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DEPARTMENT OF HEALTH
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Testimony in OPPOSITION on HB1989
RELATING TO RAW MILK

REPRESENTATIVE CEDRIC ASUEGA GATES, CHAIR,
COMMITTEE ON AGRICULTURE AND FOOD SYSTEMS

Hearing Date: 2/12/2024 2:00 pm

Room Number: Rm 312

VIDEO CONF

1 **Fiscal Implications:** This measure has substantial fiscal implications that is not included in the
2 executive budget.

3 **Department Testimony:** The Department of Health (department) opposes this measure.

4 The department opposes this bill due to serious public health concerns.

5 Section 1 of the bill finds that people in Hawaii desire to drink raw milk. However, the
6 Department urges the legislature to weigh the potential health risk allowing raw milk to be sold.
7 Based on CDC data, literature, and state and local reports, FDA compiled a list of outbreaks that
8 occurred from 1998 through 2018 in the US. During this period, there were at least 202
9 outbreaks due to the consumption of raw milk and raw milk products. These outbreaks caused
10 2,645 cases of illnesses, 269 hospitalizations, 3 deaths, 6 stillbirths and 2 miscarriages. The
11 numbers of outbreaks and illness cases were likely higher than the above estimates due to
12 underreporting.

13 If this measure is passed, the public could be exposed to undue risk of serious illness or death by
14 possible exposure to pathogenic organisms. Our Keiki, Kupuna, and the immunocompromised
15 face even greater risk than the general public, as they will face much greater difficulty fighting
16 off any pathogens ingested and will have a much higher mortality rate for almost all pathogens
17 associated with consuming raw dairy products. The FDA and the CDC have published many
18 science based articles debunking every statement in Section 1, and is included in this testimony.

19 According to the CDC's most recent study, states/counties where raw milk was legally sold had
20 3.2 times more outbreaks than areas where the sale of raw milk was illegal. Areas where raw
21 milk was allowed to be sold in retail stores had 3.6 times more outbreaks than areas where sale
22 was allowed only on farms. The study shows that laws that increase the availability of raw milk
23 are associated with more illnesses and outbreaks. In addition, the CDC reported that consuming

1 unpasteurized milk is 150 times more likely to cause foodborne illness and 13 times more
2 hospitalizations than drinking pasteurized milk products.

3 Of the 133 outbreaks occurring from 1987 to September 2010, 5 were multistate outbreaks with
4 cases from at least two states. The remaining 128 outbreaks occurred in 30 states. Of these 30
5 states, 20 allowed some type or raw milk sale for direct human consumption according to the
6 National Association of State Departments of Agriculture survey of 2008 (NASDA, 2008).
7 Outbreaks from these 20 states accounted for 80% of all outbreaks in the US during this period.
8 The three states that had the highest frequencies of outbreaks are California, Washington, and
9 Utah, accounting for about 12%, 12%, and 8% of all outbreaks, respectively.

10 The State of Hawaii currently prohibits the sale of raw milk in any form. Hawaii Administrative
11 Rules, Title 11, Chapter 15, "Milk", Section 11-15-45, Milk and Milk Products which may be
12 sold., states in part that "Only Grade "A" pasteurized milk and milk products shall be sold to the
13 final consumer"...

14 Please be advised that FDA and other federal and state health agencies have documented a long
15 history of the risks to human health associated with the consumption of raw milk. Clinical and
16 epidemiological studies from FDA, state health agencies, and others have established a direct
17 causal link between gastrointestinal disease and the consumption of raw milk. The microbial
18 flora of raw milk may include human pathogens present on the cow's udder and teats. Further,
19 the intrinsic properties of milk, including its pH and nutrient content, make it an excellent media
20 for the survival and growth of bacteria.

21 On August 10, 1987, FDA published in 21 CFR Part 1240.61, a final regulation mandating the
22 pasteurization of all milk and milk products in final package form for direct human consumption.
23 This regulation addresses milk shipped in interstate commerce and became effective September
24 9, 1987.

25 In this Federal Register notification for the final rule to 21 CFR Part 1240.61, FDA made a
26 number of findings including the following:

27 "Raw milk, no matter how carefully produced, may be unsafe."

28 "It has not been shown to be feasible to perform routine bacteriological tests on the raw
29 milk itself to determine the presence or absence of all pathogens and thereby ensure that
30 it is free of infectious organisms."

31 "Opportunities for the introduction and persistence of *Salmonella* on dairy premises are
32 numerous and varied, and technology does not exist to eliminate *Salmonella* infection
33 from dairy herds or to preclude re-introduction of *Salmonella* organisms. Moreover
34 recent studies show that cattle can carry and shed *S. dublin* organisms for many years and

1 demonstrated that *S. dublin* cannot be routinely detected in cows that are mammary gland
2 shedders."

3 During this rulemaking process, the American Academy of Pediatrics and numerous others
4 submitted comments in support of the proposed regulation.

5 In deciding upon mandatory pasteurization, FDA determined that pasteurization was the only
6 means to assure the destruction of pathogenic microorganisms that might be present. This
7 decision was science-based involving epidemiological evidence. FDA and the CDC have
8 documented illnesses associated with the consumption of raw milk, including "certified raw
9 milk" and have stated that the risks of consuming raw milk far outweigh any benefits.

10 In light of research showing no meaningful difference in the nutritional value of pasteurized and
11 unpasteurized milk, FDA and CDC have also concluded that the health risks associated with the
12 consumption of raw milk far outweigh any benefits derived from its consumption.

13 There are numerous documented outbreaks of milk-borne disease involving *Salmonella* and
14 *Campylobacter* infections directly linked to the consumption of unpasteurized milk in the past 20
15 years. Since the early 1980's, cases of raw milk-associated campylobacteriosis have been
16 reported in the states of Arizona, California, Colorado, Georgia, Kansas, Maine, Montana, New
17 Mexico, Oregon, and Pennsylvania. An outbreak of Salmonellosis, involving 50 cases was
18 confirmed in Ohio in 2002. Recent cases of *E. coli* O157:H7, *Listeria monocytogenes* and
19 *Yersinia enterocolitica* infections have also been attributed to raw milk consumption.

20 State health and agricultural agencies including the State of Hawaii routinely use the U.S. Public
21 Health Service/FDA Pasteurized Milk Ordinance (PMO) as the basis for the regulation of Grade
22 "A" milk production and processing. The PMO has been sanctioned by the National Conference
23 on Interstate Milk Shipments (NCIMS) and provides a national standard of uniform measures
24 that is applied to Grade "A" dairy farms and milk processing facilities to assure safe milk and
25 milk products. Section 9 of the PMO specifies that only Grade "A" pasteurized milk be sold to
26 the consumer.

27 Section 1. (lines 6-9) also has a misleading and false sentence that states, "Raw milk has a
28 unique flavor that may be destroyed by the double pasteurization process generally required for
29 commercial milk sales." Since the demise of Meadow Gold dairies in 2019, there has been no
30 milk on Hawaii's retail shelves that is "double pasteurized", as that has never been required for
31 commercial milk sales where the milk was produced by local dairies in Hawaii.

32 Section 6. is also objectionable from a public health standpoint as the handling of any raw milk
33 product may expose persons to the same pathogens of public health concerns. Children relish in
34 the act of feeding pets and their health will also be placed at undue risk if this measure passes.

1 The department also opposes any cow sharing and raw milk for animal/pet consumption as that
2 milk is frequently diverted as raw milk consumption to humans.

3 The following is the most current scientific thought from the FDA on

4 **Raw Milk Misconceptions and the Danger of Raw Milk Consumption**

5 Raw milk can contain a variety of disease-causing pathogens, as demonstrated by numerous
6 scientific studies. These studies, along with numerous foodborne outbreaks, clearly demonstrate
7 the risk associated with drinking raw milk. Pasteurization effectively kills raw milk pathogens
8 without any significant impact on milk nutritional quality.

9 In this document, the FDA provides a close examination of the myths associated with drinking
10 raw milk. The review below is based on scientific literature.

11 **Raw milk does not cure lactose intolerance.**

12 Lactose is a unique disaccharide found in milk. Lactose concentration in bovine milk is about
13 4.8%. People with lactose intolerance lack the enzyme, beta-galactosidase or lactase, to break
14 down lactose into glucose and galactose during digestion. All milk, raw or pasteurized, contains
15 lactose and can cause lactose intolerance in sensitive individuals. There is no indigenous lactase
16 in milk.

17 Raw milk advocates claim that raw milk does not cause lactose intolerance because it contains
18 lactase secreted by “beneficial” or probiotic bacteria present in raw milk. As discussed in a later
19 section (claim 4), raw milk does not contain probiotic organisms.

20 Fermented dairy products, especially yogurt, have been reported to ease lactose mal-absorption
21 in lactose intolerant subjects (McBean and Miller, 1984; Lin et al., 1991; Onwulata et al., 1989;
22 Savaiano et al., 1984). This enhanced digestion of lactose has been attributed to the intra-
23 intestinal hydrolysis of lactose by lactase secreted by yogurt fermentation microorganisms (Lin
24 et al., 1991; Savaiano et al., 1984). However, raw milk does not contain the same types of
25 microorganisms at the similar levels that are found in yogurt. Yogurt that showed a benefit
26 towards lactose intolerance typically contained 10^7 cfu/ml or higher levels of *Streptococcus*
27 *thermophilus* and *Lactobacillus bulgaricus*, and these microorganisms
28 were **purposely** inoculated during yogurt manufacturing (Lin et al., 1991; Savaiano et al., 1984).

29 **Raw milk does not cure or treat asthma and allergy.**

30 The PARSIFAL study (Waser et al., 2007) has been misused by raw milk advocates ever since it
31 was published. The PARSIFAL study found an inverse association of **farm**
32 **milk** consumption, **not raw milk consumption**, with asthma and allergy. The authors of the
33 PARSIFAL study clearly indicated in the paper that the “*present study does not allow evaluating*

1 *the effect of pasteurized vs. raw milk consumption because no objective confirmation of the raw*
2 *milk status of the farm milk samples was available.” In fact, in the study, about half of the farm*
3 *milk was boiled (Waser et al., 2007). The authors of the PARSIFAL study concluded that “raw*
4 *milk may contain pathogens such as salmonella or EHEC, and its consumption may therefore*
5 *imply serious health risks... At this stage, consumption of raw farm milk cannot be recommended*
6 *as a preventive measure.” (Waser et al., 2007)*

7 Regarding allergy, research has shown that raw milk and pasteurized milk do not differ in their
8 anaphylactic-sensitizing capacity when tested in both animal models (Poulsen et al., 1987;
9 McLaughlan et al., 1981) and in human clinical trials (Host and Samuelsson, 1988).
10 Pasteurization conditions have little impact on casein structure and only cause limited whey
11 protein denaturation. Therefore, it is not surprising that pasteurization does not change the
12 allergenicity of milk proteins.

13 For example, Host and Samuelsson (1988) compared the allergic responses caused by raw,
14 pasteurized (75°C/15 s), and homogenized/pasteurized milk in five children who are allergic to
15 cow milk (aged 12 to 40 months). All children developed significant and similar allergic
16 reactions from the consumption of the above three types of milk (Host and Samuelsson, 1988).
17 The authors concluded that children with proven milk allergy can not tolerate milk, raw or
18 pasteurized (Host and Samuelsson, 1988).

19 **There are no beneficial bacteria in raw milk for gastrointestinal health.**

20 Bacteria found in raw milk are not probiotic. Probiotic microorganisms must be non-pathogenic
21 (Teitelbaum and Walker, 2000). In contrast, raw milk can host various human pathogens,
22 including *E. coli* O157:H7, *Salmonella*, *Streptococcus spp.*, *Yersinia*
23 *enterocolitica*, *Campylobacter jejuni*, *Staphylococcus aureus*, *Listeria monocytogenes*,
24 *Mycobacterium tuberculosis*, and *Coxiella burnetti* to name a few (Oliver et al., 2005; Hayes and
25 Boor, 2001).

26 Probiotic microorganisms must be of human origin in order to have an impact on human health
27 (Teitelbaum and Walker, 2000). Bacteria present in raw milk are from infected udder tissues
28 (e.g., mastitis causing bacteria), the dairy environment (e.g., soil, water, and cow manure), and
29 milking equipment. High bacteria counts in raw milk only indicate poor animal health and poor
30 farm hygiene.

31 Bacteria in raw milk are typically not of human origin. An exception is *Streptococcus*
32 *pyogenes*. *S. pyogenes* that has adapted to humans can be transmitted to animals. Once *S.*
33 *pyogenes* is colonized in animals, it can be re-transmitted to humans as a **human pathogen** that
34 causes strep throat. For example, *S. pyogenes* can infect a cow udder to cause mastitis. The
35 infected cow udder can subsequently shed *S. pyogenes*, a pathogen, into raw milk.

1 Bifidobacteria have been mentioned by raw milk advocates as the “good bugs” in raw milk.
2 Bifidobacteria are bacteria commonly found in human and animal gastrointestinal track and they
3 are bacteria that make up the gut flora (Arunachalam, 1999). Since bifidobacteria are found in
4 cow’s GI track, they are present in cow’s fecal matter. Raw milk collected with proper hygiene
5 should not contain bifidobacteria. In fact, the presence of bifidobacteria in raw milk indicates
6 fecal contamination and poor farm hygiene (Beerens et al., 2000; Beerens and Neut, 2005).

7 **Raw milk is not an immune system building food and is particularly unsafe for**
8 **children.**

9 Children are typically more vulnerable than adults to the pathogens than can occur in raw milk.
10 In 2005, an *E. coli* O157:H7 outbreak in Washington and Oregon was linked to raw milk sold in
11 Washington state (CDC, 2007). Among the 18 patients, the 5 hospitalized were all children aged
12 1-13; 4 of them developed Hemolytic Uremic Syndrome (HUS) (CDC, 2007).

13 In September 2006 in California, two children developed HUS from drinking raw milk
14 contaminated with *E. coli* O157:H7. Three weeks later, four more children acquired the same
15 infection from raw milk or raw colostrum produced by the same dairy (CDC, 2008).

16 In Sep 2006, two children became sick after drinking unpasteurized milk from a licensed dairy in
17 Washington State. The raw milk was contaminated with *E. coli* O157:H7. One child was
18 hospitalized (WSDH, 2006).

19 In July 2008 in Connecticut, 14 people were sickened by raw milk contaminated with *E.*
20 *coli* O157: H7. The three most seriously ill were children; two of them developed HUS
21 (FoodHACCP.com, 2008).

22 In May 2008 in Missouri, four people became sick after drinking raw goat milk contaminated
23 with *E. coli* O157: H7. The two severely ill were children and both were hospitalized (CDC,
24 2008).

25 In July 2010 in Colorado, eight people became sick after drinking raw goat milk contaminated
26 with both *Campylobacter* and *E. coli* O157: H7. Two children were hospitalized (Boulder
27 County Public Health, 2010a, b)

28 **There are no immunoglobulins in raw milk that enhance the human immune system.**

29 The concentration of immunoglobulins in bovine milk is low, typically about 0.6-1.0 mg/ml
30 (Hurley, 2003). At these low concentrations, bovine immunoglobulins, when consumed directly
31 from milk, are physiologically insignificant to humans (Fox, 2003).

