revised September 28, 1973).

This section was further amended by resolution adopted on November 16, 1978 to extend the period from 66 hours to 96 hours from the day of pasteurization in which milk and milk products may be possessed or sold.

Section 111.25 Standards generally; pasteurization or ultra-pasteurization of milk and milk products required

Section 111.61 Labeling of containers

NORTH CAROLINA

North Carolina Administrative Code
Agriculture—Food and Drug Protection Division

Section .0500—Smoked and Smoke-Flavored Fish

.0502 Definitions

The following definitions apply:

- (1) “Smoked fish” means any fish that is prepared by treating it with salt (sodium chloride) and then subjecting it to the direct action of smoke from burning wood, sawdust, or similar material.
- (2) “Smoked-flavored fish” means any fish that is prepared by treating it with salt (sodium chloride) and then imparting to it the flavor of smoke by other than the direct action of smoke. This Paragraph does not alter the labeling requirements.
- (3) “Hot process smoked or hot-process smoke-flavored fish” means the finished food prepared by subjecting forms of smoked fish to heat.

History Note: Statutory Authority G.S. 106-139; 106-267; 106-267.2; Eff. January 1, 1985

.0507 Processes and Controls

(e) Packing

- (5) Permanently legible code marks shall be placed on the outer layer of every finished product package and master carton. Such marks shall identify at least the plant where packed, the date of packing, and the oven load. Records shall be so maintained as to provide positive identification;

History Note: Statutory Authority G.S. 106-139; 106-267;106-267; Eff. January 1, 1985.

NORTH DAKOTA

Voluntary

OHIO

Ohio Department of Agriculture
Division of Food, Dairies and Drugs
Sale Date on Perishable Food Products
Regulations 901:3-57-01 thru 901:3-57-08
Effective January 1, 1977

Regulation 901:3-57-01 Definitions

- (A) “Quality Assurance Period” means the period of time following the completion of normal manufacturing, processing, and packaging procedures during which a food product subjected to normal conditions of exposure will maintain conformity with all of the characteristics normally associated with the food product and will provide the benefits for which the food product is normally purchased. Food product characteristics include, but are not limited to, taste, texture, smell, nutritional value, and reaction value with other food products if used as an ingredient with other food products.
- (B) “Sale Date” means the date by which the manufacturer, processor, or packager of the packaged food product recommends that the food product be sold for consumption based on the food product’s quality assurance period.
- (C) “Packaged Perishable Food Product” means perishable food products packaged in consumer packages.
- (D) “Perishable Food Product” means a food product, determined by the manufacturer to have a quality assurance period of thirty (30) days or less.
- (E) The term “Commodity in package form” shall be construed to mean a commodity put up or packaged in any manner in advance of sale in units suitable for retail sale.
- (F) A “consumer package” shall be construed to mean a commodity in package form that is customarily produced or distributed for sale through retail sales agencies or instrumentalities for consumption by individuals or use by individuals for the purposes of personal care or in the performance of services ordinarily rendered in or about the household or in connection with personal possessions.
- (G) A “nonconsumer package” shall be construed to mean any commodity in package form other than a consumer package, and particularly a package intended solely for industrial or institutional use or for wholesale distribution.

Regulation 901:3-57-02 Food Products Considered Perishable

The manufacturer, processor or packager shall determine which food products manufactured, process or packaged shall be considered perishable.

Regulation 901:3-57-03 Establishing Sale Dates for Perishable Foods

- (A) The manufacturer, processor or packager shall establish the sale date for perishable food products.
- (B) Sale dates established by the original manufacturer, processor or packager shall not be increased by a repacker unless the product has been reprocessed in a manner which would enhance or lengthen the quality assurance period.

Regulation 901:3-57-04 Sale Date—Information and Location

- (A) No person shall knowingly sell a perishable food product in consumer size packages unless the package is clearly marked with a sale date by the packager. No other

similarly stated date may appear on the package. However, nothing in this regulation shall prohibit a coded date, such as a Julian date, which may be required by Federal Law.

- (B) The sale date markings shall be legible to the average consumer under normal conditions of purchase.
- (C) Label declarations—the sale date may be indicated by appropriate descriptive terms such as, “Sell before,” “sell by,” etc. Terminology used to describe the sale date of a perishable food product shall be easily understood by the average consumer.
- (D) Method of dating—The combination of words, numbers and/or abbreviations used to designate the sale date shall be easily understood by the average consumer. Word, numbers or abbreviations such as Nov. 23, 11-23, November 23, etc. are acceptable.

Bakery products with a sale date of less than seven days from the date of packaging may be dated with the days of the week or abbreviations of same in lieu of the foregoing requirements, as follows:

Sunday	SU, SUN	Thursday	TH, THU, THUR
Monday	MO, MON	Friday	FR, FRI
Tuesday	TU, TUES	Saturday	SA, SAT
Wednesday	WE, WED		

- (E) Location of “Sale Date” information—“Sale Date” information shall be located on the package in a manner traditionally established by the trade and recognized by the consumer.

Regulation 901:3-57-05 Duties of Director

The Director is authorized to investigate complaints, to determine whether the sale date for food products as determined by the manufacturer, processor, or packager, is false or misleading to consumers. If the Director finds, upon reasonable cause, that the sale date as determined by the manufacturer, processor, or packager, is false or misleading to the consumer, the Director after reasonable notice and hearing, in accordance with Chapter 119 of the Revised Code, shall establish a sale date for said product.

Regulation 901:3-57-06 Exemptions

The provisions of this regulation do not apply to:

- (A) Fresh fruits or vegetable
- (B) Meat and meat products including poultry and poultry meat products whether package or unpackaged.
- (C) Packaged perishable food products when sold or offered for sale at a place of business where less than one hundred thousand dollars (\$1000,000) of all products were sold during the preceding year.
- (D) Food products in nonconsumer packages.

Regulation 901:3-57-07 Preemption Clause

To ensure that a uniform system of determining the useful product life of perishable food products for sale within the state is established, persons complying with this section and the rules established pursuant thereto are exempt from any local ordinances or rules pertaining to the quality assurance period of food products or the manner in which the quality assurance period and perishability of food products are to be disclosed.

Regulation 901:3-57-08 Penalties

Whoever violates section 3715.171 of the Ohio Revised Code or regulations adopted thereunder is guilty of a minor misdemeanor.

OKLAHOMA

Voluntary

OREGON

Title 49 Food and Other Commodities
(Purity; Sanitation; Grades; Standards; Labels; Weights and Measures)
Chapter 616
1995 Edition

OPEN DATE LABELING

616.800 Short title. ORS 616.800 to 616.835 and 616.994 may be cited as the Open Date Labeling Law. [1973 c. 173 §2]

616.805 Definitions for ORS 616.800 to 616.835 and 616.994. As used in ORS 616.800 to 616.835 and 616.994, unless the context requires otherwise:

- (1) “Food” means any substance used or intended to be used for human consumption as food, drink or condiment.
- (2) “Open date” means a date clearly visible to retail consumers showing the pull date, packing date or other date described in ORS 616.835 (2).
- (3) “Packing date” means the date specifying the time a perishable food was packaged in its final form for sale to the consumer.
- (4) “Perishable food” means any food that may spoil or otherwise become unfit for human consumption because of its nature, type or physical condition. “Perishable food” includes, but is not limited to, fresh or processed meats, poultry, seafood, dairy products, bakery products, eggs in the shell, and foods that have been packaged or

refrigerated. ORS 616.800 to 616.835 and 616.994 shall not apply to fresh fruits or vegetables or to foods that have been canned or frozen.

