

Wisconsin Senate Agriculture and Higher Education and
Assembly Rural Economic Development
Committees

Written Statement March 10, 2010 by Dr. Ted Beals

Chairs Vinehout and Garthwaite and Committee members

First, thank you for making it possible for me to speak about Assembly Bill 628 and Senate Bill 434.

I am Ted Beals. I live in Waterloo, in south central Michigan. I am a physician retired after 31 years on the faculty of the University of Michigan Medical School's Department of Pathology, and from service in the Veterans Health Administration. During the final 8 years I served in the Senior Executive Service of the Department of Veterans Affairs in Washington DC as the Director of Pathology and Laboratory Service and overseeing all diagnostic services in the nation's VA Medical Centers. I am a consultant and have testified across the country and in Canada on benefits, safety and testing of raw milk.

In Michigan, where I live, raw milk is defined in the dairy laws as: "milk destined for pasteurization", so I may occasionally use the phrase farm fresh unprocessed whole milk, which is the term we use for the milk being discussed today.

The reason that families all over the country are driving long distances and paying premium amounts for farm fresh whole milk is because of the nutritional and health benefits. These benefits are readily recognized by health experts, researchers and government agencies. They are not controversial. I attached with this statement a summary prepared by the Michigan Fresh Unprocessed Whole Milk Workgroup. Members of the workgroup were invited to discuss how to make fresh whole milk available to the people of Michigan that want their milk unprocessed. Below is the website for this workgroup, which lists the members, the goal, and the list of Topics they are discussing. The attachment is directly from the website on Topic 2, Benefits and Values. This is a comprehensive consensus summary and I urge you to read it. <http://www.miffs.org/MIfuwmilk/>

What is controversial is whether people should be allowed access to fresh unprocessed whole milk. Some extremely vocal and powerful individuals repeatedly tell the public that this milk is inherently hazardous and is an imminent public health threat.

It is obvious, but needs to be constantly repeated; *if milk had been hazardous to the individuals in large numbers of communities that have been consuming it, the drinking of milk would have disappeared centuries ago.*

In a ludicrous hypocrisy, it is universally legal for people to drink this milk, but dairy farm families in many states are not allowed to earn a living selling it! And at the federal level, it is stated policy that this fresh farm whole milk can not be transported from one state to another; even when it is legal to sell it in those two states.

I know that warnings stating raw milk is hazardous are common. But I present for your review the attached graphs that show national outbreaks “attributed” to “raw milk”. The upper graph is for illnesses. The lower graph is numbers of individual outbreaks.

- Overall there is essentially no difference in the pattern of the two graphs. Illnesses or outbreaks ;
- There is a preponderance of incidents attributed to campylobacter;
- These are extremely low numbers of illnesses, specifically they are an insignificant number of the total foodborne illnesses, estimated to be at least 76 million per year; and
- As is true when there are such low numbers, the display is most consistent with random isolated events rather than any trend.

When ever someone talks about the extremely low numbers of incidents of illness with raw milk, it is pointed out that the numbers are low because so few people drink raw milk. Based on an extensive survey conducted about 7 years ago, the CDC determined that there were 3 1/2 million people drinking raw milk. I am unaware of any hard data on the actual number currently drinking raw milk. But there is no question that the numbers of households obtaining raw milk have been increasing dramatically over the last decade. My personal experience suggests a five fold increase. Based on the increase in newly licensed raw milk dairies in various states it has been even more than that. If outbreak numbers have been low because of low consumption, note that neither of these graphs indicate any dramatic upward trend in illnesses or outbreaks over the last years despite the huge increase in raw milk consumption.

And to emphasize that the numbers are remarkably low, data shows that more people are killed on golf courses from lightning strikes than die or even suffer serious complications from drinking raw milk. And for a more practical comparison, using national data, a person is at greater risk of injury driving to work, than possibly becoming ill from drinking raw milk every day of the year. And even more interesting, a person drinking raw milk regularly is at greater risk of injury driving to pick up milk once each week, then drinking milk every day.

It is generally accepted that most current milkborne illnesses are not transmitted from sick cows, either with mastitis or systemic disease. In published reports on outbreaks, “contaminants” that enter the milk during milking, handling and storage are considered the source of the human illnesses. Contaminants are usually attributed to the ever present manure in the dairy environment

[*Listeria monocytogenes* is an exception to this, since it is ubiquitous in the natural environment. But even though *L. monocytogenes* is nearly always listed as a common pathogen, CDC reports from 1973 through 2006, and the large database collected by the Center for Science in the Public Interest, did not find a single milkborne outbreak associated with this bacterium. The only case reported since those databases were collected, was from a Grade A pasteurized dairy in Massachusetts].