32 The predominant fraction of immunoglobulins in bovine milk is IgG (about 85-90%). IgG is
33 quite heat stable. In one study, LTLT pasteurization (63°C for 30 min) had no impact on the

1 level of IgG, and HTST pasteurization (72°C/15s) resulted in only 1% denaturation of IgG
2 (Mainer et al., 1997).

3 Kulczychi (1987) hypothesized that the heat-aggregated immunoglobulins may actually have
4 better immunological function because aggregation can amplify the binding affinity of IgG to
5 receptor sites.

6 **Raw milk is not nutritionally superior to pasteurized milk.**

7 Numerous studies have indicated that pasteurization has minimal impact on milk nutritional
8 quality.

9 ***Milk proteins***

10 Normal bovine milk contains about 3 to 3.5% total protein. The two major groups of milk protein
11 are casein (about 80%) and whey proteins (about 20%). The protein quality of pasteurized milk
12 is not different from that of raw milk (Andersson and Oste, 1995).

13 Using *in vitro* method, Carbonaro et al (1996) found no difference in protein digestibility
14 between raw milk (80.2%), milk pasteurized at 75°C/15s (80.02%), and milk pasteurized at
15 80°C/15s (80.3%).

16 In an animal study (weaning Holtzman male rats), Efigenia et al (1997) evaluated the nutritional
17 quality of bovine milk after pasteurization. After a study period of 28 days, there was no
18 difference in animal weight gain, food intake, food efficiency ration, protein efficiency ratio, or
19 apparent protein digestibility between the rat group that consumed raw bovine milk and the
20 group that consumed pasteurized bovine milk (Efigenia et al., 1997).

21 Similar results were obtained in another animal study by Lacroix et al (2006). In this study, no
22 difference in protein digestibility was observed between milk protein without heat treatment and
23 the same protein heated at 72°C/20s or 96°C/5s (Lacroix et al., 2006).

24 In a recent human study, Lacroix et al (2008) evaluated the impact of heat treatment on protein
25 quality by studying dietary nitrogen metabolism following a single meal. Human subjects were
26 fed a meal formulated with milk protein with or without HTST pasteurization (72°C/20s). The
27 same metabolic utilization of milk protein nitrogen was observed for both raw and pasteurized
28 milk (Lacroix et al, 2008).

29 ***Milk vitamins***

30 Milk contains both fat soluble and water soluble vitamins. Fat soluble vitamins include A, D, E,
31 and K. Water soluble vitamins included B1 (thiamin), B2 (riboflavin), niacin, pantothenic acid,
32 B6, biotin, folic acid, B12, and vitamin C (Renner et al., 1989). In general, pasteurization has a
33 little effect on milk vitamin levels (Bendicho et al., 2002; Renner et al., 1989). Vitamins that are
34 present at high levels in milk, such as riboflavin, B6 and B12, are relatively heat stable. Other

1 factors, such as storage temperature, dissolved oxygen, light exposure, packaging, and length of
2 storage can have a much greater impact on milk vitamin stability (Gaylord et al., 1986; Kon,
3 1972; Lavigne et al., 1989; Pizzoferrato, 1992; Renner et al., 1989; Scott et al., 1984a; Scott et
4 al., 1984b).

5 The only vitamin that is significantly heat labile is vitamin C but milk is an insignificant source
6 for vitamin C. A cup of milk (240 ml) only provides about 5 mg of vitamin C (Renner et al.,
7 1989).

8 Vitamin C is very susceptible to oxidation. Sample to sample variation can be considerable
9 (Scott et al., 1984a) and degradation can happen immediately after milking due to photo-
10 oxidation (Kon, 1972; Renner et al., 1989; Scott et al., 1984a). Reported values of vitamin C
11 vary depending on seasonality, storage temperature, and elapsed time before analysis.

12 Lavigne et al (1989) reported that HTST at 72°C/16s reduced vitamin C in goat milk by 5%.
13 Haddad and Loewenstein (1983) observed vitamin C level of 23.3 mg/liter in raw milk. After
14 pasteurization at 72°C/16s, vitamin C was reduced by 16.6%. Similarly, Head and Hansen
15 (1979) reported that in whole milk, vitamin C was reduced about 15% (from 24.3 mg/liter to
16 20.7 mg/liter) after pasteurization.

17 The loss of vitamin C increases with heating temperature and time and fits the first order kinetic
18 model (Bendocho et al., 2002; Haddad and Loewenstein, 1983). Substantial loss only occurred
19 after very high temperature heating for long time. For example, heating at 90°C for 10 min can
20 cause 70% reduction in vitamin C (Bendicho et al., 2002).

21 Interestingly, Pizzoferrato (1992) indicated that vitamin C retention during storage is better in
22 heated milk (72°C/15s, 75°C/15s, 80°C/15s) than in raw milk. The better retention was due to
23 the removal of oxygen and the inactivation of peroxidase and microorganisms during heat
24 treatment (Pizzoferrato, 1992).

25 **Folate binding protein (FBP) is not denatured during pasteurization and folate**
26 **utilization is not reduced in pasteurized milk.**

27 The concentration of folate in milk is low, about 5 -8µg/100g (Renner et al., 1989; Andersson
28 and Oste, 1994). Dietary reference intake for folate is 400 µg per day for male 19-30 years of age
29 (http://iom.edu/~media/Files/Activity%20Files/Nutrition/DRI/DRI_Vitamins.pdf). Milk is not
30 a folate rich food.

31 Pasteurization has a limited impact on milk folate level. Folate remains bound to folate binding
32 protein (FBP) after pasteurization (Wigertz et al., 1996). Andersson and Oste (1994) observed no
33 change in milk folate content after pasteurization at 75°C for 16s. Wigertz and Jägerstad (1993)
34 reported a slight decrease of folate content from 8µg/100 g to 6.4µg/100g after pasteurization at
35 74°C for 15s.

1 Studies have shown some decrease in the concentration of folate binding protein (FBP) after
2 pasteurization but the decrease is typically small and a substantial amount of residual FBP is still
3 present in the pasteurized milk. For example, Wigertz et al (1996) observed a FBP concentration
4 of 211 ± 7 nmol/l in raw milk. After pasteurization (74°C/15s), FBP concentration was about 168
5 ± 20 nmol/l (Wigertz et al, 1996). In a separate study, Wigertz and Jägerstad (1993) found no
6 difference in FBP concentration before and after pasteurization (74°C/15s).

7 **Pasteurized milk is safer than raw milk.**

8 The outbreaks and illnesses attributed to raw milk are alarming when one considers the
9 extremely low volume of raw milk consumed in the US. Outbreaks due to raw milk and raw
10 milk products continue to occur each year. In 2010 alone, raw milk has been associated with at
11 least 8 documented outbreaks:

- 12 • New York, *Campylobacter* outbreak, 5 illnesses (New York Department of Health, 2010)
- 13 • Michigan, *Campylobacter* outbreak, 12 illnesses (FDA, 2010)
- 14 • Pennsylvania, *Campylobacter* outbreak, 10 illnesses (PRNewswire, 2010)
- 15 • Utah, *Campylobacter* outbreak, 9 illnesses (Utah Department of Health, 2010)
- 16 • Utah, *Salmonella* outbreak, 6 illnesses (Utah Department of Health, 2010)
- 17 • Minnesota, *E. Coli* O157:H7 outbreak, 8 illnesses and 4 hospitalizations (Minnesota
18 Department of Health, 2010)
- 19 • Washington, *E. Coli* O157:H7 outbreak, 8 illnesses (Washington State Department of
20 Health, 2010)
- 21 • Colorado, *Campylobacter* and *E. Coli* O157:H7 outbreak, 30 illnesses, 2 hospitalizations
22 (Boulder County Public Health, 2010a, b)

23 **Raw milk produced under HACCP does not make it safe to drink.**

24 FDA does not believe that HACCP can ensure raw milk safety. The sanitary procedures
25 described in a food safety plan under HACCP might help to reduce the probability of raw milk
26 contamination but they will not ensure that raw milk is pathogen-free.

27 As the preceding discussion demonstrates, raw milk does not naturally kill pathogens of concern.
28 Further, testing raw milk for the various pathogens prior to consumption can not be used as an
29 alternative to pasteurization. The potential pathogens present in raw milk can be diverse,
30 variable, and unpredictable. It is simply impossible to test every single batch of raw milk for
31 every single pathogen prior to human consumption. More importantly, the inability of a method
32 to detect pathogens does not indicate the absence of pathogens (Oliver et al., 2009).

33 There is no visual or sensory indicator for the presence of pathogen. Typical milk quality
34 indicators, such as standard plate counts and somatic cell counts, do not provide information on
35 the presence or absence of pathogens. Seemingly high quality raw milk based on these routine
36 quality indicators can still contain pathogen (Van Kessel et al., 2008). In the Federal Register

1 notification for the final rule to 21 CFR Part 1240.61, FDA made a number of findings including
2 the following:

3 "*It has not been shown to be feasible to perform routine bacteriological tests on the raw milk*
4 *itself to determine the presence or absence of all pathogens and thereby ensure that it is free of*
5 *infectious organisms.*"

6 HACCP ensures product safety through process control and not by finished product testing.
7 HACCP has been considered possible for chemical and physical hazard controls in farm settings.
8 However, HACCP is not effective or even possible in farm settings for biological hazards,
9 including pathogens (Cullor, 1997; Sperber, 2005). Cullor (1997) indicated that potential
10 biological hazards that may exist on the dairy farms do not have well-known critical control
11 points. Since establishing critical control points is one of the most important aspects of HACCP,
12 without well-known critical control points, HACCP simply does not work for pathogen control
13 for raw milk production on the farm.

14 Organic Pastures is an example of a raw milk producer with a HACCP plan whose milk has been
15 found to contain pathogens. In 2007, raw cream from Organic Pastures was found to be
16 contaminated with *Listeria monocytogenes* (FDA, 2007). In 2006, raw milk contaminated
17 with *E. coli* O157:H7 from Organic Pastures was implicated in an outbreak that resulted in 6
18 illnesses and 3 hospitalizations (CDC, 2008). The median age of this outbreak's victims was 8
19 years (range: 6- 18 years) (CDC, 2008).

20 **Summary**

21 None of the claims made by the raw milk advocates that we have examined for you can
22 withstand scientific scrutiny. Unfortunately, the false "health benefits" claims of raw milk
23 advocates may cause parents to give raw milk to their children and prompt immuno-
24 compromised people, such as pregnant women, the elderly, and hospitalized patients, who want
25 better nutrition, to also start consuming raw milk. It is these very same sub-groups of the
26 population, however, that are most at risk for becoming ill or even dying from foodborne illness
27 as a result of consuming adulterated raw milk. Since raw milk may contain human pathogens,
28 the consumption of raw milk products increases the risk of gastrointestinal illness due to the
29 likelihood that it may contain infective doses of human pathogens. This includes our Keiki,
30 Kupuna, and any person who is immunocompromised due to illness or treatment of illnesses.
31 The only method proven to be reliable in reducing the level of human pathogens in milk and
32 milk products is by those milk products being produced and processed under sanitary conditions
33 and subsequently being properly pasteurized.

34 This is the link to the FDA fact sheet Titled "THE DANGERS OF RAW MILK"
35 [https://www.fda.gov/media/119383/download#:~:text=Raw%20milk%20is%20milk%20from,oft,
36 en%20called%20%E2%80%9Cfood%20poisoning.%E2%80%9D](https://www.fda.gov/media/119383/download#:~:text=Raw%20milk%20is%20milk%20from,oft,en%20called%20%E2%80%9Cfood%20poisoning.%E2%80%9D)

- 1 Thank you for the opportunity to testify on this measure.
- 2 **Offered Amendments:** None

JOSH GREEN, M.D.
Governor

SYLVIA LUKE
Lt. Governor



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**TESTIMONY OF SHARON HURD
CHAIRPERSON, BOARD OF AGRICULTURE**

BEFORE THE HOUSE COMMITTEE ON AGRICULTURE & FOOD SYSTEMS

**MONDAY, FEBRUARY 12, 2024
2:00 PM
CONFERENCE ROOM 312 & VIDEOCONFERENCE**

**HOUSE BILL NO. 1989
RELATING TO RAW MILK**

Chair Gates, Vice Chair Kahaloa and Members of the Committee:

Thank you for the opportunity to testify on House Bill 1989. This bill authorizes and decriminalizes the sale of raw milk, raw milk products, and raw milk dairy products directly from producers to consumers, for human consumption, subject to certain restrictions. Authorizes the sale of raw goat milk for pet consumption. Establishes labeling requirements. Requires the Board of Agriculture and Department of Health (DOH) to adopt rules no later than 7/1/2025. The Department of Agriculture (DOA) respectfully opposes this bill.

The State of Hawaii currently prohibits the sale of raw milk in any form. The DOH Hawaii Administrative Rule, Title 11, Chapter 15, "Milk", Section 11-15-46, Milk and milk products which may be sold, states in part that "Only Grade "A" pasteurized milk and milk products shall be sold to the final consumer."

The consumption of raw milk and raw milk products is a public health and milk safety issue. Raw milk is unsafe because it can contain disease causing pathogens according to Food and Drug Administration (FDA), Centers for Disease Control and



American Academy of Pediatrics. This bill states that a label is required that warns about the risks of consuming raw milk by stating that “RAW MILK MAY CONTAIN HARMFUL BACTERIA THAT ARE UNSAFE TO CONSUME.” In August 2020, a food fact sheet was published by FDA to provide information on “The Dangers of Raw Milk” and is available at the following link:

<https://www.fda.gov/media/119383/download#:~:text=Raw%20milk%20is%20milk%20from,often%20called%20%E2%80%9Cfood%20poisoning.%E2%80%9D>

The placement of this bill under Chapter 157 Hawaii Revised Statutes (Milk Control Act) is not appropriate because this statute was intended to regulate pasteurized milk and to maintain stability in the dairy industry. The milk control program is self-funded by licensing fees collected from about 50 producers and processors which were decreasing in number to the point where it is no longer self-sustaining because there is only one remaining dairy and one processor, making the Milk Control Act obsolete and subject to repeal.

In addition, there are concerns with this bill regarding licensing and enforcing the maximum ten-cow requirement on these many small producer-distributors, given that there are also provisions where producers may share cows for the purposes of producing raw milk or raw milk products. There are also potential problems with determining and collecting licensing fees. The revenues collected from monitoring the small producer-distributors containerizing their own raw milk and raw milk products for sale directly to consumers will be insufficient to sustain operations. Consequently, the DOA will be unable to enforce the proposed amendments.

Thank you for the opportunity to testify on this measure.

