CENTER FOR DAIRY RESEARCH

DAIRY PIPELINE

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WIDMER'S CELEBRATES 100 YEARS

OF HANDCRAFTING AUTHENTIC WISCONSIN CHEESES

In 1922, a Swiss immigrant named John O. Widmer bought a cheese plant in Theresa, Wisconsin and began producing Brick and Cheddar cheeses. Who would have guessed that 100 years later his grandson and great-grandson would continue to carry on the family tradition? Wisconsin Master Cheesemaker Joe Widmer and his son Joey Widmer operate Widmer's Cheese Cellars using the same open vats and 20,000 square foot plant to produce authentic, handcrafted Brick, Colby and Cheddar cheeses. Joe Widmer himself has been making cheese for more than 50 years and uses traditional methods to make Wisconsin-original cheeses like Brick and Colby.

Brian Ash placing bricks on cheese forms to make Widmer's Brick cheese.

"Widmer's Cheese Cellars exemplifies the Wisconsin tradition of high-quality, handcrafted cheese passed down through the generations of a family business," said Andy Johnson, CDR Assistant Coordinator Cheese Industry and Applications. "Joe and Joey are continuing on that tradition that makes Widmer's unique."

Brick cheese was developed in 1877 by another Swiss immigrant named John Jossi at a plant that was located only about 20 minutes from where Widmer's Cheese Cellars is located today. At that time, Wisconsin was home to a large population of German immigrants who preferred strong cheeses like Limburger and Brick. When John O. Widmer started making cheese in his plant in 1922, he made Brick to appeal to the population of German immigrants.

"Brick is a strong washed rind cheese, that's what the Germans liked, so my grandfather was making something he could sell right here," Joe Widmer said. "Original Brick is a washed rind; you might call it a stinky cheese."

When Jossi developed the original formula for Brick cheese in 1877, he poured the curds into a form and put a brick on top to press the cheese thus giving the cheese its name.

"When my grandpa started making Brick cheese in 1922, he bought a bunch of bricks," Widmer said. "They're big bricks from Ohio. They're a little heavier and we're still using those bricks that my grandfather used. We're making this cheese very authentically."

Truly Handcrafted Cheese

In addition, to using the original bricks, the Widmers continue the traditional methods of making Brick cheese. Widmer and his cheesemakers move the curd by hand from the vat to the cheese molds. The cheese

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What's Inside:

molds are turned by hand three times during the first day. The cheese is then pressed in forms with Widmer's original bricks. After pressing, the cheese is placed in a brine solution where it takes on salt. After brining, the cheese is moved to the aging room (above 60°F, 95% humidity). Widmer's aged Brick cures in the aging room for about 10 days during which it is washed daily with a mixture of cheese brine and whey. The wash includes *Brevibacterium linens*, which is also used in classic French cheese like Livarot, Reblochon and gives the aged Brick its distinct flavor. As it ages, the cheese also develops a golden, orange rind. After aging, it is wrapped in parchment paper and foil, which allows the cheese to continue to ripen.

In some ways Brick is similar to Limburger but in other ways it is different; Brick has a lower moisture content and it is made into larger pieces. As a result, Brick is a little less pungent than Limburger. "They called it the married man's Limburger," Widmer said. "Wives would accept that more because it wasn't as pungent."

Emergence of Mild Brick Cheese

In the 1960's, Widmer's Cheese Cellars began producing a mild version of their famous aged Brick cheese to meet changing consumer tastes. At that time, Brick was beginning to gain in popularity and more plants were beginning to produce it but the Widmer's questioned the authenticity of the cheese.

"A lot of them weren't making real Brick cheese," Widmer said. "It never saw a salt brine, never saw a curing room, never saw a brick but they'd call it Brick cheese anyway. It became popular too because people didn't know what the real Brick cheese was. So, we started making a mild Brick but we still brine it and it still goes in the curing room a couple of days."

Another difference between Widmer's mild and aged Brick is that the mild Brick gets vacuum packed after only a couple of days of curing, which slows the aging process and ensures that the cheese retains its distinct, earthy flavor.

Aged Brick Making a Comeback

In the 1960s and early 70s washed rind varieties of cheese like Brick and Limburger nearly fell off the map. At Widmer's Cheese Cellars, the mild Brick soon began outselling the aged Brick. Today, the mild still outsells the aged Brick but the gap between the two cheeses is narrowing.

"The washed rind cheeses are coming back fast," Widmer said. "People are more well-travelled, more adventurous and they're willing to try cheese with some odor and a lot of them are loving it." As evidence of this trend, Widmer's aged Brick received first place in its category at the 2022 American Cheese Society competition.