- (5) "Pull date" means, whichever is earlier, the date specifying the time:
- (a) The perishable food manufacturer, processor or packager recommends that a perishable food should be removed from retail sale, allowing the consumer time for normal home consumption or use under proper care and storage conditions; or
 - (b) A perishable food should no longer be offered for sale or sold as fresh. A perishable food shall be considered fresh only so long as significant changes in appearance, taste, odor, nutritional value, or other indicia of quality or fitness for human consumption have not taken place or are not likely to have taken place under generally accepted food handling practices for that particular food. [1973 c.173 §3]

616.810 Exemption for alcoholic beverages. ORS 616.800 to 616.835 and 616.994 do not apply to alcoholic beverages. [1973 c.173 §9]

616.815 Open date labeling required for packaged perishable food sold at retail. No person shall sell or offer for sale at retail any packaged perishable food unless the package bears a clearly marked, printed or stamped label showing the open date for the perishable food in the package. Such label shall be so designed and placed as to be clearly visible to the consumer. [1973 c.173 §4]

616.820 Label required to be affixed to package not later than time of delivery to retail seller.

- (1) The perishable food manufacturer, processor or packager shall affix, print or stamp the label required by ORS 616.815 to the perishable food retail package and to all closed shipping cartons, containers or wrappers of such perishable food packages not later than the time of delivery of the perishable food packages to the retail seller.
- (2) No perishable food manufacturer, processor or packager shall fail to comply with subsection (1) of this section. [1973 c.173 §5]

616.825 Sale of perishable food after expiration of pull date prohibited; exceptions; time for removal of packages with expired pull dates.

- (1) No person shall sell or offer for sale at retail any packaged perishable food after the expiration of the open pull date appearing on the label of the package or container unless:
 - (a) The package has been separated from packages of perishable food with open pull dates that have not expired;
 - (b) Each such package or group of packages is clearly identified in retail display as having an expired open pull date; and
 - (c) The food is fit for human consumption according to applicable state and federal law.

- (2) Notwithstanding the provisions of this section, a vendor shall be allowed the first eight business hours after the expiration of the open pull date within which to remove all packages with an expired pull date. [1973 c.173 §6]

616.830 Altering labels or using nonconforming labels prohibited. No person shall:

- (1) Alter, deface or remove the open date from any perishable food retail or shipping package carton, container or wrapper.
- (2) Label any perishable food retail or shipping package carton, container or wrapper in a manner that does not conform to the rules promulgated pursuant to ORS 616.835.[1973 c.173 §7]

616.835 Rulemaking authority. In accordance with any applicable provision of ORS 183.310 to 183.550, the department, in consultation with the industries affected, shall promulgate rules to carry out ORS 616.800 to 616.835 and 616.994. Such rules shall include, but are not limited to:

- (1) Establishing which particular foods are subject to ORS 616.800 to 616.835 and 616.994.
- (2) Establishing which one or more of the following types of open date is to be used for particular groups or classes of perishable foods:
 - (a) The packing date.
 - (b) The pull date.
 - (c) The date on which fowl, including chickens, fryers, turkeys, ducks, geese and other domesticated birds, are killed or slaughtered to be processed into perishable food.
- (3) Specifying the size, content and form of the labeling information required by ORS 616.800 to 616.835 and 616.994.
- (4) Exempting from the operation of ORS 616.800 to 616.835 and 616.994 those perishable foods for which open date labeling would be:
 - (a) Impractical or not meaningful because of the size of the package or the nature of the perishable food;
 - (b) Possibly unconstitutional as interference with the free movement of goods in interstate commerce. [1973 c.173 §8]

PENNSYLVANIA

[Commonwealth of Pennsylvania](#)

[Pennsylvania Code](#)

[Title 7. Agriculture](#)

[Part III. Bureau of Foods and Chemistry](#)

[Chapter 59. Milk Sanitation and Standards](#)

§ 59.22. Milk dating.

- (a) The cap or nonglass container of pasteurized milk held in stores, restaurants, schools or similar food establishments for resale shall be conspicuously and legibly marked in a contrasting color with the designation of the month and day of the month after which the product may not be sold or offered for sale. The designation may be numerical—such as “8-15”—or with the use of an abbreviation for the month, such as “AUG 15” or “AU 15.” The words “Sell by” or “Not to be sold after” shall precede the designation of the date, or the statement “Not to be sold after the date stamped above” shall appear legibly on the container. This designation of the date may not exceed 14 days beginning after midnight on the day on which the dairy products were pasteurized. Stores, as used in this subsection, include mercantile establishments which offer milk for sale except on premises where processed.
- (b) The date shall be separate and distinct from any other number, letter or intervening material on the cap or nonglass container.
- (c) Pasteurized milk may not be sold after the date designated on the container.
- (d) Sterile, ultra-pasteurized and cultured dairy products are exempt from the dating requirements.

AUTHORITY: The provisions of this § 59.22 amended under the act of July 2, 1935 (P.L. 589, No. 210) (31 P.S. §§ 645—660g).

SOURCE: The provisions of this § 59.22 amended September 4, 1987, effective September 5, 1988, 17 Pa.B. 3599; amended August 9, 1991, effective August 10, 1991, 21 Pa.B. 3508. Immediately preceding text appears at serial page (160963).

CROSS REFERENCES: This section cited in 7 Pa. Code § 59.21 (relating to general labeling requirements); and 7 Pa. Code § 59.32 (relating to sampling and examination).

RHODE ISLAND

Voluntary

SOUTH CAROLINA

Voluntary

SOUTH DAKOTA

[South Dakota Department of Agriculture](#)

[Law 39-11](#)

[Rules and Regulations](#)

[Article 12:26](#)

[Pertaining to Eggs and Egg Products](#)

Chapter 12:26:10 Labeling and Sales Requirements

12:26:10:01. **Identification and sale of graded eggs.** A person exposing or offering graded eggs for sale to consumers shall comply with the following requirements for identification and sale:

- (3) The expiration date shall be legibly stamped on the outside of each carton. Eggs may be offered for sale for no more than 30 days after the date of pack. The expiration date using the day and the three-letter abbreviation for the month shall be preceded by the letters "EXP";

SOURCE: 2 SDR 7, effective August 4, 1975; 12 SDR 128, 12 SDR 154, effective July 1, 1986; 17 SDR 122, effective February 24, 1991; 19 SDR 61, effective October 26, 1992.

GENERAL AUTHORITY: SDCL 39-11-7.

LAW IMPLEMENTED: SDCL 39-11-7.

TENNESSEE

Voluntary

TEXAS

Voluntary

UTAH

Voluntary

VERMONT

Voluntary

VIRGINIA

Regulations Governing Grade "A" Milk

2VAC5-490-40. Labeling.

<http://leg1.state.va.us/000/reg/TOC02005.HTM#C0490>

- m. The "pull date" which shall not interfere with the legibility of other labeling required for the milk or milk product and shall be expressed by: the first three letters in the name of the month, followed by or preceded by the numeral or numerals constituting the calendar date after which the product shall not be sold or expressed numerically by the number of the month followed by the number of the day. For example, June 1 shall be expressed "JUN 1," "1 JUN," "06 01," or "06-01." Nothing in this chapter pertaining to pull dates shall apply to grade A pasteurized milk and grade A pasteurized milk products bottled in glass containers for home delivery;

- n. The grade A permit holder who operates a milk plant and offers for sale milk or milk product within the Commonwealth shall file and certify with the State Regulatory Authority the maximum number of days after manufacturing or processing the grade A permit holder's milk or milk products which will be used to determine the "pull date." The grade A permit holder shall establish a "pull date" that under normal storage the milk or milk product meets for a minimum of 96 hours after the "pull date," standards set by this chapter;
- o. No person may sell or offer for sale any grade A pasteurized milk, grade A pasteurized milk product, or milk product in a package that does not bear the "pull date;" and
- p. Nothing in this chapter shall apply to containers of grade A pasteurized milk, grade A milk products, or milk products which are not to be sold in the Commonwealth.