HB-1989

Submitted on: 2/10/2024 11:06:27 AM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
JORDAN LEE	The Public Pet	Support	Written Testimony Only

Comments:

Please LEGALIZE RAW GOAT MILK for PET. Raw goat milk helps dogs and cats with allergies and is cheaper and healthier than consuming a lifetime of allergy medication. Raw goat milk helps kittens, puppies, and senior pets to gain the necessary nutrients and calories they need to survive. Raw goat milk is safe & organic, many of our customers are educated enough to know how to properly store and handle pet products containing raw ingredients. Many studies about safe raw feeding have been done and there so much new information out there to prove that.

Please help to suport local farms and local businesses by passing this bill.

HB-1989

Submitted on: 2/10/2024 10:37:05 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Tish Rothwell	The Pet Depot	Support	Written Testimony Only

Comments:

The benefits of raw goats milk for puppies, kittens and senior pets is unmatched. Please pass this bill

mahalo



P.O. Box 253, Kunia, Hawai'i 96759
Phone: (808) 848-2074; Fax: (808) 848-1921
e-mail info@hfbf.org; www.hfbf.org

February 12, 2024

HEARING BEFORE THE
HOUSE COMMITTEE ON AGRICULTURE & FOOD SYSTEMS

TESTIMONY ON HB 1989
RELATING TO RAW MILK

Conference Room 312 & Videoconference
2:00 PM

Aloha Chair Gates, Vice-Chair Kahaloa, and Members of the Committee:

I am Brian Miyamoto, Executive Director of the Hawai'i Farm Bureau (HFB). Organized since 1948, the HFB is comprised of 1,800 farm family members statewide and serves as Hawai'i's voice of agriculture to protect, advocate and advance the social, economic, and educational interests of our diverse agricultural community.

The Hawai'i Farm Bureau opposes HB 1989, which authorizes and decriminalizes the sale of raw milk, raw milk products, and raw milk dairy products directly from producers to consumers, for human consumption, subject to certain restrictions, authorizes the sale of raw goat milk for pet consumption, and establishes labeling requirements.

Farm Bureau policy states: "We support only pasteurized fluid milk being sold or distributed for human consumption" The Farm Bureau policy was developed after intense discussion. Ultimately the decision was made based on FDA's website on raw milk, and studies conducted by the Centers for Disease Control and Prevention showing that the majority of dairy-related disease outbreaks have been linked to raw milk.

We recognize the niche market opportunities associated with raw milk. However, we also have a responsibility to protect the public. The FDA reports that the risk of getting sick from drinking raw milk is greater for infants and young children, the elderly, pregnant women, and people with weakened immune systems, such as people with cancer, an organ transplant, or HIV/AIDS than it is for healthy school-aged children and adults. The CDC finds that foodborne illness from raw milk especially affects children and teenagers. But, it is important to remember that healthy people of any age can get very sick or even die if they drink raw milk contaminated with harmful germs."

Food safety is a priority for HFB. We have seen serious health consequences and successful enterprises fail when food safety issues arise.

Thank you for the opportunity to comment on this measure.

TESTIMONY ON HAWAII HB 1989
In Support of Hawaii Raw Milk Sales
House Agriculture & Food Systems Committee

Presented on behalf of the
Weston A. Price Foundation
by Pete Kennedy, Esq.
3830 Jaffa Drive
Sarasota, FL 34239
Phone: 941-34-4984
pete.foodlaw@gmail.com

Hearing: February 12, 2024

Honorable Members of the Agriculture and Food Systems Committee,

My name is Pete Kennedy. I am an attorney with the Weston A. Price Foundation (WAPF), an international nonprofit whose primary mission is to restore nutrient-dense foods to the American diet through research, education and activism. WAPF has members in all 50 states, including Hawaii, and is the leading raw milk advocacy organization in the U.S. I have worked on legal issues governing raw milk distribution for the past 20 years. I have consulted on state and federal milk legislation and have drafted raw milk bills as well (including Hawaii). I am familiar with the raw milk laws in every state.

At this time forty-six (46) states have legalized the sale and/or distribution of raw milk through statute, regulation or policy.

- Fourteen (14) states allow the sale of raw milk for human consumption in retail stores: AL, AZ, CA, CT, ID, ME, NH, NM, OR, PA, SC, UT, WA and WY.
- Seventeen (17) states allow the sale of raw milk for human consumption direct from the producer to the consumer: AR, IA, IL, KS, MA, MN, MS, MO, MT, ND, NE, NY, OK, SD, TX, VT, WI, and.
- Nine (9) states allow distribution raw milk through herdshare agreements: CO, IN, KY, MI, NC, OH, TN, VA, and WV. A herdshare agreement is an arrangement where an individual purchases an ownership interest in a dairy animal or herd of dairy animals and obtains a percentage of the raw milk production proportionate to that ownership interest.
- The remaining six (6) states allow the sale of raw pet milk by farmers: AL, DE, FL, GA, MD, and NJ.

Hawaii is clearly an outlier. There is significant demand for raw milk in Hawaii; for many years, bills legalizing its sale or distribution have been before the legislature but rarely, if ever, have received a fair hearing. Consumption of raw milk is legal in Hawaii (as it is in all 50 states) but most consumers do not have the resources and/or know-how to own and board their own dairy animal(s), leaving them with no way to legally exercise that right.

It is far past time for Hawaii to legalize raw milk sales or distribution. Raw milk has a good track record for safety; there is documentation that, as demand for raw milk has increased over the last 15 to 20 years, the number of foodborne illnesses attributed to raw milk consumption has declined.

WAPF supports the passage of HB 1989.

Regarding the provision in the bill allowing the sale of raw pet goat milk, the *Official Publication* of the Association of American Feed Control Officials (AAFCO) consists of model regulations governing the production and sale of commercial feed for animal consumption, including pet food. All 50 states have adopted part or all of the AAFCO *Official Publication*; the publication allows the sale of raw milk. Even though there is an ill-conceived interstate ban on raw milk for human consumption, there is no federal ban on raw milk for pet consumption.

There are national manufacturers complying with federal and state regulations who are selling raw pet milk in nearly every state in the U.S.; in summer 2021, raw pet milk products of two of these manufacturers were confiscated in 20 Hawaii pet food stores that were trying to meet strong demand by

pet owners. There is substantial evidence that raw milk is healthier than pasteurized milk for pets. Here is a quote from Dr Pitcairn's *Complete Guide to Natural Health for Dogs and Cats* (page 21):

THE POTTENGER CAT STUDIES

One of the most fascinating sources of information about the importance of raw foods has come from what is now known as the Pottenger Cat Studies. Dr. Pottenger did not set out to study cat nutrition, but he became intrigued by differences in the health of cats he was using in experimental studies. Turning his attention to this topic, he did a series of nutritional comparisons. For several generations, one group of cats was fed completely raw (meat, bones, milk, and cod liver oil). Other groups of cats were fed the same foods either partially or completely cooked. What he found is of definite importance to anyone who wants to raise a truly healthy pet:

- Cats on the entirely raw food diet were completely healthy, never needing veterinary attention.
- The more the food was cooked, the less healthy were the cats that ate it.
- The health problems evident in the experimental cats on the cooked diet were remarkably like those commonly seen in cats today--mouth and gum problems, bladder inflammation, skin disorders, and the like.
- Over a period of three generations, the cats on the cooked food diet continue to deteriorate until they can no longer reproduce.
- When the cats were put back on a raw food diet, it took *three generations* for the animals to totally recover from the effects of the cooked food.

Passage of HB 1989 can help improve food security and self-sufficiency in Hawaii; the state currently has no dairy legally producing milk for sale. It would lead to more of the food dollar staying in the state and would expand consumer choice by enabling consumers to purchase not only raw milk but other raw dairy products as well. It would enable family farmers to further diversify their operations; in other states raw milk is often the food that draws the consumer to the farm, leading to increased sales of other farm products such as meat, poultry, eggs, and produce. Hawaiian residents should have the freedom to consume the food they believe best for their health and the health of their families.

For all these reasons, I urged the committee to pass HB 1989.

Respectfully submitted on behalf of the

Weston A. Price Foundation

by Pete Kennedy, Esq.

3830 Jaffa Drive

Sarasota, FL 34239

Phone: 941-34-4984

pete.foodlaw@gmail.com



Food+ Policy Internship 2024

food@purplemaia.org

February 11, 2024

Subject: HB 1989, *Relating to Raw Milk*

Aloha Chair Gates, Vice Chair Kahaloa, and Members of the Agriculture and Food Systems Committee,

We are in support of HB 1989, which seeks to legalize the distribution of raw, unpasteurized milk and raw milk products in Hawaii. I believe this bill recognizes the desire of many consumers to access raw milk based on its perceived health benefits, unique taste, and cultural significance.

The acknowledgment of raw milk's potential health benefits, including reducing allergies, boosting immunity, hydrating skin, and addressing nutritional deficiencies, aligns with the growing interest in holistic health and well-being. It is crucial to respect consumers' choices when it comes to their dietary preferences, especially when supported by studies highlighting the potential advantages of consuming raw milk.

Furthermore, recognizing the unique flavor of raw milk, which may be compromised by the double pasteurization process required for commercial milk sales, underscores the cultural and culinary significance of this product. Additionally, the acknowledgment that raw milk contains bacteria essential for certain cheeses adds depth to the argument for permitting its distribution.

The legislature's understanding that raw milk can be produced safely, coupled with the recognition that its sale is permitted in many other states, emphasizes the need to align Hawaii's

The Food+ Policy internship develops student advocates who learn work skills while increasing civic engagement to become emerging leaders. We focus on good food systems policy because we see the importance and potential of the food system in combating climate change and increasing the health, equity, and resiliency of Hawai'i communities.

In 2024, the cohort of interns are undergrads and graduate students from throughout the UH System. They are a mix of traditional and nontraditional students, including parents and veterans, who have backgrounds in education, farming, public health, nutrition, and Hawaiian culture.



Food+ Policy Internship 2024

food@purplemaia.org

regulations with broader national trends. States such as California, Oregon, and Vermont have successfully implemented regulations allowing the distribution of raw milk, contributing to a thriving market that respects both consumer choice and safety protocols.

In conclusion, I strongly urge you to support and pass HB 1989. Legalizing the distribution of raw milk in Hawaii not only respects consumers' choices but can also act as another form of revenue for farmers and increasing support for local producers.

Thank you for your time and consideration.

Mahalo,
Kaitlyn + Hawaii Food+ Policy Team

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HB-1989

Submitted on: 2/9/2024 4:16:12 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
B.A. McClintock	Individual	Support	Written Testimony Only

Comments:

Please support this bill. Mahalo.

HB-1989

Submitted on: 2/9/2024 5:22:17 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Michael EKM Olderr	Individual	Oppose	Written Testimony Only

Comments:

I highly oppose this bill. Raw milk is a poison and any supposed benefits that Raw milk supposedly has is outweighed by the risk of death and safety of those who drink it. In the years since the increase in popularity, we have seen hundreds getting sick from consuming the product and many others get sick. Since the practice of pasteurizing milk began in the past century infant mortality rates fell from 30-60 percent alone. The consumption of Raw Milk is dangerous, especially to the most vulnerable of our population, imino compromised, pregnant women, and children. Passing this would be the equivalent of having a person with a covid infected person sneeze in your face every morning before work. Below are my sources for my testimony. Please oppose this bill.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6140832/#:~:text=Unpasteurized%20fluid%20milk%20was%20associated,made%20from%20the%20same%20milk.>

<https://www.fda.gov/food/buy-store-serve-safe-food/dangers-raw-milk-unpasteurized-milk-can-cause-serious-health-risk#:~:text=Raw%20milk%20can%20carry%20dangerous,products%20made%20from%20raw%20milk.>

Raw Milk - Public Health <http://www.ndhealth.gov/disease/gi/rawmilk.aspx>

<https://pubmed.ncbi.nlm.nih.gov/30234385/>

Aloha Chair and members of the Committee,

I am a farmer from the third generation to farm in Hawai'i. I strongly support HB521 to decriminalize direct farm to consumer sales of raw milk. I cannot believe that "decriminalize" can even be used in the same sentence with "milk". Nearly all states allow the sale of unpasteurized milk in some form, including California, a famously safety conscious state.

Pasteurized milk that is sold in the store is a highly processed food. Heating, homogenization, and long storage and shipping prior to sale alter milk, reducing both the flavor and nutritional content. Big commercial dairies, which often have thousands of cows, must pasteurize milk because they operate on such a large scale that they cannot ensure quality otherwise. Small dairies with just a few cows do not have the cleanliness problem that big dairies have. This bill would allow what I call "micro dairies" with up to 10 cows. I think this is a very good idea. I milk several cows for my family's use. We keep everything simple and clean. Rules could be written to ensure cleanliness on micro dairies, for example requiring filtration of milk. Filters designed specifically for milk are readily available.

I believe that all consumers should be permitted to make their own decisions about food. People are allowed to buy alcohol and cigarettes if they want. People are also able to choose GMO free or gluten free foods. Hamburger meat could be unsafe if it is not properly cooked or left unrefrigerated, but meat is sold uncooked and consumers are given responsibility for handling it properly. Every year, some people get sick from eating a variety of foods that were contaminated with E. Coli or salmonella. I got salmonella from eating cut melon, and my mother got it from eating peanuts. Egg salad is a common source of food poisoning, but we don't ban eggs, cut melon, or any of the other foods that sometimes make people sick.

Small and mid-size farms in Hawai'i are allowed to produce eggs and meat for market. Why is milk different? Milk is not inherently more dangerous than other foods. Why in this age, when we have a better scientific understanding of food safety, is raw milk still being singled out for this unfair and arbitrary treatment?

Another thing I like about this bill is that it would legalize direct farm to consumer sales. If I were allowed to sell milk from my cows, customers could meet the cows and see the facilities for themselves. They would be informed so they could make their own decisions. Transparency and trust. I am not asking the legislature to be allowed to sell milk in stores. Just please let people who want raw milk buy from people who want to produce raw milk. I am frequently asked if I have raw milk for sale just because I have milk cows. There is a lot of demand here. People moving from the mainland are often surprised to find that legal raw milk is not available here.

When I was a child, I got sick from drinking pasteurized milk from the store. My family's doctor said I was reacting to the antibodies of thousands of cows mixed together. I have been drinking raw milk for almost 30 years now and never gotten sick from it. Ask around, and you will find that some mainstream doctors recommend raw milk for a variety of health problems. Ask Dr. Green, our governor.

Thank you for hearing this bill and please give it your support.

Mahalo,
Hattie Le'a Wheeler Gerrish
Hamakua, Hawai'i

HB-1989

Submitted on: 2/10/2024 10:46:22 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
James Bondo	Individual	Support	Written Testimony Only

Comments:

Yes, please allow GRASS FED RAW certified milk. My father drank it when he was able to get it. I have never tried RAW GRASS FED milk but have tried grass-fed milk and it is DELICIOUS even though it was not raw.

Compared to pasteurized grain fed milk, you are drinking the real taste of milk and it cannot be compared. Yes, it's true. Pasteurized milk taste like DEAD milk and NOBODY should be surprised.

