



An important Public Health Evaluation is underway under the guidance of the Navy and Marine Corps Public Health Center. The Public Health Evaluation is designed to evaluate the potential short and long-term health risks associated with living in the Naples area as a result of inadequate trash collection, uncontrolled open burning of uncollected trash, and widespread dumping of waste, including chemical and other hazardous waste.

Launched in 2008, the Public Health Evaluation involves the collection of air, water, soil and soil gas samples from throughout the region to identify whether there are potential health risks.

For details and background information, visit the website listed at the bottom of this page.

Your Health: Facts for Navy Families in Naples

About: Buffalo Mozzarella Cheese (Mozzarella di Bufala)

The U.S. Navy is committed to ensuring our families are safe while serving our country at home or overseas. The following information is provided as part of a wide-ranging effort to understand the health risks of our personnel and families living in Naples, Italy. Currently underway is a comprehensive Public Health Evaluation to assess potential short and long-term health risks associated with living in the Naples area (see sidebar). In line with our commitment to continually share important health information, we encourage you to review the following information.

What is buffalo mozzarella?

Buffalo mozzarella, or *mozzarella di bufala*, is a cheese made from the milk of water buffalo, rather than from the milk of cows. The water buffalo is not the same animal as the American bison, which many people visualize when they hear the word buffalo.

The Italian city of Aversa in the province of Caserta is recognized as the origin of buffalo mozzarella cheese. The highest quality buffalo mozzarella bears the “Mozzarella di Bufala Campana” trademark. In 1993, Mozzarella di Bufala Campana was granted “*Denominazione di Origine*

regions, using defined methods, and must satisfy a defined quality standard. Three years later, the European Union granted Mozzarella di Bufala Campana “Protected Designation of Origin” or *Denominazione di Origine Protetta* (DOP), which is a geographical indication within European Union law to protect the names of regional foods. The law ensures that only products genuinely originating in that region are allowed in commerce as such. Today, nine provinces in Italy can produce buffalo mozzarella trademarked as “Mozzarella di Bufala Campana.” For more information, visit the Mozzarella di Bufala DOP website at <http://www.mozzarelladop.it/>.



Water buffalo



Mozzarella di Bufala Campana trademark



Protected Designation of Origin (DOP) logo assures that the product was produced in the specified region

Controllata” (DOC) status, which is an Italian quality assurance label for food products. To obtain DOC status, the food product must be produced within specified

How is it made?

Generally, buffalo mozzarella is made in one of two ways. The first way, made by hand, involves finely chopping the curd from buffalo milk, immersing it in hot water (to stiffen the curd), kneading the stiffened curd and separating it into individual balls. These balls are then soaked in brine (to absorb salt to help the cheese maintain its texture) and are then stored in their own liquid (i.e., whey) to preserve the balls for up to 24 hours. This production method can be traced back to at least the 12th century, and it results in a cheese that is at once creamy, tangy, soft and chewy.

Italy produces about 33,000 tons of buffalo mozzarella annually; 80 percent of this is produced in the Campania region.

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The second and most common method for producing buffalo mozzarella includes the following steps:

1. Storing the milk (raw buffalo milk is stored in big steel containers).
2. Heating the milk and then pouring it into a cream separator.
3. Curdling (by induction of natural whey).
4. Maturing the curd in tubs to make it more acidic.
5. Spinning (hot water is poured out on the curd in order to soften it, obtaining pasta *filata*, an Italian term literally meaning “spun paste”).
6. Shaping (with special rotating shaper machines).
7. Cooling (by immersion in cold water).
8. Pickling (by immersion in pickling tubs containing the original whey).
9. Packaging (in special films cut as bags or in small basins made of plastic).

Are the water buffalo in Italy still sick?

No. Since the 2008 brucellosis outbreak, there have been no further cases of brucellosis reported.

Brucellosis is an infectious disease caused by the bacteria of the genus *Brucella* and can be spread among animals and to humans. Brucellosis is primarily passed among sheep, goats, cattle, deer, elk, pigs, dogs and several other animals. Humans become infected by coming in contact with animals or animal products that are contaminated with the bacteria. The most common way for humans to be infected is by eating or drinking contaminated milk products. When sheep, goats, cows or camels are infected, their milk is contaminated with the bacteria. If the milk is not pasteurized, these bacteria can be transmitted to persons who drink milk or eat cheese made from the milk.

In 2008, Italian officials announced that about 30 percent of the water buffalo



Buffalo mozzarella (mozzarella di bufala) in a production factory

population in the Campania region had been diagnosed with brucellosis. To safeguard against the spreading of the disease, the Italian government culled about 30,000 to 60,000 water buffalo, out of a total population of approximately 400,000 water buffalo.

Were the water buffalo sick because of the trash?