WASHINGTON

Chapter 69.04 RCW

Intrastate Commerce in Food, Drugs, and Cosmetics

(Formerly: Food, drug, and cosmetic act)

RCW 69.04.900 Perishable packaged food—Pull date labeling—Definitions. For the purpose of RCW 69.04.900 through 69.04.920:

- (1) "Perishable packaged food goods" means and includes all foods and beverages, except alcoholic beverages, frozen foods, fresh meat, poultry and fish and a raw agricultural commodity as defined in this chapter, intended for human consumption which are canned, bottled, or packaged other than at the time and point of retail sale, which have a high risk of spoilage within a period of thirty days, and as determined by the director of the department of agriculture by rule and regulation to be perishable.
- (2) "Pull date" means the latest date a packaged food product shall be offered for sale to the public.
- (3) "Shelf life" means the length of time during which a packaged food product will retain its safe consumption quality if stored under proper temperature conditions.
- (4) "Fish" as used in subsection (1) of this section shall mean any water breathing animals, including, but not limited to, shellfish such as lobster, clams, crab, or other mollusca which are prepared, processed, sold, or intended or offered for sale. [1974 ex.s. c 57 § 1; 1973 1st ex.s. c 112 § 1.]

RCW 69.04.905 Perishable packaged food—Pull date labeling—Required. All perishable packaged food goods with a projected shelf life of thirty days or less, which are offered for sale to the public after January 1, 1974 shall state on the package the pull date. The pull date must be stated in day, and month and be in a style and format that is readily decipherable by consumers: PROVIDED, That the director of the department of agriculture may exclude the monthly requirement on the pull date for perishable packaged food goods which have a shelf life of seven days or less. No perishable

packaged food goods shall be offered for sale after the pull date, except as provided in RCW 69.04.910. [1974 ex.s. c 57 § 2; 1973 1st ex.s c 112 § 2.]

RCW 69.04.910 Perishable packaged food—Pull date labeling—Selling or trading goods beyond pull date—Repackaging to substitute for original date—Exception.

No person shall sell, trade or barter any perishable packaged food goods beyond the pull date appearing thereon, nor shall any person rewrap or repackage any packaged perishable food goods with the intention of placing a pull date thereon which is different from the original: PROVIDED, HOWEVER, That those packaged perishable food goods whose pull dates have expired may be sold if they are still wholesome and are without danger to health, and are clearly identified as having passed the pull date. [1973 1st ex.s. c 112 § 3.]

RCW 69.04.915 Perishable packaged food—Pull date labeling—Storage—Rules and regulations.

The director of the department of agriculture shall by rule and regulation establish uniform standards for pull date labeling, and optimum storage conditions of perishable packaged food goods. In addition to his other duties the director, in consultation with the secretary of the department of health where appropriate, may promulgate such other rules and regulations as may be necessary to carry out the purposes of RCW 69.04.900 through 69.04.920. [1989 1st ex.s. c 9 § 225; 1973 1st ex.s. c 112 § 4.]

Effective date—Severability—1989 1st ex.s. c 9: See RCW 43.70.910 and 43.70.920.

RCW 69.04.920 Perishable package food—Pull date labeling—Penalties. Any person convicted of a violation of RCW 69.04.905 or 69.04.910 shall be punishable by a fine not to exceed five hundred dollars. [1973 1st ex.s. c 112 § 5.]

WEST VIRGINIA

[West Virginia Code \(1996\)](#)

§ 47-1-9. Requirements for open dating.

The uniform open dating regulation as adopted by the national conference on weights and measures and published in national institute of standards and technology handbook 130, “Uniform Laws and Regulations” and supplements thereto and revisions thereof, shall apply to open dating in the state, except insofar as modified or rejected by legislative rule. (1994, c. 178.)

[\(A copy of the uniform open dating regulation is attached to the back of this document.\)](#)

WISCONSIN

Agriculture, Trade & Consumer Protection Chapter ATCP 70 Food Processing Plants

ATCP 70.22 Labeling and sale of smoked fish.

- (1) Every food package containing smoked fish shall be clearly and conspicuously labeled, on the principal display panel of that package, with all of the following information:
 - (f) The processing date of the smoked fish.
 - (g) The last date on which the smoked fish may be sold at retail, which shall be not more than 17 days after the processing date under par. (f). This paragraph does not apply to any of the following:
 1. Smoked fish which are distributed and sold in a frozen state.
 2. Smoked fish which are clearly labeled to indicate that they must be cooked by the consumer prior to consumption.
 3. Smoked fish which have more than 10% salt content.
 4. Smoked fish which are specifically exempted by the department in writing.
- (2) Smoked fish shall not be sold more than 17 days after the date of processing unless the smoked fish are exempt under sub. (1)(g).
- (3) Smoked fish processed on different dates may not be commingled in the same container, either at the processing plant or while the fish is being stored, distributed or offered for sale at the wholesale or retail.
- (4) No person may misrepresent a smoked fish processing date, or sell or distribute smoked fish under any processing date other than the original processing date stated by the processor.
- (5) Food consisting of or containing smoked fish shall be immediately removed from sale, and shall be destroyed or treated to render it unattractive and unfit for human consumption, if any of the following occurs:
 - (a) The food package is not labeled with a processing date.
 - (b) The food package is not labeled with a final date of sale unless its smoked fish contents are exempt under sub. (1)(g).
 - (c) The food is not sold at retail within 21 days after the date on which its smoked fish contents were smoked, unless the smoked fish are exempt under sub. (1)(g).
 - (d) The food is held at a temperature above 38°F. (3.4°C.) at any time prior to retail sale. This paragraph does not apply to a food which the department specifically exempts in writing because it is not a potentially hazardous food.

WYOMING

Voluntary

Council Directive of 18 December 1978 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs (79/112/EEC)

*as adopted by
Food Law in the EU Version 1:2. Published by Chapman & Hall*

Note: This Directive is amended by:

Directive 97/4/EEC of the European Parliament and of the Council

ARTICLE 1

1. This Directive concerns the labelling of foodstuffs to be delivered as such to the ultimate consumer and certain aspects relating to the presentation and advertising thereof.
2. This Directive shall apply also to foodstuffs intended for supply to restaurants, hospitals, canteens and other similar mass caterers (hereinafter referred to as “mass caterers”).
3. For the purpose of this Directive,
 - (a) “Labelling” shall mean any words, particulars, trade marks, brand name, pictorial matter or symbol relating to a foodstuff and placed on any packaging, document, notice, label, ring or collar accompanying or referring to such foodstuff;
 - (b) “Pre-packaged foodstuff” shall mean any single item for presentation as such to the ultimate consumer and to mass caterers, consisting of a foodstuff and the packaging into which it was put before being offered for sale, whether such packaging encloses the foodstuff completely or only partially, but in any case in such a way that the contents cannot be altered without opening or changing the packaging.