It must be raw grass fed and certified. I will pay the extra cost to drink it. It is more healthy and the enzymes are preserved and fats are in proper ratio.

I'd like to remind you that we already eat raw fish a lot in the form of poke. Having raw GRASS FED milk should be an easy crossover.

HB-1989

Submitted on: 2/11/2024 6:46:32 AM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Madhava Shakti Moe	Individual	Support	Written Testimony Only

Comments:

The sale of raw milk is happening and will continue to happen by private agreements between men/women who own cows and the men and women who choose to consume it.

It is best to authorize it and decriminalize it so that there are some rules in place and therefore makes it so the men/women who own the cows are more accountable with their cleaning and ethical practices.

HB-1989

Submitted on: 2/11/2024 8:22:25 AM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Renata	Individual	Oppose	Written Testimony Only

Comments:

I oppose to the this legislation.

HB-1989

Submitted on: 2/11/2024 8:41:29 AM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Theresa Cook	Individual	Support	Written Testimony Only

Comments:

The need for locally produced milk/ milk products in any form is in demand here so bad. It would help the local community so much. I am on big island and people want desperately to buy their food locally but current laws make it illegal for a lot of it . Allowing raw milk would make it so farmers could actually support themselves selling farm products. The demand for raw milk is high and people will find a way to obtain it either way. It would be better for the public to get it legally . People should have the right to choose what they put in their body. They are allow to smoke , drink alcohol and feed children highly processed foods filled with carcinogens and chemicals but fresh from the farm raw milk is illegal in 2024 ? How is that possible ? Please allow the sale of raw milk from local farmers. Please do not make some ridiculous rule that excludes them if they have more then 10 cows . Make the limit more realistic like 20 cows. A farmer that has invested in shelter , fencing, pasture and equipment for 10 cows will have put forward a lot of hard earned money to get to that point. It's likely they would have built a barn and other infrastructure for more then just 10 cows. To limit them to such tiny number would make it so they cannot earn enough on their investment to maintain it. 20 cows limit is more reasonable for a small farm. Also a large majority of these farms are off grid and cutting them off because they are on catchment is unreasonable. There are very simple solutions like filtration + UV treatment for their water . Many farms cannot even sell eggs legally because they are not on county water. Let the consumer choose. How often do you hear of people getting sick on big island that are eating their own raw dairy or fresh eggs because it was contaminated from their off the grid water. NEVER that's how often you hear about it because it's so fresh these farmers and their friends are not getting sick from it. The rules that were once put in to protect us no longer apply. It's 2024. There are cleaning solutions, and water filtration/uv treatments for water. We should not be stopping farmers from thriving. Farming is dying out on all island in alarming numbers. People who want to continue are shipping cows in right now because there are so few available on island due to most farms closing their doors. It is urgent that the state change these out dated irrelevant laws now while there is still time. Farms are being sold at an alarming rate because it is not possible to make enough income to cover costs of running a farm. Be the change. Make the right choice and help our communities keep at least a few running farms by changing these laws. It may already be too late but we should try. Please stop supporting paving paradise and shipping in every food item to be consumed.

HB-1989

Submitted on: 2/11/2024 11:30:10 AM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Stephanie Whaley	Individual	Support	Written Testimony Only

Comments:

I have never had access to raw milk and I think this is a tragedy. I am an adult and should be able to make choices that I see fit for myself and my children. It is not the government's job to protect me from myself. You have every right to and I fully support the overlooking of the milk industry to make sure cleanliness and sanitation practices are being upheld, but to deny any and all access to a product that has been used by humanity since recorded history is abhorrent.

Raw milk has a good track record for safety as well as having amazing health benefits. According to at least one study, the number of illnesses attributed to raw milk consumption in the U.S. has declined as demand for the product has increased. There is not a single Grade A dairy producing milk in the state. Passage of HB 1989 can revive Hawaii's dairy industry. There are many home cooks who are yearning to make their own cheeses and can't do so because they don't have access to raw milk.

Passage of HB 1989 would enable family farmers to make a better living. Raw milk in other states is often the product that first draws the consumer to set foot on the farm, leading to sales of other foods such as meat, poultry, eggs and produce. I would be one of the first people in line to buy raw milk for myself and my child. Raw milk has amazing healing qualities for allergies from the immunoglobulins it contains that are all killed in the pasteurization process.

HB 1989 supports consumer choice and our government and government officials should be making it easier for consumers, not harder. The consumption of all raw milk products is legal in Hawaii, and demand for raw milk is booming; Hawaii residents should not have to take part in an illegal transaction in order to exercise their legal right to consume raw milk. Make raw milk legal again and give the people back their access to this superfood.

HB-1989

Submitted on: 2/11/2024 1:19:30 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Emma-Lei Gerrish	Individual	Support	Written Testimony Only

Comments:

I'm a farmer, born and raised in Hawaii. I support legalizing raw milk sales.

Aloha Committee Chairs and Members,

Please Support HB 1989, The Raw Milk Bill. Thank you for this opportunity to submit supportive testimony.

I am a small scale food producer that, with my family, have run a farm that feeds us and provides a small amount of produce that we sell on the Big Island. It is my desire to expand opportunities in farming so that young people, such as my children, will have greater economic possibilities to remain on the farm. It is also my desire to see sustainable, healthy food to become more abundant in our state. To achieve those goals, I urge the passage of HB 1989 and the decriminalization of the direct sale of raw milk to informed consumers.

There are three parts to my testimony, I will be as brief as possible:

1. Response to Public Health Concerns
2. Personal Choice and Food Sovereignty
3. Agricultural Diversification and Food Security

Response to Public Health Concerns

A Raw Milk Bill was passed through the House (HB 521) in 2023. It did not pass in the Senate.

In 2023, the Hawaii State Department of Health (DOH) has submitted an 11 page document opposing HB 521. Almost half of this statement (pages 4 to 9) are under a section called “Raw Milk Misconceptions and the Danger of Raw Milk Consumption.” In my opinion, their efforts to “debunk” statements that others have made about the benefits of raw milk is not relevant to the decision to decriminalize raw milk. Concerns about “Dangers of Raw Milk Consumption” is relevant.

It is my position that the data of incidents of food borne illness, presented by DOH, do not show significant elevated risk compared to consuming the pasteurized milk that is in fact available in Hawaii’s supermarkets. **I will here present published, peer-reviewed scientific evidence that the pasteurized milk available in Hawaii’s supermarkets is of low quality and does not meet the regulatory standards for bacterial content set by FDA.**

Outbreaks of Illness From Raw Milk are Few

The DOH, citing CDC and FDA records, states 133 outbreaks of illness attributed to consumption of raw milk nationwide, in the 23 years between 1987 and 2010. I think this is not a worrisome level of outbreaks compared to large nationwide outbreaks of food poisoning that occur every year from commercially produced foods such as hamburger, cantaloupe and sprouts. I note that not every case of food poisoning is known, especially when the symptoms are mild. I also believe that there is a bias against raw milk such that all cases of food poisoning in people that drink raw milk will be presumed to be caused by the milk.

HB 1989, the 2024 bill now under consideration, mitigates against large scale outbreaks of illness. The bill allows milk from no more than 10 cows to be sold from a single farm. This will limit the likelihood of a large outbreak. Second, the bill requires a warning label on containers stating, “Contains pathogens that may be unsafe to consume” and that milk can only be sold directly from the farm. Purchasers of raw milk will have to make a deliberate effort to contact a dairy farmer and will be warned of the danger that DOH asserts they face.

Pasteurized Milk in Hawaii's Supermarkets Does Not Meet Regulatory Standards

Researchers at the University of Hawaii found that at 5 days prior to the expiration date, 90% of samples from processed mainland milk and 80% of samples from locally processed milk had bacterial counts higher than the legal limit set by the FDA. This study was published by *Pacific Agriculture and Natural Resources*, a peer-reviewed, scientific journal. I note that it was published in 2010, the same year as most of the data in the DOH testimony about incidences of food borne illness from milk.

Need I say more? It is a disservice to the people of Hawaii for the legislature to maintain the illusion that processed foods are always safer than fresh, locally produced foods.

The abstract of the article is below. The full article can be accessed with this link <https://hilo.hawaii.edu/panr/writing.php?id=278>

Microbiological Quality of Pasteurized Milk in Hawai'i HONGFEI HE, YONG LI*, ALFRED L. CASTRO, JIN DONG and C. N. LEE* Department of Human Nutrition, Food and Animal Sciences, 1955 East-West Road 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. K

Personal Choice and Food Sovereignty

Up to this point I have been rebutting the negative comments from the DOH. What I really want to be talking about is the positive aspect of decriminalization of raw milk.

“Food Sovereignty” can mean several things. The inherent right of individuals to produce food for their families, the right of a community to produce and distribute food, and certainly the right of sovereignty over one's own body.

All of our supermarkets have aisles of beer and liquor and shelves of tobacco products. Everybody knows these substances can be very injurious to our health. The stores are also filled with foods high in sugar and salt. It is well established that these foods lead to diabetes, hypertension and other serious disease. Supermarket foods often contain additives and are low in healthy nutrients. Why

are stores allowed to sell these things? Because the consumption of such items is considered a matter of free choice by the buyer.

Milk is not injurious like these items and, also unlike these items, fresh, unadulterated milk cannot be legally bought and sold. I think people should be allowed to make their own decisions about the purchase of milk, too.

My wife has always said that marijuana would be legal before milk. Please prove her wrong!

Agricultural Diversification and Food Security

85-90% of Hawaii's food is imported. Nearly all of our milk is imported. Food security, food insecurity, resilience and sustainability are all phrases we hear and are incorporated in the mission statements of many of our agencies and institutions. Allowing small farmers to produce and sell small amounts of milk will help decentralize milk and food production. **But it will do much more!**

The decriminalization of milk could be a game changing event for the very many young people (and some of us not-so-young people) that want to live and make their living on the land. Hawaii, and especially the Big Island, has a large amount of under-utilized grazing lands. Many of these were once sugarcane fields that have not been converted to other viable agricultural uses. Grazing is the most appropriate use for much of this land which has been depleted and would be subject to soil erosion, if tilled.

Where I live in Hamakua, in addition to the sugar plantations, many ranching families own, or did own, viable ranches and livestock farms of several hundred acres. There were numerous small, commercial dairies. With the passing of the generations, many farms were divided among the heirs and now there are many parcels of 20 or maybe 50 acres. These farms are not large enough for a viable beef cattle ranch. In too many cases, the descendants of these ranching families will sell their holdings and in too many cases they become "gentleman farms" with a few sheep or steers to maintain agricultural assessments for the property tax, thus contributing nothing to the community.

I know many young people growing vegetable and other crops trying to make a living. The return on all this hard work is meager without capital and the ability to hire workers. Yet, many of our people are joyfully dedicated to making a go of it.

Raw milk is a high value product. A quick search of the internet shows legal raw milk prices of \$16 a gallon and more, such as \$12 or a quart of raw milk yogurt. A couple of milk cows could supply a young family with an income stream that would make the farm economically viable. If milk sales were legal here.

Decriminalization of raw milk will help young farmers stay on the farm. It will develop agricultural capacity at the community level. It will help preserve and increase in our people the traditional knowledge and skills of livestock husbandry and milk production. Grazing is very suited to our under-utilized grasslands and is an alternative superior to confinement dairies with serious environmental waste disposal problems.

In Conclusion The milk cow is said to be the heart of a small farm. She feeds the family. Excess milk can be fed to pigs and chickens and is used by Korean Natural farmers to make many of their soil amendments. And if it were legal, it would make a badly needed cash income for hardworking farmers.

Finally, I want to tell you that I have been drinking raw milk from the Big Island for 40 years. I will not hesitate to state my opinion that fresh milk is far superior in flavor. We say it tastes like melted ice cream, not like the cardboard carton or the plastic jug that store milk comes in! Thank you for reading my testimony.

Grant Gerrish, Ph.D
Instructor of Biology UHH (retired)

HB-1989

Submitted on: 2/11/2024 2:02:08 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Sharon Gerrish	Individual	Support	Remotely Via Zoom

Comments:

Thank you for this opportunity to support HB1989 known as the Raw milk bill .

I graduated from Waialua High School in 1973 when the state of Hawaii was first talking about food sustainability. Hawaii did produce all the milk needs for the state then as well as meat but the rest was mostly imported leaving us vulnerable to shipping strikes or other world events. A new graduate I was wanting to be part of the solution to producing food in Hawai'i. Sadly I have seen further losses in food production. My family moved to Hawaii Island in 1978 and the first animal I looked for was a cow{my grandpa had a dairy}.I have drank raw firesh milk ever since.along with other products of our cows,yogurt ,butter ,kefir, cheddar cheese and cottage cheese .!

There are so many so called legal bad things you can buy. Alcohol,cigarettes, vape got in,firearms and legal drugs misused for other purposes..All these things are deadly! Yet the buyer has the freedom to buy them. I once joked with our governor that street drugs would be legal before milk which is a food. He agreed, sadly. He is also a doctor and told me he would support a farmer selling directly to a willing buyer. I live in a rural community that once had many small family dairies. I even worked for a large commercial dairy a mile from me {since closed}.

This bill would decriminalize milk! Many doctors have written in the past to support this bill and I have had at least three Veterinarians drink our milk when on a farm visit {knowingly}! Other foods occasionally make people sick such as the recent cantaloupe sickness and death but if we made illegal all food that at one time or another caused illness we would run out of "approved" foods. We all must do the best we can and with a small dairy that would greatly help farmers here,it would be far easier to ensure safety than a large dairy such as they have in other states. But speaking

HB-1989

Submitted on: 2/11/2024 2:54:44 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Barbara L Franklin	Individual	Support	Written Testimony Only

Comments:

I whole heartedly support HB1989. As one of the few cheese makers around, fresh raw milk is required to make your own cheese. I would love the opportunity to have access to the freshest ingredients for making cheese.

LATE

HB-1989

Submitted on: 2/12/2024 12:06:08 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Joyce L Louden	Individual	Support	Written Testimony Only

Comments:

I support HB1989 even though it's a nitch market, it is a market that can be filled only by local dairies.

I have been to the mainland where all stores carry raw milk in glass jugs, with a deposit on it.

Not only would HB1989 support local AG, but would cut back on plastic waste generated by the consumer.

We are in the 21 century, last century's ideas about raw milk are outdated.

HB-1989

Submitted on: 2/12/2024 1:12:19 PM

Testimony for AGR on 2/12/2024 2:00:00 PM

Submitted By	Organization	Testifier Position	Testify
AMANDA Fox	Individual	Oppose	Written Testimony Only

Comments:

Please do NOT pass this. Animal milk is retrieved by forceful impregnation and the removal of her offspring. If the same thing were happening to a human, we would refer to this as rape and kidnapping, and infanticide. Dairy milk is the cause of many cancers, diabetes, ADHD and other developmental issues. Please look to more sustainable and healthy plant based options. DO not increase demand for our species to be consuming the milk of other species.

