

## Science Note: Raw Milk Products Supplemental Information

### Justification

In response to a request from the Agriculture Policy Committee during a hearing on HB 1335 on January 15, 2020, we have compiled known outbreak data on both pasteurized and unpasteurized milk and milk products. While data was presented on the original science note containing outbreaks from a 2017 CDC report, congruent data on outbreaks in pasteurized milk and other dairy products were not presented. The following information provides a more comprehensive comparison.

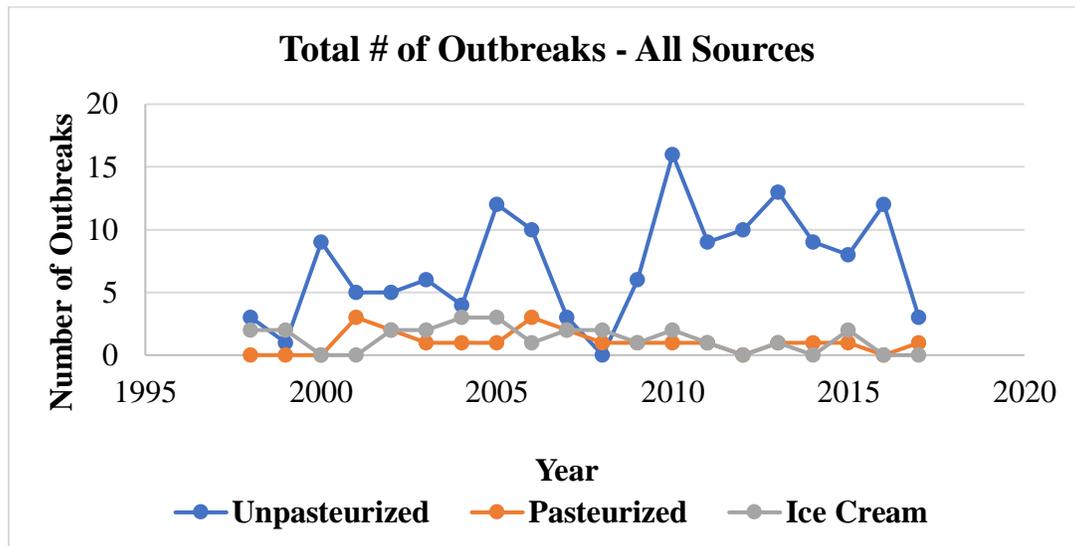
### Methods

Outbreak data are collected by the Center for Disease Control's National Outbreak Research System ([cdc.gov/nors](http://cdc.gov/nors)). State health departments and private individuals may choose to self-report outbreaks that impact 2 or more people. The CDC has data from years 1998-2017. Data is reported for any foodborne illness, not just those sourced from retail or commercial locations.

The following criteria were used in selecting specific data to answer the Committee's question:

- Outbreaks that resulted from dairy products where the source was not specified as pasteurized or unpasteurized were removed from the data set.
- Outbreaks that resulted from a combination of a dairy product plus another food source were removed from the data set.
- Only outbreaks that were confirmed (rather than suspected) were included.
- Outbreaks linked to ice cream do not specify the milk source, so I've separated those outbreaks from the others.

### Results



**Figure 1.** Total number of outbreaks by year for unpasteurized milk and cheese, pasteurized milk and cheese, and ice cream.

*This science note was prepared by MOST Policy Initiative, Inc., a nonprofit organization aimed to improve the health, sustainability, and economic growth of Missouri communities by providing objective, non-partisan information to Missouri's decisionmakers.*

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**Table 1.** Type of pathogen that caused outbreaks linked to unpasteurized milk and cheese, pasteurized milk and cheese, and ice cream.

\*Multiple bacteria may have been responsible for a single outbreak event for outbreaks linked to unpasteurized milk and cheese and for ice cream, which causes the columns to add to greater than 100%.

Type of Disease	Unpasteurized*	Pasteurized	Ice Cream*
Brucella	3%	0%	0%
Campylobacter	64%	10%	8%
Cryptosporidium	3%	0%	0%
E. coli	15%	0%	12%
Listeria	3%	52%	4%
Salmonella	15%	5%	50%
Norovirus	0%	19%	42%
Other	0%	5%	38%
Unknown	0%	10%	0%

**Table 2.** Source of contaminated products, if known, for outbreaks linked to unpasteurized milk and cheeses, pasteurized milk and cheeses, and ice cream. “Other” is not specified in the data set.

Setting	Unpasteurized	Pasteurized	Ice Cream
Banquet Facility	1%	0%	0%
Fair, festival, other temp or mobile services	1%	0%	0%
Farm/dairy	12%	0%	0%
Grocery store	3%	5%	4%
Other	53%	33%	15%
Private home/residence	17%	33%	42%
Religious facility	1%	0%	0%
Restaurant - other or unknown type	3%	19%	27%
School/college/university	1%	5%	4%
Unknown	8%	5%	8%

## Conclusions

Based on CDC outbreak data, there have been 144 confirmed outbreaks linked to unpasteurized milk and cheese, compared to 21 confirmed outbreaks linked to pasteurized milk and cheese. It is unclear if the outbreaks have been caused by regulated or unregulated milk. In most cases where outbreaks occurred linked to unpasteurized milk or cheese, people were exposed to the product at a dairy (12%) or in a private home (17%). Conversely, a larger portion of outbreaks associated with pasteurized milk or cheese have been linked to restaurants (19%) and private homes (33%). The most common type of pathogen varies depending on if the milk or cheese is pasteurized or unpasteurized.

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