

# EXPIRY DATES OF FOOD PRODUCTS

Namaskar,,,,,Welcome to the lecture series of Food Technology. In Today's lecture I am going to deliver the lecture on the topic "Expiry Dates. The topic divided into the following five sections

1. Introduction
2. Shelf life of food products
3. Regulation Enforcement of Expiry dates
4. General storage duration for Food and beverages products

## 1. Introduction

Expiration dates refer to the quality and freshness of food, not safety. Expiration dates on food and drink products are not required or regulated by Federal administrators. Those mysterious dates printed on food containers telling us when to purchase, eat, or throw out that tub of food products are actually decided by each individual manufacturer. The printed numbers on food products can mean multiple things and all codes and numbers as per USDA norms.

- "Sell-By." This number is for the store, letting employers know how long a certain product can stay on the shelf. You should buy the food item before this date passes to ensure it's freshness.
- "Best if Used Before/By." This date helps specify when a product is at its peak freshness. It does not indicate the safety of the item. Buy and use before this date for best quality.
- "Use-By." These dates indicate when a product will start deteriorating in quality and flavor.
- Closed or coded dates: These are packing codes that track the product when it is being shipped. These codes are typically a series of numbers and letters that indicate dates and times the container was filled, and places of manufacture.

## 2. Shelf life of food products

Shelf life is the recommended maximum time for which products or fresh or harvested produce can be stored, during which the defined quality of a specified proportion of the goods remains acceptable under expected or specified conditions of distribution, storage and display.

Most expiration dates are used as guidelines based on normal and expected handling and exposure to temperature. Use prior to the expiration date does not guarantee the safety of a food or drug, and a product is not necessarily dangerous or ineffective after the expiration date.

According to the USDA, "canned foods are safe indefinitely as long as they are not exposed to freezing temperature or temperatures above 32.2° C. If the cans look ok, they are safe to use. Discard cans that are dented, rusted, or swollen. High-acid canned foods for example, tomatoes, and fruits will keep their best quality for 12 to 18 months; low-acid canned foods for example, meats, and vegetables for 2 to 5 years 27 °C.

"Sell by date" is a less ambiguous term when compared to an "expiration date". Most food is still edible after the expiration date. A product that has passed its shelf life might still be safe, but quality is no longer guaranteed. In most food stores, waste is minimized by using stock rotation, which involves moving products with the earliest sell by date from the warehouse to the sales area, and then to the front of the shelf, so that most shoppers will pick them up first and thus they are likely to be sold before the end of their shelf life. This is important, as consumers enjoy fresher goods, and furthermore some stores can be fined for selling out of date products; most if not all would have to mark such products down as wasted, resulting in a financial loss.

Shelf life depends on the degradation mechanism of the specific product. Most can be influenced by several factors such as exposure to light, heat, moisture, transmission of gases, mechanical stresses, and contamination by micro-organisms. Product quality is often mathematically modeled around a parameter concentration of a chemical compound, a microbiological index, or moisture content.

For some foods, health issues are important in determining shelf life. Bacterial contaminants are ubiquitous, and foods left unused too long will often be contaminated by substantial amounts of bacterial colonies and become dangerous to eat, leading to food poisoning. However, shelf life alone is not an accurate indicator of how long the food can safely be stored. For example, pasteurized milk can remain fresh for five days after its sell-by date if it is refrigerated properly. In contrast, if milk already has harmful bacteria, the use-by dates become irrelevant.

The expiration date of pharmaceuticals specifies the date the manufacturer guarantees the full potency and safety of a drug. Most medications continue to be effective and safe for a time after the expiration date. A rare exception is a case of renal tubular acidosis purportedly caused by expired tetracycline. A study conducted by the U.S. Food and Drug Administration covered over 100 drugs, prescription and over-the-counter. The study showed that about 90% of them were safe and effective as long as 15 years past their expiration dates. FDA expiration-date compliance chief, Joel Davis, said that with a handful of exceptions - notably nitroglycerin, insulin and some liquid antibiotics - most expired drugs are probably effective.