RECEIVED

Date & Time

Feb 13, 2024, 10:33 am

LATE

TESTIMONY ON RECENT EVIDENCE FOR RAW MILK BENEFITS AND RISKS HAWAII HB1989

Peg Coleman, Medical Microbiologist/Risk Analyst

Fellow and Councilor of the Society for Risk Analysis



Monday 12 February 2024



Who we are



What we provide

Value of our services

- Woman-owned small business specializing in **medical microbiology** and scientific support for **microbial risks**; **Fellow of Society for Risk Analysis (SRA)**; Advisory Board member of RAWMI
- Analysis and training about safety of exposures to bacteria in air, **foods**, water, and the environment
- **Enhance transparency** and give clients confidence to **separate facts** from **myths** about risk and health

MAJOR POINTS BASED ON CURRENT EVIDENCE AND RISK ANALYSIS

1. **Neither pasteurized nor raw milk is risk free.** My testimony today is based on **CDC data** for **2005-2020**, the most recent 16 years of data available when requested. These data document significant numbers of pasteurized milk illnesses. Over 2000 illnesses were attributed to **pasteurized milk** in this period. (**55%**; 2,099 of 3,795 milkborne illnesses).
2. The **CDC data** (2005-2020) do **NOT support increasing raw milk illness** with **increasing access**. Charts and statistics from a manuscript on trends of these data (currently under review in an epidemiology journal), as well as additional data on trends in California and New York states, are included herein.
3. FDA/USDA (2003) found **both pasteurized and raw milks high risk** of listeriosis, but independent academic researchers (Latorre et al., 2011) subsequently estimated **very low risk for raw milk**.
4. Subsequent **peer reviewed studies** (Coleman et al., 2023; Waller et al., 2024) document **pro-pasteurization bias in the FDA/USDA 2003 assessment**, identified using the Risk Analysis Quality Test (RAQT) of the Society for Risk Analysis.
5. **Pasteurized milk** was associated with **significantly higher risks** of severe listeriosis and death than raw milk in a recent systematic review for North America (Sebastianski et al., 2022)
6. Two peer-reviewed studies mapped extensive benefits and some evidence of risks for both pasteurized and raw milks from humans and cows (slide 13).

SUMMARY

An extensive body of evidence is cited my testimony.

No scientific evidence supports the claim that raw milk produced for direct human consumption in the 21st century is inherently dangerous, for human breastmilk or milk from cows and goats.

Please pass this bill and permit consumers to choose real milk, fresh and unprocessed, complete with its natural beneficial microbiota illustrated in my supplemental slides.

CDC DATA ON MILKBORNE IN US (2005-2020)

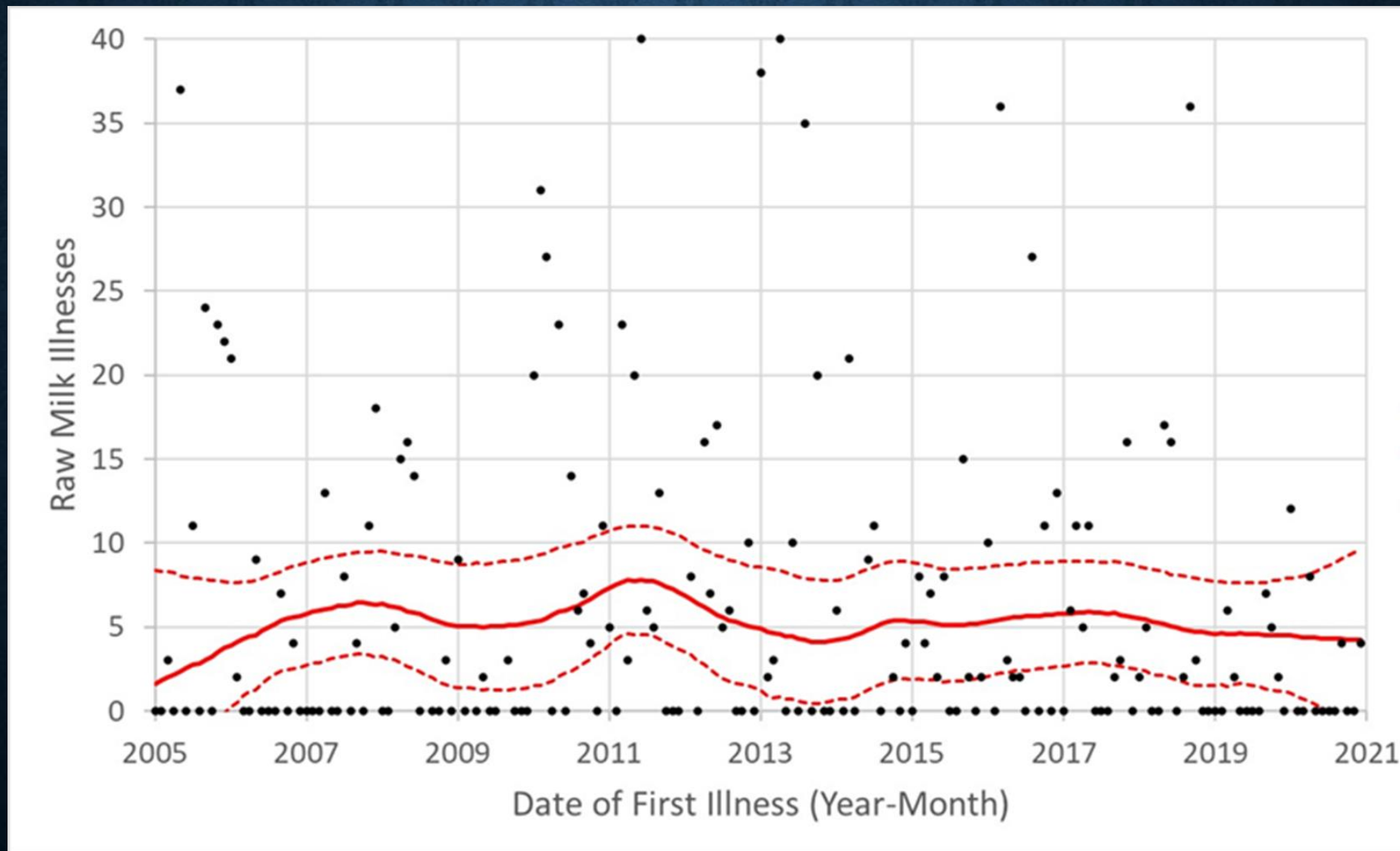
(manuscript under review)

- **Fluid milk** contributed to burden of illness in US over this 16-year period:
3,807 illnesses
180 outbreaks
202 hospitalizations
6 deaths

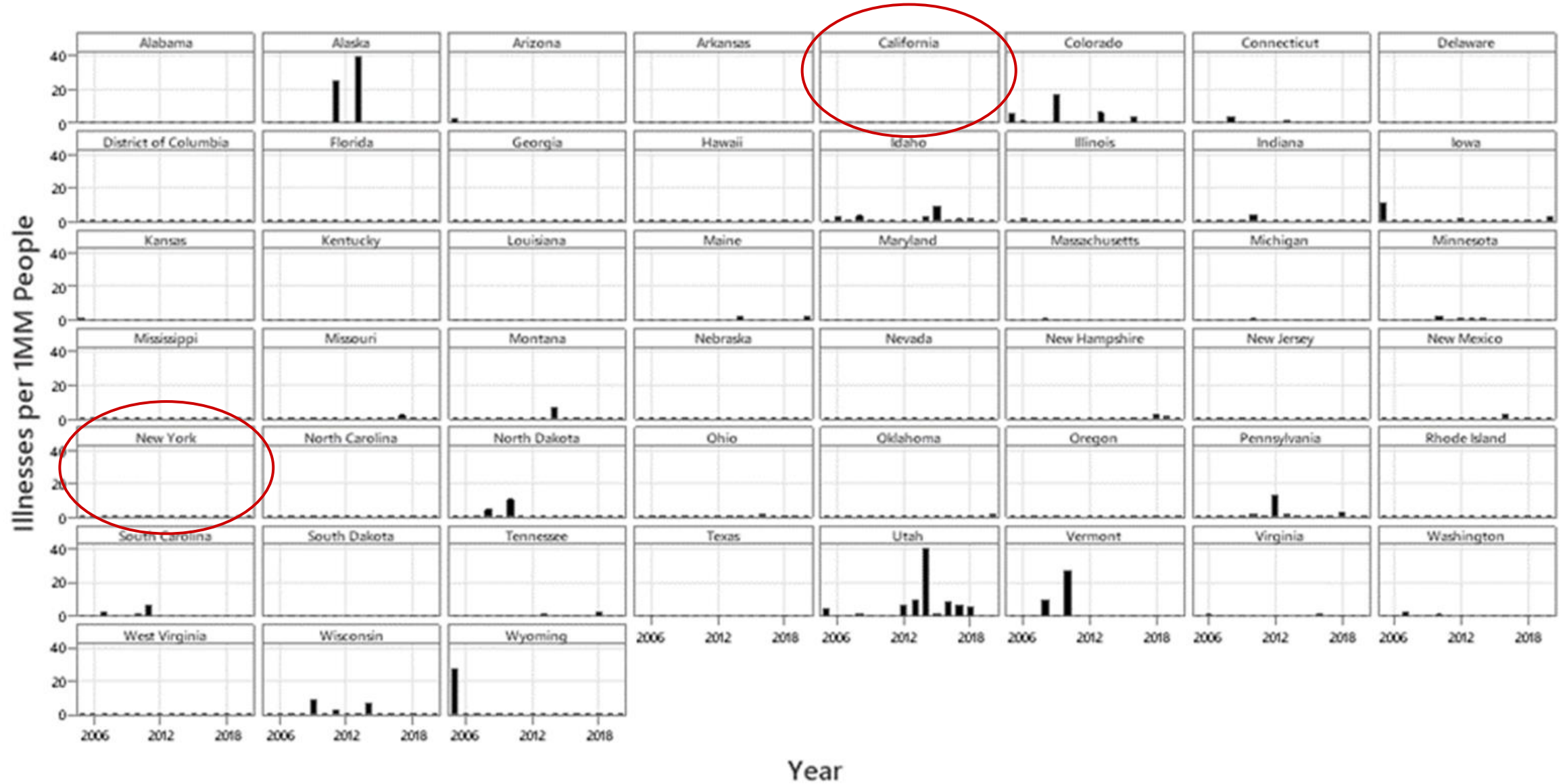
	Pasteurized Milk	Raw Milk
Illnesses	2,111	1,570
Outbreaks	18	162
Hospitalizations	32	170
Deaths	4	2

- **Campylobacteriosis** accounted for 90% of milkborne illness (3,443 of 3,807 illnesses). Of campylobacteriosis illnesses, **54%** were associated with **pasteurized milk**)
- **Significantly higher risk of listeriosis** from **pasteurized dairy** in a recent systematic review for North America (Sebastianski et al., 2022)