ARTICLE 2

1. The labelling and methods used must not:
 - (a) Be such as could mislead the purchaser to a material degree, particularly:
 - (i) As to the characteristics of the foodstuff and, in particular, as to its nature, identity, properties, composition, quantity, durability, origin or provenance, method of manufacture or production,
 - (ii) By attributing to the foodstuff effects or properties which it does not possess,
 - (iii) By suggesting that the foodstuff possesses special characteristics when in fact all similar foodstuffs possess such characteristics;

- (b) subject to Community provisions applicable to natural mineral waters and foodstuffs for particular nutritional uses, attribute to any foodstuff the property of preventing, treating or curing a human disease, or refer to such properties.
- 2. The Council, in accordance with the procedure laid down in Article 100 of the Treaty, shall draw up a non-exhaustive list of the claims within the meaning of paragraph 1, the use of which must at all events be prohibited or restricted.
- 3. The prohibitions or restrictions referred to in paragraphs 1 and 2 shall also apply to:
 - (a) The presentation of foodstuffs, in particular their shape, appearance or packaging, the packaging materials used, the way in which they are arranged and the setting in which they are displayed;
 - (b) Advertising.

ARTICLE 3

- 1. In accordance with Articles 4 to 14 and subject to the exceptions contained therein, indication of the following particulars alone shall be compulsory on the labelling of foodstuffs:
 - (1) The name under which the product is sold,
 - (2) The list of ingredients,
 - (3) In the case of prepackaged foodstuffs, the net quantity,
 - (4) The date of minimum durability or, in the case of foodstuffs which, from the microbiological point of view, are highly perishable, the "use by" date,
 - (5) Any special storage conditions or conditions of use,
 - (6) The name or business name and address of the manufacturer or packager, or of a seller established within the Community.

However, the Member States shall be authorized, in respect of butter produced in their territory, to require only an indication of the manufacturer, packager or seller.

Without prejudice to the notification provided for in Article 22, Member States shall inform the Commission and the other Member States of any measure taken pursuant to this paragraph,

- (7) Particulars of the place of origin or provenance in the cases where failure to give such particulars might mislead the consumer to a material degree as to the true origin or provenance of the foodstuff,
 - (8) Instructions for use when it would be impossible to make appropriate use of the foodstuff in the absence of such instructions,
 - (9) With respect to beverages containing more than 1,2% by volume of alcohol, the actual alcoholic strength by volume.
- 2. Notwithstanding the previous paragraph, Member States may retain national provisions which require indication of the factory or packaging centre, in respect of home production.

3. The provisions of this Article shall be without prejudice to more precise or more extensive provisions regarding weights and measures.

ARTICLE 4

1. Community provisions applicable to specified foodstuffs and not to foodstuffs in general may provide for derogations, in exceptional cases, from the requirements laid down in Article 3 (1), points 2 and 4, provided that this does not result in the purchaser being inadequately informed.
2. Community provisions applicable to specified foodstuffs and not to foodstuffs in general may provide that other particulars in addition to those listed in Article 3 must appear on the labelling.

Where there are no Community provisions, Member States may make provision for such particulars in accordance with the procedure laid down in Article 16.

3. The Community provisions referred to in paragraphs 1 and 2 shall be adopted in accordance with the procedure laid down in Article 17.

ARTICLE 5

1. The name under which a foodstuff is sold shall be the name laid down by whatever laws, regulations or administrative provisions apply to the foodstuff in question or, in the absence of any such name, the name customary in the Member State where the product is sold to the ultimate consumer and to mass caterers, or a description of the foodstuff and, if necessary, of its use, that is sufficiently precise to inform the purchaser of its true nature and to enable it to be distinguished from products with which it could be confused.
2. No trade mark, brand name or fancy name may be substituted for the name under which the product is sold.
3. The name under which the product is sold shall include or be accompanied by particulars as to the physical condition of the foodstuff or the specific treatment which it has undergone (e.g. powdered, freeze-dried, deep-frozen, concentrated, smoked) in all cases where omission of such information could create confusion in the mind of the purchaser.

Any foodstuff which has been treated with ionizing radiation must bear one of the following indications:

In English:	‘irradiated’ or ‘treated with ionizing radiation’
In Spanish:	‘irradiado’ or ‘tratado con radiacion ionizante’
In Danish:	‘bestralet/...’ or ‘stralekonserveret’ or ‘behandlet med ioniserende straling’ or ‘konserveret med ioniserende straling’
In German:	‘bestrahlt’ or ‘mit ionisierenden Strahlen behandelt’
In Greek:	‘...’
In French:	‘traite par rayonnements ionisants’ or ‘traite par ionisation’

- In Italian: 'irradiato' or 'trattato con radiazioni ionizzanti'
In Dutch: 'doorstraald' or 'door bestraling behandeld' or 'met ioniserende stralen behandeld'
In Portuguese: 'irradiado' or 'tratado por irradiacoes' or 'tratado por radiacao ionizante'
In Finnish: 'sateilytetty, kasitelty inoisoivalla sateilylla'
In Swedish: 'bestralad, behandlad med johiserande stralning'

ARTICLE 6

1. Ingredients shall be listed in accordance with this Article and the Annexes.
2. Ingredients need not be listed in the case of:
 - (a) -- fresh fruit and vegetables, including potatoes, which have not been peeled, cut or similarly treated,
-- carbonated water, the description of which indicates that it has been carbonated,
-- fermentation vinegars derived exclusively from a single basic product, provided that no other ingredient has been added;
 - (b) --cheese,
--butter,
--fermented milk and cream,

Provided that no ingredient has been added other than lactic products, enzymes and micro-organism cultures essential to manufacture, or the salt needed for the manufacture of cheese other than fresh cheese and processed cheese;

- (c) Products consisting of a single ingredient.
3. In the case of beverages containing more than 1,2% by volume of alcohol, the Council, acting on a proposal from the commission, shall, before the expiry of a period of four years following notification of this directive, determine the rules for labelling ingredients.
4. (a) "Ingredient" shall mean any substance, including additives, used in the manufacture or preparation of a foodstuff and still present in the finished product, even if in altered form.
 - (b) Where an ingredient of the foodstuff is itself the product of several ingredients, the latter shall be regarded as ingredients of the foodstuff in question.
 - (c) The following shall not be regarded as ingredients:
 - (i) The constituents of an ingredient which have been temporarily separated during the manufacturing process and later reintroduced but not in excess of their original proportions;
 - (ii) -- additives:
 - whose presence in a given foodstuff is solely due to the fact that they were contained in one or more ingredients of that foodstuff, provided that they serve no technological function in the finished product,

- which are used as processing aids;
 - substances used in the quantities strictly necessary as solvents or media for additives or flavouring.
- (d) In certain cases decisions may be taken in accordance with the procedure laid down in Article 17 as to whether the conditions described in (c) (ii) are satisfied.
5. (a) The list of ingredients shall include all the ingredients of the foodstuff, in descending order of weight, as recorded at the time of their use in the manufacture of the foodstuff. It shall appear preceded by a suitable heading which includes the word “ingredients”.

However:

- Added water and volatile products shall be listed in order of their weight in the finished product; the amount of water added as an ingredient in a foodstuff shall be calculated by deducting from the total amount of the finished product the total amount of the other ingredients used. This amount need not be taken into consideration if it does not exceed 5% by weight of the finished product;
 - Ingredients used in concentrated or dehydrated form and reconstituted at the time of manufacture may be listed in order of weight as recorded before their concentration or dehydration;
 - In the case of concentrated or dehydrated foods which are intended to be reconstituted by the addition of water, the ingredients may be listed in order of proportion in the reconstituted product provided that the list of ingredients is accompanied by an expression such as “ingredients of the reconstituted product”, or “ingredients of the ready-to-use product”;
 - In the case of mixtures of fruit or vegetables where no particular fruit or vegetable significantly predominates in proportion by weight, those ingredients may be listed in another order provided that that list of ingredients is accompanied by an expression such as “in variable proportion”;
 - In the case of mixtures of spices or herbs, where none significantly predominates in proportion by weight, those ingredients may be listed in another order provided that that list of ingredients is accompanied by an expression such as “in variable proportion”;
- (b) Ingredients shall be designated by their specific name, where applicable, in accordance with the rules laid down in Article 5.

