

Good Questions 6: What is done with questionable foods? The infant formula example*

Abstract

What is done with foods of questionable quality such as those that are outdated or recalled? There is no agency of government that tracks such foods, so they might re-enter the food stream, whether legally or illegally. This can put people's health at risk. This is a major issue in relation to infant formula because infants are highly vulnerable and for a time formula can constitute their entire diet.

There is a need for clear law for the management of questionable foods and for active enforcement of the law. There is also a need for transparency for the entire process of handling questionable foods.

Keywords

Food safety, food recalls, infant formula, contamination, traceability

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Good questions

Food products can become questionable for many reasons: expired use-by dates; reports of contamination, government recalls, or ugliness as in malformed vegetables or dented cans. Some might be legal to sell, some not, depending on the jurisdiction. Others have discussed the meaning of expiration and other types of dates provided on food packages (Best Food Facts 2018; Neff et al. 2019). Here, however, the focus is on ***What is done with questionable food products? Where do they go?***

No one seems to know. Some food experts can describe the practices and rules in specific settings (Quora 2018), but there is not much knowledge about broad patterns, locally, nationally, and globally. It is difficult to find published reports on the trajectory of food products that are bumped out of the mainstream path from producers to consumers. There is talk of accountability from farm to plate (360iResearch LLP 2019), but not for food products that never get to the originally intended destination.

Food safety agencies might give little attention to foods outside the conventional commercial channels because government action is designed to protect trade as much as to protect consumers' health, so foods outside the regular trade stream are of little interest. The emphasis on trade is clear in the orientation of Codex Alimentarius globally (Codex Alimentarius Commission 2019), the U.S. Food and Drug Administration in the U.S., and in the European Food Safety Authority (EFSA 2019). It is also evident in the food safety concerns of low-income countries (Defait 2018).

Ugly and Expired foods

Foods can become questionable and possibly not suitable for sale for many different reasons. Malformed or bruised fresh foods might be sold at a discount, perhaps from an "Ugly Fruit" bin. Some foods might have damaged packaging. Some might become undesirable because they were produced in ways that harm the environment or violate human rights. Some might be thought to violate standards for kosher or halal food. However, usually it is the risk to the consumer's health that is the major concern, as discussed below.

Food that is rejected only because of its appearance is likely to be just as safe to eat as its prettier companions. But ignoring cautionary information such as expiration dates can be risky. Often the risks are unknown, but such warning "signs" should be heeded out of an abundance of caution. Of course, common sense tells us that something outdated by just a few days is still safe, but as the weeks and months go by, the risks increase.

It has been suggested that expiration dates can be ignored because "Waste, after all, hurts everyone's bottom line, from farmers to retailers to consumers (Crawford 2018a)." That is not accurate. It is true that when retailers remove food from its pathway to consumers at their own expense, their bottom line is hurt. However, discarding opens opportunities for increased sales by the producers, increasing their profits.

Food can be salvaged in many different ways, even on a small scale. For example, if you order too much at a restaurant, you might ask for a box and take the leftovers home. In India, I once noticed that my host packed up the leftovers on the table, I assumed for himself. But on the way to the hotel he rolled down the car window and handed the package over to some poor people. It appeared to be routine for both the donor and the receiver. This was in sharp contrast to the practice in Japan, where restaurants hesitate to let customers take away their leftover food (Saito 2010).

Individuals sometimes find creative ways to intercept unsold food before it is removed (Moore 2018). Some take it from the dumpsters at the back of supermarkets, in a practice commonly described as “dumpster diving”. It appeals even to people who are not particularly needy. “Rescuing” food from garbage bins may or may not be legal, depending on the jurisdiction. The Internet offers advice on how to do it.

Imperfect Produce is a business whose mission is based on the concept of “Ugly Produce Delivered: Healthy, delicious fruits and veggies for about 30% less than grocery stores, delivered to your door (Imperfect Produce 2019).” However, Food First and Phat Beets criticized its approach as an attempt to monopolize and profit from the flow of valuable food waste (The Phat Beets Crew 2018). They launched a petition that challenges its approach. At the time of writing it is accessible at https://www.change.org/p/imperfect-produce-adopt-the-food-justice-community-benefits-program?fbclid=IwAR2fc1n0pp64iEITn6KzxcZ3PcF8zL3GRZyNQ49_00jg69NL12WNkbEbp4I

Salvaging food for profit can be viewed as a “long overlooked business opportunity (Crawford 2018a; Danovich 2015a, 2015b).” This focuses on benefits for those who salvage the food in order to sell it. Attention should also be given to the potential benefits and risks for consumers who get the salvaged food.