In addition to Brick, Widmer's also makes Cheddar and have received numerous awards for their aged Cheddar. Widmer is also proud of their stirred curd Colby cheese, which, like Brick, is another Wisconsin-original cheese. "It was invented in Colby, Wisconsin in 1877," Widmer said. "It's a cheese that's mild and meant to stay mild. We make an authentic one; meaning we follow the original recipe and we haven't staggered from it. There's a lot of mild Cheddar on the market that they call Colby."

More recently, Widmer's has added aged Brick cheese spreads to its list of products. Around the year 2000, Widmer got connected with Phil Lindemann at Pine River Cheese Company and they use Widmer's cheese to make cold-pack cheese spreads.

"Cold-pack is essentially just natural cheese ground up," Widmer said. "Phil and his crew at Pine River are the master blenders. If it wasn't for them, I wouldn't have this product out there. They blend our aged Brick with some of our Cheddar and it has come up to be a real hit." At this year's American Cheese Society competition, Widmer's won the cold-pack category with its olive flavored Brick cheese spread.

Working With CDR and Looking Ahead

Widmer credits the Center for Dairy Research (CDR) for some of the success of the Wisconsin dairy processing industry. He has personally worked with CDR on a variety of issues like salt levels in their brine, cheese defects and overall process improvements.

"Over the years, we've had problems, we have questions, quality issues, anything, we turn to CDR. We're well educated here too but the staff at CDR are the experts. A lot of them worked in the industry or are very well educated and have been studying cheese for years."

Additionally, Widmer was one of the first Wisconsin Master Cheesemakers. He graduated with the second class of Wisconsin Master Cheesemakers in 1998 with certifications in Brick, and Colby. In 2001, Widmer returned to the program and earned a certification in Cheddar.

"It's a great program," Widmer said. "You really learn the microbiology, chemistry and all of the science behind cheesemaking… Knowing these things increases the knowledge of the cheesemaker and they go back to the

plant and bring this knowledge to the people who work with them. The program is one of a kind in America here that's why Wisconsin makes the best cheese."

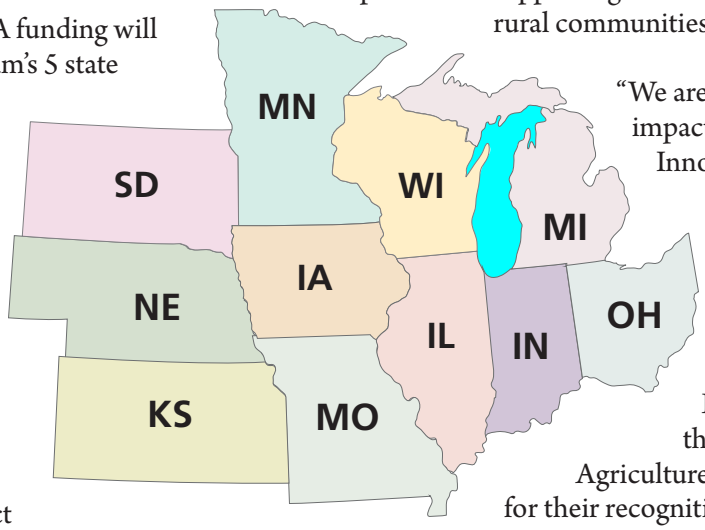
The future looks bright for Widmer's. Like any cheese plant, they face challenges but sales are strong and more exciting projects are on the horizon. Joey Widmer, who represents the fourth generation of Widmers cheesemakers, says, "It's special to be making cheese here with all of our history. But we also are really focused on the present and are really proud of the authentic cheeses we make."

Handcrafting aged Brick cheese: Curd is moved by hand from the vat (1) and poured into the forms (2). Bricks are placed on top of the forms to press the curd (3). The cheese is removed from the forms and placed into a brine solution (4). The cheese is moved to the aging room (5). After about 10 days of aging, the cheese is wrapped (6).

DBIA TO RECEIVE $20 MILLION IN SUPPLEMENTAL FUNDING TO EXPAND SERVICES

It was announced earlier this summer that the Dairy Business Innovation Alliance (DBIA) will be awarded $20 million by the U.S. Department of Agriculture (USDA) in American Rescue Plan Act (ARPA) monies. The funding will be used to supplement the work of DBIA, which is coordinated by the Wisconsin Cheese Makers Association and the Center for Dairy Research.

The additional $20 million in DBIA funding will support an expansion of the program's 5 state service area to include Indiana, Kansas, Michigan, Missouri, Nebraska, and Ohio. Dairy businesses in the broadened service area will also see a boost in direct-to-business grant funding available through DBIA. Successful grant applicants for the Dairy Business Builder grant program will now be eligible to receive up to $100,000 each to support business-boosting projects. The Dairy Industry Impact grant program will offer up to $500,000 per award to fund innovative projects with a broad impact.



The funds will also be used to launch new dairy research projects focused on the creation of value-added products at the newly renovated Center for Dairy Research, and to support an innovative mentorship program engaging long-time dairy business experts to support entrepreneurship in the industry.

