

FRI eNews provides updates on research and events at FRI and UW-Madison and other current food safety news.

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FRI had another busy year in 2023! Check out our [Year in Review](#) on Facebook.

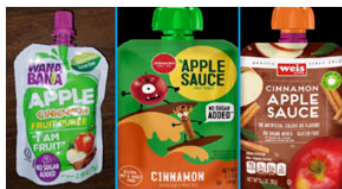
Also, we have a [new Facebook page](#)! Due to technical difficulties with Facebook, we recently had to create a new page. So even if you followed our old page, please follow us on the new one to keep getting our updates on Facebook.

## In the News

A ***Salmonella* spp.** outbreak associated with **cantaloupes** has sickened at least 230 people and led to 96 hospitalizations and three deaths in the U.S. in the past two months. The same outbreak has caused 129 illness, 44 hospitalizations, and five deaths in Canada. Most of those sickened have been below 5 or above 65 years old. **Several serovars of *Salmonella* (Sundsvall and Oranienburg)** have been implicated, and **both whole cantaloupes and pre-cut fruit products** have been recalled. CDC and FDA



Malichita nor Rudy brands.



**Lead contamination in cinnamon applesauce pouches** has led to FDA receiving at least **65 reports of adverse events** believed to be linked to the products, all in children under 6 years old. Sampling of retail product found lead levels of 2.18 ppm, which is **more than 200 times the action level** proposed in a [draft guidance](#) from FDA for such products. Three brands (WanaBana, Schnucks, and Weis) have recalled their products. Meanwhile (using different data sources), [CDC has identified](#) up to 125 confirmed, probable, and suspect cases in 22 states, where individuals have blood levels of  $\geq 3.5$  microgram/dL within three months of consuming one of the recalled products. **The lead in the products is believed to have come from the cinnamon**, which was sourced from a facility in Ecuador that is currently being investigated onsite by FDA. FDA and FDA Deputy Commissioner for Human Foods Jim Jones [have indicated](#) that economically motivated intentional adulteration of the cinnamon is suspected.

A ***Listeria monocytogenes* outbreak** that has caused 11 illnesses, 10 hospitalizations, and one death across seven U.S. states over a five-year period [has been linked to peaches, plums, and nectarines](#). A match to the outbreak strain was found in peach samples collected at HMC Group Cold Storage, Inc. in Kingsburg, Calif., and a recall has been issued.



Several **new outbreaks have been reported in the U.S.** in the last month and remain active, with no foods yet linked to these outbreaks:

- A *Salmonella* Newport outbreak [has sickened](#) at least 44 individuals.
- A *Listeria monocytogenes* outbreak [has sickened](#) three people.
- An *E. coli* O121:H19 outbreak has sickened at least 37 people.

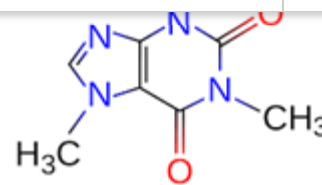
The multistate outbreak of ***Salmonella* Thompson** reported last month in eNews remains ongoing, and [has now sickened](#) 80 people, with 18 requiring hospitalization and one death now reported. This outbreak has been linked to Gills Onions fresh diced yellow onion, diced onions and celery, diced mirepoix, and diced red onions; the company has recalled these products.

**Water and environmental samples from the farm supplying the onions to Gills Onions matched the outbreak strain.** Additionally, other *Salmonella* isolates were obtained from the farm's samples that matched strains found in other salmonellosis patients who were not considered to be part of this outbreak.



Seven people in the U.S., mostly **infants**, [have been sickened](#) (with one requiring hospitalization) with a ***Salmonella*** strain linked to **dry dog foods**. The low infectious dose for *Salmonella* means that even touching a dog bowl or the saliva or poop of a dog who ate the food can lead to illnesses. Samples of the implicated dog food (Victor brand Hi-Pro Plus) were shown by whole-genome sequencing to contain *Salmonella* that closely matched the outbreak strain.

has been blamed for the death of two people, including one university student and a 46-year-old man. Both individuals had underlying health conditions and were not known to consume energy drinks. The product, previously available in restaurants with **unlimited, self-serve refills** but no mention of its caffeine content, contains 390 mg caffeine per 30 ounces (or about as much as 4–5 cups of coffee), approximately the total daily acceptable intake of caffeine for healthy adults, per FDA. Following the filing of lawsuits related to each death, Panera is displaying new cautions about the beverage and no longer allows self-serve refills of Charged Lemonade but continues to dispute any relationship between the product and the deaths.