Whole fresh foods such as fruits and vegetables are not labeled with an expiration date. When they go bad, it is obvious. Rather than going into garbage heaps, some might be diverted through sales or gifts to feed livestock (Penn State 1996). Much of the food that is discarded could go to moderately better uses, such as composting or bioenergy (U.S. Environmental Protection Agency 2016) rather than going to landfills.

Processed foods sold in boxes, cans, or jars are different from fresh foods. Unless they are opened, they cannot be inspected to determine if the smell is “off” or the product is discolored. Buyers might rely on dates printed on the container, bypassing those with dates that are imminent or have passed. The language varies, and so does the meaning. Some say, “use by” a specific date, or “best by” or “sell by”. Some people assume it is illegal to sell the products after that printed date, but in many jurisdictions, no such law can be found. Policies can vary from one store to the next, and from one day to the next. The United States Department of Agriculture provides an overview of food product dating (U.S. Department of Agriculture 2019), but it should not be assumed that the views and policies stated there are accepted everywhere.

Some people think the date on the food product means it goes bad by then and should not be eaten after that date. However, many foods are safe to eat for some time after the printed date. Usually the rate at which the quality deteriorates is not known by experts or consumers, so people just guess. Some markets might sell outdated foods at a discount. A group in Nigeria worked out a system for purchasing food close to its expiration date at a discount and distributing it to people who otherwise might not get enough to eat (Fallon 2018). There are potentials for doing that in systematic ways (Berkenkamp 2017). The Goodr company in the U.S. (<https://goodr.co/>) helps businesses take advantage of tax incentives while donating unsold food to help needy people (Crawford 2018b). These practices share some qualities with traditional gleaning, (Marshman and Scott 2019; The Economist 2018). There are good ways to salvage food that might otherwise go unsold (Walla 2019), but it must always be done with caution about the risks involved.

Those risks can be difficult to assess. Some manufactured food products provide information on Date of Manufacture or Date Packed or Inspection Date but say nothing about when they might become unsafe to eat. Government agencies and the food industry provide little guidance to consumers about how to assess the safety of any specific food in front of them.

There is information about how to prepare food safely (e. g., WHO 1996), but little on ways to evaluate food that might have been sitting around for a time or in contact with unclean surfaces. The visual and smell tests are obvious, but surely food safety experts could offer more helpful suggestions to consumers.

Many retailers take outdated processed foods off their shelves and don't sell them. Those products might go into the garbage bins at the back of the store or they might be returned to the wholesalers or manufacturers. In some cases, retailers might be compensated for the returned products. Some outdated or otherwise unsellable foods could be given or sold to farmers to feed their livestock. Some might be sold in low-end stores at which buyers are not so fussy. Some might be exported.

Policies and practices vary a great deal, and so do the laws at national and subnational levels. Some laws are questionable. For example, in France and the Czech Republic, retailers are required to turn unsold food over to food banks for distribution to the needy (Beardsley 2018; Willoughby 2019). In contrast, in Brazil, food safety regulations prevent restaurants from giving away food (Ratliff 2018).

Donated foods should be safe to consume, but it is not always clear how the businesses that donate food or the food banks that receive it are to assess its safety, or who would carry what legal liability if a health problem arises. In some jurisdictions there are "Good Samaritan" laws that protect donors, making them more willing to donate (Feeding America 2019).

As we wonder about the disposition of questionable foods, we should not ignore the huge quantities kept in storage and not sold (Brown 2018; Haddon 2018). Much of that food is the result of excess production, beyond what is needed in the food marketplace. Some of it might be distributed through school meals, even if the food is not a good choice (Robison and Mulvany 2019). This is a long history of wasteful food storage in India (Kaur 2015). Some of the cow's milk produced in the U.S. goes to food banks, which is good, but it can be so excessive, it becomes a severe management problem for them (NPR Illinois 2019). In some places, huge amounts of stored food just sit, not discarded and not distributed. Many hungry people would welcome a portion of these idle foods.