"This critical investment in dairy innovation allows us to expand our DBIA grants and support programs to 11 Midwest states that produce over a third of all U.S. milk production," said John Lucey, CDR Director. "This funding also provides key investments in critical research and emerging opportunities, such as biofermentation of dairy residues, and we thank the U.S. Department of Agriculture and Senator Baldwin for their ongoing support of this essential program."

U.S. Senator Tammy Baldwin (D-Wisconsin), who has championed the Dairy Business Innovation initiatives, said, "Wisconsin's dairy businesses are a key driver of our state's economy and with all the challenges they face I'm working to do everything I can to help. This federal funding from USDA will help Wisconsin dairy businesses modernize, reach new markets, and create economic growth. The Dairy Business Innovation Initiatives provide our farmers, cheesemakers, and dairy processors with the tools they need to innovate and develop new Made in Wisconsin dairy products. I'm thankful that President Biden and USDA are committed partners in supporting Wisconsin's dairy economy and rural communities."

"We are thrilled to build on the impact of the Dairy Business Innovation Alliance, strengthening dairy farms and processors and rural communities," said John Umhoefer, WCMA Executive Director. "Our sincere thanks go to the Biden Administration, the U.S. Department of Agriculture, and Senator Baldwin for their recognition of the program's stewardship and effectiveness, and for this historic supplemental investment."

Tom Guerin, CDR; John Umhoefer, WCMA; U.S. Senator Tammy Baldwin; Bob Wills, Cedar Grove Cheese Inc.

To date, DBIA has administered over $3.7 million in 79 grants to dairy farms and businesses, conducted market research and product development projects, and provided direct technical assistance that is accessed by dairy farmers and processors across the Midwest and the rest of the country. To learn more visit https://www.cdr.wisc.edu/dbia

CDR-DEVELOPED HIGH-PROTEIN PUDDING SHOWCASES THE POWER OF DAIRY INGREDIENTS

The Center for Dairy Research (CDR) is always exploring novel ways to utilize dairy ingredients in new food applications. A great example of this is the development of a High-Protein Mango Pudding, which has been featured at food shows and events across the U.S. and internationally.

The United States Dairy Export Council (USDEC) is promoting the formulation to international markets as another example of how dairy ingredients can add nutrition and value to food and beverages.

Susan Larson, CDR Associate Researcher, developed the High-Protein Mango Pudding to meet increasing consumer demand for flavorful, high-protein products, "The mango flavor was developed for its appeal in the U.S., Mexico, Asian-Pacific, and South American markets."

The pudding formulation utilizes instantized whey protein concentrate 80 (WPC 80) to provide an economical, high-quality protein. Instantized WPC 80 is manufactured by combining WPC with soybean or sunflower lecithin, which results in a WPC that dissolves readily and allows for quick hydration.

The High-Protein Mango Pudding also contains nonfat dry milk or skim milk powder as a convenient way to add additional nutritional value, along with providing a milky flavor and providing a smooth mouthfeel.

Pudding is a popular snack food across the globe but a typical 100 gram serving only contains about 2 grams of protein. With the combination of WPC 80 and the nonfat or skim milk powder, the CDR-developed High-Protein Mango Pudding has an impressive 10 grams of protein per serving.

Whey proteins are recognized as one of the highest quality sources of protein. They are easily digested and naturally high in essential branched-chain amino acids like leucine, iso-leucine and valine. Leucine has been shown to be the key amino acid in stimulating muscle protein synthesis, which is essential in supporting muscle maintenance, building and recovery. Because of these properties, whey proteins can be particularly beneficial to older consumers who require more protein in their diet.

Additionally, the High-Protein Mango Pudding formulation showcases the convenience of dairy ingredients. The pudding is produced by mixing the dry ingredients with water. This simple method produces a nutritious, convenient and flavorful snack.

"Whey proteins and other dried dairy ingredients are readily available, they are easy to store, and they pack a powerhouse of nutrients, and they taste delicious," said Larson.

The recipe for CDR's High-Protein Mango Pudding is available on the USDEC website, www.ThinkUSADairy.org

INGREDIENTS

	Usage Level (%)
Water	63.85
Instantized Whey Protein Concentrate, 80% (WPC 80)	10.00
Sugar	9.70
Nonfat Dry Milk or Skim Milk Powder	6.67
Dextrose	6.20
Modified Tapioca Starch	3.00
Tetra Sodium Pyrophosphate	0.25
Synergy Nat Mango Flavor WONF SD #426510	0.20
Disodium phosphate	0.13
Total	100.00

Contains: Milk

Ingredient Statement: Water, Instantized whey protein concentrate (Whey protein concentrate, Sunflower oil), Sugar, Nonfat dry milk, Dextrose, Modified tapioca starch, Contains less than 2%: Tetrasodium pyrophosphate, Mango flavor with other natural flavors, Disodium phosphate.

