

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
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**Testimony in OPPOSITION to HB1663 HD1  
RELATING TO HEALTH**

REPRESENTATIVE JOHN M. MIZUNO, CHAIR  
HOUSE COMMITTEE ON HEALTH

Hearing Date: 2/11/2020

Room Number: 329

1 **Fiscal Implications:** None

2 **Department Testimony:** The Department of Health (Department) respectfully opposes this  
3 measure for the following reasons:

- 4 1) SECTION 1. of this measure requires clarification. The “unrefrigerated tanks” should  
5 not be a cause for alarm as the nation-wide industry standard regarding construction of  
6 milk tankers are identical. Due to the highly perishable nature of fluid milk, all tankers  
7 are required to be constructed so the milk temperature may not rise more than 1° degree F  
8 in a 24 hour period. These are literally giant double wall thermoses filled with 7,500 to  
9 10,000 gallons of fluid milk. If milk is shipped from the West coast to Hawaii, and filled  
10 at the pasteurization plant at 33°F, it will arrive at the Meadow Gold plant about 9 days  
11 after being filled and the temperature will always be around 40-41°F, as most tankers  
12 exceed the 1°F/24hr rise in temp. The national requirement is that the milk be held below  
13 45°F at all times.
- 14 2) The primary reason that milk must be re-pasteurized when it arrives in Hawaii, is due to  
15 the FDA/USPHS Pasteurized Milk Ordinance (PMO) requirement that all milk must be  
16 packaged at the plant where it is pasteurized to prevent post pasteurization contamination  
17 of the milk.

- 1       3) It is true that the Milk Control Act of 1967 attempted to deal with commerce and the  
2       movement of milk into the State and does not address public health. Public health is  
3       addressed solely by the PMO and HAR 11-15, Milk.
- 4       4) The violative testing referred to in Section 1. are regulatory testing done by the  
5       Department. The Department is required to sample all milk products that a plant  
6       produces at least 4 times in a 6 month period. The Department's protocol is to sample  
7       every month so we are above the national standard. Coliform (Coli) and Standard Plate  
8       Count (SPC) are considered to be quality control tests that indicate the level of plant and  
9       farm sanitation. Milk products that violate these SPC or coliform standards are still safe  
10      to drink, however when a milk plant or dairy farm violates 3 of the last 5 consecutive  
11      samples, the the Department routinely suspends the milk product for sale until a complete  
12      evaluation is done to ascertain the cause of the elevated counts. The Department requires  
13      the plant or farm to pass re-sampling of the violative product prior to allowing it back  
14      into commerce after a suspension.
- 15     5) Regarding the 128,000 hospitalizations and 3,000 deaths mentioned, not one of these  
16     originated from the consumption of Grade A Pasteurized milk. There have been no milk-  
17     borne outbreaks for decades in the United States when the milk consumed has originated  
18     from a Grade A pasteurized milk plant.
- 19     6) Page 3. Lines 15-17, erroneously states that "...making the re-pasteurization of milk and  
20     its associated dangers an unnecessary risk for consumers in Hawaii." This statement is  
21     false as the re-pasteurization of milk is required by the PMO and the sole purpose of this  
22     requirement is to ensure milk safety, by requiring that all fluid milk MUST be packaged  
23     in the same plant that it is pasteurized to prevent post-pasteurization contamination of the  
24     finished milk product(s). Cold chain logistics and the federal Food Safety Modernization  
25     Act (FSMA) requires adherence to the PMO.
- 26     7) All milk plants and dairy farms in Hawaii fully comply with ALL handling,  
27     transportation, and distribution requirements of FSMA, including handling protocols,  
28     temperature verifications, and proper refrigerated transportation of all perishable foods.

- 1 To reiterate, passage of this measure may result in an immediate, and severe milk shortage in the
- 2 State of Hawaii as Hawaii's only milk plant would not be able to ship in bulk containers of
- 3 pasteurized milk from the mainland. However, it would still be possible for any entity to ship in
- 4 pre-packaged milk from the mainland, but some careful planning would be needed for other milk
- 5 purveyors to pick up the immediate void that would result from not allowing Hawaii's sole milk
- 6 plant to process bulk-tankers of milk into packaged, ready-to-serve containers.
  
- 7 Thank you for the opportunity to testify on this measure.



# Meadow Gold Dairies



**LATE**

**Testimony By: Glenn Muranaka  
HB 1663hd1, Relating to Health  
House HLT Hearing – 9:30 am  
Tuesday, February 11, 2020 – Room 329**

**Position: Oppose**

Chair Mizuno, Vice Chair Kobayashi and Members of the Hse HLT Committee:

My name is Glenn Muranaka, President and General Manager of Meadow Gold Dairies. Our company has been in Hawaii since 1897—122 years, providing Hawaii consumers with a variety of milk products and juices. Meadow Gold's long history has not come without effort. We continually adapt to our customers' and consumers' ever-changing needs, and we constantly evolve along with our industry, our community and our market. Over the years, this has required that we struggle, tighten our belts, innovate and work extremely hard, making us a better company in the process. The foundation of this work rests with the 305 employees that are committed to providing superior quality products.

In the past, Hawaii's dairy industry numbered about 60 dairies and it is now down to one dairy on the Big Island of which its milk is processed, packaged and distributed to Big Island customers. It takes more milk than can be locally produced to meet the needs of Hawaii. Meadow Gold milk also comes to Hawaii from California dairies inside 6,200-gallon super-insulated, stainless steel tanks, where it has remained at an average temperature of 33°F to 40°F. Sustaining the last remaining processing plant in Hawaii provides for the likelihood of again processing milk from other dairy farms in Hawaii.

Here are factual responses to the misperception presented in HB1663sd1. Please see attached Kokua Line article for fact-based research on pasteurization:

**Fact:** Milk arriving at the Meadow Gold processing facility has been pasteurized once on the mainland. It receives a second pasteurization in Hawaii to meet Federal standards. Since Meadow Gold packages its milk here in the islands, the second pasteurization is mandatory.

The **Code of Federal Regulations** requires that milk that is shipped in bulk tankers from one plant to another, like we do, be pasteurized before bottling, even if it has been pasteurized before. Pasteurization is required in 21 CFR Sec. 1240.61 "Mandatory pasteurization for all milk and milk products in final package form intended for direct human consumption."

In pasteurization, milk is quickly heated and cooled. Federal standards require that it be heated to 161°F for 15 seconds. But Meadow Gold exceeds those standards, heating its milk to 178°F for 18 seconds.

Meadow Gold Quality Assurance Facts:

- Of the more than 60 processing facilities nationwide in the Meadow Gold family of companies, the Meadow Gold facility in Honolulu is rated in the top five percent for the quality of its operations.

- Meadow Gold milk is laboratory tested again in Hawaii. In addition, the Meadow Gold milk processing line is cleaned every 24 hours to meet high quality standards.
- Meadow Gold has attained SQF certification from the Safe Quality Food Institute, the highest level possible, which attests to Meadow Gold having comprehensive food safety and quality management systems for every step in the food chain.

Fact: Pasteurization, whether it is single or double, destroys the pathogens in milk that cause food borne illness. Bacteria is always present in milk—it is not a sterile product—and these bacteria eventually grow, and the milk turns sour. The important distinction is that the bacteria that causes milk to spoil does not cause food borne illness.

Fact: This ever-present bacteria in milk, imported pre-packaged or packaged locally, is not a food safety concern but a product quality concern.

Fact: In March 2017, the Hawaii Department of Health Sanitation Branch issued a statement that the 2% milk that tested higher-than-acceptable levels of coliform bacteria which can lead to spoilage before the code date on the package was safe for consumers. It did not place any consumer at undue risk of contracting a milk-borne illness when compared to any other “Grade A” milk product sold in the US.

Further the DOH stated that “...every Meadow Gold milk product taken for analysis is definitively tested for proper pasteurization through a required residual phosphatase test. Meadow Gold milk products, including the 2% milk in question have NEVER failed this test...”

Fact: The label use of “Fresh” milk is governed by the Code of Federal Regulations Title 21, which allows for the use of “fresh” milk because consumers commonly understand that milk is nearly always pasteurized. Otherwise, “fresh” is used for foods that are unprocessed or unpreserved.

Fact: Meadow Gold, Hawaii’s Dairy has been a registered trade name under Hawaii law. This trade name reflects Meadow Gold’s contemporary legacy stemming from its roots deep in the history of our community since 1897, when seven Oahu dairy farms formed a cooperative using the Dairymen’s Association for processing and distribution of milk produced by the seven dairy farms. There is no evidence suggesting that this trade name engenders any confusion of the origin of products processed, manufactured or distributed by Meadow Gold and no claim of origin is expressed or implied by this trade name.

Throughout its 123-year history, Meadow Gold, Hawaii’s Dairy, has continuously engaged in processing, manufacturing, and distributing dairy products in Hawaii with farms, plants, and operations at various times on Hawaii Island, Maui, Oahu, and Kauai. From this perspective, Meadow Gold has had a physical presence in Hawaii much longer and on more islands than any other enterprise engaged in processing, manufacturing and distributing dairy products in Hawaii.

We request that this bill be deferred. I can be reached at 944-5911 if there are any questions. Thank you for the opportunity to testify.

