



**Washington State
Department of Agriculture**

Small-Scale Dairies: Barriers to Licensing

Report to the Washington State Legislature

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Small-Scale Dairy Work group Members

- Carey Hunter, Pine Stump Farm – Okanogan County
- Tim Lukens, Grace Harbor Farms – Whatcom County
- Lorrie Conway, Conway Family Farms – Clark County
- Sarah Brown, Dungeness Valley Creamery – Clallam County
- Alexis Koester, Smith Brothers – King and Grant counties
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Executive Summary

As a part of legislation strengthening the state's dairy laws, the Washington State Department of Agriculture (WSDA) was directed to convene a short-term work group to identify and help resolve obstacles faced by small-scale dairies in their efforts to become licensed as milk producers and milk processors.

A 14-member work group was appointed that included small licensed pasteurized and raw milk producer/processors, larger dairy operators, public health officials, university experts, and industry and consumer advocates. Through a targeted industry survey and a series of meetings, mostly via conference calls, the work group gathered, reviewed and identified barriers and discussed potential solutions.

The work group identified barriers that can be sorted into three general categories:

1. Barriers related to the meeting WSDA requirements;
2. Barriers related to meeting requirements of other state and local agencies; and
3. Barriers related to starting and operating a small business.

This report concentrates on barriers related to the licensing process and potential solutions that directly relate to the Department of Agriculture.

Overall, the work group found the delivery of services, implementation of regulatory requirements, and information provided by WSDA to be accessible, appropriate and accurate. The work group members were in agreement that regulation of milk production and processing is necessary to protect public health, regardless of the size of the operation. No major barriers to obtaining a license were identified, however, minor barriers were recognized and improvements suggested in several areas.

Potential solutions suggested for reducing licensing barriers are expected to result in:

- Information that is easier to access and centrally located (i.e., Web site).
- Information that is more user-friendly.
- Examples, both visual and narrative, of acceptable and non-acceptable systems.
- Checklists that bridge multi-agency steps for start-up operations.
- Linking licensees and applicants to other available services and resources.
- Continued training and educational opportunities.

While some could be done with little to no additional funding, the work group recognized that most potential solutions would require additional resources to be implemented.

Barriers outside the purview of WSDA are noted in the report, as they are fundamental to the success of small-scale dairies. Small-scale dairies face the same challenges of any small business. A list of resources is included in the report for seeking possible solutions to those barriers and challenges.

Background

Growth in Small-Scale Dairies

Washington has experienced a resurgence of interest in small-scale dairy production and processing. This resurgence has coincided with an increase in small-scale agriculture production as consumer demand has increased for locally grown, high-quality fresh and processed foods. Examples of this trend can be found in the tremendous growth of farmers markets and the number of organic food producers in Washington.

Growth in small-scale dairy production and processing has been encouraged by the increased popularity of artisan cheeses, a push to improve farm economic vitality through value-added products and direct marketing, and a movement that promotes consumption of locally produced raw milk from pasture-fed cows.

In Washington, these factors have resulted in the doubling of the number of licensed milk processors in the state over the last five years. Between 2002 and 2005, WSDA issued licenses to 17 new small-scale milk processing operations, bringing the total number of milk processors to 46 by mid-2005. Most of the new small-scale processing operations manufacture pasteurized milk products or aged (raw milk) cheese products.

In working with licensing these new processors, WSDA became aware that the prohibition on hand capping in the state's dairy law was creating a barrier for new potential processors. In 2004, the department prepared a legislative proposal that would eliminate the requirement that milk processors use a mechanical capping method for bottling and capping milk and milk products. Enactment of Senate Bill 5039 in 2005, allowing for hand capping of milk bottles and other milk products, opened the door for a new set of processors to enter the market.

As of November 1, 2006, there are 64 licensed milk processing plants across the state, 47 of which are small-scale milk processing plants. The greatest growth has been in the number of licensed retail raw fluid milk producer/processors, which has increased from six to 22 since January 2006.

While many new processors were becoming licensed, WSDA became aware of a number of unlicensed milk processing operations through news stories in the media, advertising, complaints and illness outbreaks. WSDA contacted these operations and provided them with application packets for obtaining a producer and/or processor license. Several became licensed; some ceased production. At least one facility continued operation without meeting licensing requirements and was the source of an E. coli O157:H7 outbreak in mid-December 2005 that sickened at least 18 people in Washington and Oregon.