However:

- Ingredients which belong to one of the categories listed in Annex I and are constituents of another foodstuff may be designated by the name of that category only. Alterations to the list of categories in Annex I may be effected in accordance with the procedure laid down in Article 17;
- Ingredients belonging to one of the categories listed in Annex II must be designated by the name of that category, followed by their specific name or EEC number; if an ingredient belongs to more than one of the categories, the

category appropriate to the principal function in the case of the foodstuff in question shall be indicated; amendments to this Annex based on advances in scientific and technical knowledge shall be adopted in accordance with the procedure laid down in Article 17;

- Flavourings shall be designated in accordance with Annex III to this Directive.
- These provisions shall be adopted in accordance with the procedure laid down in Article 17;
- The specific Community provisions governing the indication of treatment of an ingredient with ionizing radiation shall be adopted subsequently in accordance with Article 100a of the Treaty.

6. Community provisions or, where there are none, national provisions may lay down that the name under which a specific foodstuff is sold is to be accompanied by mention of a particular ingredient or ingredients. The procedure laid down in Article 16 shall apply to any such national provisions.

The Community provisions referred to in this paragraph shall be adopted in accordance with the procedure laid down in Article 17.

7. In the case referred to in paragraph 4 (b), a compound ingredient may be included in the list of ingredients, under its own designation in so far as this is laid down by law or established by custom, in terms of its overall weight, provided that it is immediately followed by a list of its ingredients.

Such a list, however, shall not be compulsory:

- where the compound ingredient constitutes less than 25% of the finished product; however, this exemption shall not apply in the case of additives, subject to the provisions of paragraph 4 (c),
- where the compound ingredient is a foodstuff for which a list of ingredients is not required under Community rules.

8. Notwithstanding paragraph 5 (a), the water content need not be specified:
 - (a) Where the water is used during the manufacturing process solely for the reconstitution of an ingredient used in concentrated or dehydrated form;
 - (b) In the case of a liquid medium which is not normally consumed.

ARTICLE 7

1. Where the labelling of a foodstuff places emphasis on the presence or low content of one or more ingredients which are essential to the specific properties of the foodstuff, or where the description of the foodstuff has the same effect, the minimum or maximum percentage, as the case may be, used in the manufacture thereof shall be stated.

This information shall appear either immediately next to the name under which the foodstuff is sold or in the list of ingredients in connection with the ingredient in question.

In accordance with the procedure laid down in Article 17, it may be decided that, in the case of certain ingredients, the percentage referred to in this paragraph shall be expressed in absolute terms.

2. Paragraph 1 shall not apply:
 - (a) In the case of labelling which is intended to characterize a foodstuff in accordance with Article 5 (1) or which is required under community provisions or, where there are none, under national provisions applicable to certain foodstuffs;
 - (b) In the case of ingredients used in small quantities only as flavourings.
3. Community provisions or, where there are none, national provisions may stipulate for certain foodstuffs, as well as in the case referred to in paragraph 2 (a), that quantities of certain ingredients must be indicated either in absolute terms or as percentages and that, where appropriate, mention should be made of any alteration in the quantities of ingredients.

The procedure laid down in Article 16 shall apply to any such national provisions.

The Community provisions referred to in this paragraph shall be adopted in accordance with the procedure laid down in Article 17.

ARTICLE 8

1. The net quantity of prepackage foodstuffs shall be expressed:
 - in units of volume in the case of liquids,
 - in units of mass in the case of other products, using the litre, centilitre, millilitre, kilogram or gram, as appropriate.

Community provisions or, where there are none, national provisions applicable to certain specified foodstuffs may derogate from this rule.

The procedure laid down in Article 16 shall apply to any such national provisions.

2. (a) Where the indication of a certain type of quantity (e.g. nominal quantity, minimum quantity, average quantity) is required by community provisions or, where there are none, by national provisions, this quantity shall be regarded as the net quantity for the purposes of this directive.

Without prejudice to the notification provided for in Article 22, Member States shall inform the Commission and the other Member States of any measure taken pursuant to this point.

(b) Community provisions or, where there are none, national provisions may, for certain specified foodstuffs classified by quantity in categories, require other indications of quantity.

The procedure laid down in Article 16 shall apply to any such national provisions.

- (c) Where a prepackaged item consists of two or more individual prepackaged items containing the same quantity of the same product, the net quantity shall be indicated by mentioning the net quantity contained in each individual package and the total number of such packages. Indication of these particulars shall not, however, be compulsory where the total number of individual packages can be clearly seen and easily counted from the outside and where at least one indication of the net quantity contained in each individual package can be clearly seen from the outside.
- (d) Where a prepackaged item consists of two or more individual packages which are not regarded as units of sale, the net quantity shall be given by indicating the total net quantity and the total number of individual packages. Community provisions or, where there are none, national provisions need not, in the case of certain foodstuffs, require indication of the total number of individual packages. Without prejudice to the notification provided for in Article 22, Member States shall inform the Commission and the other Member States of any measure taken pursuant to this point.

3. In the case of foodstuffs normally sold by number, Member States need not require indication of the net quantity provided that the number of items can clearly be seen and easily counted from the outside or, if not, is indicated on the labelling.

Without prejudice to the notification provided for in Article 22, Member States shall inform the Commission and the other Member States of any measure taken pursuant to this paragraph.

4. Where a solid foodstuff is presented in a liquid medium, the drained net weight of the foodstuff shall also be indicated on the labelling.

For the purposes of this paragraph, "liquid medium" shall mean the following products, possibly in mixtures and also where frozen or quick-frozen, provided that the liquid is merely an adjunct to the essential elements of that preparation and is thus not a decisive factor for the purchase: water, aqueous solutions of salts, brine; aqueous solutions of food acids, vinegar; aqueous solutions of sugar, aqueous solutions of other sweetening substances; fruit or vegetable juices in the case of fruit or vegetables.

This list may be supplemented in accordance with the procedure laid down in Article 17.

Methods of checking the drained net weight shall be determined in accordance with the procedure laid down in Article 17.

5. It shall not be compulsory to indicate the net quantity in the case of foodstuffs:
 - (a) Which are subject to considerable losses in their volume or mass and which are sold by number or weighed in the presence of the purchaser;
 - (b) The net quantity of which is less than 5 g or 5 ml; however this provision shall not apply to spices and herbs.

Community provisions or, where there are none, national provisions applicable to specified foodstuffs may in exceptional cases lay down thresholds which are higher than 5 g or 5 ml provided that this does not result in the purchaser being inadequately informed.

Without prejudice to the notification provided for in Article 22, Member States shall inform the Commission and the other Member States of any measure taken pursuant to this paragraph.

6. Until the end of the transitional period during which the use of the imperial units of measurement contained in chapter D of the Annex to Directive 71/354/EEC of 18 October 1971 on the approximation of the laws of the Member States relating to units of measurements, as last amended by Directive 76/770/EEC, is authorized in the Community, Ireland and the United Kingdom may permit the quantity to be expressed only in imperial units of measurement calculated on the basis of the following conversion rates:
 - 1 ml = 0,0352 fluid ounces,
 - 1 l = 1,760 pints or 0,220 gallons,
 - 1 g = 0,0353 ounces (avoirdupois),
 - 1 kg = 2,205 pounds.
7. The Community provisions referred to in paragraphs 1, 2 (b) and (d) and 5 shall be adopted in accordance with the procedure laid down in Article 17.