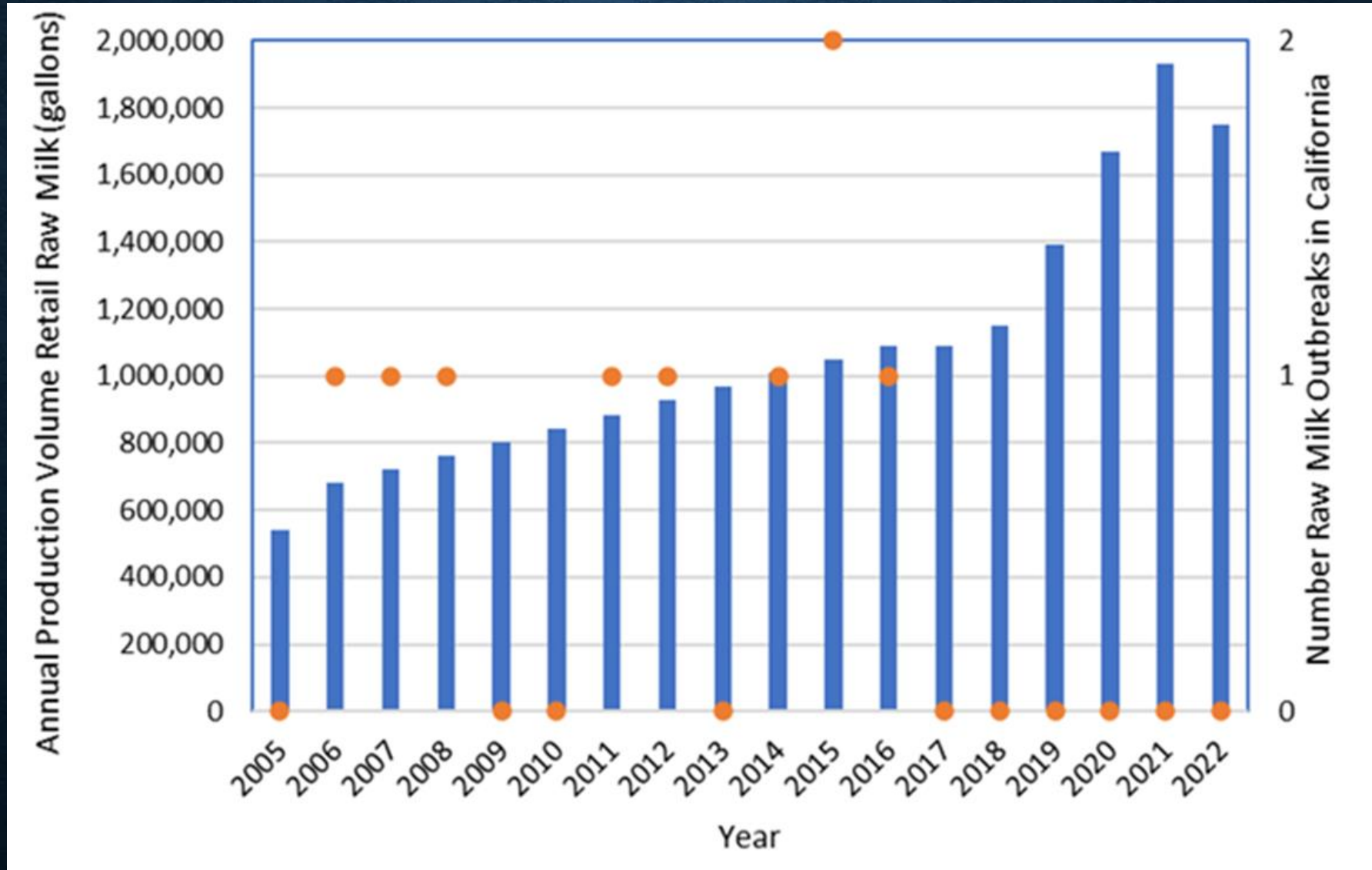
TRENDS OF RAW MILK ILLNESSES PER OUTBREAK NOT INCREASING



RATES OF ILLNESS BY STATE NOT INCREASING



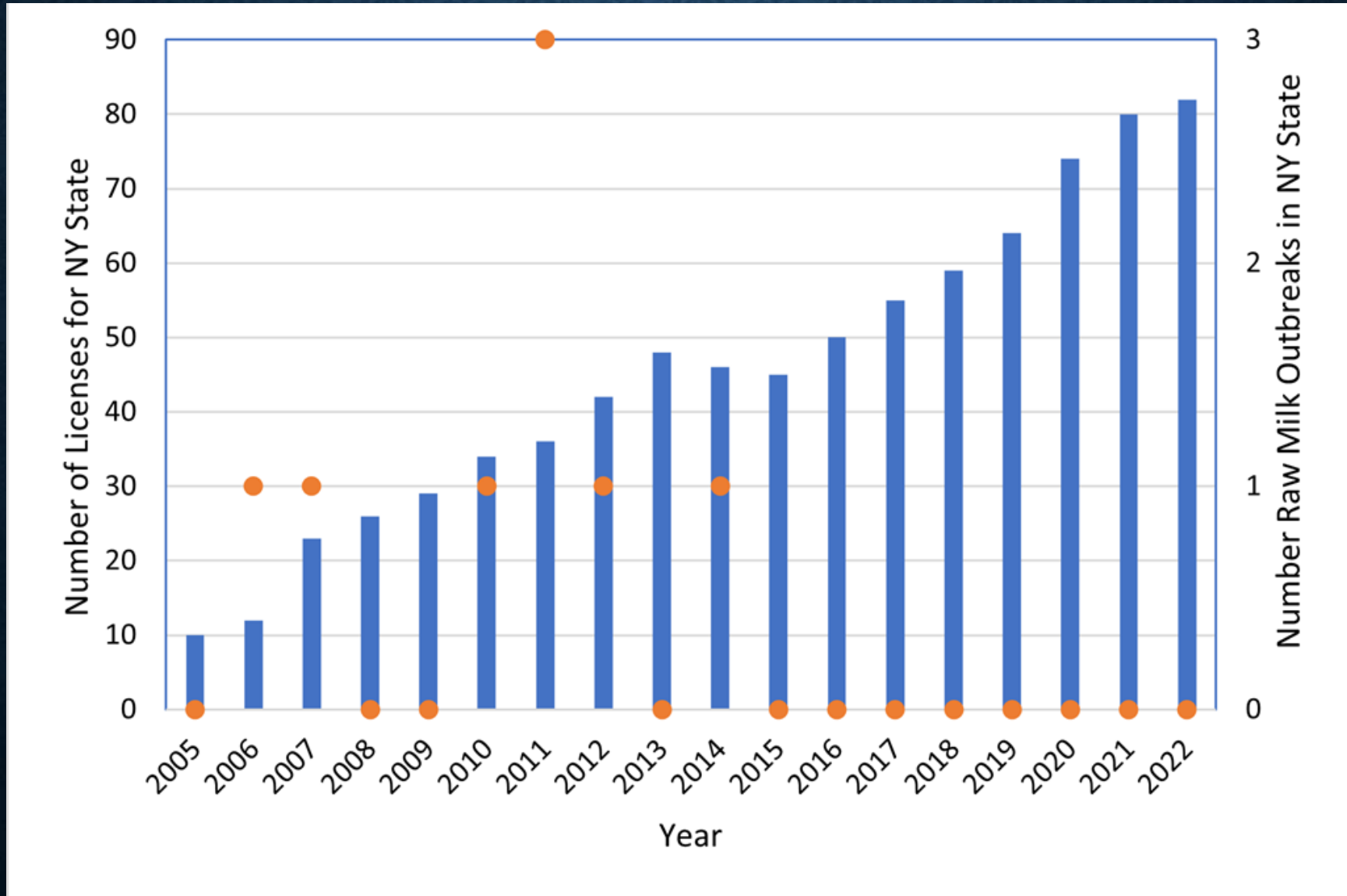
NO ILLNESS INCREASE WITH INCREASING RETAIL RAW MILK PRODUCTION IN CA



VERY LOW RISK ILLNESS FOR CA RETAIL RAW MILK

1. **Annual Production** from one California dairy
More than a **million gallons of raw milk** supplied to retail markets **annually**
2. CDC NORS outbreaks (2005-2020)
 - 9 California outbreaks in 16 years, **none since 2016**
 - 99 illnesses, 16 hospitalizations, 0 deaths
3. **~9 million gallons of retail raw milk** sold from 2017 to 2022, without an outbreak reported in California linked to raw milk consumption
4. **Risk estimate: <1 illness in 20 million servings**

INCREASING RAW MILK ACCESS IN NY STATE NOT INCREASING ILLNESS



NO RAW MILK ILLNESSES IN NY STATE IN PAST EIGHT YEARS

- CDC reported 8 outbreaks in NY State from 2005 to 2014
 - 58 **campylobacteriosis** illnesses, 4 hospitalizations, 0 deaths
- **No raw milk outbreaks** reported in NY state since **2014** despite increasing numbers of licenses for farms legally selling raw milk (data obtained by FOIA)

QUANTITATIVE MICROBIAL RISK ASSESSMENTS

Estimated Risks for Listeriosis in Milks

FDA/FSIS (2003); update by independent researchers (Latorre et al., 2011)

Pasteurized Milk

- 90.8 deaths per year (**high** risk)
- 10^{-9} per serving or 1 case in 1,000,000,000 exposures (**moderate** risk)

Raw Milk

- 3.1 deaths per year (**moderate** risk)
- 7×10^{-9} per serving or 7 cases in 1,000,000,000 exposures (**high** risk)
- $\sim 2 \times 10^{-15}$ per serving or 2 cases in 1,000,000,000,000,000 exposures (**very low** risk)

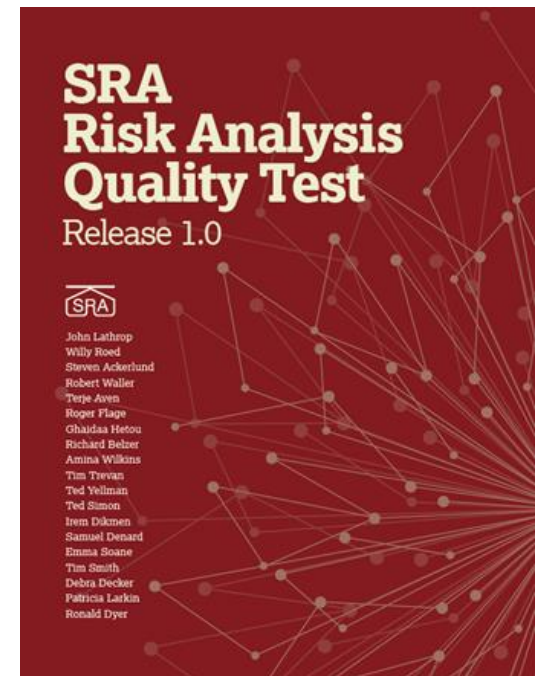
FDA/FSIS

Latorre

SRA RAQT *beta* Testing of FDA/FSIS Assessment Evidence of Ideological or Political Bias (Waller et al., 2024)

Two foods estimated as **high risk** for listeriosis (milks) with **different management** recommendations lacking scientific justification

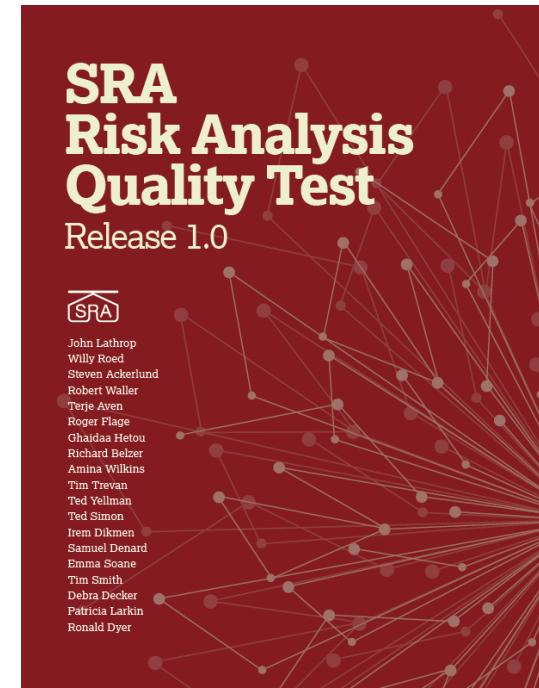
- **Raw milk** assigned “**priority candidate for continued avoidance**”
- **Pasteurized milk** assigned “**priority candidate for more study to confirm model predictions or identify factors not captured by current models that would reduce risk**”
- No consideration of alternatives to intentionally conservative assumptions
- No integration of risk management, little integration of risk communication
- No consideration of **societal costs** of interventions/**recalls** for foods that may **not pose high risk to consumers** (Farber et al., 2021)



Risk Analysis Quality Test of the Society for Risk Analysis: ROOT CAUSES for Poor Quality of Raw Milk QMRAs?

Fear and Dread of Microbes as Killer Germs;
Unquestioned Unstated Assumptions, Speculations;
Ideology and/or Politics Tipping Science

- 1. The source of microbes in raw milks is feces**
 - Wu et al., 2019, 2022; Gomes et al., 2020
- 2. Pasteurization is a ‘silver bullet’**
- 3. Pasteurized milk is zero risk**
- 4. Raw milk is ‘inherently dangerous’**



**Apply RAQT to identify root causes (ideology, politics, and science)
and enable future Evidence-Based Risk Management**

PEER-REVIEWED MANUSCRIPTS ON BENEFITS AND RISKS OF MILK MICROBIOTA



applied microbiology

an Open Access Journal by MDPI

**Enhancing Human Superorganism Ecosystem Resilience by Holistically
'Managing Our Microbes'**

Margaret E. Coleman; Rodney R. Dietert; D. Warner North; Michele M. Stephenson

Appl. Microbiol. 2021, Volume 1, Issue 3, 471-497



applied microbiology

an Open Access Journal by MDPI

**Examining Evidence of Benefits and Risks for Pasteurizing Donor
Breastmilk**

Margaret E. Coleman; D. Warner North; Rodney R. Dietert; Michele M. Stephenson

Appl. Microbiol. 2021, Volume 1, Issue 3, 408-425



applied microbiology

an Open Access Journal by MDPI

**Nourishing the Human Holobiont to Reduce the Risk of Non-
Communicable Diseases: A Cow's Milk Evidence Map Example**

Rodney R. Dietert; Margaret E. Coleman; D. Warner North; Michele M. Stephenson

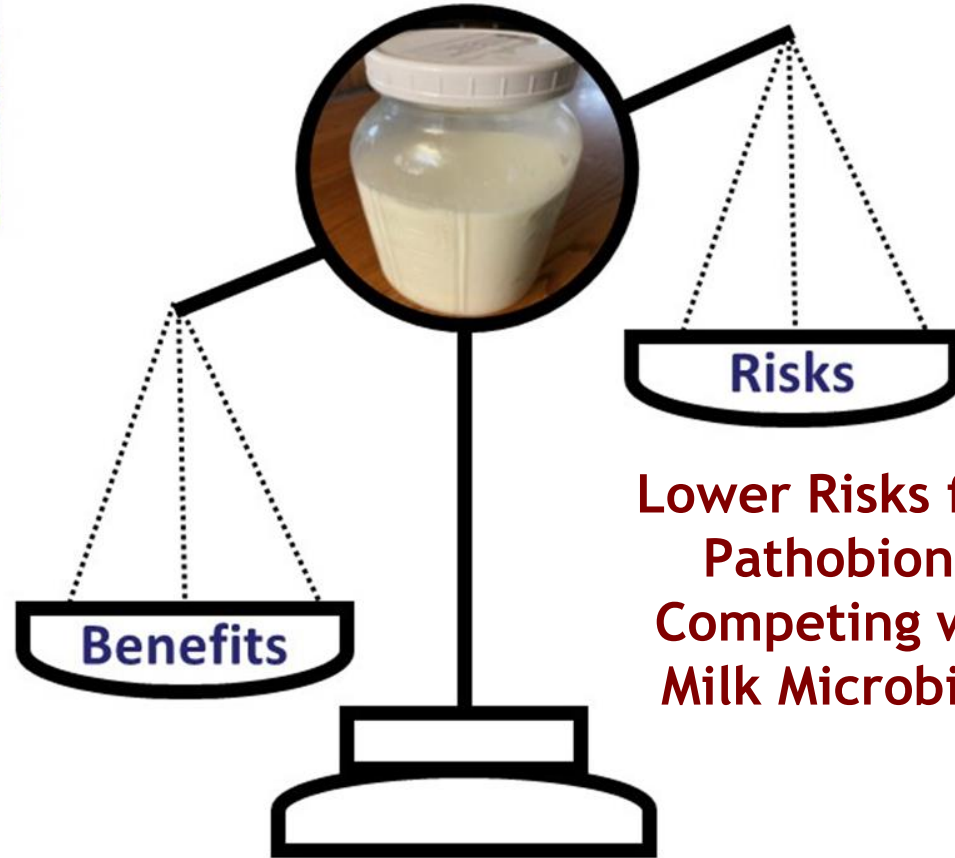
Appl. Microbiol. 2022, Volume 2, Issue 1, 25-52



BENEFITS OUTWEIGH RISKS FOR RAW MILK MICROBIOTA



Microbiota-Laden Complete Food Benefits the Immune System, Reducing Risks of Illness



Dietert et al., 2022. Nourishing Human Holobiont to Reduce Risk of Non-Communicable Diseases: A Cow's Milk Evidence Map Example. *Applied Microbiology*

