

In the news

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Rural & Small Business News

Raw Milk is Safe

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On the web

A Campaign for
Real Milk

raw-milk-facts.com

Objective: Understand Raw Milk & Public Health Issues

- Pasteurization
- Milk regulations and programs
- Bacteria and milk
- Milk Borne outbreaks
- Raw milk myth and facts

Definitions

Raw Milk =
Unpasteurized

Pasteurization =
Process of heating milk for a set period of time at a set temperature

Types of Pasteurization

HTST Most common

- 71.7 °C (161 °F) for 15 seconds.
- Does not sterilize, increases safety by decreasing bacteria, increases shelf life

UHT

- 138 °C (250 °F) for a fraction of a second
- Can store at room temp for 8 wks when stored in airtight package

<http://www.enerymanagement.com/industry/Pasteurization.pdf>

Regulations

- FDA's Center for Food Safety and Nutrition oversees processing of raw milk into pasteurized products
- Federal government has no jurisdiction in the enforcement of milk sanitary standards within state borders

21CFR 1240.61

- Federal regulation passed in 1987
- Bans *inter*-state transport of raw milk for *human consumption*
- 28 states allow raw milk sales for direct human consumption



Pasteurized Milk Ordinance

- Model code of regulations that can be adopted by states
 - Guidelines to minimize microbial contamination of milk
- A note on regulations vs guidelines: federal government regulates interstate sales of milk, states regulate milk processing within state and intra(within) state sales. The PMO guidelines have been adopted as law by many states. States must have state regulations that are equivalent to PMO guidelines if they don't adopt them directly.

Grade A program

- State personnel inspect and grade dairies.
 - Grading is an indication that certain inspection standards have been met.
- FDA regional milk specialist audits state
- Inspection covers from “Cow to Carton”
- Since raw milk not pasteurized cannot be labeled Grade A



school.discoveryeducation.com

Minnesota Statutes 2008 32.393 Limitation on Sale of Milk

“No milk, fluid milk products....shall be advertised, offered or exposed for sale...for the *purpose of human consumption* in fluid form in this state unless the same has been *pasteurized* and cooled....this section will not apply to milkoccasionally secured or purchased for personal use by any consumer *at the farm* where the milk is produced.”

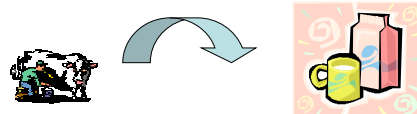
Milk Testing:

- Somatic Cell Count
- Bacteria: Coliform count
- Antibiotic residues
- Phosphatase: tests that milk pasteurized
- Freeze point



Sources of micro-organisms in raw milk

- Can be contaminated during the continuum between production and packaging



Milk Contamination

- Animals shed bacteria into milk
 - Mastitis
 - Bacteria living on teat (commensals)
- Milk or equipment contaminated with animal feces



Environmental Contaminants

Sources

- Water
- Fecal contamination
- Soil

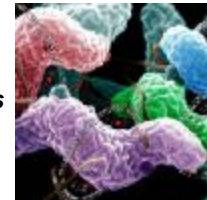


History of foodborne illness outbreaks associated with raw milk

- In 1939 outbreaks associated with milk accounted for 25% of food/waterborne associated outbreaks
- In 2000 milk accounted for <1% of food/waterborne associated outbreaks
- How many foodborne outbreaks are associated with raw milk?
 - 1993 – 2006, 68 U.S. outbreaks suspected or confirmed to be associated with raw milk or raw milk products
 - During the same time period, 3 outbreaks in Minnesota were confirmed to be associated with raw milk

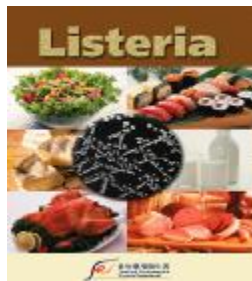
Bacteria associated with milk borne outbreaks

- *Campylobacter*
- *E. coli* O157:H7
- *Listeria*
- *Salmonella*
- *Staphylococcus aureus*



Bacterial characteristics that influence disease potential

- Low infectious dose: takes only a few bacteria to cause illness
- Proliferate in refrigerator temperatures



http://www.fehd.gov.hk/safefood/library/Listeriosis/images/listeria_e1.jpg

Who is at risk



- Children
 - EColi associated with Hemolytic Uremic Syndrome that can cause kidney failure
- Elderly
- Immunocompromised
- Pregnant women
 - Listeria can result in miscarriage, fetal death or illness/death of newborn
- But anyone can be affected
 - 19 of 31 college students *Campylobacter*

Prevalence of raw milk consumption

- 3.5% reported consuming unpasteurized milk during last 7 days
- In the same survey, 3.4% of respondents from Minnesota indicated they drank raw milk within 7 days

Source: CDC FoodNet population survey 2002

Why drink raw milk?

- Proponents of raw milk say it is healthier
 - raw milk has good protein
 - raw milk has good bacteria
 - raw milk has enzymes that aid in digestion of food
 - raw milk can prevent and treat diseases
- Tastes better
- Convenient (if you live on farm)

Argument against regulations

- Right to choose what you drink
- Right to make own decisions on risks



*Source: John F. Sheehan, FDA

Raw Milk Mythbusters*

- "Raw milk kills pathogens"
 - No, it doesn't.
- "Pasteurization inactivates enzymes that kill pathogens."
 - No, it doesn't.
- "Pasteurized milk causes lactose intolerance."
 - No, it doesn't



Raw Milk Mythbusters

- "Pasteurized milk causes allergic reactions."
- "Pasteurization destroys Vitamin C."
- "Pasteurization makes the major part of the calcium contained in raw milk insoluble."

Raw Milk Mythbusters

- Raw milk safety depends on farm
 - raw milk from cattle on pasture (vs conventional dairy) do not have pathogens
- Cows raised on clean dairy farms produce safe milk



<http://www.animalwhispers.org/cattles.jpg>

FAQs

- Why don't farmers that drink raw milk get sick?
- Do organic cows have less bacteria than non-organic?
- Can raw milk be tested to insure safety?
 - Contamination is sporadic and can occur all along collection to cartoning
 - Contamination may not be evenly distributed so a "clean" sample does not mean all milk in bulk tank equally uncontaminated
 - Very small # of some bacteria can cause illness
 - Small # of bacteria contaminating milk when collected may proliferate during shipping

FAQs continued

- Shouldn't buying of raw milk be supported as part of the "local foods" movement?
- Doesn't raw milk taste better?
- What about lactose intolerance? Isn't that caused by pasteurization?
- Doesn't pasteurization cause allergies?
- Does raw milk protect against allergies?
- Does pasteurization cause autism?

FAQs continued

- How are people getting raw milk?
 - Legal to sell retail raw milk in some states
 - If illegal (23 states ban raw milk sale for human consumption):
 - Sold as pet food
 - Buy share of cow and you own the milk produced by the cow
 - Some states allow sale of raw milk if purchaser brings own container to farm

Extension's Role

- Use education to interpret science
- We are local "the further you get from your home town, the greater the distrust is- local educators are local citizens and fellow townspeople

"A combination of outreach and enforcement should be directed at store owners, vendors and dairy farmers, including education about disease risks and vigorous enforcement of laws and regulations governing the production and sale of milk and cheese".
MacDonald et al. CID 2005:40 (1 March) 677.



Questions?

For more information:

- FDA
- CDC
- UMN Center Animal Health and Food Safety: Raw Milk Factsheet
http://www.cvm.umn.edu/cahfs/foodforourselves/050608/cvm/050608documents/soontent/um_cootent_115316.pdf
- Int'l Assoc of Food Protection