Other noteworthy outbreaks reported recently **outside** of the U.S. include the following:

- A ***Salmonella* Strathcona** outbreak in **Europe** associated with **fresh tomatoes** has sickened 149 people in 11 countries so far in 2023. Eight of the cases were in individuals from the U.S., of whom at least six recently had traveled to Europe. The outbreak is part of a **re-emerging, seasonal outbreak**, according to the European Centre for Disease Prevention and Control, with isolates of the uncommon serovar being found in cases in Europe since 2011.
- Another ***Salmonella*** outbreak, this one involving three types of ***Salmonella* Enteritidis ST11** and associated with chicken, has resulted in 335 cases (including one death) across 14 European countries as well as in the U.K. and the U.S. Traceback data points to producers in **Poland and Austria**, but no microbiological evidence at these facilities has been found.
- **Excessive levels of the preservative calcium propionate** are being blamed on an **outbreak in Finland associated with tortillas manufactured in Poland** that has sickened more than 800 people, most of whom were children. Some of those sickened said the tortillas had a soapy or detergent smell or taste. **The calcium propionate levels were 10-fold higher than normal** in the implicated tortillas. Propionate (or propionic acid), while an authorized and effective antimicrobial naturally found in some dairy products, can cause some toxicity at high doses. Those sickened in this outbreak experienced short-lived (less than 12 hours) symptoms of stomach pain, nausea, and headache that started within an hour of eating the tortillas.
- In **Thailand**, more than 500 cases (and 24 deaths) of ***Streptococcus suis*** infection are being blamed on consumption of **raw or undercooked pork products** (or pig blood or handling pigs). Officials there suggested that a **social media trend** involving eating raw food and drinking alcohol may have played a role, although a large 2021 *S. suis* outbreak in that country involved mostly older individuals, especially farm or slaughterhouse workers.



Several updates have occurred related to a **large botulism outbreak in France** that was

- **Criminal charges** (including involuntary homicide) have been filed against the owner of the restaurant in Bordeaux that served “**home-canned**” **sardines contaminated with type B C. botulinum and its toxin** to patrons, many of whom were from other countries and were visiting to attend games of the Rugby World Cup. Fifteen people contracted botulism, with 13 requiring hospitalization, six needing invasive mechanical ventilation, and one dying.



- Another report on this outbreak was published in Eurosurveillance, which highlights how **credit card and meal order information was used to rapidly identify individuals** who may have eaten contaminated sardines at the restaurant.

## Government and Regulatory News

Two attorneys discuss the **current and upcoming state bans on PFAS** (per- and polyfluoroalkyl substances) in **food packaging** as well as recent litigation and how it is pushing some large fast-food chains to make changes.



FDA has issued a Small Entity Compliance Guide to help small companies comply with the **updated standard of identity for yogurt**, which consolidates previously separate standards of identity for lowfat and nonfat yogurt into the general standard of identity for yogurt.

FDA released a draft of Edition 2 of the **Menu Labeling Supplemental Guidance with proposed updates**. The draft guidance, once finalized, will update the existing guidance and **will address the voluntary declaration of added sugars and the voluntary declaration of nutrition information for menus on third-party platforms**.

EFSA announced the launch of a **new online food chemical platform for modeling and predicting toxicity (toxicokinetics and toxicodynamics) of chemicals** that involves **little or no animal testing**. The new platform, “TKPlate,” developed by scientists at EFSA and other European research institutions, is not yet used by risk assessors, however.



The Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) Expert Committee has assessed and published **allergenic thresholds** (for exposure without appreciable health risk) for a variety of allergens, including **celery, soy, certain nuts, mustard, lupin, buckwheat, and oat**. Previously established recommended reference doses (RfDs) for other nuts, milk, peanut, egg, sesame, hazelnut, wheat, fish, and crustaceans are also discussed. All of the RfDs are between 1 and 10 mg (except crustaceans at 200 mg) total protein from the allergenic source.