ARTICLE 9

1. The date of minimum durability of a foodstuff shall be the date until which the foodstuff retains its specific properties when properly stored. It shall be indicated in accordance with the provisions of this article.
2. The date shall be preceded by the words:
 - "Best before..." when the date includes an indication of the day,
 - "Best before end..." in other cases.
 - "..."
3. The words referred to in paragraph 2 shall be accompanied by:
 - either the date itself, or

-- a reference to where the date is given on the labelling.

If need be, these particulars shall be followed by a description of the storage conditions which must be observed if the product is to keep for the specified period.

4. The date shall consist of the day, month and year in uncoded chronological form.

However, in the case of foodstuffs:

- which will not keep for more than three months, an indication of the day and the month will suffice,
- which will keep for more than three months but not more than 18 months, an indication of the month and year will suffice,
- which will keep for more than 18 months, an indication of the year will suffice.

The manner of indicating the date may be specified according to the procedure laid down in Article 17.

5. In their own territories the Member States may, until 31 December 1992, permit the minimum durability period to be expressed otherwise than in terms of the date of minimum durability. Without prejudice to the notification provided for in Article 22, Member States shall notify the Commission and the other Member States of any measure taken under this paragraph.
6. Subject to Community provisions imposing other types of date indication, an indication of the durability date shall not be required for:
 - fresh fruit and vegetables, including potatoes, which have not been peeled, cut or similarly treated. This derogation shall not apply to sprouting seeds and similar products such as legume sprouts,
 - wines, liqueur wines, sparkling wines, aromatized wines and similar products obtained from fruits other than grapes, and beverages falling within CN codes 22.06 and manufactured from grapes or grape musts,
 - beverages containing 10% or more by volume of alcohol,
 - soft drinks, fruit juices, fruit nectars and alcoholic beverages in individual containers of more than five litres, intended for supply to mass caterers,
 - bakers' or pastry cooks' wares which, given the nature of their content, are normally consumed within 24 hours of their manufacture,
 - vinegar,
 - cooking salt,
 - solid sugar,
 - confectionery products consisting almost solely of flavoured and/or coloured sugars.
 - chewing gums and similar chewing products,
 - individual portions of ice-cream.

ARTICLE 9a

1. In the case of foodstuffs which, from the microbiological point of view, are highly perishable and are therefore likely after a short period to constitute an immediate danger to human health, the date of minimum durability shall be replaced by the “use by” date.
2. The date shall be preceded by the words:

In English: ‘use by’
In Spanish: ‘fecha de caducidad’
In Danish: ‘sidste anvendelsesdato’
In German: ‘verbrauchen bis’
In Greek: ‘...’
In French: ‘a consommer jusqu’au’
In Italian: ‘da consumare entro’
In Dutch: ‘te gebruiken tot’
In Portuguese: ‘a consumir ate’
In Finnish: ‘viimeinen kayttoajankohta’
In Swedish: ‘sista forbrukningsdag’

These words shall be accompanied by:

- either the date itself, or
- a reference to where the date is given on the labelling.

These particulars shall be followed by a description of the storage conditions which must be observed.

3. The date shall consist of the day, the month and, possibly the year, in that order and in uncoded form.
4. In some cases it may be decided by the procedure laid down in Article 17 whether the conditions laid down in paragraph 1 are fulfilled.

ARTICLE 10

1. The instructions for use of a foodstuff shall be indicated in such a way as to enable appropriate use to be made thereof.
2. Community provisions or, where there are none, national provisions may, in the case of certain foodstuffs, specify the way in which the instructions for use should be indicated.

The procedure laid down in Article 16 shall apply to such national provisions.

The Community provisions referred to in this paragraph shall be adopted in accordance with the procedure laid down in Article 17.

ARTICLE 10a

The rules concerning indication of the alcoholic strength by volume shall, in the case of products covered by tariff heading nos 22.04, be those laid down in the specific Community provisions applicable to such products.

In the case of other beverages containing more than 1,2% by volume of alcohol, these rules shall be laid down in accordance with the procedure provided for in Article 17.

ARTICLE 11

1. (a) When the foodstuffs are prepackaged, the particulars provided for in Articles 3 and 4 (2) shall appear on the prepackaging or on a label attached thereto.
 - (b) Notwithstanding point (a) and without prejudice to Community provisions on nominal quantities, where prepackaged foodstuffs are:
 - intended for the ultimate consumer but marketed at a stage prior to sale to the ultimate consumer and where sale to a mass caterer is not involved at that stage,
 - intended for supply to mass caterers for preparation, processing, splitting or retail sale,

the particulars required under Articles 3 and 4 (2) need appear only on the commercial documents referring to the foodstuffs where it can be guaranteed that such documents, containing all the labelling information, either accompany the foodstuffs to which they refer or were sent before or at the same time as delivery.

 - (c) In the cases referred to in (b), the particulars referred to in Article 3 (1) (1), (4) and (6) and, where appropriate, that referred to in Article 9a, shall also appear on the external packaging in which the foodstuffs are presented for marketing.
2. These particulars shall be easy to understand and marked in a conspicuous place in such a way as to be easily visible, clearly legible and indelible.

They shall not in any way be hidden, obscured or interrupted by other written or pictorial matter.
3. (a) The particulars listed in Article 3 (1), points 1, 3, 4 and 9 shall appear in the same field of vision. This requirement may be extended to the particulars provided for in Article 4 (2).
 - (b) However, for glass bottles intended for re-use, upon which one of the particulars listed in point (a) is indelibly marked, this requirement shall not apply for a period of 10 years following notification of this Directive.
4. In the case of the glass bottles intended for re-use which are indelibly marked and which therefore bear no label, ring or collar and packaging or containers the largest

surface of which has an area of less than 10 cm² only the particulars listed in Article 3 (1) (1), (3) and (4) need be given. In this case, paragraph 3 (a) shall not apply.

5. Member States may, until 31 December 1996, refrain from requiring the minimum durability date or the “use by” date to be mentioned in respect of bottles referred to in paragraph 4.
6. Ireland, the Netherlands and the United Kingdom may derogate from Article 3 (1) and paragraph 3 (a) of this Article in the case of milk and milk products put up in glass bottles intended for re-use.
7. The Member States shall inform the Commission of any measure taken pursuant to paragraphs 5 or 6.

ARTICLE 12

Where foodstuffs are offered for sale to the ultimate consumer or to mass caterers without prepackaging, or where foodstuffs are packaged on the sales premises at the consumer’s request of prepackaged for direct sale, the Member States shall adopt detailed rules concerning the manner in which the particulars specified in Article 3 and Article 4 (2) are to be shown.

They may decide not to require the provision of all or some of these particulars, provided that the purchaser still receives sufficient information.

ARTICLE 13

This Directive shall not affect the provisions of national laws which, in the absence of Community provisions, impose less stringent requirements for the labelling of foodstuffs presented in fancy packaging such as figurines or souvenirs.

ARTICLE 14

Member States shall refrain from laying down requirements more detailed than those already contained in Articles 3 to 11 concerning the manner in which the particulars provided for in Article 3 and Article 4 (2) are to be shown.

The Member States shall, however, ensure that the sale of foodstuffs within their own territories is prohibited if the particulars provided in Article 3 and Article 4 (2) do not appear in a language easily understood by purchasers, unless other measures have been taken to ensure that the purchaser is informed. This provision shall not prevent such particulars from being indicated in various languages.

ARTICLE 15

1. Member States may not forbid trade in foodstuffs which comply with the rules laid down in this Directive by the application of non-harmonized national provisions governing the labelling and presentation of certain foodstuffs or of foodstuffs in general.