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## Kokua Line

June Watanabe

### Repasteurized milk can be sold as 'fresh'

**Question:** Having moved recently to Hawaii, I was shocked to hear that almost all the "fresh" milk on Oahu has been repasteurized (pasteurized twice). I understand that this milk is shipped unrefrigerated from the mainland to Hawaii that requires a second pasteurization. While California and other states prohibit repasteurized milk from being sold as "market milk," there apparently isn't similar prohibition here. Can you confirm this, and why the state Department of Agriculture doesn't have restrictions against repasteurized milk as being sold as "fresh" milk? What are the pros and cons of repasteurized milk? Does it spoil more quickly than milk that has been pasteurized only once? Why isn't Hawaii-fresh milk sold on Oahu? Why isn't the consumer given all of the information about repasteurized milk and the option of purchasing Hawaii-fresh milk?

**Answer:** You are correct about the repasteurization, but apparently have some misconceptions about the process and status of fresh milk in Hawaii.

The state Department of Health oversees the safety of milk in Hawaii.

Neither the department's Administrative Rules (Chapter 15 dealing with "Milk") nor the Food and Drug Administration's Grade A Pasteurized Milk Ordinance prohibits repasteurization, said Sidney Doi, a program specialist with the department's Sanitation Branch.

Doi explained that milk is pasteurized in mainland milk plants, then loaded into approved, licensed milk-transport tankers for shipment to Hawaii.

"The stainless-steel tanker itself is not mechanically refrigerated, but it is extremely well insulated," he said. "It must meet a nationally recognized standard called the 3-A Standard."

Doi said the milk is loaded into the tanker at a very cold temperature, approximately 35 degrees Fahrenheit. When it reaches the local milk plant, it is usually 39 to 43 degrees Fahrenheit.

"The local milk plant will reject the tanker if the milk is received at above 45 degrees," as is required by state rules and the Pasteurized Milk Ordinance, Doi said.

"The milk must be repasteurized because the rules require that milk can be packaged or bottled only at the milk plant where final pasteurization is done," he said.

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Regarding prohibitions against repasteurized milk being sold as "market milk," Doi said you may be misinterpreting the rules.

Both state rules and the Pasteurized Milk Ordinance require that if "packaged" (pasteurized) milk has physically left a milk plant, it may not be repasteurized for Grade A milk use, he said.

"However, the rules specifically permit the repasteurization of milk if transported in bulk tankers and handled properly," he said, emphasizing the words "specifically permit."

"In regards to it being sold as 'fresh' milk, the state rule makes no differentiation between milk that has been pasteurized once and milk pasteurized twice," Doi said. "The rule addresses milk safety only, and all Grade A milk must meet state and (Pasteurized Milk Ordinance) standards."

Doi said he was not aware of any studies addressing your spoilage question. He pointed out that state rules require that a milk plant label milk cartons with a pull date (month and day), after which the milk cannot be sold for human consumption.

"The milk plant sets this pull date based on their quality-assurance studies," he said. "If the pull date is inaccurate and the milk tends to spoil prematurely, the plant would be required to review the shelf life of the product and adjust the pull date, if necessary."

He said he couldn't address the pros and cons of repasteurized milk, other than to emphasize that the Health Department's responsibility is to enforce the provisions of Chapter 15 and the FDA's milk ordinance "in order to ensure that the milk is safe for public consumption."

Doi said Hawaii's milk regulation should not differ significantly from those of other states, because all 50 states participate in the Interstate Milk Shippers program, a voluntary state and U.S Public Health Service/ FDA program.

"The Pasteurized Milk Ordinance is the basic standard used in the shippers' program, and is recognized as the national standard for milk production," he said. Chapter 15 is based on that ordinance.

As for locally produced milk, the problem is that there are only a few dairy farms left in the state, so there is not enough being produced to meet demand. That's why most of the milk has to be imported.

As it is, "Island Fresh" milk is served exclusively within the state, Doi said. There is no exporting.

There are currently two dairies on Oahu and three on the Big Island, according to Jeri Kahana, manager of the state Department of Agriculture's Commodities Branch and Milk Control Section.

The "Island Fresh" milk they produce accounts for about 40 percent of the total milk supply in the state.

On Oahu alone, the Oahu dairies produce approximately 28 percent to 30 percent of the island's milk supply, with most of the milk going to school lunch programs, Kahana said

"You can rarely find 'Island Fresh' milk at retail," she said.

However, the three dairies on the Big Island produce practically all the milk sold on that island, she said.

## Mahalo

To Mr. Fa'a. On Wednesday, Sept. 27, I went to Lina's flower shop. After leaving, I couldn't find my car keys and was just about to retrace my steps when a nice gentleman came and gave me the keys. What a relief it was. A sincere mahalo to Mr. Fa'a. May he be blessed. -- Helen

**Got a question or complaint?** Call 529-4773, fax 529-4750, or write to Kokua Line, Honolulu Star-Bulletin, 500 Ala Moana Blvd., No. 7-210, Honolulu 96813. As many as possible will be answered. E-mail to [kokualine@starbulletin.com](mailto:kokualine@starbulletin.com). **See also:** [Useful phone numbers](#)

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**LATE**

Chair Mizuno  
Vice Chair Kobayashi  
Committee Members:

Chad Buck  
Owner  
Hawaii Foodservice Alliance

I am in support of HB 1663 as it pertains to STRENGTHENING FOOD SAFETY PROTOCOLS FOR HAWAII'S IMPORTED FOOD. *LOSER*

- I EMPLOY several hundred people
- OWN & OPERATE FSMA COMPLIANT dry, chill, and frozen warehousing and distribution facilities on all major islands.
- ALL OF our facilities are THIRD PARTY AUDITED for FSMA Compliance/INTERNATIONAL Food Safety Standards and Practices

*ALIGNED WITH W/FSMA*

*EVERY WEEK*

**WE ARE:**

- Largest handler of perishable air freight - 1.5 million pounds monthly
- Largest distributor of mainland and local eggs - **350,000 to 600,000** dozen eggs **DISTRIBUTED EVERY WEEK**
- Largest distributor of local island beef - Parker Ranch, HBP, Makaweli, Niihau
- Distribute roughly 80,000 gallons of fresh milk every week.
- Perishable Logistic Provider via air, truck, and ocean for Hawaii's largest clubs, grocers, and retailers.
- **LARGEST** individual donor to Hawaii Foodbank - FB & Salvation Army - Children not eating
- **ALL OF OUR PERISHABLE PRODUCTS ARE SHIPPED UNDER FULL TIME REFRIGERATION WITH TEMPERATURE LOGS TO ENSURE COMPLIANCE.**



## **FSMA - FOOD SAFETY MODERNIZATION ACT**

- President Obama's legacy - Signed in to law on January 4th, 2011
- Prompted after many reported food borne illnesses throughout the first decade of the 2000
- Similar to the Food Safety Enhancement Act passed in 2009
- FIRST PIECE of federal legislation to addressing food safety since 1938

EVERYONE HAD FAIR WARNING: FSMA requirements were stair stepped in enforcement where milestones were met between 2009 and 2017

In 2017 - FSMA = any officer or owner of a company that knowingly breaks cold chain can serve prison time = Independent Audits

## **SPEAK TO FSMA COMPLIANCE FOR HAWAII**

FSMA = TIME AND TEMP CONTROLS to reduce the risk of deadly bacteria

HAWAII IS THE MOST ISOLATED LAND MASS ON PLANET EARTH.

NO OTHER STATE IN THE NATION FACES THE CHALLENGES THAT HAWAII DOES - SHIPPING 90 PLUS PERCENT OF THEIR FOOD FOR A WEEK OVER THE OCEAN IN TROPICAL HEAT. HEAT THAT IS INCREASING WITH CLIMATE CHANGE

TIME AND TEMP CONTROLS TO CONTROL BACTERIA GROWTH ARE ALL STACKED AGAINST US IN HAWAII.

NO OTHER MAN HAS DONE MORE TO PROTECT - PETER OSHIRO of DOH.

## Listeria (Listeriosis)

CDC Listeria (Listeriosis) Outbreaks



↑ Listeria (Listeriosis)

Questions & Answers

Symptoms

Diagnosis & Treatment

Prevention

People at Risk

Outbreaks

Reporting Timeline

Outbreak of *Listeria* Infections  
Linked to Hard-boiled Eggs

Outbreak of *Listeria* Infections

Outbreak of *Listeria* Infections  
Linked to Deli-Sliced Products

Outbreak of *Listeria* Infections

# Multistate Outbreak of Listeriosis Linked to Roos Foods Dairy Products (Final Update)

Posted April 18, 2014 9:30 AM ET



### Highlights

- [Read the Advice to Consumers & Cheese Retailers»](#)
- A total of eight persons infected with the outbreak strain of *Listeria monocytogenes* were reported from two states.
  - The number of ill persons identified in each state was as follows: California (1) and Maryland (7)
  - Seven of eight ill persons were hospitalized. One death was reported in California. Five of the illnesses (2 mother-newborn pairs and a newborn) were related to pregnancy.