WHO and FAO and the Joint Expert Committee on Food additives on Nov. 24 released an assessment of the **health impacts of titanium dioxide (TiO<sub>2</sub>)** consumption. TiO<sub>2</sub>, used to whiten and brighten foods,



showed **no evidence of carcinogenic, reproductive, or developmental toxicity**. While available data did not provide convincing evidence of genotoxicity, the report indicated that **more research concerning the TiO<sub>2</sub> size distribution in food is needed**,



however, as well as genotoxicity tests that are appropriate for **nanoparticles**. TiO<sub>2</sub> was initially included in the list of chemicals that California wished to ban as food additives under the California Food Safety Act, but TiO<sub>2</sub> was withdrawn from the list before the bill was signed into law on Nov. 1. TiO<sub>2</sub> is still listed in a list of food additives that may be banned in New York state and remains banned in the EU.

FDA, USDA, and EPA announced a joint draft national strategy to reduce food loss and waste 30% by 2030. Comments on the proposal will be accepted through Jan. 4, 2024.

## Current Literature



A newly published study demonstrated that **summer sausage can be manufactured at a higher pH (5.0, vs. the more typical 4.6) plus a mild heat treatment (43.3°C endpoint temperature)** and still achieve the USDA requirement of a 5-log reduction in Shiga toxin-producing *E. coli* by adding a **high-pressure pasteurization step** (586 MPa for at least 150 sec) after processing. The higher pH and minimal heat treatment may result in a milder sausage preferred by some consumers (although sensory tasting was not conducted in this study). Of historical note: FRI director **Charles Kaspar** and

other former FRI researchers were part of the Blue Ribbon Task Force that originally validated the five options to reduce the risk of *E. coli* O157:H7 in fermented sausages that this work supplements.

**UV-C light** (200–280 nm) is very effective at **rapidly inactivating foodborne pathogens on surfaces**, but exposure to UV-C wavelengths that best kill microorganisms (250–270 nm) are hazardous to humans. Two new reports investigated antimicrobial properties of other, less hazardous wavelengths of light (**far-UV-C, at 220 nm**) and **blue light** (at 405 nm) for potential food industry applications:



- A study from the University of Georgia's Center for Food Safety demonstrated the efficacy of antimicrobial blue light (405 nm) for surfaces contaminated with ***Listeria monocytogenes***. A **3-log reduction** in viable Lm (as dried cells or biofilms) on stainless steel coupons was observed with 16 hours of exposure of 405 nm light at a dose of 2,672 J/cm<sup>2</sup>. **Blue light was even more effective against Lm on polystyrene and polyethylene** coupons or with a photosensitizing agent, although the **long exposure time** needed may limit its use.
- Another study tested sequential light treatment with 222 nm (for 30 sec) followed by 405 nm (for 48 hours) vs. 405 nm (for 48 hours) alone on thin liquid suspensions of ***E. coli* O157:H7, *L. monocytogenes*, *Salmonella Typhimurium*, and *Staphylococcus aureus***. **The sequential treatment was much more effective against *E. coli* and *L. monocytogenes*** (>4 log reductions) than was the single 405 nm treatment (1.3 to 2.6 log reductions for the two pathogens, respectively). A

highly susceptible to 405 nm light) occurred upon sequential treatment vs. 405 nm treatment alone.



**Room temperature pizza: yay or nay for food safety?** A [new report](#) found using a modeling analysis that while pizza served in college dining facilities is often out of temperature (~40% of the time) and may contain pathogens such as *S. aureus* and *Bacillus cereus* at low but detectable levels, **even the riskiest pathogen (*S. aureus*) would not be expected to become a problem in pizza unless it was left out at room temperature for more than eight hours.**

A recent [study](#) found that **Herpes simplex virus type 1** (HSV-1, which causes oral blisters or cold sores) **can persist at least 24 hours on surfaces and at least one hour on a variety of food matrices**, suggesting some potential of risk when sharing food with infected carriers.

How often and in what foods is *Bacillus cytotoxicus* (a relatively understudied organism that has on rare occasions led to [fatal cases](#) of diarrhea) found? Like other species in the *B. cereus* group, *B. cytotoxicus* is associated with low water-activity foods and is thermotolerant; however, *B. cytotoxicus* can grow at even higher temperatures (up to 52°C vs. 45°C for other *B. cereus* group species). [A new report](#) found that **screening at 50°C (but not at lower temperatures** typically used in screening protocols) resulted in detection of *B. cytotoxicus* in 23% of low water-activity food samples, mostly dried potato products. However, all of the isolates found exhibited either low or nondetectable cytotoxicity. The study also found that *B. cytotoxicus* was capable of **persisting in food production environments for years, likely as spores** given the low mutation rate observed.