In response to this outbreak, in early 2006, the state legislature passed SSB 6377, which amended the state's Milk and Milk Products law, providing the Department of Agriculture with additional enforcement tools to address unlicensed milk producers and processors.

During hearings on the bill, legislators heard testimony from several small-scale goat and cow producer/processors. Some expressed concern about the difficulties in obtaining milk producer and processing licenses; others provided examples of how they successfully obtained the licenses. In response to these differing experiences, an amendment was added to SSB 6377 directing WSDA to convene a work group to identify and help resolve obstacles faced by small-scale dairies in their efforts to become licensed as milk producers and milk processors.

Legislative Directive

Excerpt from:

Substitute Senate Bill 6377 as Amended by the House
Passed Legislature – 2006 Regular Session

NEW SECTION. Sec. 8.

The legislature finds that small-scale dairies have varying degrees of familiarity with statutory and regulatory requirements and the range of acceptable methods they can use to meet those requirements. The legislature therefore directs the department of agriculture to convene a work group to identify and help resolve obstacles faced by small-scale dairies in their efforts to become licensed as milk producers and milk processing plants.

The director of the department of agriculture shall include in the work group representatives of small-scale and conventional dairies, public health officials, the cooperative extension, industry associations, consumers, and other stakeholders as the director deems appropriate. Representatives from the department's food safety and small farms direct marketing programs shall staff the work group.

The work group shall:

- Identify barriers to small-scale dairies in achieving licensing;
- Examine potential solutions to those barriers that are size-appropriate and economically feasible;
- Identify sources of technical assistance and information on best management practices; and
- Recommend other actions that will assist small-scale dairies to become licensed.

By December 1, 2006, the department of agriculture and representatives of the work group shall report on their work and recommendations to appropriate standing committees of the legislature.

Current Licensing Requirements

State law (Chapter 15.36 RCW) requires a person or organization that operates a dairy farm and provides, sells, or offers milk for sale to be licensed as a milk producer. All locations where milk or milk products are processed or prepared for distribution must be licensed as a milk processing plant.

If a dairy wants to bottle its own milk or make other dairy products, it is required to be licensed as both a milk producer and a milk processor. In the case of raw milk, the law requires milk that is intended to be consumed raw to be processed on the farm where it is produced.

Most of the state's 577 dairy farms sell their milk to milk processors. In the past five years, the number of dairy farms that are also licensed as milk processors has increased from 11 to 43, largely due to the interest in producing and marketing their own milk products.

The licensing requirements stipulate that dairies and processing plants must meet facility, production and sanitation requirements and that dairy animals must be tested for certain communicable diseases. WSDA offers technical assistance and guidance to those wishing to obtain these licenses.

WSDA's Dairy Farm Manual describes the sanitation requirements for producing Grade A raw milk and meeting the quality and grade standard requirements of the state's dairy law. These requirements address the cleanliness of the animals, the milking area, the milk storage area, equipment, utensils and personnel, as well as milk handling and protecting the milk from contamination. The water for the milk house and milking operations must be safe and sanitary.

WSDA's Milk Processing Plant Handbook and Application outlines licensing and operating requirements for milk processors. Applicants must provide:

- Ingredient/processing information, including providing a flow diagram of each step of the process and a complete ingredient list for each product.
- The floor plan of the operation, including the location of sinks, floor drains (if needed), doors, and placement of equipment, etc.
- Pasteurizer equipment information (if appropriate), which must be approved by WSDA prior to installation and tested and sealed prior to use.
- A sanitation plan, listing the schedule and procedures for clean up of facilities and equipment.
- Proposed labeling of the product.
- Water supply type & testing (verification of potable water to be submitted, if needed).
- Animal health testing information (if required).
- Information needed to meet other requirements if product testing, producing low-acid and acidified foods, or shipping interstate.

An application is first reviewed by the Olympia office. If complete, it is forwarded to a regional Food Safety Officer who schedules an appointment to inspect the facility. During the inspection, the Food Safety Officer reviews the application with the applicant, takes necessary water samples, and discusses any additional obligations the applicant may have. The facility must be inspected and approved by WSDA before the license is issued. Producers and processors must pass periodic inspections and water and product testing to maintain a license.

Organization and Activities of the Small-Scale Dairy Work Group

Formation of the Work Group

SSB 6377 was signed by the Governor on March 20 and became effective June 7, 2006. WSDA staff met in spring 2006 to begin planning for appointing the work group and outlining how to organize its tasks and prepare the report to be delivered to the legislature by December 1, 2006. Funding appropriated for the activity became available July 1, 2006.