### At a Glance:

- Case Count: 8
- States: 2
- Deaths: 1
- Hospitalizations: 7
- Recall: Yes



From	Vessel	Regular Container Avail - HON	Actual Container Avail - HON
Long Beach	DKI	Thursday, December 26, 2019	Friday, December 27, 2019
Seattle	Mahi	Sunday, December 29, 2019	mid-day Sunday 12/29
Long Beach	Kaimana Hila	Monday, December 30, 2019	Tuesday, December 31, 2019
Long Beach	Manoa 419	Monday, January 6, 2020	Tuesday, January 7, 2020
Long Beach	Lurline 001	Thursday, January 16, 2020	Friday, January 17, 2020
Long Beach	Lurline 002	Thursday, January 30, 2020	Friday, January 31, 2020
Long Beach	Manoa 420	Monday, February 10, 2020	Tuesday, February 11, 2020
Long Beach	Lurline 003	Thursday, February 13, 2020	Friday, February 14, 2020

## FSN | Food Safety News

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### Most Restaurants in Hawaii are Adjusting to Tighter Food Safety Rules

By News Desk on October 28, 2015

Food safety inspectors in Hawaii are working with restaurants statewide on compliance after revising the acceptable hot and cold holding temperatures and adopting a color-coded placard system in 2014. There have been occasional problems, such as when health inspectors recently closed down two Oahu restaurants, in part for temperature violations, and they have issued more than 2,000 yellow placards to those having two or more critical violations. However, 95 percent of restaurants in the Aloha State are in compliance and are sporting a green placard, meaning that they immediately corrected any violations found at their most recent inspection, according to the Hawaii State Department of Health. The changes, adopted in February 2014, require food establishments to keep potentially hazardous foods at 41 degrees F or lower for cold foods and 135 degrees F or higher for hot foods. (The previous lower limit had been 45 degrees F, while the previous higher limit was 140 degrees F.) The

department's food safety guidelines note that these potentially hazardous foods include meats, seafood, eggs, dairy products, cooked rice, cooked beans, cooked pasta, cooked vegetables, tofu, cut melon, sprouts, and garlic in oil. Peter Oshiro, the



department's environmental health program manager, said that the changes were prompted by research showing the dangers of keeping foods at temperatures above 41 degrees F. "Because of an increase nationwide of incidences in *Listeria*, it prompted the regulators to use science to control it, and what the science says is that *Listeria* has a difficult time growing below temperatures of 41 degrees Fahrenheit," he said. A few restaurants have had problems meeting the new requirements. Earlier this

# Hawaii Department of Health

## Basic Food Safety Self-Inspection Checklist for Food Processors



HAWAII STATE  
DEPARTMENT  
OF HEALTH

Personal Hygiene	Yes	No
Hands are washed thoroughly using proper hand-washing procedures at critical points.	<input type="checkbox"/>	<input type="checkbox"/>
Hand wash sinks are provided. Easily accessible, conveniently located with soap and paper towels.	<input type="checkbox"/>	<input type="checkbox"/>
Open sores, cuts, infected wounds, or bandages are completely covered with a single-use glove.	<input type="checkbox"/>	<input type="checkbox"/>
Employees take appropriate action when coughing or sneezing.	<input type="checkbox"/>	<input type="checkbox"/>
Hands are washed before putting on gloves. Gloves are changed at critical points.	<input type="checkbox"/>	<input type="checkbox"/>
Hair restraint is worn. Fingernails clean and trim.	<input type="checkbox"/>	<input type="checkbox"/>
Eating, drinking, or chewing gum are observed only in designated areas away from work areas.	<input type="checkbox"/>	<input type="checkbox"/>
No jewelry such as rings, bracelets, wristwatches, or any other items that may interfere with thorough hand washing.	<input type="checkbox"/>	<input type="checkbox"/>
Smoking is not allowed in the food prep, dishwashing, service or storage areas.	<input type="checkbox"/>	<input type="checkbox"/>
Food workers do not handle foods if they are ill with a disease transmissible by foods or have symptoms associated with such illness.	<input type="checkbox"/>	<input type="checkbox"/>

Food Handling	Yes	No
No bare-hand contact with ready-to-eat foods. Ready-to-eat foods such as: salads, sandwiches, sushi, finished pastries, cooked foods on a plate, nothing with a "kill step" before it gets to a customer – do NOT touch with bare hands (use of tongs, spoons, forks, utensils, gloves, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Food workers do not handle raw foods then cooked or ready-to-eat foods without proper hand washing in between.	<input type="checkbox"/>	<input type="checkbox"/>
Food is not allowed to be in the temperature "danger zone" (between 41° and 135°F) for more than 4 hours.	<input type="checkbox"/>	<input type="checkbox"/>
Once served to the customer, portions of leftover food are not served again.	<input type="checkbox"/>	<input type="checkbox"/>
Frozen food is thawed under refrigeration, cold running water or as part of the cooking.	<input type="checkbox"/>	<input type="checkbox"/>
Reusable towels are used only for sanitizing equipment surfaces and not for drying hands, utensils, floor, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Food is handled with utensils, clean-gloved hands, or clean hands.	<input type="checkbox"/>	<input type="checkbox"/>
Raw fruits and vegetables are properly washed before serving.	<input type="checkbox"/>	<input type="checkbox"/>
Food is tasted using proper method.	<input type="checkbox"/>	<input type="checkbox"/>

In use food (including ice) dispensing utensils are properly stored (1. In the food. 2. Clean and dry. 3. In running water) and handled to avoid contamination of parts that will be in direct contact with food.	<input type="checkbox"/>	<input type="checkbox"/>
Accurate thermometers available, calibrated and used to monitor cooking, hot holding, cooling, reheating, and refrigerated storage temperatures.	<input type="checkbox"/>	<input type="checkbox"/>

Refrigerated Storage and Proper Cooling	Yes	No
Food is stored at 41°F or below, properly covered, labeled and dated and at least 6 inches off the floor.	<input type="checkbox"/>	<input type="checkbox"/>
Cooked or ready-to-eat foods are stored above raw foods.	<input type="checkbox"/>	<input type="checkbox"/>
Shellfish properly stored and tagged. Tag kept on file for at least 90 days.	<input type="checkbox"/>	<input type="checkbox"/>
All cooked PHF cooled to 70°F or below within 2 hours then to 41°F or below within 4 hour placing into shallow pans, stirring the food in containers placed in an ice water bath, breaking it down to smaller portions, using rapid cooling equipment, adding ice, or other effective methods.	<input type="checkbox"/>	<input type="checkbox"/>
Thermometer is accurate, available and conspicuous.	<input type="checkbox"/>	<input type="checkbox"/>
The FIFO (First In, First Out) method is used.	<input type="checkbox"/>	<input type="checkbox"/>

Hot Holding and Reheating	Yes	No
Potentially Hazardous Foods (PHF) kept at 135°F or above, except when properly labeled.	<input type="checkbox"/>	<input type="checkbox"/>
Steam tables, warmers and other hot holding equipment are not used for reheating.	<input type="checkbox"/>	<input type="checkbox"/>
Food is reheated to 165°F within 2 hours before placing in hot holding equipment.	<input type="checkbox"/>	<input type="checkbox"/>
Thermometer is accurate, available and conspicuous.	<input type="checkbox"/>	<input type="checkbox"/>

Cooking	Yes	No
All poultry, poultry stuffing, stuffed meats, and stuffing containing meat are cooked to 165°F or above.	<input type="checkbox"/>	<input type="checkbox"/>
Ground beef and other comminuted meats are cooked to 155°F or above.	<input type="checkbox"/>	<input type="checkbox"/>
All pork or any foods containing pork are cooked to 155°F or above.	<input type="checkbox"/>	<input type="checkbox"/>
All other PHF requiring cooking are heated to 145°F before they are placed in hot holding equipment, except rare roast beef, which may be served at 130°F or above.	<input type="checkbox"/>	<input type="checkbox"/>

Food Storage and Protection	Yes	No
All food and paper supplies are at least 6 inches off the floor.	<input type="checkbox"/>	<input type="checkbox"/>
The FIFO (First In, First Out) method of inventory is being practiced.	<input type="checkbox"/>	<input type="checkbox"/>
All food is labeled with name and delivery date.	<input type="checkbox"/>	<input type="checkbox"/>
All foods are wholesome and free from spoilage or adulteration (no rodent or insect filth, unapproved chemicals) molds.	<input type="checkbox"/>	<input type="checkbox"/>
There are no bulging or leaking canned goods.	<input type="checkbox"/>	<input type="checkbox"/>
Food is protected from contamination and properly covered.	<input type="checkbox"/>	<input type="checkbox"/>
Single service items properly protected.	<input type="checkbox"/>	<input type="checkbox"/>
Water and ice are from approved sources.	<input type="checkbox"/>	<input type="checkbox"/>
Chemicals are labeled and stored away from food and other food-related supplies.	<input type="checkbox"/>	<input type="checkbox"/>

Garbage Storage and Disposal	Yes	No
Adequate number of leak-proof, vermin-proof, and covered containers provided.	<input type="checkbox"/>	<input type="checkbox"/>
Pickup frequency, cleaning schedules of dumpsters and containers adequate to prevent a nuisance.	<input type="checkbox"/>	<input type="checkbox"/>
Garbage storage areas, loading docks and areas around the dumpster are clean and do not create a nuisance.	<input type="checkbox"/>	<input type="checkbox"/>

Pest Control	Yes	No
Presence of insects, rodents and other vermin minimized.	<input type="checkbox"/>	<input type="checkbox"/>
Effective measures used to control entrance and harborage of vermin.	<input type="checkbox"/>	<input type="checkbox"/>
Screen doors open to the outside.	<input type="checkbox"/>	<input type="checkbox"/>
Screens are on open windows and doors and in good repair.	<input type="checkbox"/>	<input type="checkbox"/>