2. Paragraph 1 shall not apply to non-harmonized national provisions justified on grounds of:
 - protection of public health,
 - prevention of fraud, unless such provisions are liable to impede the application of definitions and rules laid down by this directive,
 - protection of industrial and commercial property rights, indications of provenance, registered designations of origin and prevention of unfair competition.

ARTICLE 16

Where reference is made to this Article, the following procedure shall apply:

1. When a Member State maintains the provisions of its national laws, it shall inform the Commission and the other Member States thereof within a period of two years after notification of this Directive;
2. Should a Member State deem it necessary to adopt new legislation, it shall notify the Commission and the other Member States of the measures envisaged and give the reasons justifying them. The Commission shall consult the Member States within the Standing Committee on Foodstuffs if it considers such consultation to be useful or if a Member State so requests.

Member States may take such envisaged measures only three months after such notification and provided that the Commission's opinion is not negative.

In the latter event, and before the expiry of the abovementioned period, the Commission shall initiate the procedure provided for in Article 17 in order to determine whether the envisaged measures may be implemented subject, if necessary, to the appropriate modifications.

ARTICLE 17

Where the procedure laid down in this Article is to be followed, the matter shall be referred to the Standing Committee on Foodstuffs (hereinafter called "the Committee") by its chairman, either on his own initiative or at the request of a representative of a Member State.

The representative of the Commission shall submit to the Committee a draft of the measures to be taken. The Committee shall deliver its opinion on the draft within a time limit which the chairman may lay down according to the urgency of the matter. The opinion shall be delivered by the majority laid down in Article 148 (2) of the Treaty in the case of Decisions which the Council is required to adopt on a proposal from the Commission. The votes of the representatives of the Member States within the Committee shall be weighted in the manner set out in that Article. The chairman shall not vote.

The Commission shall adopt the measures envisaged if they are in accordance with the opinion of the Committee.

If the measures envisaged are not in accordance with the opinion of the Committee, or if no opinion is delivered, the Commission shall, without delay, submit to the Council a proposal relating to the measures to be taken. The Council shall act by a qualified majority.

If, on the expiry of a period three months from the date of referral to the Council, the Council has not acted, the proposed measures shall be adopted by the Commission.

ARTICLE 18

...

ARTICLE 19

If temporary measures prove necessary to facilitate the application of this Directive, they shall be adopted in accordance with the procedure provided for in Article 17.

ARTICLE 20

This Directive shall not affect Community provisions relating to the labelling and presentation of certain foodstuffs already adopted at the time of its notification. Any amendments necessary to harmonize such provisions with the rules laid down in this Directive shall be decided in accordance with the procedure applicable to each of the provisions in question.

ARTICLE 21

This Directive shall not apply to products for export outside the Community.

ARTICLE 22

1. Member States shall make such amendments to their laws as may be necessary to comply with the provisions of this Directive and shall forthwith inform the Commission thereof; the laws thus amended shall be applied in such a way as to:
 - permit trade in those products which comply with the provisions of this Directive no later than two years after its notification,
 - prohibit trade in those products which do not comply with the provisions of this Directive four years after its notification.
2. However, Member States may:
 - (a) In the case of certain foodstuffs, reduce the period specified in the second indent of paragraph 1;

- (b) In the case of certain foodstuffs which keep for a long time, extend the period specified in the second indent of paragraph 1;
 - (c) Without prejudice to the first indent of Article 23 (1) (b), in the case of foodstuffs which will keep for more than 12 months, extend to six years that period laid down in the second indent of paragraph 1 above as regards the obligation to indicate the date of minimum durability.
3. In the case referred to:
- (a) In paragraph 2 (a), the procedure laid down in Article 16 (2) shall apply to any national provision;
 - (b) In paragraph 2 (b) and (c), Member States shall inform the Commission and the other Member States of any measure taken pursuant to the said points.
4. Member States shall also ensure that the Commission receives the text of any essential provision of national law which they adopt in the field governed by this Directive.

ARTICLE 23

...

ARTICLE 24

This Directive shall also apply to the French overseas departments.

ARTICLE 25

This Directive shall not apply to foodstuffs marketed in Greenland, intended for local consumption.

ARTICLE 26

This Directive is addressed to the Member States.

ANNEX I

Categories of ingredients which may be designated by the name of the category rather than the specific name

Definition

Refined oils other than olive oil

Designation

“Oil”, together with

- either the adjective “vegetable” or “animal”, as appropriate, or
- an indication of their specific vegetable or animal origin

The adjective “hydrogenated” must accompany the indication of a hydrogenated oil

Definition

Refined fats

Designation

“Fat”, together with

- either the adjective “vegetable” or “animal”, as appropriate, or
- an indication of their specific vegetable or animal origin

The adjective “hydrogenated” must accompany the indication of a hydrogenated fat

Definition

Mixtures of flour obtained from two or more cereal species

Designation

“Flour”, followed by a list of the cereals from which it has been obtained, in descending order by weight

Definition

Starches, and starches modified by physical means or by enzymes

Designation

Starch

Definition

All species of fish where the fish constitutes an ingredient of another foodstuff and provided that the name and presentation of such foodstuff does not refer to a specific species of fish.

Designation

Fish

Definition

All types of cheese where the cheese or mixture of cheeses constitutes an ingredient of another foodstuff and provided that the name of presentation of such foodstuff does not refer to a specific type of cheese

Designation

Cheese

Definition

All spices not exceeding 2% by weight of the foodstuff

Designation

Spice(s) or mixed spices

Definition

All herbs or parts of herbs not exceeding 2% by weight of the foodstuff

Designation

Herb(s) or mixed herbs

Definition

All types of gum preparations used in the manufacture of gum base for chewing gum

Designation

Gum base

Definition

All types of crumbed baked cereal products

Designation

Crumbs or rusks as appropriate

Definition

All types of sucrose

Designation

Sugar

Definition

Anhydrous dextrose or dextrose monohydrate

Designation

Dextrose

Definition

Glucose syrup and anhydrous glucose syrup

Definition

Glucose syrup

Definition

All types of milk protein (caseins, caseinates and whey proteins) and mixtures thereof

Designation

Milk proteins

Definition

Press, expeller or refined cocoa butter

Designation

Cocoa butter

Definition

All crystallized fruit not exceeding 10% of the weight of the foodstuff

Designation

Crystallized fruit

Definition

Mixtures of vegetables not exceeding 10% of the weight of the foodstuff

Designation

Vegetables

Definition

All types of wine as defined in Council Regulation (EEC) No 822/87

Designation

Wine

ANNEX II

Categories of ingredients which must be designated by the name of their category followed by their specific name or EC number

Colour

Preservative

Anti-oxidant

Emulsifier

Thickener

Gelling agent

Stabilizer

Flavour enhancer

Acid

Acidity regulator

Anti-caking agent

Modified starch

Sweetener
Raising agent
Anti-foaming agent
Glazing agent
Emulsifying salts
Flour treatment agent
Firming agent
Humectant
Bulking agent
Propellent gas

ANNEX III

Designation of flavouring in the list of ingredients

1. Flavourings shall be designated either by the word “flavouring(s)” or by a more specific name or description of the flavouring.
2. The word “natural” or any other word having substantially the same meaning may be used only for flavourings in which the flavouring component contains exclusively flavouring substances as defined in Article 1 (2) (b) (I) and/or flavouring preparations as defined in Article 1 (2) (c) of Directive 88/388/ECC on flavourings.
3. If the name of the flavouring contains a reference to the vegetable or animal nature or origin of the incorporated substances, the word “natural” or any other word having substantially the same meaning may not be used unless the flavouring component has been isolated by appropriate physical processes, enzymatic or microbiological processes or traditional food-preparation processes solely or almost solely from the foodstuff or the flavouring source concerned.