In July, WSDA contracted with Nancy Jordan to coordinate the work group activities and assist in preparation of the report. Jordan, a community and business development expert, was raised on a dairy in Oregon and worked as a commercial and agricultural lender for 14 years. The coordinator convened an initial planning meeting, identified potential work group members and a potential meeting and activity schedule, and began contacting potential work group participants to ascertain their interest and availability for this quick, short-term project.

WSDA issued a news release on August 18 announcing the appointment of the 14-member work group and its work plan. The work group included both cow and goat dairies and both pasteurized and raw milk processors of varying size and geographic location. As specified by the legislature, the work group also included public health officials, WSU extension experts, and industry and consumer representatives. Staff from the department's food safety and small farm and direct marketing programs assisted the work group.

Two of the initial members withdrew from the work group during the project due to other demands and work schedules.

Work Group Meetings and Activities

The final work plan was accepted July 27, 2006. The work group met six times beginning with a conference call on August 14. Due to the limited time, dispersed locations, and no budget allocated for work group members' travel, conference calls were the primary method of participation.

The only non-conference call meeting was held on August 28 in Whatcom County and included a presentation by WSDA showing examples of facilities that did and did not meet licensing requirements and tours of three licensed producer/processors.

The work group held four conference calls in September and October and communicated regularly by e-mail.

Early on, the work group discussed whether there was a need to define "small-scale dairy." The group concluded that a definition would not be needed for its task, as the issue of food safety and concerns related to becoming licensed were not related to size. The group acknowledged that there are business and financial issues related to size that may impact the

feasibility of an operation to pursue licensing, but these are not under the purview of WSDA Food Safety Program.

To accomplish its task, the work group decided to solicit input regarding licensing barriers and possible solutions from current licensees, prospective licensees, and other interested parties. The work group developed a survey in August and distributed it in September to:

- Currently licensed milk processors and all persons with pending license applications.
- Individuals who testified on licensing issues in legislative hearings.
- Individuals contacted by work group members.
- Several industry associations for forwarding out to others. These organizations included: Washington Tilth, Washington Food & Farming Network, Cascade Harvest Coalition, Puget Sound Fresh, and WSU Small Farms Program.

Follow-up calls and e-mails were made to encourage response. Work group members felt the survey had excellent distribution and coverage as many noted that they had received the survey six to eight times from various sources. A total of 18 responses were received by the October 5th final cut-off date, including two responses that were compilations of responses of several operators.

The work group received a wide range of input. Many identified barriers did not relate specifically to the process or requirements of becoming licensed by WSDA. In light of the short time frame and its assigned task, the work group focused its efforts on issues tied directly with becoming or staying licensed.

The survey responses provided the work group with a base of current information from dairy producers and processors on obtaining a WSDA dairy license. The responses were reviewed and considered in light of the information, expertise and experience provided by work group members and participating WSDA staff.

General Observations

No Major Barriers

Overall, the work group found the delivery of services, implementation of regulatory requirements, and information provided by WSDA to be accessible, appropriate and accurate. The work group members were in agreement that regulation of milk production and processing is necessary to protect public health, regardless of the size of the operation. No major barriers to obtaining a license were identified, however, minor barriers and areas for improvement were recognized.

Backgrounds and Expectations of Applicants Vary

A recognition that emerged through this process is that some of the new, small-scale license applicants have a different background and perspective than the typical applicant of the past. Because many people are new to the regulatory process and to food processing, many misconceptions exist. The needs of these prospective operators, their understanding of the regulations, and what they expect from WSDA staff, use of technology, and services available has put a greater demand on the resources of the department. This added dimension may have contributed to a heightened level of frustration and communication challenges in recent years.

Barriers and Potential Solutions

The work group identified barriers that can be sorted into three general categories:

1. Barriers related to meeting WSDA requirements;
2. Barriers related to meeting requirements of other state and local agencies; and
3. Barriers related to starting and operating a small business.

This report concentrates on barriers related to the licensing process and potential solutions that directly relate to the Department of Agriculture. The report identifies some barriers that are outside the purview of WSDA as they can equally impact the success or failure of an operation becoming licensed.

While a few of the potential solutions listed could be accomplished with little to no additional funding, the work group recognized that most potential solutions would be contingent upon additional funds or resources being provided to WSDA or other service provider in order to be implemented.

Barriers to Licensing: Meeting WSDA Requirements

While no major barriers to licensing were found, minor barriers and suggestions for improvement to the existing process for obtaining a WSDA license are identified below.