Cleaning and Sanitizing	Yes	No
Three-compartment sink is properly sized, installed and maintained. Proper procedures followed: Pre-wash, wash, rinse, sanitize and air dry.	<input type="checkbox"/>	<input type="checkbox"/>
Wash water: 110°F. Chemical sanitizer: 75°F. Final rinse temperature: 180°F (mechanical dishwashing).	<input type="checkbox"/>	<input type="checkbox"/>
Sanitizing is by heat (hot water), chemical immersion or chemical swabbing.	<input type="checkbox"/>	<input type="checkbox"/>
Equipment and utensils immersed in chemical sanitizer for at least 1 minute at proper concentration and temperature of at least 75°F.	<input type="checkbox"/>	<input type="checkbox"/>
Chemical test kits and accurate thermometers are present and functional.	<input type="checkbox"/>	<input type="checkbox"/>
Thermometers are washed and sanitized.	<input type="checkbox"/>	<input type="checkbox"/>
Dishwasher washes hands before handling clean dishware.	<input type="checkbox"/>	<input type="checkbox"/>
Wiping cloths are stored in sanitizer.	<input type="checkbox"/>	<input type="checkbox"/>
Food contact surfaces are cleaned after each use.	<input type="checkbox"/>	<input type="checkbox"/>
Cooking surfaces are cleaned at least once a day.	<input type="checkbox"/>	<input type="checkbox"/>

Your notes:

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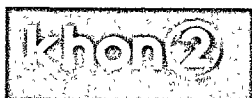


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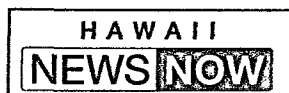
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## NEWS LINKS TO HB 1663



KHON 2  
MEADOW GOLD ORDERED TO HALT DISTRIBUTION

<https://www.khon2.com/news/meadow-gold-ordered-to-halt-distribution-sale-of-2-percent-reduced-fat-milk/amp/>



HAWAII NEWS NOW  
MEADOW GOLD ORDERED TO STOP SELLING 2% MILK

<https://www.hawaiinewsnow.com/story/34619085/breaking-state-orders-meadow-gold-dairies-to-stop-selling-two-percent-milk-over-bacteria-concerns/>



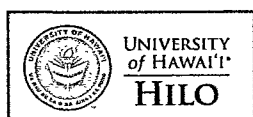
KITV 4 ISLAND NEWS  
DOH ORDERS MEADOW GOLD TO STOP SELLING 2% REDUCED FAT MILK

<https://www.kitv.com/story/34619091/doh-orders-meadow-gold-to-stop-selling-2-reduced-fat-milk>



STARADVERTISER.COM  
MEADOW GOLD DAIRIES ORDERED TO STOP SELLING 2% MILK

<https://www.staradvertiser.com/2017/02/27/breaking-news/meadow-gold-dairies-ordered-to-stop-selling-2-milk/>



UNIVERSITY OF HAWAII HILO  
MICRO BIOLOGICAL STUDY

<https://hilo.hawaii.edu/panr/writing.php?id=278>

FOOD SAFETY INSPECTION

Bruce Tompkin Ph.D.  
Armour Swift-Eckrich

Tompkin, R.B. 1996. The Significance of time-temperature to growth of foodborne pathogens during refrigeration at 40-50°F. Presented during the Joint FSIS/FDA Conference on Time/Temperature. November 18, Washington, DC.

Attribution on page 11 of this document. From the author. 12/31/2015- This 2007 version of the document includes information about the date, where, and why the document was made available to the public. It was never published in the literature but FSIS recognizes it since it was presented at a public hearing on a proposed regulation. FSIS inserted a link on page 20 of its recent, "FSIS Compliance Guideline HACCP Systems Validation April 2015".

Table 1. Minimum growth temperatures for selected foodborne pathogens.

	Minimum Growth Temperatures	
Salmonellae <sup>1</sup>	7C	44.6F
Pathogenic <i>E. coli</i>	7-8C	44.6-46.4F
<i>L. monocytogenes</i>	-0.4C	<u>31.3F</u>
<i>Y. enterocolitica</i>	-1.3C	<u>29.7F</u>
<i>Campylobacter jejuni</i>	32C	89.6F
<i>Staphylococcus aureus</i>	7C	44.6F
<i>Bacillus cereus</i> <sup>2</sup>		
psychrotrophic strains	4C	39.2F
<i>Clostridium perfringens</i>	12C	53.6F
<i>Clostridium botulinum</i>		
nonproteolytic	3.3C	38F
proteolytic	10C	50F

FOOD SAFETY INSPECTION

- <sup>1</sup>One report of initial growth on bacon at 5C but then the population decreased.
- <sup>2</sup>While growth of *B. cereus* occurs in milk at refrigeration temperatures (e.g., <7C), there is no evidence for this in meat and poultry. One study reported death of vegetative cells in ground beef at 12.5C (54.5F) and below.
- Parasites (e.g., *Trichinella spiralis*, *Taenia* spp., *Toxoplasma gondii*) and viruses do not multiply in meat or poultry products.

Source: International Commission on Microbiological Specifications for Foods. 1996. Microorganisms in Foods: Microbiological Specifications of Food Pathogens. Blackie Academic & Professional, New York.

## **Labeling for Raw Shell Eggs**

The Code of Federal Regulations 21 CFR 101.17 **Food Labeling warning, notice, and safe handling statements**, paragraph (h) *Shell* eggs state in subparagraph (1), “The label of all shell eggs, whether in intrastate or interstate commerce, shall bear the following statement: ‘SAFE HANDLING INSTRUCTIONS: To prevent illness from bacteria; keep eggs refrigerated, cook eggs until yolks are firm, and cook foods containing eggs thoroughly.’” Further, in subparagraph (4) it states, “Shell eggs that have been, before distribution to consumers, specifically processed to destroy all viable *Salmonella* shall be exempt from the requirements of paragraph (h) of this section.”

## **Labeling for Whole-muscle, Intact Beef Steaks**

In order for a food establishment operator to know that a steak is a whole-muscle, intact cut of beef that can therefore be undercooked and served without a consumer advisory, the incoming product must be labeled. Processors can accommodate this need at the retail level by developing proposed labels, obtaining the necessary USDA Food Safety Inspection Service review and approval, and appropriately affixing the labels to their products.

Refer also to public health reason for § 3-602.11.

### **3-201.12 Food in a Hermetically Sealed Container.**

Processing food at the proper high temperature for the appropriate time is essential to kill bacterial spores that, under certain conditions in an airtight container, begin to grow and produce toxin. Of special concern is the lethal toxin of *Clostridium botulinum*, an organism whose spores (i.e., survival stages for non-growth conditions) are found throughout the environment. Even slight underprocessing of low acid food which is canned can be dangerous, because spoilage microbes are killed and there are no signs to warn consumers that botulinum spores have germinated into vegetative cells and produced their toxin. If these foods are not processed to be commercially sterile, they must be received frozen or under proper refrigeration.

Refer also to the public health reason for §§ 3-101.11 and 3-201.11.

### **3-201.13 Fluid Milk and Milk Products.**

Milk, which is a staple for infants and very young children with incomplete immunity to infectious diseases, is susceptible to contamination with a variety of microbial pathogens such as Shiga toxin-producing *Escherichia coli*, *Salmonella* spp., and *Listeria monocytogenes*, and provides a rich medium for their growth. This is also true of milk products. Pasteurization is required to eliminate pathogen contamination in milk and products derived from milk. Dairy products are normally perishable and must be received under proper refrigeration conditions.



cooked, there would be an opportunity for the egg's defenses to degrade and growth of ***Salmonella Enteritidis*** to occur. The agency reviewed research indicating that ***Salmonella Enteritidis*** multiplies at temperatures of 10°C (50°F) and above but can be inhibited at lower temperatures, e.g., 8°C (46°F), 7°C (45°F), and 4°C (39°F). Based on this research and USDA's temperature requirement during transport, FDA implemented regulations that establish a maximum ambient air temperature of 7°C (45°F) for eggs stored and displayed at retail establishments. Amended Federal regulations 21 CFR Part 115.50 issued on December 5, 2000 and became effective on June 4, 2001.

Although Congress did not expressly preempt State law in this area, FDA found preemption is needed because State and local laws that are less stringent than the Federal requirements will not support the important public health goals of these regulations. FDA does not believe that preemption of State and local refrigeration and labeling requirements that are the same as or more stringent than the requirements of these regulations is necessary, as enforcement of such State and local requirements will support the food safety goals of these regulations. Accordingly, the preemptive effect of this rule is limited to State or local requirements that are not as stringent as the requirements of these regulations; requirements that are the same as or more stringent than FDA's requirements remain in effect.

#### **Historical Record of Cold Holding Temperature Provisions**

The 1976 Food Service Sanitation Manual recommended 45°F as the cold holding temperature. Based on the available science at the time, the 1993 Food Code lowered the cold holding temperature to 41°F.

However, stakeholders raised concerns that many of the refrigerators currently in place in food establishments would not be capable of maintaining food at that temperature. There was also concern that most of the open-top buffet and food prep table-type units being built at the time could not reliably maintain food at 41°F or less. Industry pointed out that operators needed to recover investments in new refrigeration equipment purchased just before or after a state adopted the 41°F provision.

Consequently, the Conference of Food Protection (CFP) recommended the 1997 Food Code incorporate the option of having a 5-year phase-in period for the 41°F requirement to allow for upgrading of existing equipment, and the FDA agreed.

By 2006, many states adopted and implemented the phase-in period, the 5 years had expired and they were requiring cold holding at 41°F or less. In addition, NSF/ANSI Standard 7 was revised in 1997 and again in 1999 to ensure that equipment conforming to the Standard, including open-top and display units, could achieve the desired performance under conditions typically found in the food service and retail environments. Thus, there are mechanisms in place to allow industry flexibility in holding foods out of temperature control and the exemption for holding at 45°F was no longer necessary, given equipment capabilities, existing provisions of the Food Code that could be utilized (e.g., variances, time as a public health control), and the impact on

public health. Additionally, the FDA believed this exemption was no longer necessary and perhaps was detrimental to public health protection in light of what had been learned about the growth and survival of *Listeria monocytogenes* (LM) in refrigerated foods.