Shelf life is not significantly studied during drug development, and drug manufacturers have economic and liability incentives to specify shorter shelf lives so that consumers are encouraged to discard and repurchase products. One major exception is the Shelf Life Extension Program (SLEP) of the U.S. Department of Defense (DoD), which commissioned a major study of drug efficacy from the FDA starting in the mid-1980s. One criticism is that the U.S. Food and Drug Administration (FDA) refused to issue guidelines based on SLEP research for normal marketing of pharmaceuticals even though the FDA performed the study. The SLEP and FDA signed a memorandum that scientific data could not be shared with the public, public health departments, other government agencies, and drug manufacturers. State and local programs are not permitted to participate. The failure to share data has caused foreign governments to refuse donations of expired medications. One exception occurred during the 2010 Swine Flu Epidemic when the FDA authorized expired Tamiflu based on SLEP Data. The SLEP discovered that drugs such as Cipro remained effective nine years after their shelf life, and, as a cost-saving measure, the US military routinely uses a wide range of SLEP tested products past their official shelf life if drugs have been stored properly.

Preservatives and antioxidants may be incorporated into some food and drug products to extend their shelf life. Some companies use induction sealing and vacuum/oxygen-barrier pouches to assist in the extension of the shelf life of their products where oxygen causes the loss.

### 3. Expiry dates and Food Wastage

A new study revealed that almost half the food goes to waste around the world. Food Navigator-usa.com reports that "Timothy Jones, an anthropologist at the UA Bureau of Applied Research in Anthropology, has spent the last 10 years measuring food loss, including the last eight under a grant from the US department of agriculture (USDA)." Mr Jones learned in his study that this food loss came from edible food that is discarded daily as well as waste during the production and retail process.

Reducing food wastage is one way of making food chains more sustainable, and it can cut costs to companies and consumers. The Ministry of Economic Affairs, Agriculture and Innovation have set the target of a 20% reduction in food wastage throughout the world by 2015. This aspiration was set out in the Sustainable Food policy document - 2009 and confirmed in a letter of 10 December 2010 to the House of Representatives. Various government bodies, ranging from the Dutch House of Representatives to other European governments and the European Parliament, have identified better use of expiry dates as one way of combating food wastage. Various proposals have been put forward in this connection:

- Abolishing minimum durability dates for long-life products;
- Providing better information to consumers on the difference between minimum durability and use-by dates;
- Placing both 'sell by' and 'use by' dates on packaging.

There is a continuous study has been conducting to investigate what is possible under the current legislation on expiry dates so as to reduce food wastage and to indicate how expiry dates are being used in practice and investigate whether the consequences as regards food wastage are known or can be ascertained.

The following research questions were therefore formulated:

1. What is legally possible as regards changing the current legislation on the compulsory labeling of minimum durability dates on food?
2. Is there any case law showing that product liability regarding the use of minimum durability dates has resulted in court cases?
3. What information is available in the Netherlands and the EU on the use of product date information for foods?
4. What are the options as regards using technical indicators to show durability?

5. What examples are there of the use of expiry dates in practice, and what can we learn from them as regards food wastage?

The part played by expiry dates in food wastage is not clear from studies on the subject alone. If we want to reduce the food wastage resulting from expiry dates, we also need to look at what makes expiry dates the way they are at present, from various angles such as legislation, the information/communication provided by various bodies, and day-to-day practice, which sometimes involves alternatives whose positive or negative effect on food wastage is not known.

### 3. Regulation Enforcement of Expiry dates

In India, the packaged food products do not have to print an expiry date on the labels except pharmaceutical products. The existing rules mandate that the manufacturers only need to print a "Best Before Use" on the label for selling in the retail market. By printing Best Before Use on the label, manufacturers of the food products cannot be held responsible if the products sold after date become unuseable. This inadequacy in the rules is definitely a cause of concern as India does not have a regulation for monitoring the shelf-life of a product. In fact, this loophole in the law is being exploited by a large number of manufacturers in the country by selling products after 'best before use' date. Therefore, Food Safety and Standards Authority of India considering a plan to make it mandatory for manufacturers to print expiry dates on food and beverages packs.

The Canadian Food Inspection Agency produces a Guide to Food Labeling and Advertising which sets out a "Durable Life Date". The authority for producing the guide comes from the Food and Drugs Act. The guide sets out what items must be labeled and the format of the date. The month and day must be included and the year if it is felt necessary and must be in the format year/month/day. However, there is no requirement that the year be in four digits. The Canadian Food Inspection Agency mandates that only five types of products need to be labelled with an expiration date:

- Baby formula and other human milk substitutes.
- Nutritional supplements.
- Meal replacements.
- Pharmacist-sold foods for very low-energy diets.
- Formulated liquid diets.