Starting with the Medical Milk Commissions at the turn of the 20th century and continued in the existing Pasteurized Milk Ordinance and state dairy regulations, protecting public health is focused on sanitation. The major argument for pasteurization is that it is the only way to eliminate the potential for pathogen contamination. The reason being that because milk is such a “nutritious media for bacteria”, they must be totally eliminated. Although counter intuitive to biologists, the facts clearly show that fresh milk is a very unfriendly environment for the common human pathogens. There are many bactericidal and bacteriostatic factors in fresh milk including the lactoperoxidase system, lysozymes, and lactoferrin. These are well documented and accepted as active in fresh milk. Added to this are the competitive inhibition effects of “probiotic” organisms that are present in fresh milk.

There are several scientific facts that challenge the unscientific conclusion that raw milk is hazardous.

- 1) It is a common error to simply label the bacteria that cause foodborne illnesses in people with the “genus species” name; for example: *Campylobacter jejuni*.
- 2) Factors that enable colonization and associated shedding of “pathogenic bacteria” in domestic animals (dairy cows) are not the same as the factors that enable infectivity and illness in humans.

Although these appear very technical, they are extremely important and I will briefly expand on them.

There has been considerable recent research on the specific factors in human pathogens that enable them to make people sick.

For example:

the ability of the bacteria to migrate out of the digestive tract; then to find acceptable environments for growth in our bodies; and once established, to cause specific illness.

These factors are complex and remarkably variable for the different pathogens. Many of these virulence factors are not inherited, but have been added to the virulent bacteria by horizontal transmission via phage infection. But the point I wish to emphasize is that these virulence factors are present in only a small number of the many subtypes within the named pathogen species. *E. coli* O157:H7 which is a very uncommon subtype of the very common and beneficial *E. coli* is a good example. In this pathogen the “O157: H7” indicates that it is number 157 in the list of “O” *E. coli* subtypes and number 7 in the list of “H” *E. coli* subtypes.

Therefore, the presence of a named pathogen does not mean the presence of a subtype of that bacteria that is virulent in humans. It is totally inaccurate to say that *E. coli* are pathogens. But the same is true for *Campylobacter jejuni*, Salmonella and *Listeria monocytogenes*. Only a few subtypes of each of these can actually cause illness in people. Many businesses, including dairies are now suffering the economic and public relation consequences of this scientific fact. The public is notified that they have found Salmonella in some food -- there are recalls -- but no one becomes sick. Not because the food was removed from the shelves, but because the

particular subtype of Salmonella that was found was not one of the types that can cause people to become sick.

It is important to clarify the distinction between what I just said and when there are reports of illness. When the health department is investigating an outbreak, the positive cultures isolated from people with diarrhea are obviously a virulent subtype of the reported pathogen. And if in their investigation they find a pathogen in a food product and it “matches” the isolate from the sick people, then that also must be a subtype that is virulent since it matched. It becomes a problem when you isolated a pathogen from some food, and there are no illnesses to match. When reporting “contaminations” of food, the burden is on the agency to determine before the announcement, that the isolate is a subtype that is known to cause illness in people and would therefore be a public health threat.

The second point is that the major human “pathogens” (*Campylobacter jejuni*, Salmonella, *E. coli* O157:H7 and *Listeria monocytogenes*) only rarely cause disease in dairy cows. They can occasionally be found in fresh feces from dairy cows. But when present they have been found to be temporary colonizers in the cow’s intestine, without infection, and are shed, in very small numbers in their feces. It is now understood that the ability to colonize in cows is not the same as those complex factors that are necessary to cause illness in humans. And with current research we are beginning to learn which farm management practices are able to minimize these incidents of colonization in the dairy herd.

The public health impact of actual milkborne illnesses is far less than the prediction of the alarmists that insist that the distribution of raw milk must not be allowed to expand.

You have heard, or probably will hear about the prevalence of “pathogens” in farm storage tank milk. I do not dispute these findings. Competent research, valid sampling, undeniable microbiology shows that from 10-30% of bulk tank milk contains at least one named pathogen. Based on published prevalence in farmer’s bulk tanks (raw milk) we should expect at least 1 out of 10 pathogen tests to be positive.

However, as I research test results of raw milk suppliers from around the country, positive results are in fact rare. My data document that less than 1 in 500 report the possible presence of a pathogen. As more states perform regulatory pathogen testing on raw milk, the evidence is becoming well documented.

Furthermore, I am unaware of instances in which a positive regulatory pathogen test was confirmed on repeat samples or even on “split samples”. Far more important from a public health perspective; in all of the cases of presumptive positive regulatory samples, no person has been discovered to have been sick from consuming that specific farm milk. In all these cases the warning that the milk tested positive for the presence of some pathogen, came after the milk from that farm tank had already been distributed and consumed, without anyone getting sick. These findings are particularly important when you realize that in most of the

states the specific households that received that “suspect” milk are known individually, and have usually been notified and asked if anyone was ill.