Globally, there are no standard practices in the handling of questionable foods, leaving many questions unanswered: Who decides when foods are to be recalled, based on what criteria? Where is unwanted food supposed to go? Where does it actually go? In recalls, who bears what costs? Who bears what risks? What is legal or illegal in any particular jurisdiction? How is the relevant law enforced? Who is watching? Questions like these are important because for some people the temptation to recover some of the value of the products, even illicitly, can be strong, and the risks these actions create for consumers' health can be substantial.

Issues related to the disposition of questionable foods could be illustrated with many different food products. Here the focus is on the example of infant formula. It is distinctive because of the high vulnerability of infants, and the fact that for some infants, for a time, formula is the entire diet, not just a small part of a diverse diet. Infants cannot make assessments and reject the product on their own. They depend on caretakers and government regulators for that.

Powdered infant formula is not a sterile product. It is vulnerable to both accidental and deliberate contamination. It is a high-value product, economically, so it attracts criminals, especially smugglers, for its cash value rather than its nutritive value.

Global guidelines and national law

I once strolled through a neighborhood food kiosk in Asia with other food specialists. One of them picked up a box of powdered infant formula and peeled back a sticker with a little message, something like “On Sale!” The sticker covered the long-passed expiry date. What story was hidden by that sticker? That box might have expired or it might have been recalled in another country and then exported. It might have been stolen. There is little regulation of outdated or recalled infant formula anywhere in the world. Using infant formula in places where there is little effective regulation adds to its riskiness.

At the global level, the *Codex Alimentarius Commission* develops non-binding guidelines regarding food composition and safety. Its main purposes are “protecting consumers’ health and ensuring fair practices in the food trade (Codex Alimentarius Commission 2019).” The *Codex Standard for Infant Formula*, designated as CODEX STAN 72-1981, includes a list of required ingredients and designates various required quality control measures.

In paragraph 9.4.1 the standard specifies:

The date of minimum durability (preceded by the words “best before”) shall be declared by the day, month and year in uncoded numerical sequence except that for products with a shelf-life of more than three months, the month and year will suffice. (Codex Alimentarius 2007)

Specific ingredients in infant formula can have their own expiration dates (Keju 2017). That information is not available to consumers. They have to hope that the manufacturers consider the use-by dates for individual ingredients when they set the use-by dates for formula that include those ingredients.

National laws generally follow Codex guidelines, but with variations. In U.S. law, regulations relating to infant formula are found in the Code of Federal Regulations Title 21, Sections 106 and 107 (U.S Code of Federal Regulations 2003; 2009).

Section 107, paragraph 20 requires:

(c) 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). (U.S. Food & Drug Administration. 2019a)

As the U.S. Food and Drug Administration (FDA) has explained:

“Use by” date. This is the date after which a package or container of infant formula should not be fed to infants. It indicates that the manufacturer guarantees the nutrient content and the general acceptability of the quality of the formula up

to that date. FDA regulations require this date to be specified on each container of infant formula. (U.S. Food & Drug Administration. 2014)

There is nothing in U.S. law that says expired infant formula may not be sold, although the FDA advises against it. There are no rules about what should be done with infant formula that has expired or has been withdrawn or recalled. There is no system for tracking these products (U.S. Food and Drug Administration 2019b).

The rules regarding expiration dates in Canada are similar. Division 25 of the Food and Drug Regulations (FDR) refer specifically to infant formula:

B.25.001 In this Division,

expiration date means, in respect of a human milk substitute, the date

(a) after which the manufacturer does not recommend that it be consumed, and
(b) up to which it maintains its microbiological and physical stability and the nutrient content declared on the label; (*date limite d'utilisation*). (Government of Canada 2017).

In Canada, as in many other countries, the rules do not say what must be done with the product after the expiration date passes.

Botswana's Food Control Act says, "No person shall stock, distribute, sell or exhibit any foods for infants and young children which have expired or are beyond their shelf life (Government of Botswana 2017)." This is unusual because it plainly says such foods may not be sold. Of course, this leaves open the question of how well that law is enforced. Also, this law focuses on what must *not* be done. It does not say what grocers or others should do with expired formula.