In 2006, the CFP recommended (CFP Issue 2006-I-033) and FDA agreed that the option of maintaining 45°F as a cold holding temperature be deleted from § 3-501.16. In the Supplement to the 2005 Food Code, the option to maintain 45°F as the cold holding temperature was deleted from the Food Code and 41°F became the standard for cold holding.

### Hot Holding

In a January 2001 report, the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) recommended that the minimum hot holding temperature specified in the Food Code:

- Be greater than the upper limit of the range of temperatures at which *Clostridium perfringens* and *Bacillus cereus* may grow; and
- Provide a margin of safety that accounts for variations in food matrices, variations in temperature throughout a food product, and the capability of hot holding equipment to consistently maintain product at a desired target temperature.

*C. perfringens* has been reported to grow at temperatures up to 52°C (126°F). Growth at this upper limit requires anaerobic conditions and follows a lag phase of at least several hours. The literature shows that lag phase duration and generation times are shorter at incubation temperatures below 49°C (120°F) than at 52°C (125°F). Studies also suggest that temperatures that preclude the growth of *C. perfringens* also preclude the growth of *B. cereus*.

CDC estimates that approximately 250,000 foodborne illness cases can be attributed to *C. perfringens* and *B. cereus* each year in the United States. These spore-forming pathogens have been implicated in foodborne illness outbreaks associated with foods held at improper temperatures. This suggests that preventing the growth of these organisms in food by maintaining adequate hot holding temperatures is an important public health intervention.

Taking into consideration the recommendations of NACMCF and the 2002 Conference for Food Protection meeting, FDA believes that maintaining food at a temperature of 57°C (135°F) or greater during hot holding is sufficient to prevent the growth of pathogens and is therefore an effective measure in the prevention of foodborne illness.

## Microbiological Quality of Pasteurized Milk in Hawai'i

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University of Hawaii at Manoa, Hawaii 96822 USA

**Abstract:** Complaints of spoilage of pasteurized milk purchased from Honolulu groceries highlighted the need to address the emerging milk quality issues for the consumer's consumption. The objective of this study was to evaluate the microbiological quality of pasteurized milk available in Hawaii's market. Bacterial counts of different types of milk samples (imported-M, locally produced-L and imported organic-O) were compared during refrigerated storage. Imported bulk milk from mainland are re-pasteurized in Hawaii and packaged under different brands. Hawaii locally produced milk are marketed with the "Island Fresh" label. The expiration or sell by date is based on the pasteurization. Imported organic milk from the mainland were prepackaged and shipped by air freight. At 5d before the expiration date, 70% of the mainland samples and 62% of the local samples had aerobic bacteria count exceeding the regulatory limit of 20,000 cfu/ml for grade 'A' pasteurized milk set by the United States Food and Drug Administration (FDA). Local raw milk samples from the farms supplying the processor were examined and results indicated good microbiological quality. High levels of psychrotrophic bacteria were identified as a major contributor to the pasteurized milk spoilage before the expiration date. The implications of this study were further discussed.

**Key words:** pasteurized milk, raw milk, re-pasteurization, microbiological quality, shelf-life, spoilage bacteria, psychrotrophic bacteria, post-pasteurization contamination, degradative enzymes, Pasteurized Milk Ordinance.

### INTRODUCTION

Hawaii's dairy industry faced numerous challenges in the recent decade. Aging operators faced with higher feed costs, fluctuations in raw milk prices and increased environmental regulations (both at the state and federal levels) found it easier to close operations versus investing in costly new technologies for waste management. Most of the dairy operations were located in small acreage without the opportunity to expand and were faced with increasing pressure of housing development within a stone throw from their farm sites. Displaced dairy operations resulted in the need for larger volumes of milk to be imported to meet local demands for fluid milk. Presently, there are three types of imported milk from the U.S. mainland: 1) pre-packaged organic milk with refrigerated shipping or air-freighted; 2) ultra pasteurized milk with long shelf-life, and 3) conventional high temperature short time (HTST) pasteurized milk is cooled and shipped in bulk tanks (>6,000 gallons) for the trans-ocean journey that normally takes 5-7 days. Particularly, the conventional pasteurized milk is held in insulated tankers without refrigeration during transportation. Initial shipment of bulk tankers had refrigeration but due to higher cost and limited space for electrical terminals in a ship, this method was changed. In Honolulu or Hilo, imported bulk tank milk was then re-pasteurized (HTST), packaged and placed for retail with a shelf-life of 17-19 days. The shelf-life dates back to the most recent pasteurization (local) date.

Consumer complaints of pasteurized milk spoilage in Honolulu prior to the printed expiration date began in late 2002 and increased in 2003. The increased complaints coincided with the increase of imported milk into the market. Numerous studies have indicated that spoilage of processed milk is primarily due to bacterial activity that results in loss of sensory quality (Cromie, 1991, Boor and Murphy, 2002, Hayes and Boor, 2001). Among various microorganisms, psychrotrophic bacteria are by far the most important factor influencing pasteurized milk quality (Sorhaug and Stepaniak, 1997). Psychrotrophic bacteria are a group of microorganisms capable of growing at 7°C (44.6°F) or less. These organisms are remarkable for their rapid growth and short generation multiplication under low temperatures; in raw milk or in pasteurized milk under refrigeration. The extracellular proteolytic and lipolytic enzymes produced by these bacteria can degrade nutritional components of milk and cause undesirable changes in sensory characteristics (Hantsis-Zacharov and Halpern, 2007). Although most of the psychrotrophic bacteria are destroyed by pasteurization, high level of these organisms in raw milk may produce sufficient enzymes that can tolerate pasteurization and reduce processed milk quality. Furthermore, post-pasteurization contamination by psychrotrophic bacteria present in the processing environment is currently a detrimental factor for extending the shelf-life of HTST pasteurized milk (Eneroth *et al.*, 2000). This study was designed to determine the bacterial levels of retail fluid milk produced locally versus milk

Nutrition  
Degraded

Matson & Pasha now  
have ample supply of  
refrigerated capacity

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*Pac. Agric. Nat. Resour.*  
Vol. 2: 20-25, 2010

imported and re-pasteurized. The general goal was to validate the legitimacy of the consumer complaints. The hypothesis was that early spoilage of imported milk was due to higher psychrotrophic bacteria count even under proper handling.

## MATERIALS AND METHODS

### Sample collection

The first study was conducted to evaluate the microbiological quality of pasteurized milk available in Honolulu. Three types of milk with 2% fat were selected: imported pasteurized milk from mainland and re-pasteurized locally (M), locally produced and pasteurized milk (L), and imported pre-packaged organic milk (O). The study was conducted over a period of several months (August 2006-April 2007). A total of 45 commercial pasteurized milk samples were randomly purchased from local grocery stores in Honolulu. The sampling plan consisted of collecting 15 samples of each type (M, L, and O). Over 9 brands of milk from 10 stores were sampled. Local milk samples were identified by the smiling daisy logo - "Island Fresh". The time taken to transport the milk from the stores to the laboratory was less than 10 min. Samples were purchased in the evening when the day was cooler and the traffic was lighter.

In the second study, the microbiological quality of local raw milk was evaluated. A total of six raw milk samples were randomly collected from local dairy farms and transported to the laboratory in ice in a cooler. In the third study, the bacterial level of pasteurized milk sold in the Big Island (Hawaii) was examined; 5 M samples and 9 L samples from the grocery stores in the Big Island were purchased and transported by air to our laboratory in coolers containing coolant packs. A fourth study was conducted to evaluate the effect of storage temperature on microbial population in milk. This "stress test" was conducted 15 months later, under a separate grant. All milk samples were stored at 4°C in the laboratory and handled according to Standard Methods for the Examination of Dairy Products (Wehr and Frank, 2004).

### Microbiological evaluation

At five days before expiration (-5), day of expiration (0), and three days after expiration (+3), the samples were analyzed for aerobic plate count (APC) and rapid psychrotrophic count (RPC). Raw milk samples were tested for APC and RPC within 2 h after on farm collection. The milk samples were serially diluted in 0.1% peptone water and spread on plate count agar (BD Diagnostic Systems, Sparks, Md.). The plates were incubated at 35°C for 48 h to determine APC or at 21°C for 48 h to determine RPC (Oliveria and Pamelec, 1976). All H1ST processed milk products with different brands (M and L) in Hawaii were processed by the only processing plant in Honolulu and on the Big Island, respectively. The O type milk

tested was normally imported via air shipment from the west coast.