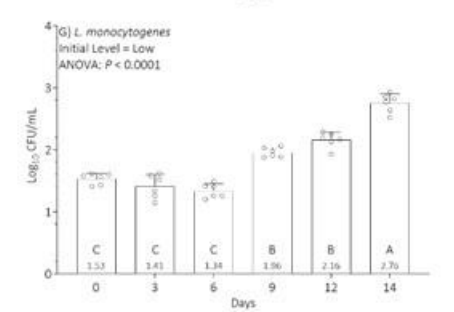
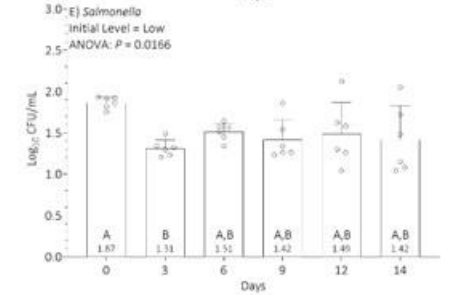
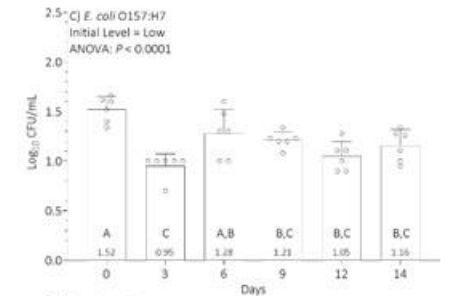
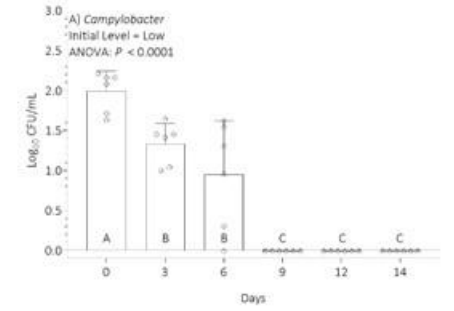
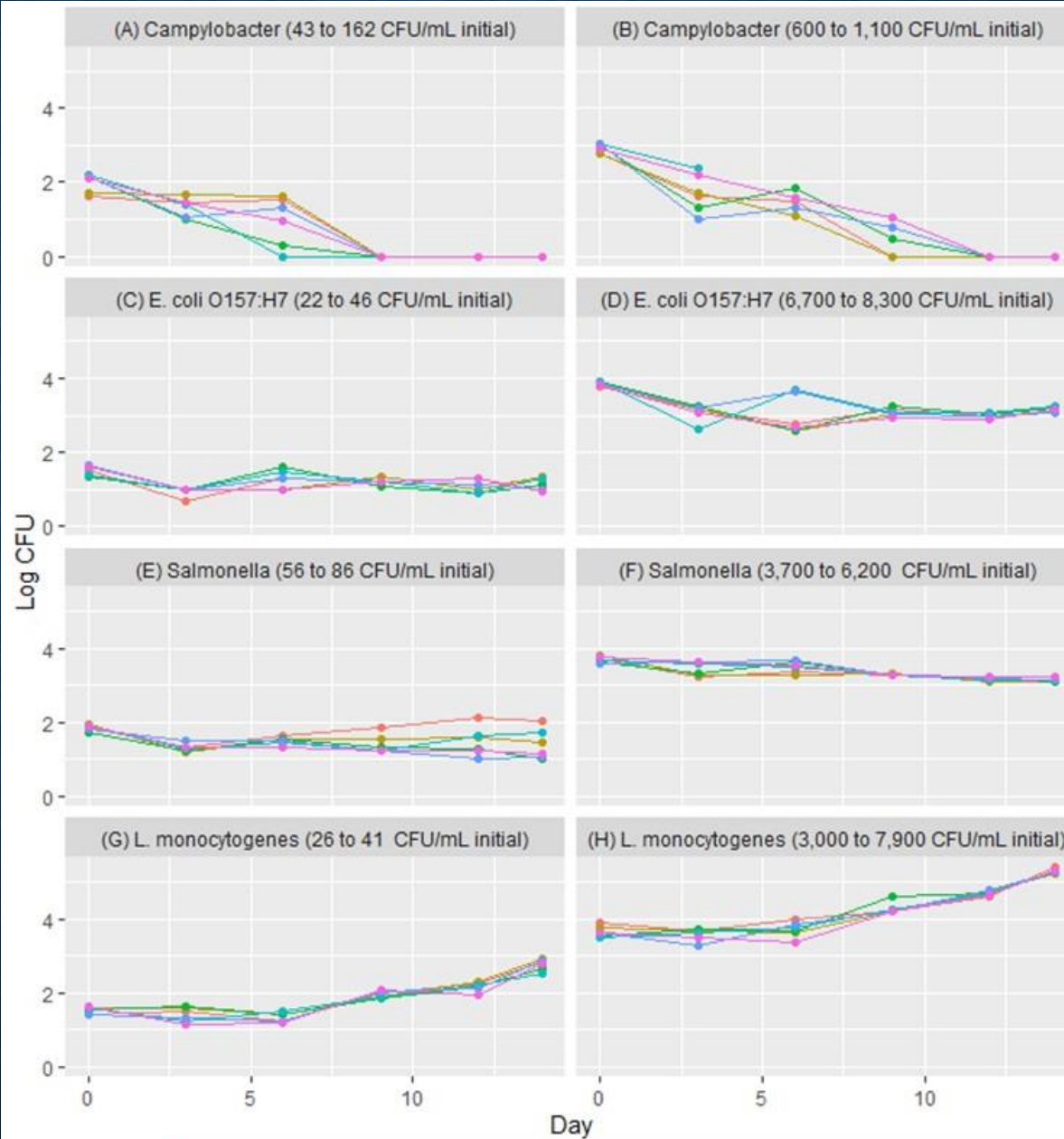
Coleman et al., 2023. Suppression of Pathogens in Properly Refrigerated Raw Milk. *PLOS ONE*

EXTREMELY LOW PERCENTAGE POSITIVES FROM RAW MILK MONITORING PROGRAMS IN US AND AROUND THE WORLD

Recent Results from Pathogen Testing for Raw Milk from 6 Countries	<i>Campylobacter</i>	<i>E. coli</i> O157:H7 or EHECs	<i>L. monocytogenes</i>	<i>Salmonella</i>
PERCENTAGE POSITIVE	93/9,740 (0.01%)	26/10,934 (<0.01%)	40/9,118 (<0.01%)	14/7,976 (<0.01%)

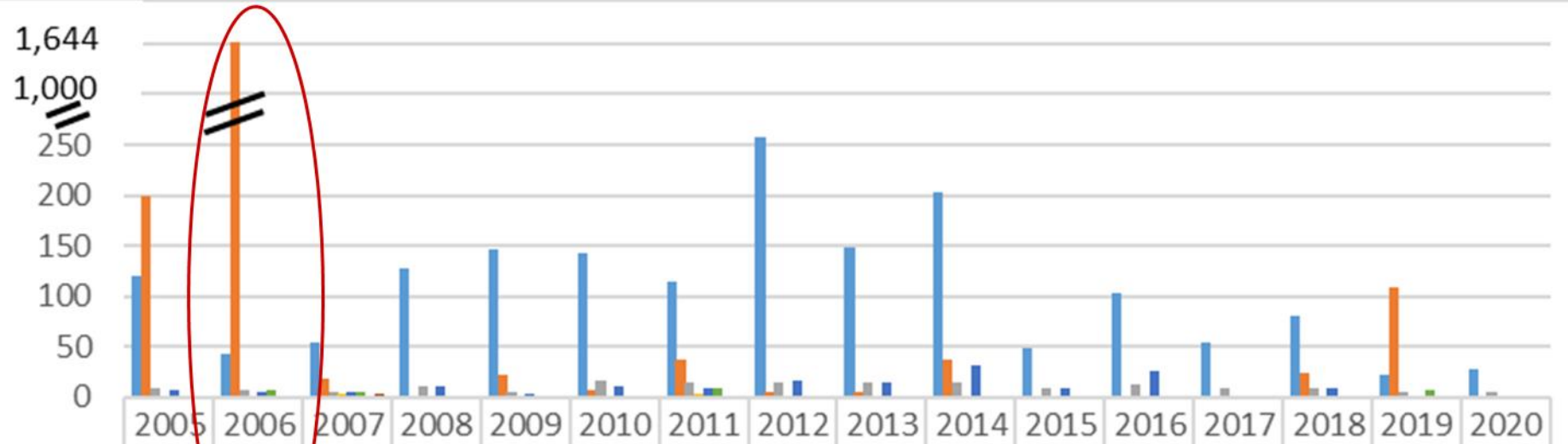
From Table 1 in peer-reviewed publication by Dietert and colleagues (2022; full table appended)

PATHOGEN SUPPRESSION IN RAW MILK



SUPPLEMENTARY SLIDES

TRENDS OF MILKBORNE ILLNESS (CDC, 2005-2020)



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
■ Illness - unpasteurized	120	43	54	128	147	143	115	258	148	203	48	104	54	81	22	28
■ Illness - pasteurized	200	1644	19		22	7	37	6	5	38				24	109	
■ Outbreaks - unpasteurized	9	7	6	11	5	16	15	14	14	14	10	13	9	9	5	5
■ Outbreaks - pasteurized	1	1	3		1	2	3	1	1	2				2	1	
■ Hospitalizations - unpasteurized	8	6	5	11	3	12	10	17	15	32	10	26	2	10	2	1
■ Hospitalizations - pasteurized	1	7	5		0	0	10	0	1	0				1	7	
■ Deaths - unpasteurized	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
■ Deaths - pasteurized	0	0	3		0	0	1	0	0	0				0	0	

FDA/USDA Listeriosis Risk Assessment

(Summary Table 1, 2003)

- RESULTS:**

Pasteurized AND Raw Milk
High Risk

- Only simulated servings containing very high levels (>10,000 pathogen cells per serving) associated with illness

Relative Risk Ranking	Predicted Median Cases of Listeriosis for 23 Food Categories					
	Per Serving Basis ^a		Per Annum Basis ^b			
	Food	Cases		Food	Cases	
1	High Risk	Deli Meats	7.7x10 ⁻⁸	Very High	Deli Meats	1598.7
2		Frankfurters, not reheated	6.5x10 ⁻⁸	High Risk	Pasteurized Fluid Milk	90.8
3		Pâté and Meat Spreads	3.2x10 ⁻⁸		High Fat and Other Dairy Products	56.4
4		Unpasteurized Fluid Milk	7.1x10 ⁻⁹	Moderate Risk	Frankfurters, not reheated	30.5
5		Smoked Seafood	6.2x10 ⁻⁹		Soft Unripened Cheese	7.7
6		Cooked Ready-to-Eat Crustaceans	5.1x10 ⁻⁹		Pâté and Meat Spreads	3.8
7	Moderate Risk	High Fat and Other Dairy Products	2.7x10 ⁻⁹	Moderate Risk	Unpasteurized Fluid Milk	3.1
8		Soft Unripened Cheese	1.8x10 ⁻⁹		Cooked Ready-to-Eat Crustaceans	2.8
9		Pasteurized Fluid Milk	1.0x10 ⁻⁹		Smoked Seafood	1.3
10	Low Risk	Fresh Soft Cheese	1.7x10 ⁻¹⁰	Low Risk	Fruits	0.9
11		Frankfurters, reheated	6.3x10 ⁻¹¹		Frankfurters, reheated	0.4
12		Preserved Fish	2.3x10 ⁻¹¹		Vegetables	0.2
13		Raw Seafood	2.0x10 ⁻¹¹		Dry/Semi-dry Fermented Sausages	<0.1
14		Fruits	1.9x10 ⁻¹¹		Fresh Soft Cheese	<0.1
15		Dry/Semi-dry Fermented Sausages	1.7x10 ⁻¹¹		Semi-soft Cheese	<0.1
16		Semi-soft Cheese	6.5x10 ⁻¹²		Soft Ripened Cheese	<0.1
17		Soft Ripened Cheese	5.1x10 ⁻¹²		Deli-type Salads	<0.1
18		Vegetables	2.8x10 ⁻¹²		Raw Seafood	<0.1
19		Deli-type Salads	5.6x10 ⁻¹³		Preserved Fish	<0.1
20		Ice Cream and Other Frozen Dairy Products	4.9x10 ⁻¹⁴		Ice Cream and Other Frozen Dairy Products	<0.1
21		Processed Cheese	4.2x10 ⁻¹⁴		Processed Cheese	<0.1
22		Cultured Milk Products	3.2x10 ⁻¹⁴		Cultured Milk Products	<0.1
23	Hard Cheese	4.5x10 ⁻¹⁵	Hard Cheese	<0.1		

Mammalian Milk Microbiota NOT Fecal Contamination!

Shared Microbes in Breastmilk and Ruminant Milks

Human

Ralstonia
Roseburia
Clostridium
Corynebacterium
Faecalibacterium
Lactobacillus
Bifidobacterium
Propionibacterium
Pseudomonas
Staphylococcus
Streptococcus
Bacteroides
Acinetobacter
Veillonella
Lachnospiraceae
Ruminococcaceae
Enterococcus
Prevotella
Weissella
Leuconostoc
Lactococcus
Citrobacter
Serratia

Cow

Microbacterium
pediococcus
Fusobacterium
Propionibacterium
Acinetobacter
Bifidobacterium
Pseudomonas
Staphylococcus
Streptococcus
Lachnospiraceae
Corynebacterium
Bacteroides
Enterococcus
Ruminococcaceae
Aerococcus
Jeotgalicoccus
Psychrobacter
Enterobacter

Water buffalo

Micrococcus
5-7N15
Solibacillus
Propionibacterium
Pseudomonas
Staphylococcus
Aerococcus
Clostridium
Facklamia
Trichococcus
Turicibacter
Acinetobacter
Psychrobacter

Goat

Micrococcus
Rhodococcus
Arthrobacter
Stenotrophomonas
Pseudomonas
Staphylococcus
Streptococcus
Phyllobacterium
Rhizobium
Agrobacterium
Bacillus

Sheep

Enterococcus
Bifidobacterium
Lactobacillus
Pseudomonas
Staphylococcus
Streptococcus
Corynebacterium
Bacillus
Methylobacterium
Escherichia

I, Margaret E. (Peg) Coleman, MS, am a medical microbiologist and risk analyst specializing in benefit and risk assessments for microbial pathogens and food safety. My credentials include two graduate degrees and more than 30 years of experience in microbial risk analysis, initially for USDA and currently as a consultant. My appended resume documents previous expert testimony for multiple court cases and an extensive body of work relevant to raw milk microbes beginning in 2014. My expertise in microbial risk analysis is recognized in the US and internationally, evidenced by my recognition as a Fellow of the Society for Risk Analysis (SRA) in 2020, as an elected Counselor of SRA (2022-2024), and on the Advisory Board of the Raw Milk Institute (RAWMI).

An extensive body of evidence is cited herein, in my written testimony and a supporting slide set. No scientific evidence supports the claim that raw milk produced for direct human consumption in the 21st century is inherently dangerous, for human breastmilk or milk from cows and goats.

Please pass this bill and permit consumers to choose real milk, fresh and unprocessed, complete with its natural beneficial microbiota illustrated in my supplemental slides.

Overview

My testimony is based on current evidence and peer-reviewed analyses that contradict major misconceptions about raw milk commonly offered without scientific support by individuals and organizations with pro-pasteurization biases. Slide 3 of the slide set includes the 6 points listed below and provides data and charts from peer-reviewed studies, including a manuscript on a dataset on US outbreaks provided by the Centers for Disease Control and Prevention (CDC) for reporting years 2005-2020. Relevant references are cited herein.

1. **Neither pasteurized nor raw milk is risk free.** My testimony today is based on CDC data for 2005-2020, the most recent 16 years of data available when requested. These data document significant numbers of pasteurized milk illnesses. Over 2000 illnesses were attributed to pasteurized milk in this period. (55%; 2,099 of 3,795 milkborne illnesses).
2. The **CDC data (2005-2020) do NOT support increasing raw milk illness with increasing access.** Charts and statistics from a manuscript on trends of these data (currently under review in an epidemiology journal), as well as additional data on trends in California and New York states, are included herein.
3. FDA/USDA (2003) found **both pasteurized and raw milks high risk** of listeriosis, but independent academic researchers (Latorre et al., 2011) subsequently estimated very low risk for raw milk.
4. **Subsequent peer reviewed studies** (Coleman et al., 2023; Waller et al., 2024) document **pro-pasteurization bias in the FDA/USDA 2003 assessment**, identified using the Risk Analysis Quality Test (RAQT) of the Society for Risk Analysis.

