



What is raw milk?

Raw milk is milk from cows, goats, sheep, or other animals that has not been pasteurized. Although precise data are not available, it is thought that less than 1% of milk sold to consumers in the United States has not been pasteurized.

What are the risks associated with drinking raw milk?



Raw milk can carry harmful bacteria and other germs that can make you very sick or kill you. While it is possible to get foodborne illnesses from many different foods, raw milk is one of the riskiest of all.

Getting sick from raw milk can mean many days of diarrhea, stomach cramping, and vomiting. Less commonly, it can mean kidney failure, paralysis, chronic disorders, and even death.

Many people who chose raw milk thinking they would improve their health instead found them-selves (or their loved ones) sick in a hospital for several weeks fighting for their lives from infections caused by germs in raw milk. For example, a person can develop severe or even life-threatening diseases, such as Guillain-Barré syndrome, which can cause paralysis, and hemolytic uremic syndrome, which can result in kidney failure and stroke.

- Illness can occur from the same brand and source of raw milk that people had been drinking for a long time without becoming ill.
- A wide variety of germs that are sometimes found in raw milk, can make people sick, including **bacteria** (e.g., *Brucella*, *Campylobacter*, *Listeria*, *Mycobacterium bovis* (a cause of tuberculosis), *Salmonella*, Shiga toxin-producing *Escherichia coli* [e.g., *E. coli* O157], *Shigella*, *Yersinia*), **parasites** (e.g., *Giardia*), and **viruses** (e.g., *norovirus*).
- Each ill person's symptoms can differ, depending on the type of germ, the amount of contamination, and the person's immune defenses.

Who is at greatest risk of getting sick from drinking raw milk?

The risk of getting sick from drinking raw milk is greater for infants and young children, the elderly, pregnant women, and people with weakened immune systems, such as people with cancer, an organ transplant, or HIV/AIDS, than it is for healthy school-aged children and adults. But, it is

important to remember that healthy people of any age can get very sick or even die if they drink raw milk contaminated with harmful germs.

Can drinking raw milk hurt me or my family?

Yes. Raw milk can cause serious infections. Raw milk and raw milk products (such as cheeses and yogurts made with raw milk) can be contaminated with bacteria that can cause serious illness, hospitalization, or death. These harmful bacteria include *Brucella*, *Campylobacter*, *Listeria*, *Mycobacterium bovis*, *Salmonella*, Shiga toxin-producing *E. coli*, *Shigella*, *Streptococcus pyogenes*, and *Yersinia enterocolitica*. From 1998 through 2008, 86 outbreaks due to consumption of raw milk or raw milk products were reported to CDC. These resulted in 1,676 illnesses, 191 hospitalizations, and 2 deaths. Because not all cases of foodborne illness are recognized and reported, the actual number of illnesses associated with raw milk likely is greater.

How does milk get contaminated?

Milk contamination may occur from:

- Cow feces coming into direct contact with the milk
- Infection of the cow's udder (mastitis)
- Cow diseases (e.g., bovine tuberculosis)
- Bacteria that live on the skin of cows
- Environment (e.g., feces, dirt, processing equipment)
- Insects, rodents, and other animal vectors
- Humans, for example, by cross-contamination from soiled clothing and boots



Pasteurization is the only way to kill many of the bacteria in milk that can make people very sick.

What is pasteurization, and how does it work in milk?

Pasteurization is the process of heating milk to a high enough temperature for a long enough time to kill illness-causing bacteria contained in the milk. As most commonly applied, pasteurization heats milk to a high temperature for a short time, which kills the bacteria that cause illness. It was invented in a time when millions of people became sick and died of diseases like tuberculosis, scarlet fever, typhoid fever, and other infections that were transmitted through raw milk. Pasteurization has prevented millions of people from becoming ill.

Raw milk contains bacteria, and some of them can be harmful. So, if you're thinking about consuming raw milk because you believe that it is a good source of beneficial bacteria, you need to know that it isn't, and you may instead get sick from the harmful bacteria. If you think that certain types of bacteria may be beneficial to your health, consider getting them from foods that don't involve such a high risk. For example, so-called probiotic bacteria are sometimes added to pasteurized fermented foods, such as yogurt and kefir.

Pasteurized milk products have occasionally caused illnesses and outbreaks. Usually, this has happened because of germs introduced in the dairy after the pasteurization process. Pasteurized milk that is correctly handled in the dairy, bottled, sealed, and refrigerated after pasteurization, and that is properly handled by the consumer, is very unlikely to contain illness-causing bacteria. Considering the amount of pasteurized milk consumed in the United States, illness from it is exceedingly rare.

What is the history of the recommendation for pasteurization in the United States?

Routine pasteurization of milk began in the United States in the 1920s and became widespread by 1950 as a means to reduce contamination and reduce human illnesses. It led to dramatic reductions in the number of people getting sick from diseases that had previously been transmitted commonly by milk. Most public health professionals and health care providers consider pasteurization to be one of public health's most effective food safety interventions ever!



Many medical and scientific organizations recommend pasteurization for all milk consumed by humans; these include CDC, the Food and Drug Administration, the American Academy of Pediatrics, the American Veterinary Medical Association, the National Association of State Public Health Veterinarians, and others.

Does pasteurization change milk's nutritional benefits?

No. Many studies have shown that pasteurization does not significantly change the nutritional value of milk and dairy products. All of the nutritional benefits of drinking milk are available from pasteurized milk without the risk of disease that comes with drinking raw milk.