As a scientist, I am intrigued by this obvious contradiction between well documented prevalence of pathogens in bulk tank milk and the lack in fresh unprocessed milk. I am convinced this is not the result of difference in sampling or testing. But I strongly suspect that the difference is the management practices of the dairies. The research on bulk tank milk with significant pathogen prevalence has ALL been milk destined for pasteurization. I find it helpful to label this as “pre-pasteurized” milk. In contrast the fresh milk testing positive only rarely, is milk that has been produced specifically for consumption by people in the fresh unprocessed state. Furthermore at these dairies the consuming families are well known to the farmer, and those consumers know the source of their milk. These consumers not only know their farmer personally, but consider them “their farmer”.

I do not fully understand the critical factors in the management practices, but there are some very obvious differences. Pre-pasteurized milk comes from dairies with larger herds usually confined indoors, that are fed processed foods with high grain content, and where maximum volume and efficiency are the principle production drivers. At the dairies providing milk intended for consumption in the fresh unprocessed state, the herds are much smaller; most are pastured on grass and fed predominately forage. These farmers pay particular attention to the condition of the pasture soil, quality of the forage and health of the animals. Focus is on quality of the milk to meet the expectations of the consumers who pay a premium.

Although often unspoken these consumers are not simply against pasteurization, they want fresh WHOLE milk that tastes good and has a higher fat content. Some significant farm management practices, in addition to good sanitation, have been adopted by farmers that greatly reduce the prevalence and magnitude of the remarkably few virulent pathogens associated with milkborne illness. As our knowledge of best practices that minimize the colonization of “pathogens” in the herds expands, we can even further reduce the already minimal public health impact without having to pasteurize this fresh traditional food.

It is understandable that food safety regulators should be motivated to minimize public risk. And certainly many agency inspectors, investigators, and policy makers are sincerely motivated by a sense of responsibility to protect people. It becomes a concern when this motivation concludes, as one executive recently stated, that as a policy even one death is unacceptable. Yes any illness and certainly death is a genuine tragedy to the individuals and an empathetic community. And every outbreak must be aggressively investigated to determine if there was a breakdown of best practices, or to determine if new practices would have averted the outbreak. However, outbreaks should not be exploited to fuel the obsession of those that want to eliminate any access to raw milk. Responsible public health policy must start with the acknowledgment that our lives can never be totally free of risk. No food can ever be considered completely safe.

I urge you to support the bills before you. They represent a solid, well reasoned position that allows farm families to provide a quality product to knowledgeable consumers who not only

want this different milk, but are willing to pay a premium in recognition of the quality and the management practices of the producers. To do this you must put into perspective the individual horrific stories or exaggerated data presented by those obsessed with banning all consumption of raw milk. But this is not anything new for you. You have experienced similar instances, and tactics by those with strong feelings about a particular special interest. In this instance the proposed legislation focuses on a distinct product that is being sought by a significantly large population of the public, your constituents, farm fresh whole milk that is produced specifically for consumption in the unprocessed form. Careful analysis of the benefits and risks are presented.

It is argued that pasteurization is such an easy measure for guaranteeing milk safety. But a significant and rapidly expanding population of consumers, who want the nutritional and health benefits of milk, want it fresh from a farmer they trust. And to maximize those benefits they want that milk to be unprocessed. Government policy that overrides that choice based on reports of extraordinarily rare instances of milk illness and even much rarer serious complications is policy based on worse case scenarios and hysteria, rather than objective risk assessment!

Thank you. I would be glad to answer any questions or further clarify this important and complex topic.

Ted F. Beals, MS, MD
16100 Seymour Rd
Grass Lake, Michigan, 49240
Tedbeals@msn.com



Key Points

- ✓ **Reports of the extremely rare outbreaks and even rarer severe consequences of milkborne illness do not reflect the actual public health risk of raw milk.**
- ✓ **The simple naming with genus and species is an inaccurate means of identifying virulent pathogens. This error has serious regulatory and economic consequences.**
- ✓ **Distinct difference in farm management practices comparing the (a) commodity processed milk producers with (b) milk production intended for fresh unprocessed consumption, must be factored into the public health and regulatory policies. Pre-pasteurized milk and fresh unprocessed whole milk are both “raw milk” but they are different products.**
- ✓ **There is a large and rapidly expanding group of knowledgeable consumers who want fresh whole milk that has not been processed, and are willing to pay a premium to obtain it directly from their farmer.**