In October 2018, the Pennsylvania Department of Agriculture called a local pharmacy to account for having infant formula on the store's shelves beyond the product's expiration date (Penn Live Staff 2018). I asked a food safety specialist in the department to refer me to the relevant regulations related to the sale of expired formula. I was told, "Expired infant formula may not be sold according to federal regulations." When I then asked for the specific law, I was directed to various FDA documents on infant formula, none of which said anything about prohibiting sale of expired infant formula. There might be other state-level food safety agencies that have a similar misunderstanding of current federal law.

Infant formula recalls

Foods are recalled from time to time. Recalling refers to stopping the sale of specific foods under orders from the government or the manufacturer. It requires the removal of unsold items by both wholesale and retail sellers. Some food recalls are huge (Bloch 2019). *Food Safety News* at www.foodsafetynews.com regularly reports on recalls for infant formula and other foods. The International Baby Food Action Network and the International Code Documentation Center list formula recalls (IBFAN-ICDC 2018).

Recalls of infant formula and other products by regulatory agencies are common, but the process can be slow. It has been reported that in the United States, "Food companies took an average of 57 days to recall items after the F.D.A. was apprised of the potential hazards. One recall did not begin for 303 days (Kaplan 2017)." The risks to consumers are substantial. In

many countries, little or no action is taken to recall foods reported to be at elevated risk of contamination. In some cases, contamination may be concealed by the manufacturer for years before the government learns about it and demands recall of the of the product (RFI 2018).

Some recalls for infant formula and other foods are widely reported in the press. I cannot remember any that reported what was done with the recalled products. I don't remember any that asked the question.

Nestlé's policies

Each manufacturer of infant formula has its own policies. To get one example, I asked Nestlé about their policy for dealing with outdated infant formula. They replied:

Expired or outdated infant products including those at customer's premises are considered as no longer suitable for consumption and our policy is to destroy them in a safe, legally acceptable and environmentally compatible manner. Nestlé takes back returns for all expired Infant Nutrition Products (i.e. starter formula and follow up formula, infant specialties, infant cereals, infant meals & drinks and growing up milks) from trade partners. Nestlé representatives or a company authorized by Nestlé supervises the destruction process and documents each destruction. Depending on local legislation, government officials may need to witness the destruction and if necessary a destruction certificate is obtained from these government officials.

They also responded to my specific questions:

(gk) I would like to know whether retailers who return outdated products have some economic incentive for doing that, perhaps a refund of the wholesale price paid for it, or maybe even a bit more for their trouble.

(Nestlé) Generally we do not give an economic incentive for outdated products. In some markets we have what we call "bad goods allowance", which is usually calculated as a percentage of sales. This is to reduce unnecessary and duplicated administrative and transportation costs.

(gk) Also, have any studies been done on what happens with outdated products that are not sold and not destroyed? I can imagine a variety of possible pathways, some legitimate, some not. Has anyone looked at that?

(Nestlé) There are no scientific studies, but we diligently trace the destruction of outdated products, asking for certificates of destruction from the retailers, any authorised company or local authority in charge of destruction. Our internal audit process also checks and ensures that all products are destroyed according to local laws and our own standards.

(gk) I didn't know there were companies that specialized in the destruction of outdated goods. Can you give me the names of some of so I could explore how they operate?

(Nestlé) There are many companies in many geographies specializing in this highly regulated work and they do so under very strict and confidential

agreements. I am sure you can find listings of such companies from local directories.

In that last answer, in what way are those specialized companies regulated? And why should the agreements be confidential? Why is the management of questionable foods of all kinds so opaque? It may be about avoiding legal liability for health risks associated with questionable food products. It seems fair to guess that this lack of transparency serves the interests of industry, not the public interest.

Defective and counterfeit formula

Some infant formula, purchased or stolen, possibly outdated or contaminated, might be repackaged and relabeled. Some repackaging might be based on obtaining cheap formula and then putting it into boxes that make it look like a more expensive product. Some infant formula might be repackaged by the manufacturers themselves. Some manufacturers put the same product into differently labeled boxes to gain more shelf space in the stores (Yan and Feng 2017).