**Alcohol, microbes, and health** were discussed in three recent papers:

- **Metabolic byproducts of microbial fermentation** used to make alcoholic beverages are linked to many of the **acute and chronic toxicities associated with alcoholic beverages**. A comprehensive new [review article](#) explores the hazards of **nitrogen-containing microbial metabolic byproducts** in alcoholic beverages such as **biogenic amines and ethyl carbamate** as well as others such as **fusel alcohols, nitrosamines, and heterocyclic amines** that may occur via **nonmicrobial processes**. The review explains how these compounds arise in different types of fermented beverages, how they can be detected, and **how their presence can be minimized**.
- **How does drinking beer (with or without alcohol) affect bacterial diversity within the gut microbiota?** While alcohol consumption is generally believed to decrease bacterial diversity, [a randomized clinical study](#) found that four weeks of consumption (330 mL/day) of **either 5.2% alcohol beer or non-alcoholic beer increased the bacterial diversity** (as measured by the Shannon diversity index) to a similar extent relative to baseline levels. The increase in diversity was hypothesized to be due to beer's **phenolic compounds**, including polyphenols, which have been shown to be responsible for modulating the gut microbiome following red wine consumption.
- At alcohol levels of 3.5 to 5%, beer has been shown previously to **inhibit the growth of foodborne**



gaining popularity? Inoculated *E. coli* O157:H7 and *Salmonella enterica* were both shown to survive in low (<2.5%) or nonalcoholic (<0.5%) beer for over two months. **In nonalcoholic beers (but not low-alcohol beers), both *E. coli* O157:H7 and *S. enterica* could grow 2 log during 63 days of storage at 14°C, but not at 4°C.** Inoculated *L. monocytogenes* numbers fell rapidly under all tested conditions.



## Other News

**Conflicts of interest related to dietary guidelines and nutritional studies** are not a new thing, but two recent items in the news show that such problems are not going away:

- The members of the **Dietary Guidelines for Americans Committee (DGAC)**, which sets new dietary guidelines in the U.S. every five years, have been scrutinized and criticized in the past for their **ties to the food or drug industry**, with **arguments made that such ties may bias their decisions**, although some of that criticism has itself been met with criticism. As a result, USDA and HHS released **public disclosures of conflict of interest (COI)** for members of the current 2025 DGAC that lists (but does not name) members reporting ties to large food and drug companies or to industry groups. However, this COI report was criticized by the activist organization U.S. Right to Know, which independently investigated and issued a detailed report of COIs for each specific member. Others, however, have suggested that the authors of U.S. Right to Know report have their own biases.
- A **clinical study using identical twins comparing the cardiometabolic effects of an omnivorous vs. a vegan diet** has received significant press. The randomized controlled clinical trial included 22 pairs of identical twins who followed assigned diets for eight weeks. **Twins in the vegan arm experienced significant reductions in LDL cholesterol, fasting insulin, and body weight. However, serum trimethylamine N-oxide (TMAO) levels were similar between groups.** Higher serum levels of TMAO, a gut microbial metabolite often associated with increased red meat consumption, have been linked to increased cardiovascular risks. The study, which will be the focus of a Netflix Limited Series in January, has been criticized because of conflicts of interest among the investigators and **post-hoc selection of two of their key endpoints** (fasting insulin and body weight) while neglecting other important endpoints (i.e., **blood pressure**).



## Doritos are embracing technology!

- While **U.S. gamers love their Doritos** (more than 85% have eaten them in the last three months), **they don't love their loud crunch** that can distract and annoy other players as they voice chat during a game. Since crunch-less Dorito chips were not a viable solution, Doritos Silent Crunch Cancellation Software was created. More than 500 people crunching were



crunching sounds while allowing the gamer's voice to be heard as usual. See the technology in action [here](#).

- But wait! There is another new way to enjoy the flavor of Doritos without the crunch (and without the orange crud on your keyboard) while gaming, but only if you are 21 or older! Doritos [is collaborating with](#) Empirical Spirits to **make a liquor that tastes just like nacho cheese flavor Doritos.**



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