As amended by

85/7/EEC: Council Directive of 19 December 1984
(Official Journal No L 2, 03/01/1985)

86/197/EEC: Council Directive of 26 May 1986
(Official Journal No L 144, 29/05/1986)

89/395/EEC: Council Directive of 14 June 1989
(Official Journal No L 186, 30/06/1989)

91/72/EEC: Commission Directive of 16 January 1991
(Official Journal No L 42, 15/02/1991)

93/102/EEC: Commission Directive of 16 November 1993
(Official Journal No L 291, 25/11/1993)

Council Decision 95/1 adjusting the instruments concerning the accession of new Member States (Austria, Finland and Sweden) to the European Union
(Official Journal No L 1, 01/01/1995)

YOU ASKED ABOUT

YOGURT

and How It Is Stored

What's the Best Way to Store DANNON Yogurt?

DANNON Yogurt has a delicate gel structure, so proper storage is important. Refrigerating the yogurt as soon as it arrives from the supermarket will insure a high quality product that tastes great.

Can DANNON Yogurt be Eaten After the "Sell-by" Date?

The date stamped on each carton of DANNON Yogurt is 30 days from the time of manufacturing. All DANNON products are guaranteed until this date. Although the yogurt will remain fresh for at least a week beyond this date when properly refrigerated, its flavor changes and the yogurt becomes more tart with prolonged refrigeration.

What is the Watery Liquid that sometimes Separates to the Top of the Yogurt?

When yogurt is allowed to stand, the whey (liquid) may separate out. This natural breakdown process called syneresis occurs when part of the liquid breaks away from the solid. Whey tends to form more as the product ages. Improper handling and refrigeration also increase whey formation. To reintegrate the whey, simply stir it back into the yogurt before using.

Appendix E: Major Modes of Deterioration, Critical Environmental Factors, Shelf-Life, and Type of Open Dating by Food Product (OTA, 1979)

Food Product	Mode of Deterioration (assuming an intact package)	Critical Environmental Factors	Shelf-life (average)	Date Most Suitable for Product	Additional Information
<i>Perishable Foods</i>					
Fluid Milk and Products	Bacterial Growth, Oxidized Flavor, Hydrolytic Rancidity	Oxygen, Temperature	7-14 Days at Refrigerated Temperature	Sell-by	Length of Time Product Can be Stored at Home
Fresh Bakery Products	Staling, Microbial Growth, Moisture Loss Causing Hardening, Oxidative Rancidity	Oxygen, Temperature, Moisture	2 Days (Bread)/ 7 Days (Cake)	Sell-by	---
Fresh Red Meat	Bacterial Activity, Oxidation	Oxygen, Temperature, Light	3-4 Days at Refrigerated Temperature	Pack or Sell-by ¹	---
Fresh Poultry	Pathogen Growth, <i>Microbial Decay</i>	Oxygen, Temperature, Light	2-7 Days at Refrigerated Temperature	Sell-by ¹	Length of Time Product Can be Stored in Home Either Frozen or Refrigerated
Fresh Fish	Bacterial Growth	Temperature	14 Days When Stored on Ice (<i>marine fish</i>)	Pack (Catch Date) ¹	---
Fresh Fruits and Vegetables	Microbial Decay, Nutrient Loss, Wilting, Bruising	Temperature, Light, Oxygen, Relative Humidity, Soil & Water, Physical Handling	Depends on the Specific Commodity ²	Pack ¹	---
<i>Semiperishable and Perishable Foods</i>					
Fried Snack Foods	Rancidity, Loss of Crispness	Oxygen, Light, Temperature, Moisture	4-6 Weeks	Sell-by or Best-if-Used-by	Home Storage Information such as "Store in a Cool, Dry Place"
Cheese	Rancidity, Browning, Lactose Crystallization	Temperature	Processed Cheese 4-24 Months/ Natural Cheese 4-12 Months	Best-if-Used-by	---
Ice Cream	<i>Graininess Caused by Lactose Crystallization</i> , Loss of Solubilization (<i>caking</i>), Lysine Loss	Fluctuating Temperature (<i>below freezing</i>)	1-4 Months	Sell-by or Best-if-Used-by	Recommended Home Storage Temperature
<i>Long Shelf-Life Foods</i>					
Dehydrated Foods	Browning, Rancidity, Loss of Pigment, Loss of Texture, Loss of Nutrients	Moisture, Temperature, Light, Oxygen	Dehydrated Vegetables 3-15 Months/ Dehydrated Meat 1-6 Months/ Dried Fruit 1-24 Months	Sell-by or Best-if-Used-by	Recommended Home Storage Temperature

Food Product	Mode of Deterioration (assuming an intact package)	Critical Environmental Factors	Shelf-life (average)	Date Most Suitable for Product	Additional Information
Nonfat Dry Milk	Flavor Deterioration , Loss of Solubilization (<i>caking</i>), Lysine Loss	Moisture, Temperature	12 Months	Best-if-Used-by	Estimate of Shelf-Life Beyond Sell-by Date; Store in Cool, Dry Place
Breakfast Cereals	Rancidity, Loss of Crispness, Vitamin Loss, Particle Breakage	Moisture, Temperature, Rough Handling	6-18 Months	Best-if-Used-by or Sell-by	Recommended Storage Conditions
Pasta	Texture Changes, Staling , Vitamin and Protein Loss	Too High or Low Moisture, Temperature	Pasta with Egg Solids 9-36 Months/ Macaroni and Spaghetti 24-48 Months	Best-if-Used-by	---
Frozen Concentrated Juices	Loss of Turbidity or Cloudiness, Yeast Growth, Loss of Vitamins, Loss of Color or Flavor	Temperature	18-30 Months	Sell-by or Best-if Used-by	Month of High Quality Left in Home Storage
Frozen Fruits and Vegetables	Loss of Nutrients; Loss of Texture, Flavor , Color; and Formation of Package Ice	Temperature	6-24 Months	Best-if-Used-by	Recommended Storage Conditions
Frozen Meats, Poultry, and Fish	Rancidity , Protein Denaturation, Color Change, Desiccation	Temperature	Beef 6-12 Months/ Veal 1-14 Months/ Pork 4-12 Months/ Fish 2-8 Months/ Lamb 6-16 Months	Best-if-Used by	Recommended Storage Conditions
Frozen Convenience Foods	Rancidity in Meat Portions, Weeping and Curdling of Sauces, Loss of Flavor, Loss of Color	Oxygen, Temperature	6-12 Months	Best-if-Used-by	Recommended Storage Conditions
Canned Fruits and Vegetables	Loss of Flavor , Texture, Color, Nutrients	Temperature	12-36 Months	Best-if-Used-by	---
Coffee	Rancidity , Loss of Flavor and Odor	Oxygen	Ground, Roasted, Vacuum-Packed, 9 Months/ Instant Coffee 18-36 Months	Best-if-Used-by	---
Tea	Loss of Flavor , Absorption of Foreign Odors	Moisture	18 Months	Best-if-Used-by	---

¹This date applies only if the product is packaged prior to sale. If unpacked or sold in bulk prior to sale, this product is exempt from an open date.

²Sweet corn has a shelf-life of 4 to 8 days, and apples range from 3 to 8 months at proper temperature. For this specific information, see Theodore Labuza, et al. "Open Shelf Dating of Foods," Dept. of Food Science and Nutrition, University of Minnesota, report prepared for the Office of Technology Assessment, 1978.

NOTE: When known, the primary mode of deterioration is in bold italic type.