In Hong Kong, prepackaged food, which from the microbiological point of view is highly perishable and is therefore likely after a short period to constitute an immediate danger to human health, are required to use the 'Use by' label instead of the 'Best before' label. Examples include pasteurised fresh milk, packed egg and sandwiches.

Sale of expired food products is lightly regulated in the US. Some states like New York bar such sale, and require expiration dates on all foods, but many states like California do not. However, sale of contaminated food is generally illegal, resulting in product liability. The Food and Drug Administration, which regulates packaged foods and drugs, only requires a use-by, or expiration date on infant formula and some baby foods, because formula must contain a certain quantity of each nutrient as described on the label. If formula is stored too long, it loses its nutritional quality, and also separates or forms lumps that will clog the bottle nipple.

Common things about expiration and best before dates

1. Expiration dates tell consumers the last day of a product is safe to consume. A food should never be consumed after the expiry date. Best before dates are found on foods that will only stay fresh for 90 days or less. Some foods may be consumed even if their best before date has passed, unlike an expiry date.

2. Best before dates guarantee freshness

An unopened, properly stored product's best before date tells a consumer how long that food will keep its flavour and nutritional value. The manufacturer's nutritional claims may no longer apply after a best before date or if the product isn't properly stored. Orange juice may not provide as much Vitamin C and milk less riboflavin past the best before date.

Other items may have compromised taste, but still be safe to eat. Ketchups and salsas may be more acidic, dry pasta may break when cooked, and cookies at the back of the pantry may just taste bad. It's generally the taste, not safety that suffers. However, food products must be properly stored according to package instructions to avoid turning mouldy or sour before their best before date.

3. The best before date no longer applies if a package is opened or if the food is frozen, according to Health Canada. Once a sealed product is exposed to air it can be cross-contaminated.

4. Even though some food remains edible — just less tasty and nutritionally dense — after its best before date, that doesn't mean all food is safe to eat when that date passes. Health Canada does not recommend eating anything after the best before date. Generally, if the food changes colour or appearance, or develops a bad smell, it is no longer safe to eat. Dented, leaking or bulging cans should be discarded. "When in doubt throw it out".

Hungry snackers should throw away mouldy cheese, breads, yogurts and other foods. Food and Nutritional experts says people used to feel comfortable scraping mould off the top of food and continuing to eat it. Nowadays, that's not considered acceptable, as mould is believed to contaminate food beyond what's visible to the human eye.

Healthy people are unlikely to suffer any consequences if they fry up a steak one day past its best before date. But people shouldn't try with the best before date on foods that contain lots of pathogens. That includes fresh meats — like chicken, steak or ground beef and dairy products.

Chips past their best before date won't be as crunchy, but they also may become contaminated if people sharing them have dirty hands or double dip in the salsa bowl. "There's always a risk for something in food to go awry.

5. Fresh doesn't always mean better, Experts point out that fresh produce found in Canadian grocery stores during the winter may have less nutritional value than frozen vegetables. It takes several weeks for produce to be picked and transported from warmer climates. As soon as someone picks a vegetable, its nutrients start to decline.

Frozen vegetables, however, are usually frozen within hours of being picked. It's not a significant nutritional difference, but frozen veggies may be more nutritious in the winter.

4. General storage duration for following Food and beverages products as follows

Chocolates-1 year from production date

Brown sugar- indefinite shelf life, stored in a moisture proof container in a cool, dry place

Coffee- canned ground- Unopened: 2 years Opened: 1 month if refrigerated

Coffee Beans- 3 weeks in paper bag, longer in vacuum-seal bag, after this time, color or flavor may be affected, but product is still generally safe to consume

Ground nut: 1 week in sealed container

Coffee- instant- Unopened: Up to 2 years Opened: Up to 1 month

Beer- Unopened: 4 months.

Soda, regular Unopened: In cans or glass bottles, 9 months from “best by” date Opened: Doesn't spoil, but taste is affected

Diet soda and soft drinks in plastic bottles-Unopened: 3 months from “best by” date. Opened: Doesn't spoil, but taste is affected.