Nutrition Facts

servings per container

Serving size	**(100g)**
Amount per serving	
Calories	**140**
	% Daily Value*
Total Fat 0.5g	**1%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Cholesterol 20mg	**7%**
Sodium 75mg	**3%**
Total Carbohydrate 22g	**8%**
Dietary Fiber 0g	**0%**
Total Sugars 19g	
Includes 15g Added Sugars	**30%**
Protein 10g	
Vitamin D 0mcg	0%
Calcium 112mg	8%
Iron 0mg	0%
Potassium 147mg	4%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

WISCONSIN PASTEURIZER BROKEN SEAL PROCESS

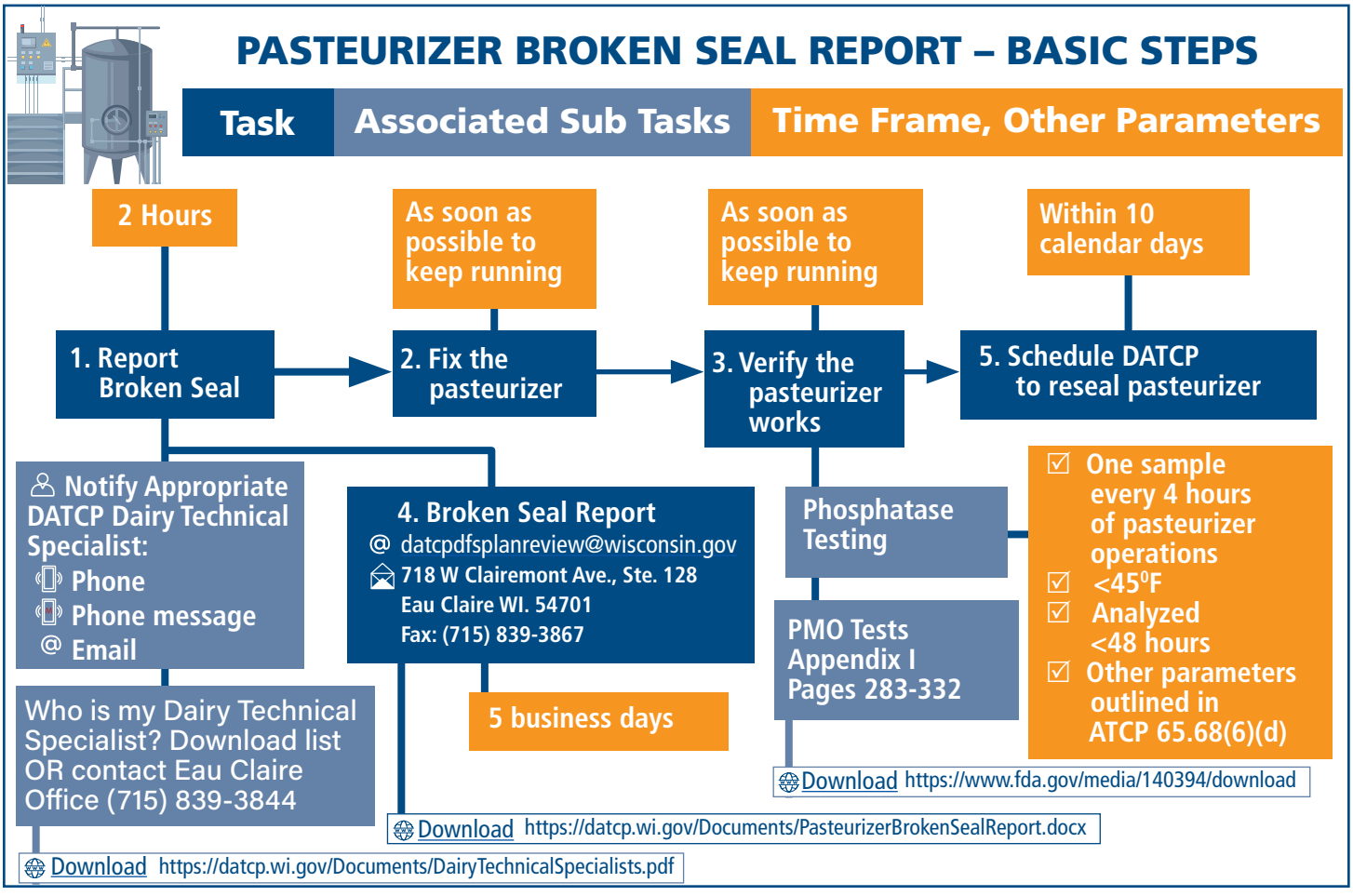
Operating and maintaining a properly functioning pasteurizer is crucial to producing high-quality and safe dairy products. In the state of Wisconsin, pasteurizers are inspected, timed and sealed by dairy technical specialists from the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). This helps ensure that pasteurizers are operating correctly and that several crucial parts of the system are not being tampered with.