No. The outbreak of brucellosis was unrelated to the garbage problem.

How common is brucellosis in the Campania region?

According to the Italian Ministry of Health, in 2005, the Campania region experienced an average of 3.4 cases of brucellosis per 100,000 people.

There have been no reported cases among U.S. Navy personnel in the Campania region.

What are some of the symptoms and treatment for brucellosis?

Brucellosis has a wide range of symptoms in humans. Many of the symptoms are flu-like, such as irregular fever, headache, weakness, sweating, chills, depression, joint pain and weight loss. Symptoms can appear anywhere from five to 60 days after exposure, although many individuals will begin to show symptoms within three to four weeks.

The diagnosis of brucellosis is made through laboratory analysis of blood, bone marrow, spinal fluid and other tissues. Brucellosis can be treated through the use of antibiotics. Antibiotics taken for six weeks can prevent a reoccurring infection. Recovery times vary, taking a few weeks to several months. Death by brucellosis is extremely rare.

Is there a way to prevent infection of brucellosis?

Yes. People should not consume unpasteurized milk, cheese or ice cream. If it is unclear whether a dairy product has been pasteurized, it should not be consumed. There currently is no vaccine against brucellosis for humans; however, there is a vaccine for animals.

Can brucellosis be spread among humans?

Direct person-to-person spread of brucellosis is extremely rare. Mothers who are breast-feeding may transmit the infection to their infants. Sexual transmission of the infection has also been reported. For both sexual and breast-feeding transmission, if the infant or person at risk of contracting the infection is given antibiotics for brucellosis, their risk of becoming infected will probably be eliminated within three days. Although uncommon, transmission may also occur via contaminated tissue transplantation.

Is buffalo mozzarella contaminated by chemicals such as dioxin?

The U.S. Navy does not have enough information to say whether harmful levels of chemicals are present in buffalo mozzarella sold off-base. Buffalo mozzarella sold on base, however, is safe to consume.



Buffalo mozzarella

As part of Italian government programs to ensure food safety, 85 mozzarella di bufala farms (25 dairy farms and 60 breeding farms) in Campania were tested for dioxin in March 2008. These farms are part of the 109 farms in the Campania region that have been under investigation since November 2007 for suspected contamination of milk and cheese products. The government responded to unacceptable levels of dioxin by immediately closing the farms and seizing their dairy products. There are over 1,900 buffalo breeding farms in the Campania region, and all are subject to the Italian laws that help ensure public safety.

Is the buffalo mozzarella sold in the commissary safe to eat?

Yes. The milk used to produce buffalo mozzarella is provided by herds of water buffalo in Germany, which is a brucellosis-free area. The Lat-Bri brand of buffalo mozzarella found in the commissary is produced in a factory that is approved and inspected by the U.S. Army Veterinary Command. The milk undergoes traditional plate-type pasteurization and is shipped to the Lat-Bri production facility in northern Italy. At Lat-Bri, the mozzarella-making process begins with vat pasteurization when the curds are separated from the whey.



Lat-Bri brand of buffalo mozzarella sold in the commissary

Vat pasteurization is the process of heating milk in a large tank for at least 30 minutes to prepare the milk for making starter cultures in the processing of cheese or other dairy products. Currently the Lat-Bri brand is the only buffalo mozzarella cheese authorized to be sold in the Naples commissary.



For more information contact:

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Why isn't buffalo mozzarella produced in the Campania region sold on base?

Department of Defense regulations require all dairy products to come from approved sources, and the U.S. Army Veterinary Command ensures that dairy products are provided from these approved sources. The Veterinary Command in Naples has never officially inspected a mozzarella factory in the area to ensure that the factory meets acceptable standards to be deemed an approved source.

In the past, interested buffalo mozzarella vendors contacted larger producers in the region about becoming approved sources or suppliers. None of the local producers were willing to meet strict U.S. standards and thus could not be approved.

Is buffalo mozzarella sold off-base safe to eat?

Since 2008, there have been no further cases of brucellosis reported. However, traditional mozzarella di bufala from the Campania region is not usually pasteurized. Consuming unpasteurized food products should be avoided, especially by pregnant women or immune-compromised individuals. Although the process of converting milk to mozzarella does require some heat treatment, it is not for the length and temperature necessary for a product to be considered pasteurized. Since unpasteurized milk products can be a breeding ground for other bacteria such as *E.coli*, *Salmonella* and *Brucella*, consumption of unpasteurized dairy products can put someone at risk for contracting a number of different infectious diseases. For these reasons, it is good public health practice to only buy and consume pasteurized products. For more information, visit the Centers for Disease Control and Prevention website at http://www.cdc.gov/healthypets/cheesespotlight/cheese_spotlight.htm.

Dairy products sold on base come from facilities that have been inspected and approved to distribute products to U.S. military installations.