5. **Pasteurized milk** was associated with **significantly higher risks** of severe listeriosis and death than raw milk in a **recent systematic review for North America** (Sebastianski et al., 2022)
6. **Two peer-reviewed studies mapped extensive benefits** and **some evidence of risks** for **both pasteurized and raw milks** from humans and cows (slide 13).

Specific Testimony with Reference to Slide Numbers

1. CDC Dataset for 2005-2020

The CDC dataset documents that of the total of 3,807 illnesses reported for fluid milk from 2005-2020, pasteurized milk was associated with 18 outbreaks, 2,111 illnesses, 32 hospitalizations, and 4 deaths, and raw milk was associated with 162 outbreaks, 1,696 illnesses, 170 hospitalizations, and 2 deaths in 37 of 50 U.S. states. See slides 5-7 and supplemental slide 20 for charts documenting these results.

2. Additional Data Sources

Additional data from the states of California (CA) and New York (NY) are presented in combination with the CDC data for raw milk outbreaks reported in these states from 2005-2020. Slides 8 and 9 provide data on trends in retail raw milk production from one CA dairy and CDC outbreak data, as well as an estimate of risk at less than 1 illness in 20 million servings (250 mL). Slides 10 and 11 provide data on trends in NY state-licensed farms and CDC outbreak data.

3. FDA/USDA Listeriosis Risk Assessment (2003)

The US Food and Drug Administration and the USDA Food Safety and Inspection Service (FDA/FSIS, 2003) conducted a Quantitative Microbial Risk Assessment (QMRA) for severe listeriosis in 23 ready-to-eat foods include both pasteurized and raw milk. Slide 12 provides estimates from the FDA/FSIS assessment, along with updated estimates from independent academic researchers (Latorre et al., 2011). Supplemental slide 21 provide the FDA/FSIS Summary Table documenting the results of the QMRA in estimated risk per serving (middle column) and per annum (right column).

FDA/FSIS predicted moderate to high risk for both pasteurized and raw milk. Notably, the independent researchers updated assessment predicted very low risk (2 cases in 1,000,000,000,000 exposures) for unpasteurized milk.

New research now available in 2024 would even further lower the estimated risks for unpasteurized milks. The summary table in Slide 15 illustrates results from pathogen testing programs for raw milk from 6 countries including the US. Overall percentage positive rates were $\leq 0.01\%$ for each of the four major pathogens of concern for raw milk, representing $\sim 8,000$ to 11,000 samples for each pathogen. The full table was published in Dietert et al. (2022), and the QR code for this study is provided on slide 13.

A recent pathogen growth study in raw milk that warrants your consideration was conducted by an independent certified laboratory (FSNS, 2022). Raw milk stored for a week at the refrigeration temperature recommended by FDA and USDA, 4.4°C or 40°F, did not support growth of any of the four major pathogens of concern (Slide 8). A manuscript based on the FSNS study (Coleman et al., 2023) documents suppression, not

growth of pathogens, representing further reduction in the estimated risks for raw milk in the 2003 QMRA would because FDA/FSIS had assumed growth in their model.

Slide 16 includes charts from the 2023 study (Coleman et al., 2023) documenting the invalid assumption of FDA/FSIS that the pathogen grew at refrigeration temperatures in raw milk. This study and Waller et al. (2024) further document the pro-pasteurization biases that underestimated risk of pasteurized milk and overestimated risk of raw milk.

This evidence is inconsistent with the common assumption that raw milk is inherently dangerous because it may contain pathogens when reality is that detection of pathogens is uncommon and none of the pathogens contributing to raw milk illnesses grow in raw milk at stored at the proper temperature.

4. Risk Analysis Quality Test (RAQT) of the Society for Risk Analysis

The need for periodic reassessment of QMRAs as science advances is widely acknowledged, and the RAQT of the SRA provides a tool for independently assessing analysis quality. Slides 13 and 14 provide highlights of work applying the RAQT to the FDA/FSIS 2003 assessment.

5. Pasteurized Milk Risk of Listeriosis from Systematic Review

The peer-reviewed study by Sebastianski et al. (2022) documented that **pasteurized milk** was associated with **significantly higher risks** of severe listeriosis and death than raw milk. The full reference is provided below.

6. Evidence Maps, First Simultaneous Consideration of Benefits and Risks

Slide 15 provides the QR codes for three extensively documented studies in a special collection of the journal *Applied Microbiology*. The available body of evidence is described in detail for breastmilk in Coleman et al., 2021 and for cow milk in Dietert and colleagues (2022).

The extensive body of scientific evidence available is inconsistent with the assumption that raw milk is inherently dangerous. On the contrary, the body of evidence supports raw milk with its dense and diverse natural microbiota (Oikonomou et al., 2020, supplementary slide 22) as a healthful food that is beneficial for children and adults.

Recommendation:

I urge the committee to consider the evidence presented herein (and described in detail in my peer-reviewed publications) and pass HAWAII HB1989.

Respectfully,

Margaret E. Coleman

Margaret E. Coleman

Coleman Scientific Consulting

434 W Groton Road, Groton, NY 13073-9784

peg@colemanscientific.org | (315) 729 – 3995

Key References

- Abbring, S.; Kusche, D.; Roos, T.C.; Diks, M.A.P.; Hols, G.; Garssen, J.; Baars, T.; van Esch, B.C.A.M. Milk Processing Increases the Allergenicity of Cow's Milk-Preclinical Evidence Supported by a Human Proof-of-Concept Provocation Pilot. *Clin Exp Allergy* 2019, 49, 1013–1025, doi:10.1111/cea.13399.
- Abe, H.; Takeoka, K.; Fuchisawa, Y.; Koyama, K.; Koseki, S. A New Dose-Response Model for Estimating the Infection Probability of *Campylobacter* Jejuni Based on the Key Events Dose-Response Framework. *Appl Environ Microbiol* 2021, 87, e01299-21, doi:10.1128/AEM.01299-21.
- Alsan, M.; Goldin, C. Watersheds in Child Mortality: The Role of Effective Water and Sewerage Infrastructure, 1880 to 1920. *J Polit Econ* 2019, 127, 586–638, doi:10.1086/700766.
- Berge, A.C.; Baars, T. Raw Milk Producers with High Levels of Hygiene and Safety. *Epidemiol Infect* 2020, 148, e14, doi:10.1017/S0950268820000060.
- Centers for Disease Control and Prevention (CDC) Microsoft Access® Data Set Including All Transmission Sources (Food, Water, Animal Contact, Environmental, Person-to-Person) for Years 2005 – 2020. Provided to MEC by Hannah Lawinger, NORS Data Request Manager, on July 20, 2021. 2021.
- Coleman, M.E.; Oscar, T.P.; Negley, T.L.; Stephenson, M.M. Suppression of Pathogens in Properly Refrigerated Raw Milk. *PLOS ONE* 2023, 18, e0289249, doi:10.1371/journal.pone.0289249.
- Coleman, M.E., Dietert, R.R., North, D.W., Stephenson, M.M. 2021. Enhancing Human Superorganism Ecosystem Resilience by Holistically 'Managing Our Microbes'. *Applied Microbiology* 1(3): 471-497. <https://doi.org/10.3390/applmicrobiol1030031>.
- Coleman, M.E., North, D.W., Dietert, R.R., Stephenson, M.M. 2021. Examining Evidence of Benefits and Risks for Pasteurizing Donor Breastmilk. *Applied Microbiology* 1(3):408-425. <https://doi.org/10.3390/applmicrobiol1030027>.
- Condran, G.A.; Crimmins, E. Mortality Differentials between Rural and Urban Areas of States in the Northeastern United States 1890-1900. *J Hist Geogr* 1980, 6, 179–202, doi:10.1016/0305-7488(80)90111-5.
- Crimmins, E.M.; Condran, G.A. Mortality Variation in U.S. Cities in 1900: A Two-Level Explanation by Cause of Death and Underlying Factors. *Soc Sci Hist* 1983, 7, 31–60.
- Dietert, R.R.; Dietert, J.M. Twentieth Century Dogmas Prevent Sustainable Healthcare. *Am J Biomed Sci Res* 2021, 13, 409–417, doi:10.34297/AJBSR.2021.13.001890.
- Dietert, R.R., Coleman, M.E., North, D.W., Stephenson, M.M. 2022. Nourishing the Human Holobiont to Reduce the Risk of Non-Communicable Diseases: A Cow's Milk Evidence Map Example. *Applied Microbiology* 2(1):25-52. <https://doi.org/10.3390/applmicrobiol2010003>.

- Egan, M. Organizing Protest in the Changing City: Swill Milk and Social Activism in New York City, 1842–1864. *New York History* 2005, 86, 205–225.
- EFSA Panel on Biological Hazards (BIOHAZ) Scientific Opinion on the Public Health Risks Related to the Consumption of Raw Drinking Milk. *EFSA Journal* 2015, 13, 3940, doi:10.2903/j.efsa.2015.3940.
- Farber, J.M.; Zwietering, M.; Wiedmann, M.; Schaffner, D.; Hedberg, C.W.; Harrison, M.A.; Hartnett, E.; Chapman, B.; Donnelly, C.W.; Goodburn, K.E. Alternative Approaches to the Risk Management of *Listeria Monocytogenes* in Low Risk Foods. *Food Control* 2021, 123, 107601.
- Feigenbaum, J.J.; Muller, C.; Wrigley-Field, E. Regional and Racial Inequality in Infectious Disease Mortality in U.S. Cities, 1900-1948. *Demography* 2019, 56, 1371–1388, doi:10.1007/s13524-019-00789-z.
- Food and Drug Administration and USDA Food Safety and Inspection Service (FDA/FSIS). 2003. Interpretive Summary: Quantitative assessment of relative risk to public health from foodborne *Listeria monocytogenes* among selected categories of ready-to-eat foods. Accessed on September 17, 2015 at <http://www.fda.gov/Food/FoodScienceResearch/RiskSafetyAssessment/ucm183966.htm>.
- Heckman, J.R. Securing Fresh Food from Fertile Soil, Challenges to the Organic and Raw Milk Movements. *Renew. Agric. Food Syst.* 2017, 34, 472–485, doi:10.1017/S1742170517000618.
- Hill, C. RDA for Microbes — Are You Getting Your Daily Dose? *The Biochemist* 2018, 40, 22–25, doi:10.1042/BIO04004022.
- Institute of Food Technologists (IFT) Chapter 3: Factors That Influence Microbial Growth: Evaluation and Definition of Potentially Hazardous Foods. 2001 Report Prepared for the Food and Drug Administration, Center for Food Safety and Applied Nutrition. *Comprehensive Reviews in Food Science and Food Safety* 2003, 2S, 21–32.
- Interagency Food Safety Analytics Collaboration (IFSAC) Foodborne Illness Source Attribution Estimates for 2017 for *Salmonella*, *Escherichia Coli* O157, *Listeria Monocytogenes*, and *Campylobacter* Using Multi-Year Outbreak Surveillance Data, United States.; U.S. Department of Health and Human Services, CDC, FDA, USDA-FSIS: GA and DC, 2019.
- Interagency Food Safety Analytics Collaboration (IFSAC) Foodborne Illness Source Attribution Estimates for 2020 for *Salmonella*, *Escherichia Coli* O157, and *Listeria Monocytogenes* Using Multi-Year Outbreak Surveillance Data, United States.; U.S. Department of Health and Human Services, CDC, FDA, USDA-FSIS: GA and DC, 2022.
- Koski, L.; Kisselburgh, H.; Landsman, L.; Hulkower, R.; Howard-Williams, M.; Salah, Z.; Kim, S.; Bruce, B.B.; Bazaco, M.C.; Batz, M.B. Foodborne Illness Outbreaks Linked to Unpasteurised Milk and Relationship to Changes in State Laws—United States, 1998–2018. *Epidemiology & Infection* 2022, 150, e183.

- Latorre, A.A., Pradhan, A.K., Van Kessel J.A., Karns J.S., Boor K.J., Rice D.H., Mangione K.J., Gröhn Y.T., Schukken Y.H. 2011. Quantitative risk assessment of listeriosis due to consumption of raw milk. *Journal of Food Protection* 74(8):1268-81.
- Marco, M.L.; Hill, C.; Hutkins, R.; Slavin, J.; Tancredi, D.J.; Merenstein, D.; Sanders, M.E. Should There Be a Recommended Daily Intake of Microbes? *J Nutr* 2020, 150, 3061–3067, doi:10.1093/jn/nxaa323.
- North, D.W., Coleman, M.E., Hull, R.R. 2022. Need for International Workshops to Deliberate Evidence of Benefits and Risks of Raw Milks. Accepted in *Corpus Journal of Dairy and Veterinary Science*.
- Obladen, M. From Swill Milk to Certified Milk: Progress in Cow’s Milk Quality in the 19th Century. *Ann Nutr Metab* 2014, 64, 80–87, doi:10.1159/000363069.
- Oikonomou, G., Addis, M. F., Chassard, C., Nader-Macias, M. E. F., Grant, I., Delbès, C., ... & Even, S. 2020. Milk microbiota: what are we exactly talking about?. *Frontiers in Microbiology*, 11, 60.
- Pouillot, R.; Klontz, K.C.; Chen, Y.; Burall, L.S.; Macarisin, D.; Doyle, M.; Bally, K.M.; Strain, E.; Datta, A.R.; Hammack, T.S. Infectious Dose of *Listeria Monocytogenes* in Outbreak Linked to Ice Cream, United States, 2015. *Emerging infectious diseases* 2016, 22, 2113.
- Sebastianski, M.; Bridger, N.A.; Featherstone, R.M.; Robinson, J.L. Disease Outbreaks Linked to Pasteurized and Unpasteurized Dairy Products in Canada and the United States: A Systematic Review. *Canadian Journal of Public Health* 2022, 113, 569–578.
- Society for Risk Analysis Applied Risk Management Specialty Group Member Risk Analysis Quality Test Available online: <https://www.sra.org/resources/risk-analysis-quality-test/>.
- Stasiewicz M.J., Martin N., Laue S., Gröhn Y.T., Boor K.J., Wiedmann M., et al. 2014. Responding to bioterror concerns by increasing milk pasteurization temperature would increase estimated annual deaths from listeriosis. *J Food Protection* 77:696e–712.
- Whitehead J., Lake B. 2018. Recent Trends in Unpasteurized Fluid Milk Outbreaks, Legalization, and Consumption in the United States. *PLoS currents* Sep 13;10. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6140832/>.
- Wikswo, M.E.; Roberts, V.; Marsh, Z.; Manikonda, K.; Gleason, B.; Kambhampati, A.; Mattison, C.; Calderwood, L.; Balachandran, N.; Cardemil, C. Enteric Illness Outbreaks Reported through the National Outbreak Reporting System—United States, 2009–2019. *Clinical Infectious Diseases* 2022, 74, 1906–1913.

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