Pasteurizing is one of the most critical food safety processes in a dairy operation, as it is a staple Critical Control Point in HACCP plans and Process Preventive Control in Food Safety Plans. The operation of this equipment and verification that it has not been tampered with is critical to food safety. Seals are placed at critical parts of the pasteurizer to ensure that the plant can't intervene and push more product through or reduce the temperature or adjust the holding time to increase throughput or save on power.

Like any piece of equipment, pasteurizers do occasionally need unscheduled or unexpected maintenance or emergency repairs. It's never convenient when a dairy plant's pasteurizer breaks down – an entire plant or line of production can come to a halt. For most manufacturing sites, this occurs seldomly, so remembering typical protocol can be an exercise of "shaking off the rust" since last time you performed the activity.

Currently, a majority of the first-time submissions of the broken seal report forms are incorrect. These get corrected with help from the DATCP Dairy Plant Technical Specialists. It would increase efficiency to have a standard operating procedure (SOP) assigning steps and individuals responsible for each step. The Dairy Food Safety Alliance webpage (https://www.wischeesemakersassn.org/food-safety) has several free SOP templates that will be updated soon to include a Broken Seal SOP template (it is also a great resource for artisan cheesemakers).

Another important point is that DATCP is not responsible for fixing pasteurizers. DATCP's responsibility is to verify that the pasteurizer is working properly. Therefore, before DATCP comes to the plant to reseal a pasteurizer, the plant needs to already have fixed the pasteurizer and conducted the various tests to ensure that it is working properly.



To assist with the process of properly reporting a pasteurizer broken seal we've created this reference sheet. It includes links to key documents and contacts. It may be helpful to print out these documents and contacts and place them in the plant . For more information, you can also refer to Wisconsin Administrative Code ATCP 65.68(6)
https://docs.legis.wisconsin.gov/code/admin_code/atcp/055/65/iv/68/6

Within 2 Hours Notify DATCP

Plant must notify DATCP within 2 hours when the dairy plant breaks a seal.

Notify your Dairy Technical Specialist within 2 hours by phone, phone message or email. | Find Your Dairy Plant Technical Specialist: https://datcp.wi.gov/Documents/DairyTechnicalSpecialists.pdf

Within 5 Business Days Complete and Submit Pasteurizer Broken Seal Report to DATCP

Fill out the Pasteurizer Broken Seal Report: https://datcp.wi.gov/Documents/PasteurizerBrokenSealReport.docx

Send completed Pasteurizer Broken Seal Report to DATCP Eau Claire office:
DATCP Eau Claire office:
Wisconsin Department of Agriculture, Trade and Consumer Protection
Division of Food and Recreational Safety
718 W Clairemont Ave., Ste. 128, Eau Claire WI 54701
Phone: (715) 839-3844 | Email: datcpdfsplanreview@wisconsin.gov | Fax: (715) 839-3867

Fill out the top portion of the pasteurizer broken seal report
Fill out all the relevant information. If you don't know when the seal broke, put the time of discovery. When putting the reason for the broken seal, make sure it is succinct and describes a good summary of why the seal was broken.

PASTEURIZER BROKEN SEAL REPORT

Wis. Adm. Code § ATCP 65.68(6)(a)

PLANT INFORMATION			
PLANT NAME:			TODAY'S DATE:
ADDRESS:		COUNTY:	TOWNSHIP:
PASTEURIZER ID:		Plant 55-	LIC. -D1
DATE SEAL BROKEN:	TIME SEAL BROKEN:	BROKEN SEAL LOCATION(S) AND SEAL NUMBER(S):	
REASON FOR BROKEN SEAL(S):			
NAME OF PERSON CONDUCTING VERIFICATION:	DATE VERIFICATIONS COMPLETED:	TIME VERIFICATIONS COMPLETED:	

Pasteurizer System Verification Tests

Before resuming operation of the pasteurizer, the pasteurizer system must be verified that it is repaired and functioning properly. Each line in the Broken Seal Report references the PMO test that should be used to verify as well as values to record. Pasteurizer Milk Ordinance -https://www.fda.gov/media/140394/download

For example: If the Safety Thermal Limit Recorder (STLR) is what is having issues, verification should be complete to show the problem has been resolved prior to DATCP arrival: The associated test is outlined below.