Information

Barrier: Information regarding licensing requirements and steps can be hard to understand and hard to find.

Potential Solutions:

- Improve information on the WSDA Web site. Expand it to provide a central site for current information. Keep Web site active with regular, informative updates.
- Simplify process by providing a flow chart with contacts and references.
- Create a checklist for applicants to follow from pre-application through startup.
- Identify possible mentors for prospective licensees to move through the licensing process.
- Review and affirm requirements with a brief explanation of their importance/need, (e.g., separate facilities, testing, etc.). Where possible, provide supporting information as to the reasons for certain requirements.
- Provide more detail on current facility and equipment requirements and processing practices with an emphasis on food safety and consumer protection such as the Minnesota Department of Agriculture (www.mda.state.mn.us/dairyfood/ecoli.html).
- Generally, make licensing manuals, forms and communication tools, such as the WSDA Web site, more user-friendly.
- Generally, make sure forms and licensing material and other information is clear and concise, and written for the intended reader.

Barrier: Some individuals have incorrect information on regulatory requirements.

It became evident through this process that some prospective and current licensees have incorrect information on regulatory requirements. For example, someone expressed concern about a “requirement” that the milk processing room facility must have a 10-foot ceiling. WSDA has no such requirement. A milk processing facility is required to be suitable in size, construction, and design to facilitate maintenance and sanitary operations for processing purposes. For some facilities, a 10-foot ceiling allows adequate clearance for maintenance and sanitation, but there is no specific height requirement for WSDA licensing.

Another example was someone identifying a “barrier” that raw milk produced at one farm could not be delivered to an off-site milk processor. While it is true that retail raw milk products must be produced and processed at the same location, this is not the case for other milk products. Raw milk from a licensed producer can be delivered to an off-site processor to be used in raw milk cheeses or any pasteurized milk product.

There are a variety of possible reasons for misinformation. A person could be using information from non-WSDA sources, interpreting recommendations as requirements, or assuming that how one licensed operation is set-up is what is required for them.

Some people don’t realize that there are multiple ways of meeting some requirements that are based on type, size and location of an operation. Washington’s small-scale entrepreneurs are coming up with innovative ways to meet requirements. WSDA is open to considering new techniques or practices that increase processing efficiency or effectiveness while still holding to the standards of providing safe food products.

Potential Solutions:

- Ensure all agency documents and information are clearly identified as prepared by WSDA.
- Ensure all agency documents and information have a date of publication or revision.
- Improve WSDA’s Dairy “Questions and Answers” web page to address common areas of misinformation.

Awareness of Acceptable Options

Barrier: There is varying understanding of how to meet license requirements.

Potential Solutions:

- Post examples on Web site of small-scale facilities and equipment with various acceptable options that meet requirements or recommendations. For example:

Requirement:	Milk must be cooled to 40 degrees F within two hours after first milking and blend temperatures cannot exceed 50 degrees F during additional milking periods.
Acceptable Options:	<ul style="list-style-type: none">▪ If a milk bulk tank system is used, a mechanical temperature-recording chart must be used to measure the cooling rate of milk after production.▪ Milk producers who do not produce enough milk volume to install and use a bulk tank can physically measure their milk cooling rates through the use of a calibrated hand held thermometer and record the results into a log book documenting that they are meeting the cooling temperature requirements.

- Provide examples (photos with explanation) of small-scale facilities and equipment that both meet and do not meet regulations.
- Add field staff or ombudsman to support increased time, communication and resource demands of new and prospective applicants.
- Provide more time for training of Food Safety Officers to ensure consistency in inspections and technical assistance and knowledge of options that meet regulatory requirements.

Coordination

Barrier: The application process involves several steps, and may require contacting other WSDA programs, such as the Livestock Nutrient Management, Organic Food, and Animal Health programs.

Potential Solutions:

- Improve coordination of licensing and business-related information among WSDA programs.
- Work with other agency programs to assure related information is available, consistent and user-friendly.
- Provide packets with complete information for licensing, contact information and links with other programs associated with small dairy processing and food distribution.
- Assure that intra-agency links with other programs are easy to access.

Barriers to Licensing: Meeting other State and Local Requirements

Licensees and applicants have experienced barriers outside the purview of WSDA. While not the primary scope of this report, the work group felt these were important to include, as they are also part of the licensing process. Again, while no major barriers to licensing were found, minor barriers and suggestions for improvement to the existing process for working with related agencies in obtaining a WSDA license are identified below.