### Growth of bacteria under different refrigeration temperature

In the fourth study aimed at determining the effects of different refrigeration temperatures on bacterial growth in pasteurized milk (12 samples) that were randomly purchased in Honolulu were examined. Upon receipt in the laboratory, each milk sample was aseptically aliquoted into two sterile 50 ml bottles, one stored at 4 °C and the other stored at 7 °C for shelf-life study. At 10, 7 and 5 days before expiration, these samples were analyzed for APC and RPC. This study was part of a subsequent grant to perform fingerprinting of the spoilage-causing bacteria in milk. It was conducted 15 months later. The data fits this presentation as it provided a more complete picture of what is happening in milk microbial population

### Statistical analysis

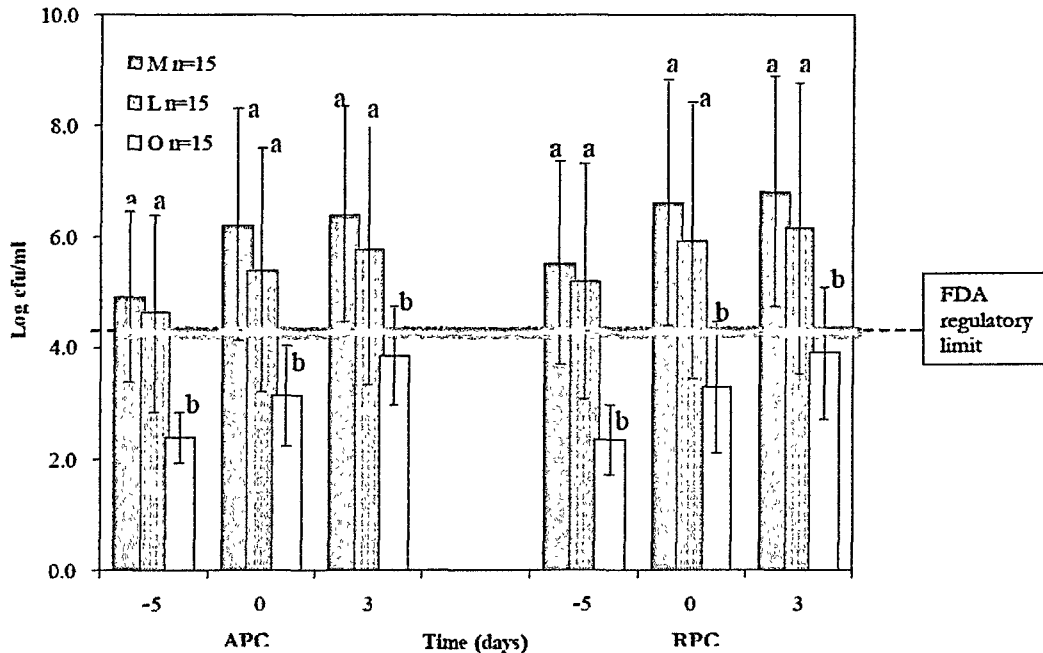
The APC and RPC data were transformed using  $\log_{10}$ CFU/ml. Differences between mean microbial counts of M, L and O samples were analyzed at each sampling time using multi-variate analysis of variance. The APC and RPC data from the study of storage temperature effects on microbial growth were analyzed using paired t-test. All statistical analyses were performed with SAS® 9.1 (SAS Institute Inc.).

### Results

Figure 1 showed the bacterial population of three types of commercially available pasteurized milk (M, L, O) in Honolulu assessed at three time points (-5, 0, and +3) during their shelf-life. The bacteria numbers of all O samples were below the 20,000 CFU/ml regulatory limit for grade 'A' pasteurized milk (U.S.-FDA, 2005) during the reported shelf-life period. However, at five days before expiration day, 90% of the M samples and 80% of the L samples had APCs levels greater than the legal limit. There was a rapid increase in APCs during shelf-life, as illustrated by 90% of both M and L samples with  $> 10^6$  CFU/ml by expiration day. At this level, the products became unacceptable due to the growth and metabolism of bacteria in milk (Fromm and Boor, 2004). Results also showed, for M and L samples, RPCs was higher than APCs during the five days before expiration day. All M and L samples had higher bacterial levels than O samples ( $p < 0.05$ ).

The bacterial counts of all raw milk samples from local farms (Figure 2) were under the ordinance level, 100,000 CFU/ml (U.S. Food and Drug Administration and Nutrition (US-FDA), 2005). This suggests that the supply of local raw milk met the US-FDA standards.

**Local Milk Fine - Issues look to  
point to plant involved in  
re-pasteurization**



\*Means with no common superscripts are significantly different ( $P < 0.05$ )  
 Figure 1. Bacterial level in commercial pasteurized milk samples from Honolulu at 5 days before expiration (-5), day of expiration (0) and 3 days after expiration date (mean + s.d.). Imported milk (M), locally produced milk (L) and organic milk (O). The dotted line indicate the bacteria limit set by USFDA for grade 'A' pasteurized milk (log cfu/ml = 4.3). Data presented were aerobic plate counts (APC) and rapid psychrotrophic counts (RPC).

Table 1. Mean values of bacterial level ( $\text{Log}_{10}\text{CFU/ml}$ ) in pasteurized milk under 4°C and 7°C at 10, 7 and 5 days before expiration day (-10, -7, -5).

Time (days)	APC		RPC	
	4°C	7°C	4°C	7°C
-10	0.96 <sup>a</sup>	0.49 <sup>a</sup>	0.33 <sup>a</sup>	0.42 <sup>a</sup>
-7	1.23 <sup>a</sup>	2.15 <sup>b</sup>	0.41 <sup>a</sup>	1.47 <sup>b</sup>
-5	1.58 <sup>a</sup>	2.83 <sup>b</sup>	0.70 <sup>a</sup>	2.19 <sup>b</sup>

\*Means with no common superscripts are significantly different ( $P < 0.05$ )

Figure 3 showed the microbial population of milk samples from the stores in the Big Island. At five days before the expiration day (-5), 40% of the M samples and 11% of the L samples had APCs exceeding the legal limit. By the expiration day, 60% of the M samples and 11% of the L samples had APCs higher than  $10^6$  CFU/ml. The RPC counts from the M samples were higher than the L samples ( $p < 0.05$ ). Table 1 showed that at seven and five days before expiration, samples stored at 7°C had significantly

higher bacterial numbers than samples stored at 4°C ( $P < 0.05$ ).

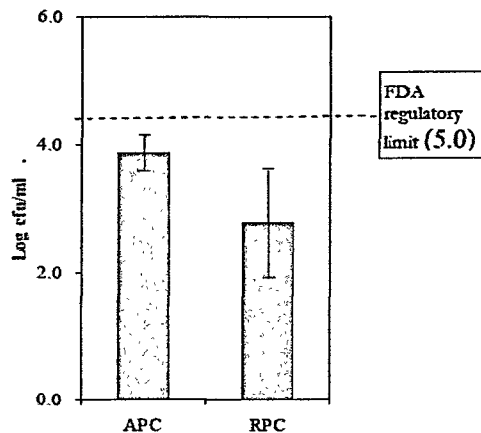
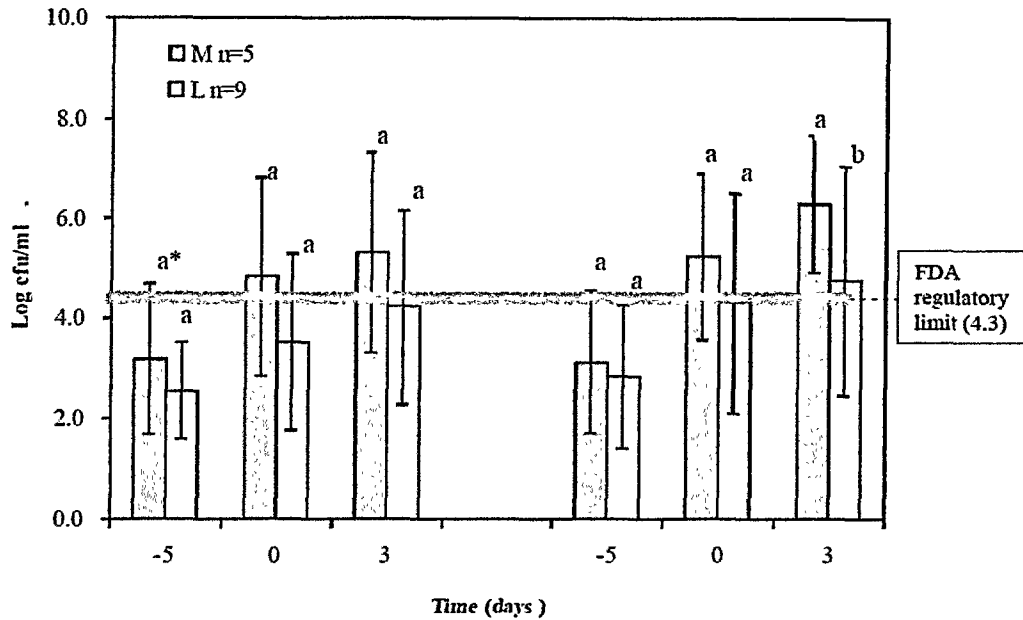


Figure 2. Bacterial level in bulk tank raw milk samples (Oahu). The dotted line indicate the bacteria limit set by USFDA for grade 'A' raw milk for pasteurization (log cfu/ml = 5.0). Data presented were aerobic plate counts (APC) and rapid psychrotrophic counts (RPC).



\*Means with no common superscripts are significantly different ( $P < 0.05$ )  
 Figure 3. Bacterial concentration (mean + s.d.) in 2% milk samples from stores in the Big Island at 5 days prior (-5), day of (0) and 3 days after the labeled expiration date. Imported milk (M), locally produced milk (L) and organic milk (O). The dotted line indicate the bacteria limit set by USFDA for grade 'A' pasteurized milk (log cfu/ml = 4.3). Data presented were aerobic plate counts (APC) and rapid psychrotrophic counts (RPC).