SAFETY THERMAL LIMIT RECORDER (STLR)		
☒ YES		Verify programming of electronic recorder per the FDA's M-b approval for the device, maintain documentation for review
☒ YES		Verify time accuracy of electronic recorder over a 30 minute time span, PMO Test 3, document on chart as appropriate
166.6 Indicator	166.0 Recorder	Compare temperature with indicating thermometer and adjust as necessary, PMO Test 4
162.0 CUT-IN	161.4 CUT-OUT	Verify cut-in and cut-out temperatures are above legal pasteurization temperatures PMO Test 10

STLR RTD		
166.6 Indicator	166.0 Recorder	Compare temperature with indicating thermometer and adjust as necessary, PMO Test 4
3.71 Seconds		Thermometric Response – Time temperature rise from 12°F below cut-in to cut-in, with water bath 7°F above cut-in, PMO Test 8

The part of the pasteurizer that is having the issue will determine which tests you will use to verify if the pasteurizer is functional. For example, if you had an electrical power outage that affected the frequency for the booster pump, you would:

1. Make sure to verify the programming works.

2. Confirm that it stops when it is supposed to and that there is no pressure cross-over during a Manual Divert.

3. Make sure the booster pump stops when the timing pump is disabled.

Phosphatase Testing

It is required that samples be taken to test for Alkaline Phosphatase (ALP) to verify that pasteurization was achieved. This native enzyme in milk will denature when proper pasteurization is achieved. It is important that this sample is:

1. Sampled correctly

a. Correct location: Directly from the outlet of the pasteurizer

b. Sanitarily: Contamination may lead to high ALP values

c. Correct frequency: Once every 4 hours that the pasteurizer is operating

d. Appropriate Sample Matrix:

i. Fluid White Milk

1. Whole Milk 2. Low-fat milk/reduced fat milk 3. Fat-free milk

ii. Cream

2. Stored properly: below 45°F

3. Tested in a timely manner – within 48 hours

4. Tested by competent and approved individuals

a. Grade A - performed at a certified laboratory approved by ATCP 77 or PMO

b. Grade B - performed at a certified laboratory approved by ATCP 77 or PMO or trained by the test kit manufacturer.

The specification for this test is <350 milli-units.

It is critical that these are sampled by individuals that are properly trained. This enzyme is very finnicky, and will reactivate (Rankin et al 2010). If there are positive results for Alkaline Phosphatase (> 350 milli units), there is little a plant can do to confirm these values once there are no viable milk samples. Ensure that you keep records on hand for your Dairy Technical Specialist to review and for DATCP/FDA to review in the future.

Within 10 Calendar Days schedule an appointment with your Dairy Technical specialist to reseal the pasteurization system.

Make sure that when the Broken Seal Report is submitted that there is documentation that the issue is remedied and when the DATCP representative arrives, they find that the equipment ready to time and seal. The main responsibility of the state is to verify that the pasteurizer is working properly, and not to fix the problem.

Pasteurizer Broken Seal Process Recap/Takeaways

- Pasteurizer seals are critical to the validity of pasteurization and ensuring the system has not been tampered with and is operating correctly.
- If a pasteurizer seal is broken, notify DATCP as soon as possible (maximum 2 hours) after the pasteurizer seal is broken or discovered to be broken.
- Verify the pasteurizer is working as soon as possible by conducting relevant PMO tests and phosphatase testing.
- Complete the Pasteurizer Broken Seal Report and submit it to DATCP within 5 business days of broken seal.
- Schedule DATCP to reseal pasteurizer within 10 calendar days after the seal is broken. Remember: pasteurizer must be fixed and necessary tests and samples must be conducted before DATCP arrives to reseal the pasteurizer.

References:

S. A. Rankin, A. Titel, W. Lee, D. S. Banavara, and A. Lopez-Hernandez. 2010. The application of alkaline phosphatase assays for the validation of milk product pasteurization. J. Dairy Sci. 93: 5538-5551.

Wisconsin Department of Agriculture, Trade and Consumer Protection. Pasteurizer Broken Seal Report. Revised 5/20. Accessed at datcp.wi.gov.

CURD CLINIC – IS MOLDY CHEESE A FOOD SAFETY CONCERN?

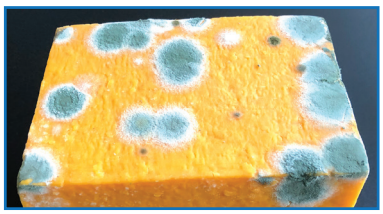
Curd Clinic Doctor: Dean Sommer, CDR

Question: We received a question from a customer who found mold in some diced cheese. Some of the cheese was consumed before the mold was noticed. Are there any health or safety risks with consuming cheese with unwanted mold?

Answer: The short answer to this question is no. Generally speaking, unwanted mold on cheese is considered a cheese quality issue (as in poor flavor), and not a food safety issue. Spoilage molds create off flavors in cheese because they produce excessive amounts of enzymes, such as lipases and proteases, which lead to the breakdown of cheese. While one can't say it's impossible, I would say that it would be extremely rare for mold on cheese to pose a health concern.