Dried pasta- 12 months

Frozen dinners- Unopened: 12 to 18 months

Frozen vegetables-Unopened: 18 to 24 months Opened: 1 month

Honey- Indefinite shelf life

Juice, bottled (apple or cranberry)- Unopened: 8 months from production date

Opened: 7 to 10 days

Ketchup, Unopened: 1 year, after this time, color or flavor may be affected, but product is still generally safe to consume

Opened or used: 4 to 6 months (after this time, color or flavor may be affected, but product is still generally safe to consume)

Maple syrup, real or imitation- 1 year

Maraschino cherries- Unopened: 3 to 4 years Opened: 2 weeks at room temperature; 6 months refrigerated

Marshmallows-It is a soft item of confectionery made from a mixture of sugar, albumen, and gelatin-  
Unopened: 40 weeks, Opened: 3 months

Mayonnaise; It is a thick creamy dressing consisting of egg yolks with oil and vinegar-

, Unopened: Indefinitely Opened: 2 to 3 months from “purchase by” date, after this time, color or flavor may be affected, but product is still generally safe to consume

Mustard- 2 years (after this time, color or flavor may be affected, but product is still generally safe to consume)

Olives- Unopened: 3 years, Opened: 3 months

Olive oil- 2 years from manufacture date (after this time, color or flavor may be affected, but product is still generally safe to consume)

Peanuts Unopened: 1 to 2 years unless frozen or refrigerated, Opened: 1 to 2 weeks in airtight container

Peanut butter- natural- 9 months

Peanut butter- processed - Unopened: 2 years, Opened: 6 months; refrigerate after 3 months

Pickles Unopened: 18 months Opened: No conclusive data. Discard if slippery or excessively soft.

Protein bars or Power Bars: Unopened: 10 to 12 months

Rice- white- 2 years from date on box or date of purchase

Salad dressing, bottled Unopened: 12 months after “best by” date Opened: 9 months refrigerated

Steak sauce 33 months (after this time, color or flavor may be affected, but product is still generally safe to consume)

Tea bags (Lipton) Use within 2 years of opening the package

Tuna fish canned Unopened: 1 year from purchase date Opened: 3 to 4 days, not stored in can

Soy sauce, bottled Unopened: 2 years Opened: 3 months (after this time, color or flavor may be affected, but product is still generally safe to consume)

Vinegar 42 months

Wine (red, white) Unopened: 3 years from vintage date; 20 to 100 years for fine wines

Opened: 1 week refrigerated and corked

### Safety after date expires

Except for "use-by" dates, product dates don't always pertain to home storage and use after purchase. "Use-by" dates usually refer to best quality and are not safety dates. Even if the date expires during home storage, a product should be safe, wholesome and of good quality if handled properly. See the accompanying refrigerator charts for storage times of dated products. Foods can develop an off odor, flavor or appearance due to spoilage bacteria. If a food has developed such characteristics, you should not use it for quality reasons.

If foods are mishandled, however, food borne bacteria can grow and, if pathogens are present, cause food borne illness — before or after the date on the package. For example, if hot dogs are taken to a picnic and left out several hours, they will not be safe if used thereafter, even if the date hasn't expired.

Other examples of potential mishandling are products that have been: defrosted at room temperature more than two hours; cross contaminated; or handled by people who don't practice good sanitation. Make sure to follow the handling and preparation instructions on the label to ensure top quality and safety. Food and Beverage Cans must exhibit a packing code to enable tracking of the product in interstate commerce. This enables manufacturers to rotate their stock as well as to locate their products in the event of a recall.

### 5. Conclusion

Expiration dates refer to quality and freshness of food, most expiration dates are used as guidelines based on normal and expected handling and exposure to temperature. "Sell by date" is a less ambiguous term for what is often referred to as an "expiration date". To reduce food wastage, cut costs to companies and consumers expiry date can be very useful. India does not have regulations on expiry dates of packaged food like developed countries, the packaged food products do not have to print an expiry date on the labels except pharmaceutical products. The existing rules mandate that the manufacturers only need to print a "Best Before Use" on the label for selling in the retail market. By printing Best Before Use on the label, manufacturers of the food products cannot be held responsible if the products sold after date become unusable.

Thank you