Is it true that raw milk has more enzymes and nutrients than pasteurized milk?

While it's true that the heating process of pasteurization does inactivate some enzymes in milk, the enzymes in raw animal milk are not thought to be important in human health. Some nutrients are somewhat reduced in raw milk, but the United States diet generally has plenty of other sources of these nutrients. For example, vitamin C is reduced by pasteurization, but raw milk is not a major source of vitamin C.

Aren't raw or natural foods better than processed foods?

Many people believe that foods with no or minimal processing are better for their health. Many people also believe that small, local farms are better sources of healthy food. However, some types of processing are needed to protect health. For example, consumers process raw meat, poultry, and fish for safety by cooking. Similarly, when milk is pasteurized, it is heated just long enough to kill disease-causing germs. Most nutrients remain after milk is pasteurized. There are many local, small farms that offer pasteurized organic milk and cheese products.

Does milk have a "built-in" safety mechanism that prevents bacterial contamination?

No. Disease-causing organisms can only be eliminated in milk through pasteurization, or by adding chemicals to the milk. Pasteurization is the best method of eliminating disease-causing organisms in milk and the only method routinely used in the United States.

Is it legal to buy or sell raw milk?

Yes, in some states. Because of the potential for serious illness, federal law prohibits dairies from distributing raw milk across state lines in the final package form (packaged so that it can be consumed). This means that raw milk can only be distributed across state lines if it is going to be pasteurized or used to make aged (over 60 days) cheese before being sold to consumers. Each state

makes its own laws about selling raw milk within the borders of the state. In about half of the states, sale of raw milk directly to consumers is illegal. In the remaining states, raw milk may be sold to directly to consumers.

Does drinking raw milk prevent or cure any diseases, such as asthma, allergies, heart disease, or cancer?

No. There are no health benefits from drinking raw milk that cannot be obtained from drinking pasteurized milk that is free of disease-causing bacteria. The process of pasteurization of milk has never been found to be the cause of chronic diseases, allergies, or developmental or behavioral problems.

I know people who have been drinking raw milk for years, and they never got sick. Why is that?

The presence of germs in raw milk is unpredictable. The number of disease-causing germs in the raw milk may be too low to make a person sick for a long time, and later high enough to make the same person seriously ill. For some people, drinking contaminated raw milk just once could make them really sick. Even if you trust the farmer and your store, raw milk is never a guaranteed safe product. Drinking raw milk means taking a real risk of getting very sick.



My farmer performs laboratory tests for bacteria in raw milk, so isn't it safe?

Even negative tests do not guarantee that raw milk is safe to drink. People have become very sick from drinking raw milk that came from farms that regularly tested their milk for bacteria and whose owners were sure that their milk was safe.

My farmer uses grass-fed cows and goats to produce raw milk, so isn't it safe?

Outbreaks of illness related to raw milk have been traced back to both grass-fed and grain-fed animals.

My farmer's raw milk is organic, so isn't it safe?

Raw organic milk is not safe. Pasteurized organic milk is available in many places, including supermarkets, farmers' markets, and dairies.

I've heard that many organic and raw milk producers are creating sanitary and humane conditions for raising animals and producing "safe" raw milk and raw milk products (like cheeses and yogurts). Does this help reduce milk contamination?

Adherence to good hygienic practices during milking can reduce, but not eliminate, the risk of milk contamination. The dairy farm environment is a reservoir for illness-causing germs. No matter what precautions farmers take, and even if their raw milk tests come back negative, they cannot guarantee that their milk, or the products made from their milk, are free of harmful germs.

- Germs such as *Escherichia coli* O157, *Campylobacter*, and *Salmonella* can contaminate milk during the process of milking dairy animals, including cows and goats. Animals that carry these germs are usually healthy.

Can I still get a disease from raw milk and rawmilk products if the cows or goats are healthy, clean, and grass-fed or if the dairy is especially careful and clean when collecting the milk?



Yes. Even healthy animals may carry germs that can contaminate milk. Milk may be contaminated with bacteria during the milk collection process. Small numbers of bacteria might multiply and grow in the milk before someone drinks it, if it is raw. Dairying methods have improved over the years, but are still no substitute for pasteurization in assuring that milk is safe to drink. Raw milk supplied by “certified,” “organic,” or “local” dairies has no guarantee of being safe.

Information about raw milk-related outbreaks

States that allow the legal sale of raw milk for human consumption have more raw milk-related outbreaks of illness than states that do not allow raw milk to be sold legally.

The CDC collects data on foodborne disease outbreaks voluntarily reported by the state, local, territorial, or tribal health departments. The health departments conduct most outbreak investigations reported to the CDC. The data reported may change frequently as reporting agencies enter new records and modify or delete old ones.

Among dairy product-associated outbreaks reported to the CDC between 1973 and 2008 in which the investigators reported whether the product was pasteurized or raw, 82% were due to raw milk or cheese. From 1998 through 2008, 86 outbreaks due to consumption of raw milk or raw milk products were reported to the CDC. These resulted in 1,676 illnesses, 191 hospitalizations, and two deaths. Most of these illnesses were caused by *Escherichia coli* O157, *Campylobacter*, or *Salmonella*. It is important to note that a substantial proportion of the raw milk-associated disease burden falls on children; among the 86 raw dairy product outbreaks from 1998 to 2008, 79% involved at least one person younger than 20 years old.

Reported outbreaks represent the tip of the iceberg. For every outbreak and every illness reported, many others occur, and most illnesses are not part of recognized outbreaks.