For example, there are quite a few cheeses, such as cave aged Cheddars, where wild molds are deliberately promoted to populate the surface of the cheese. A leading researcher on the molds, yeasts and bacteria that grow on these cheeses, has told us they have yet to find a mold growing on these cheeses that has resulted in a health concern.

We have also found that many of the spoilage molds that grow on cheese are members of the genus *Penicillium* and are wild 'cousins' to the molds used to make Blue and Brie cheeses. So, I believe it is fair to say the risk of food safety concerns with spoilage molds found on cheeses is exceedingly low. In fact, in cases where the mold growth is limited and spotty, we recommend cutting off the moldy sections to a depth of about 1/4" underneath, which is typically sufficient to avoid the poor flavor notes that can accompany mold growth. However, if mold growth is substantial, or if it has penetrated into the interior of a piece of cheese through cracks or crevices, discarding the cheese may be the prudent option.



Preventing unwanted mold in cheese is a challenge for the industry. Many varieties of mold tend to be both acid and salt tolerant (molds can also grow under refrigeration). Molds reproduce through spores, which become airborne and can quickly spread throughout the plant.

Keeping mold counts as low as practically possible in the plant environment is key. This starts with managing the air quality in the cheese plant. Having an HVAC system that delivers adequate quantities of clean, filtered air with reduced humidity is the first step. Having positive air pressures and proper air directional flows so that air moves from "clean" rooms (containing open product) to less sensitive rooms (product protected by packaging; storage rooms) is a must. Furthermore, maintaining a dry floor program and an overall dry environment in the plant will greatly lessen the probabilities of mold contamination. Practicing Good Manufacturing Practices(GMP) and maintaining strict sanitation in your cheese plant is also a must. Mold organisms can enter the plant on wood pallets, corrugated boxes, and other supplies. It is critical to minimize the amount of these materials in operations rooms that contain open cheese product.

Since mold organisms are obligate aerobes, meaning they need some quantity of oxygen (about 1-2%) to grow and reproduce, removing oxygen from the package is one of the most common and effective ways to prevent mold growth.

Traditionally, cheeses like 40-pound block Cheddar, rely on vacuum-sealed poly (flexible plastic) bags to remove the oxygen and prevent mold growth. This is an extremely effective practice; however, the trick is to minimize the incidence of leakers in these bags. When leakers occur, whether from seal failure or inadvertent puncturing of the bag, oxygen leaks back into the bag and mold growth inevitably occurs. It is advisable to devise some sort of inspection system (i.e., looking for whey leakage on the boxes) to verify seal and bag integrity.

In retail, limiting the exposure of cheese cuts to oxygen is also a sound strategy to prevent mold growth. In cuts of cheese, this is routinely accomplished by vacuum packaging. Modified Atmosphere Packaging is routinely used for shredded, diced or cubed cheese to flush virtually all the oxygen out of the bag and replace it with a mixture of nitrogen and carbon dioxide. In addition, natamycin is commonly added to cheese shreds to prevent mold growth.

Cheese containing unwanted mold growth is a constant challenge for our industry. While rarely a food safety concern, mold on cheese is undesirable, unappealing, and likely will lead to undesirable flavors in the cheese. Sound practices such as maintaining a clean environment in the cheese plant, observing strict GMP hygiene practices, and adopting sound packaging systems are critical to limiting issues with mold contamination of cheese.

ABOUT CDR VIDEO

CDR has produced a new overview video featuring staff and describing the services and opportunities that CDR provides. Learn how CDR helps the dairy industry through innovation, support and training. To view this video, visit https://www.cdr.wisc.edu/cdr-video

NEW CDR EQUIPMENT AND CAPABILITIES

The Center for Dairy Research continues to get settled into its new three-story addition to Babcock Hall on the University of Wisconsin-Madison campus. The Center's staff are excited to continue to share some of the equipment and capabilities available in this new facility. CDR is rolling out a series of short videos highlighting some of the new equipment and capabilities.

To view these videos, visit https://www.cdr.wisc.edu/building-project

Sensory Area

The ground floor of the new addition includes six sensory booths. These help CDR Sensory Services staff run consumer testing, discrimination testing and descriptive analysis. In addition, CDR staff are available as expert screeners to evaluate dairy products.

Training Auditorium

CDR's short courses and trainings utilize the new auditorium on the ground floor. This state-of-the-art space seats up to 80 people and has the capability to display live video and audio feeds to communicate and observe research cheesemakers and other CDR staff in the pilot plant.

Kalt Copper Vat

The new Kalt copper cheese vat holds 1,000 pounds of milk and features precision technology to make the perfect piece of cheese. This vat, which is located in the dairy plant on the first floor, allows staff to manually control cutting speeds and curd size.