Some shady operators buy milk powder by the ton and repackage it. There are several accounts of such questionable practices (Associated Press 2016; He 2016; JUSTIA US Law 2000).

There are cases in which infant formula has been contaminated deliberately. In China in 2008, melamine was added to infant formula to make it appear to have more nutritional value than it actually had, with fatal consequences (Greiner 2009; Ji et al. 2014). Such practices put infants at high risk.

Some formula might be discarded, perhaps going into the nearest garbage dump (Amrieh 2015). Others might retrieve it and use it to feed their children or their animals or sell it. If we expect grocers to discard expired infant formula, how should they do that? If it goes into bins behind the store, there is a good chance that scavengers will find it and “recycle” it.

Questionable sellers and buyers

Some formula is sold illicitly, here taken to mean the sale is illegal or perhaps ought to be illegal. There are sales of formula of unknown provenance on the Internet, through platforms such as Craig’s List. In some cases, the formula offered for sale becomes available because a family has leftover unopened packages. Some comes from the distribution of infant formula at no cost to participants in the United States’ Special Supplemental Nutrition Program, commonly known as WIC. These sales violate WIC rules.

Apart from the questionable sales by individuals, there are large-scale sales of infant formula in what might be criminal operations. Perhaps the largest is the huge flow of infant formula purchased in Australia’s supermarkets to be resold in China (Cooper 2018; Puddy and Burnie 2018).

Infant formula is often stolen (Hinckley 2016; Price 2016; Taylor 2011; Tucson Citizen 2003). Small quantities might be stolen from market shelves by poor parents to feed their own children. When large quantities are stolen, the thieves’ main interest is in selling it.

There are bulk buyers of infant formula that operate out in the open, such as the organization called “Sell Formula” accessible at <https://sellformula.com/> That website does not

say what they do with the formula they purchase. Some of it might be sold to parents, some might go to others who then resell it, and some might be exported. There is no systematic oversight of such operations.

The need for better regulation

The U.S. government says that if you have purchased a recalled food, “you should return it to the store. They will return it to the manufacturer or destroy it.” (Foodsafety.gov 2015).” How do they know that?

A jurisdiction might have a law saying that expired infant formula or other foods may not be sold. But if retailers have paid for the product and the wholesaler will not reimburse them for expired product that is returned, and there is no regular inspection by government agents, the retailers are not going to be eager to discard the supposedly unsellable product. When called to account, they might just apologize for having failed to notice that the product was outdated and carry on.

Agencies that deal with food safety and quality such as the U.S. Food and Drug Administration and the SQF (SQF Institute. 2019) generally claim to serve the interests of both consumers and the industry, but where choices need to be made, there might be a tendency to favor the food industry. Their behavior is very different from that of non-governmental agencies such as the Center for Science in the Public Interest in the U.S., which is decisively on the side of consumers (CSPI 2019).

No government agency systematically tracks what happens with the huge amount of questionable food withdrawn from store shelves or never gets to those shelves. Data are available on food that is sold, but nothing is done to track food that is not sold. Some might go into the recognized waste stream, but some might be sold and used, legally or illegally. Much of it might raise health risks for consumers.

A key element in food safety systems is the requirement for traceability. It should be possible to trace the history any questionable foods back to their origins, thus facilitating corrective measures. The technologies for doing this have been improving steadily (Crawford 2018c; Painter 2018; Provenance 2019), but the implementation of those technologies lags behind.

During the shut-down of the U.S. government in January 2019, its Food and Drug Administration suspended inspections of food processing facilities in the country (Moritz-Rabson 2019). In the U.S. any individual food processing facility is inspected only rarely. “Foodborne illness sickens 48 million people in the U.S. each year and kills 3,000 annually (Moritz-Rabson 2019).” The risks are likely to be much higher in low-income countries, especially those in which there little or no protection against expired foods and other sorts of food safety risks. Everywhere, government efforts to ensure food safety could be much better.

Currently there is no agency at any level that tries to keep track of questionable foods, putting people’s health at risk and failing to contain various types of illicit behavior. There is a need for clear law for the management of questionable foods, especially those that present great risks, such as infant formula. There is a need for active enforcement of the law and for stronger laws. And there is a need for transparency for the entire process of handling questionable foods, including those that are not sold.

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