**Discussion**

Spoilage of processed milk is primarily due to bacterial activity that results in loss of sensory quality. Contamination of psychrotrophic bacteria in environment is currently a detrimental factor for extending the shelf-life of HTST pasteurized milk (Boor and Murphy, 2002, Douglas *et al.*, 2000). This is supported by our results showing relatively high levels of the RPCs of milk samples with high APCs during shelf-life (Figure 1, 3). The rapid growth and higher counts of psychrotrophic bacteria suggest that psychrotrophic bacteria represented a major causative agent for spoilage in the samples in the present study. Psychrotrophic bacteria are capable of growing at 7°C (44.6°F or less). In the present study, storage of milk at 4°C did not prevent growth of psychrotrophic bacteria from surpassing the US-FDA regulatory limit even 5 days before the printed expiration date. In reality, most home refrigerators are set at temperatures higher than 4°C (39.2°F). This microbial dynamics could very well occur in the consumers' refrigerator at home, resulting in increased frequency of spoilage prior to the expiration date thus leading to increased complaints, which is supported by results in table 1, where a small change in the refrigeration temperature (4°C vs 7°C) speeds up the bacteria population in the milk. The original assumption was that the locally

produced milk would have lower bacteria counts. However, in the present study, some L samples showed high levels of bacteria counts. Hence, it was necessary to ascertain the microbial level of the raw milk supplied by the local dairy producers to the only processing plant. The results showed that the supply of local raw milk met the standard by the USFDA for grade 'A' raw milk for pasteurization (Figure 2) and gave the credence that local supply of milk was safe. Hence, these results also suggest the poor quality of local pasteurized milk in the retail space was probably due to post pasteurization contamination.

The microbial counts during shelf-life between M and L samples from both Honolulu and the Big Island were similar. The higher percentage of spoiled products in Honolulu compared to the Big Island may indicate that the processing plant is a significant factor influencing the microbial quality of milk. The extremely high level of psychrotrophic bacteria present in Honolulu milk samples suggests that these organisms may present in the dairy plant environment and entered the product after pasteurization (Ralyca *et al.*, 1998). It remains unclear as to how contamination had occurred or what was the source of the psychrotrophic bacteria. Further studies requiring the sampling of milk from imported bulk tanks and at various targeted points in the processing steps may be

Issues look to point to Honolulu plant involved in re-pasteurization

one way to determine the sites of contamination.

On the other hand, organic (O) milk samples in this study demonstrated high quality performance in microbial testing. It may be possible that the different milk handling strategies designed for O milk production and handling may contribute to its quality; the chilled distribution system of O milk is the probably primary factor that contributed to product safety and extended shelf-life. Direct airfreight with shorter transportation time may be a major contributing factor for the superior microbiological quality of O milk. It must also be noted that in some rare occasions, O milk samples did exceed the legal limits set by the FDA. This is probably due to poor handling e.g. transportation from air cargo site to the retail stores is not performed by refrigerated trucks as has been observed in a few occasions when one walked passed the stores.

Bulk tank milk imported into the state without refrigeration generally requires 5-7 days of transit. The volatile temperatures during transportation may have a direct effect on the shelf-life, quality and potential safety of the milk products. Increased temperatures have been shown to encourage growth of microorganisms and increase the activity of degradative enzymes (Cromie, 1991, Hantsis-Zacharov and Halpern, 2007, Sorhaug and Stepaniak, 1997). Excessive high bacterial level may challenge the efficacy of re-pasteurization, resulting in final products with higher bacterial counts thus affecting their subsequent shelf-life. The heat-stable enzymes produced by bacteria may cause serious quality defects of re-pasteurized milk (Sorhaug and Stepaniak, 1997). For example, proteins present in milk can be digested by proteases, resulting in production of bitter-tasting peptides and curdling of the milk; Lipases are able to degrade lipids and cause rancidity of milk (Hantsis-Zacharov and Halpern, 2007). Unlike Honolulu where the majority (>65%) of milk is imported, the majority of the milk supply on the Big Island was produced locally (>70%). This circumstance may be a possible explanation for the differences in the rate of spoilage in between the two counties (>80% vs 11%).

It must be noted that the Pasteurized Milk Ordinance (PMO) allows the bulk shipping of pasteurized milk without refrigeration. The guideline recommends the temperature of 7.2°C (45°F) as the indicator for rejecting milk. Hence, as long as the temperature is met, the milk can be reprocessed for fluid milk use. The current standards do not set a legal microbial count. In addition, there is no data on the bacterial level after 7 days in transit without refrigeration. The state of California however prohibits the re-pasteurization of milk for fluid milk market but allows it for other utilization (CA FAC # 35832). Such regulation does not exist in Hawai'i and as such no law is violated or challenged. The PMO, when drafted and revised, probably, did not consider the situation where milk is being transported and held for more than five days without refrigeration. There is also a need for

future studies to determine the microbial population of milk following such mode of transportation and handling. Sampling of the bulk tanks milk prior to re-pasteurization would be required if the current PMO standards is to be validated. Any such sampling would need the cooperation of the processor and the regulatory agency.

In a study conducted 15 months later, results showed storage temperatures affected the final microbial numbers in milk (Table 1). When this was compared to the microbial level in the earlier studies, only 8% of the samples at 4°C and 25% of the samples at 7°C storage had bacterial counts higher than the regulatory limit at 5 days prior to expiration date. These results indicate that: a) the milk products from the same processing plant had different quality during the two different sampling periods and b) post-pasteurization contamination was still the likely culprit. Previous report suggests the differences are probably due to multiple factors existing in the processing environment, such as pasteurization and storage conditions, packaging equipment, and personal hygiene (Gruetzmacher and Bradley, 1999). Nevertheless, 25% incidence of high bacteria counts should raise concerns given the fact that the major consumers of milk are infants, toddlers and young children. It must also be noted that shelf-life of milk in the retail space is not governed by any regulations in any state. The duration a product is on the shelf space is primarily a product quality control set by the respective creamery.

In summary, these studies validate the increased complaints from the consumers on milk spoilage prior to the expiration date in Hawai'i. We did not resolve where the contamination occurs or identify the source of the bacteria. These spoilage-related organisms can be present in raw milk, but they also may enter milk products during production and processing. Identifying the spoilage organisms and their reservoirs are critical for extending fluid milk shelf-life. In the present study, our findings suggest that psychrotrophic bacteria were the predominant organisms causing spoilage in Hawai'i locally processed milk and this is confirmed by the subsequent study using molecular techniques to identify the spoilage-related bacteria in pasteurized milk (He *et al.* 2009). Since these bacteria are heat sensitive, the contaminants could be attributed to post-pasteurization contamination. Our findings provide important information on the quality status of locally available pasteurized milk in retail stores and stress the need for further studies to determine the source of the spoilage organisms.

#### Acknowledgement

This study was supported via a grant provided by Hawaii Department of Agriculture and the Hawaii Farm Bureau Federation ORS# 2006 1665-4.

CONCERNS RAISED FOR INFANTS,  
TODDLERS, AND SMALL CHILDREN AND  
REPASTEURIZED MILK

Date: February 8, 2020

To: House Committee on Health  
Chair Mizuno  
Vice Chair Kobayashi  
Representative Belatti  
Representative Nakamura  
Representative San Buenaventura  
Representative Say  
Representative Tokioka  
Representative Ward

Fm: Joseph Realdine - USDA-FSIS Retired Consumer Safety Officer (SCSO)

Re: SUPPORT to Approve HB 1663 – Executive Review

Dear Chair Mizuno and Health Committee Members,

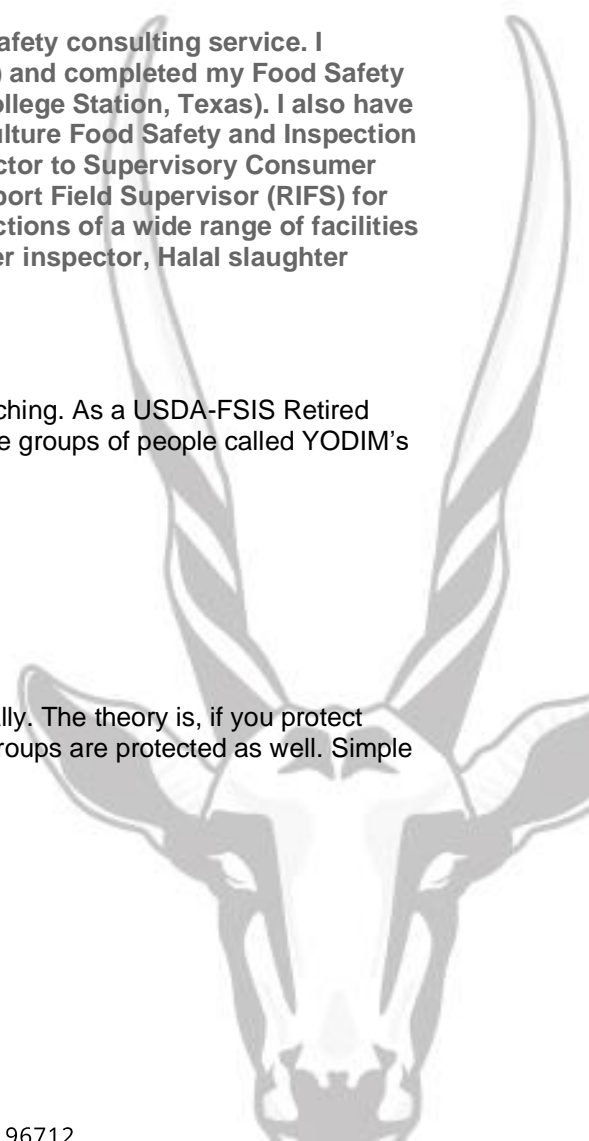
My firm Healthy Earth LLC-Tasty Safety is a Hawaii based food safety consulting service. I graduated from the Culinary Institute of America (Hyde Park, NY) and completed my Food Safety Science (including HACCP & Micro) at Texas A&M University (College Station, Texas). I also have 27-years of decorated service with the U.S. Department of Agriculture Food Safety and Inspection Service (USDA-FSIS). My positions ranged from Slaughter Inspector to Supervisory Consumer Safety Officer and Frontline Supervisor as well as a Regional Import Field Supervisor (RIFS) for the Office Of International Affairs. My experience includes inspections of a wide range of facilities and products as a red meat slaughter inspector, poultry slaughter inspector, Halal slaughter inspector, processing products inspector, and import inspector.