EBERLY AWARDED NORM OLSON SCHOLARSHIP

Philip Eberly, a graduate student in the University of Wisconsin-Madison Department of Food Science, has been selected for the Norman F. Olson Cheese Research Scholarship. This scholarship is presented by the Center for Dairy Research and the Wisconsin Cheese Makers Association.

Eberly's research is investigating best practices to improve the functionality of shredded LMPS Mozzarella cheese during extended storage, primarily with different storage temperatures and the use of anticaking agents. His supervisor is Rani Govindasamy-Lucey, CDR Distinguished Scientist.

Rani Govindasamy-Lucey, CDR Distinguished Scientist; Philip Eberly, University of Wisconsin-Madison graduate student.

"I am humbled and honored to be the recipient of a scholarship with such a legacy as this one," Eberly said. "From growing up on a dairy farm to now researching at one of the best dairy programs, I hope to contribute to the advancement of the great industry that developed me."

The Norman F. Olson Cheese Research Scholarship will help support Eberly's research. The award is named after Dr. Olson, the creator and first director of the Center for Dairy Research. The scholarship is awarded to students majoring in food science at the University of Wisconsin-Madison.

CONGRATULATIONS TO GARY GROSSEN

Gary Grossen, CDR research cheesemaker and Wisconsin Master Cheesemaker, recently announced his retirement. Grossen worked for more than 60 years as a cheesemaker and he won many awards at national and international cheese competitions. He worked for 50 years at his cheese plant, Prairie Hill Cheese Coop in Monroe, Wisconsin before coming to the University of Wisconsin-Madison in 2005 as a cheesemaker in the Babcock Hall Dairy Plant.

At Babcock Hall, Grossen made many different cheeses, including several award-winners like aged Gouda. He also helped with ice cream production and worked with many student employees over the years who had the unique opportunity of making cheese with a Wisconsin Master Cheesemaker.

When the Babcock Hall Dairy Plant closed for renovation, Grossen joined CDR in 2019 as a research cheesemaker where he helped with all aspects of cheesemaking from milk pasteurization to assisting with research and industry trials.

As a Wisconsin Master Cheesemaker, Grossen earned certifications in Brick, Cheddar, Gouda, Havarti and Muenster. Last summer, he won top honors at the Green County Fair Cheese Contest in Monroe, Wisconsin for his Aged Gouda. In 2019, his Gouda was named Cheese and Butter Grand Champion at the 2019 World Dairy Expo. Perhaps most notably, Grossen earned a silver medal in the Gouda category at the 2012 World Cheese Championships.

"It is very hard to make the decision to move onto the next step in my life, due to me being raised in a cheese plant and working at a very young age," Grossen said. "The most rewarding part of my time at Babcock Hall and CDR is the people I have met, including the staff coordinators, cheesemakers, and most of all, the students…I will not be done in the cheese industry. I will keep very active in numerous dairy related functions and may take some more classes at CDR."

CDR WELCOMES NEW STAFF

Miguel Perez, Cheese Scientist

Miguel has joined CDR as a Cheese Scientist. In this position, he will investigate microbes in cheese using modern molecular techniques. Previously, Miguel worked as a post-doctoral researcher and a graduate student at the Great Lakes Bioenergy Research Center (University of Wisconsin-Madison), engineering soil microbes to sustainably produce fuels and chemicals from wood. He is a graduate of the Pontificia Universidad Catolica de Chile School of Agriculture and Forestry. In addition, he has a MS from Cornell University, and a PhD from the University of Wisconsin-Madison in Civil and Environmental Engineering. At CDR, Miguel is excited to discover the role of the different members of dairy microbiomes in the production of safe, nutritious, and tasty cheeses.

Daniel Wilbanks, Dairy Applications Specialist

As a Dairy Applications Specialist, Daniel works with clients in the development of dairy beverages and cultured milk products. He recently completed his PhD in Food Science at the University of Wisconsin-Madison where his research focused on membrane filtration technology to develop novel dairy products for use in beverages and high protein yogurt. Daniel has a MS in Food Science from Kansas State University and a BS in Forensic Science from Eastern Kentucky University. He also has 10 years of experience in the dairy industry developing analytical methods for use in infant formula.

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ADDRESS SERVICE REQUESTED

Upcoming CDR Trainings

The Center for Dairy Research is here to help with dairy processing training. Below is a listing of upcoming CDR short courses and other training opportunities.

- Cheese Grading (in-person) – October 18-20
- Dairy Protein Beverage Applications (in-person) – October 25-26
- Cheesemaking Fundamentals (self-study) – November 9
- Dairy Ingredients Fundamentals (self-study) – November 16

For the latest information or to register visit www.cdr.wisc.edu/short-courses

Save the Date!

CHEESECON

April 4-6, 2023 | Alliant Energy Center, Madison, Wisconsin | CheeseCon.org

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