Barrier: It can be hard to find information on related requirements that are outside the responsibility of WSDA.

Potential Solutions:

- Work with other agencies, such as local health jurisdictions, Department of Ecology, WSU Extension, and Conservation Districts to provide an explanation of the relationships of each agency to milk producer and processor licensing. Outline the various duties and responsibilities, with a summary of what information each provides and how they interrelate for successful compliance to obtain a license.
- Provide Web links to these sites (see Appendix A).
- Provide packets with complete information for licensing, contact information and links with other agencies associated with small dairy processing and food distribution.

Barrier: There appears to be a lack of standardized information among multi-agency processes required for licensing.

For example, a facility must have a potable water supply before it can be licensed as a milk processing plant. The Department of Health Division of Drinking Water regulates and sets the standards for approved drinking water (potable) systems and it is the Department of Ecology who regulates the source of the water being used for drinking water. Local jurisdictions may have additional requirements related to water supply. Which agencies have jurisdictional control depends on where an operation is located. Understanding this and who to contact about potable water as well as waste water requirements can be confusing.

Another example is local health requirements for farmers markets and on-farm sale operations. These requirements have varied over the years as have the cost of obtaining local health licenses. Clarification of such local market requirements can help small operations as they consider expanding their market sales across county lines.

Potential Solutions:

- Compile a summary of the requirements for licensing by county or municipality including information on septic and water regulations and zoning.
- Where possible, provide information regarding requirements with substantiating information. Use pictures and descriptors that can be interpreted and explained.

Barriers to Licensing: Business, Finance, & Risk Management Issues

Small-scale dairies face the same challenges of any small business, including those related to business planning, financing, marketing, and risk management. This section is important for the business management and decision-making process to achieve financial viability. These barriers are not impediments to becoming licensed but are necessary considerations for sustainability and achieving entrepreneurial goals. A list of resources is included in the Appendix section of this report for seeking possible solutions to those barriers.

Barrier: Locating equipment (new, used, modified) and manufacturers, installers and other professionals.

Potential Solutions:

- Peer-to-peer information exchange. Establish information exchanges through existing organizations and agency programs, such as Washington Tilth, Washington Food & Farming Network, Cascade Harvest Coalition, Puget Sound Fresh, WSU Small Farms Program, WSDA Small Farm & Direct Marketing, and others. Consider mentor programs, listserv discussions, etc.

Barrier: Access to adequate capital.

Potential Solutions:

- Provide information and links to existing financial resources for small business such as commercial banks, the Small Business Administration (SBA) 7A Loan Program, Washington Community, Trade and Economic Development Rural Washington Loan Fund, Cascadia Revolving Loan Fund, etc.
- Consider special loan programs such as:
 - Illinois Specialty Growers Association cider pasteurization equipment revolving loan program (www.specialtygrowers.org/releases/Pasteurization%20Loan%20release.doc).
 - North Carolina Dept. of Agriculture & Consumer Services Small Dairy Pasteurizer Loan Program (www.ncagr.com/markets/dairyloan.htm).
 - Oklahoma Department of Agriculture, Food and Forestry Grant/Loan Program (www.ok.gov/~okag/mktdev-loanshome.htm).

The WSDA Small Farm and Direct Marketing Program is a good source for some of this information, and an excellent starting place for links to other resources such as:

- Business Planning and Feasibility Analysis: including cost of and sourcing equipment, general business start-up and sustainability (retention and expansion) issues such as break-even analysis, business basics, etc.
- Financing: conventional financing options, alternative financing options such as Revolving Loan Funds, incentives, and specialty funding such as pasteurizer loans mentioned above.
- Marketing: marketing resources and tools, and cooperative opportunities such as the various trade associations, and the Northwest Cooperative Development Center.

- Education and Risk Management: For small-scale (or any) dairy processor operations, this is the most important business aspect to be addressed. This is especially crucial for those producing a “ready-to-eat” food product. Food safety and consumer protection must be addressed and fully understood by each producer/processor. Once understood, additional business decisions must be made such as: identification and understanding of potential risk factors, legal, product liability insurance, education/training (owners, producers, processors, and staff), and labeling, advertising message, etc.

Other Suggestions

The work group also made some suggestions and recommendations that were not related to a specific barrier but supported the overall licensing process.