### **Background**

The negative aspects of Hawaii's milk that is re-pasteurized is far reaching. As a USDA-FSIS Retired Consumer Safety Officer (SCSO), we are focused on the following five groups of people called YODIM's that must be protected.

1. **Y**oung
2. **O**ld
3. **D**iseased
4. **I**mmune deficient
5. **M**alnourished

Federal protocol mandates that all the groups above are treated equally. The theory is, if you protect those five groups or classes, then every person either side of those groups are protected as well. Simple concept with far reaching affects.





The University of Hawaii study on this re-processing of milk supports this Bill. The scientists have spoken and the case made with regards to the elevated bacterial levels in re-pasteurization of milk. This would apply to all YODIM's that consume this milk.

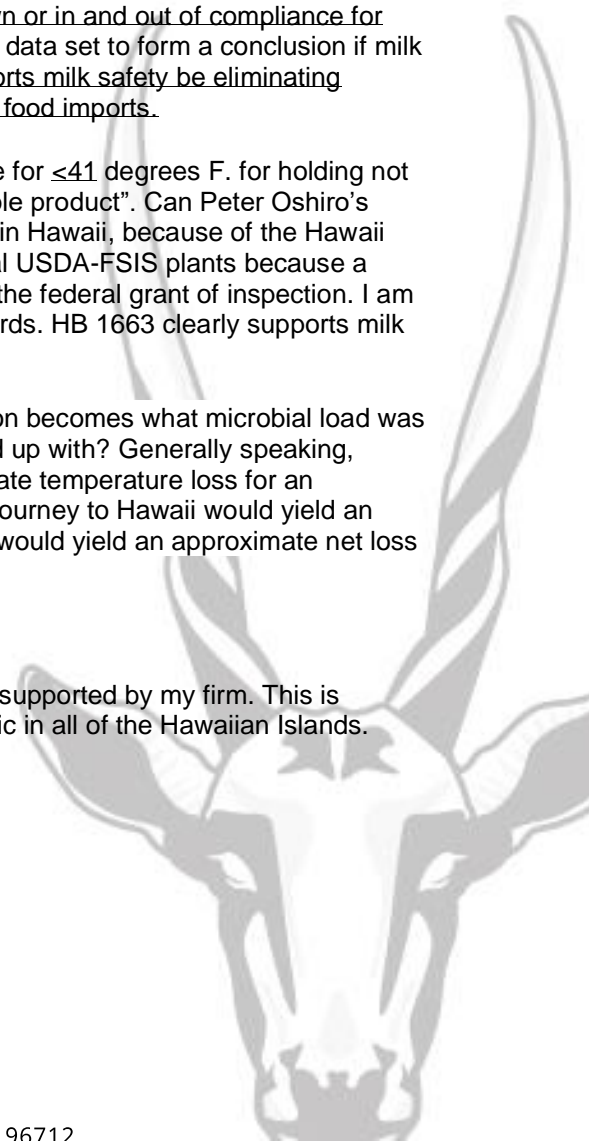
Over a decade ago, Hawaii Legislative Issued Resolution HCR 72 to research these issues and safe handling of imported products into Hawaii. Unfortunately, there was no action moving this issue forward at the legislative level.

#### **Supportable Position and Other Information:**

- One important overarching point to be made is that **“product must be protected at all times”**. Yet while the pasteurized milk ordinance (PMO) sets rules in place, these are the minimum requirements. Hawaii deserves nothing but the safest milk. There are many factors in producing safe milk. HB 1663 clearly supports milk safety.
- The next important overarching point is that **“once a process is in control, it should remain in control”**. Therefore, if a critical control point (CCP) and critical limit (CL) are for product temperature, once it meets the CCP/CL it should remain in compliance. Not shelf stable (SS) milk product, time, temperature and sanitation (including removing bio-films) are what food safety focuses on with regards to Micro-Hazards. Going up and down or in and out of compliance for food can be dangerous. It's the Yoyo affect. I do not have the data set to form a conclusion if milk is currently arriving above 41 degrees. HB 1663 clearly supports milk safety be eliminating unnecessary risks pertaining to the transportation of Hawaii's food imports.
- The Hawaii DOH does have a regulation that is enforced here for  $\leq 41$  degrees F. for holding not SS product. There should be no exceptions for “not shelf stable product”. Can Peter Oshiro's DOH Crew enforce this regulation the moment the product is in Hawaii, because of the Hawaii DOH food handling permit? DOH enforces this even in federal USDA-FSIS plants because a Hawaii DOH food handling permit is issued in addition to the the federal grant of inspection. I am not in possession of any cold chain management (CCM) records. HB 1663 clearly supports milk safety.
- Pasteurization only decreases the microbial load. The question becomes what microbial load was present to begin with and what Log reduction will the milk end up with? Generally speaking, based on my research, two-degrees F. a day is the approximate temperature loss for an unrefrigerated 6000-gal bulk milk tank. Therefore, a five-day journey to Hawaii would yield an approximate net loss of 10 Degrees F. and a 10-day journey would yield an approximate net loss of 20 Degrees F. for milk temperature.

#### **Conclusion**

The safe handling of milk and food outlined in HB 1663 is completely supported by my firm. This is certainly a step towards improving milk safety and protecting the public in all of the Hawaiian Islands.



February, 10 2020

To: House Committee on Health (HLT)

Chair Mizuno

Vice Chair Kobayashi

Representative Della Au Belatti

Representative Nadine K. Nakamura

Representative Joy A. San Buenaventura

Representative Calvin K.Y. Say

Representative James Kunane Tokioka

Representative Gene Ward

Fm: Flora Samis

Re SUPPORT of HB 1663

Dear Chair Mizuno and Health Committee Members,

In 2011 President Obama signed into effect the Food Safety Modernization Act (FSMA), which serves to drastically improve the quality and safety of food grown, processed and transported in the United States. One portion of this bill includes the safe transport of food items. It requires that all food products intended for human consumption must have procedures and control points in place to eliminate or reduce significant hazards. For perishable items such as milk and eggs this means sanitary, temperature controlled (< 40°F) transportation.

The current bulk milk transportation practices do not meet this standard, **this is unacceptable**. This raises deep concerns about the practices utilized to transport a commodity primarily consumed by higher risk citizens such as infants, children and the elderly. Milk distributors must absolutely be held to these standards that have been developed with the support of years of science-based studies evidencing that temperature control is an effective means to prevent microbiological activity. The current practices to transport milk without temperature control violate most city health food codes which require restaurants and food service establishments to maintain food and product temperatures below 40°F.

Test results of post pasteurized milk with coliform levels exceeding those established also deeply concerns me. While the root cause of the contamination is unclear, from my experience working in food manufacturing this type of contamination indicates there is a loss of control at some point in the supply chain, which must be addressed. Controlling the temperature of milk during transport is an obvious control point that prevents microbial activity of the products that arrive to Hawai'i. A deeper investigation of the transportation and processing practices should be conducted.

Refrigerated and temperature-controlled shipping logistics have drastically increased and accessibility improved since the passing of FSMA as transportation companies are pushed to meet regulatory and customer requirements. Local companies are investing in building temperature-controlled airplane hangers and are rapidly expanding cold warehousing spaces. Affordable real time temperature monitors exist and are required by many private companies to be utilized to verify that their products are being transported at the required temperatures. The resources are available and must to be utilized, milk industry is no exception, these regulations have been created to protect the health and safety of consumers.

Lastly, in an era where locally produced foods are dwindling and local companies struggle to compete for shelf space and visibility with international conglomerates with billions of dollar marketing and strategy campaigns, we must protect the value of Hawai'i made commodities. Products that do not comprise wholly of locally grown or raised ingredients should not be labeled as "Island Fresh" or "Local" this is completely misleading. By protecting local producer's products, we are valuing not only the unique characteristics of a product made in the most remote region of the world that set it apart from others, but also the additional costs that may be required to produce such a product. There are strong economic statistics that show locally produced products and businesses for every dollar spent between \$0.63-\$0.80 of that money remains in the community. We should not be allowing foreign companies to be earning and taking valuable dollars away from our island's economy.

Sincerely,

Flora Samis  
Food Safety Specialist and Consultant  
Kwai Farm LLC.

**HB-1663-HD-1**

Submitted on: 2/9/2020 7:07:23 PM

Testimony for HLT on 2/11/2020 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Lisa Kimsey	Individual	Support	No

Comments:

As an educator I am aware of how important it is to provide quality, nutritious food to young children, especially in their early years. I support HB 1663 and the state's efforts to ensure that our children and families receive the highest quality milk and all food products imported in to the state of Hawaii.

Over the years, I have read the reports in the news and seen the television reports on the health concerns regarding re-pasteurized milk. I am glad that the Hawaii Legislature is working toward ensuring that Hawaii's food imports are properly handled and shipped to Hawaii at the proper temperatures to protect the health of our children and families.

In addition, I am concerned about the sustainability of our food sources and the impact that re-pasteurized milk has had on our local dairy industry.

I support HB1663 and ask you to, as well.