- Create an evaluation/feedback mechanism. Provide applicants with an evaluation form (mail or Web-based) to complete to offer feedback on their experience and suggestions for improvement. This would provide a tool for WSDA staff to have a record of any concern or complaint, address it appropriately at the time, and have information to improve service delivery in the future. An example might be to include a return postcard with each completed (approved or denied) license application asking for feedback on the applicant's experience working through the licensing process.
- Continue and encourage training that supports licensing and best management practices. WSDA has sponsored or participated in several excellent workshops and training programs. One such training was the 2004 Cheesemaking Workshop in Yakima that WSDA conducted under a grant from USDA's Risk Management Agency. It is suggested that WSDA continue to sponsor or participate in these types of programs and make educational materials from these programs accessible via agency Web sites. Other suggestions related to training and education included:
 - Continue to participate in and facilitate educational training and technical assistance outreach to existing and prospective producer/processor licensees.
 - Consider recommending food safety education training or certification for processing plant employees similar to the Retail Food Code's Food Worker Card training.

Appendices

Appendix A: Selected Sources of Technical Assistance and Information on Best Management Practices

- ❖ WSDA Web and Other Resources:
 - Food Safety Program: http://agr.wa.gov/AboutWSDA/Divisions/Food_Svc.htm
 - Small Farm and Direct Marketing Program:
<http://agr.wa.gov/Marketing/SmallFarm/default.htm>
- ❖ WSU Web Resources:
 - WSU Cooperative Extension: <http://ext.wsu.edu>
 - Cheesemaking Shortcourse & Pasteurization Workshop:
www.wsu.edu/creamery/education/cheesemakingEd.htm
 - Food Safety Cooperative Extension Service: <http://safefood.wsu.edu/>
 - Extension Food Processing: <http://foodprocessing.wsu.edu/>
 - Small Farms Team: <http://smallfarms.wsu.edu>
- ❖ Local Health Departments/Districts: www.doh.wa.gov/LHJMap/LHJMap.htm
- ❖ Dept. of Ecology: www.ecy.wa.gov/org.html
- ❖ Conservation Districts: <http://www.scc.wa.gov/districts>
- ❖ Associations:
 - Washington Tilth: www.tilthproducers.org
 - Washington Sustainable Food & Farming Network: www.wsffn.org
 - Cascade Harvest Coalition: www.cascadeharvest.org
 - Puget Sound Fresh: www.pugetsoundfresh.org
- ❖ Western Center for Risk Management: NxLevel, Tilling the Soil and Cultivating Success courses
- ❖ Northwest Ag Business Center
- ❖ Business Development Programs
 - US Small Business Administration: www.sba.gov
 - Washington State Small Business Development Center: www.wsbdc.org
 - Women and Minority Owned Business Association: www.omwbe.wa.gov
 - Northwest Cooperative Development Center: www.nwcdc.coop

Appendix B: The Science of Food Safety and the Regulatory Process

Input to the work group highlighted a wide range in individual knowledge and understanding of the science behind regulatory requirements designed to protect public health. In response, Richard Dougherty, PhD, WSU Extension Food Safety Specialist, provides the following information.

- ❖ Information is available addressing food safety issues such as the sources of E. coli O157:H7 and other pathogens on farms and in milk.
 - The physical and chemical characteristics of milk make it an ideal vehicle for the survival and growth of food borne pathogens.
 - Science shows that pathogens can be found in milk that is traced directly from the animal and/or from the environment.
 - Cases of human illnesses and recalls of milk and milk products occur because high-risk food products that are minimally processed do not fully eliminate pathogen hazards or when products are exposed to recontamination during production, storage or distribution steps.
 - The reduction of food borne outbreaks associated with milk can be attributed to the quality of health care given to dairy cattle, effective environmental sanitation and the almost universal pasteurization of milk.

- ❖ Microbial testing for pathogens at the farm level requires methodologies that are not yet available.
 - Testing animals to assure they are free from microbial pathogens is not definitive as readings of positive or negative detection can change from month to month (read positive one month, negative the next and positive the next).
 - Phosphatase testing is used as a regulatory surveillance test to monitor for proper pasteurization but is not effective on cultured milk products, such as yogurt or fresh cheese products, because of pH interactions.
 - Current information indicates newer technologies (using filtration, ultraviolet light, or high pressure) offer some promise, but are expensive and require skilled technicians to operate.

- ❖ Research shows that size of operation is not a factor regarding the science of pathogens.

The WSU Food Science & Human Nutrition Department is a resource for scientific research on milk and milk products, including the science of pathogens in raw milk. For more information, contact the WSU Food Safety Cooperative Extension Service, on the Web at <http://safefood.wsu.edu/>.