

## NewsWatch

# UW researcher seeks methods to track path of dairy microbes



**NURSE MURF**

By HELEN MURPHY

**T**HERE is much talk in medical literature about the so-called "take-home pathway" that attributes sporadic cases of human diarrheal disease to microbes in livestock workplaces.

How reliable is that link? With all the extraordinary measures the dairy industry takes to keep the work site and workers uncontaminated, where is the break, if any, through which microbes migrate into human habitats? Are there better ways to permanently cut off this contamination route to protect this vital industry?

This is the concern of University of Washington environmental microbiologist Scott Meschke. He is partnering with interested dairy farmers to answer these questions by developing new laboratory methods to track down problem bacteria.

Microbes are everywhere and a natural part of farm life especially in livestock operations. One gram of cattle feces has in excess of 100,000 bacteria.

A healthy, well-fed cow can produce 120 pounds of fecal waste per day. Most of these bacteria are not harmful, but a select few may cause disease in humans and animals.

## Bacteria's movement

Bacteria may move through the environment as aerosols in the wind, through water, or by hitchhiking on moving animate objects (e.g., flies) or through inanimate objects like clothing or shovels. Workers can unwittingly be the transport pathway through direct contact with the animals and their manure, or indirectly through exposure to contaminated work surfaces, water and particles circulating in the air.

Once infected, the worker can serve as a biologic carrier, transmitting the infection to other family members.

Also, the worker can serve as a mechanical carrier by introducing the bacteria into their auto and home through their work clothes, shoes or hands. Children are particularly vulnerable to these microbes because they spend more time on the ground exploring their environment through hand-to-mouth behaviors.

Two kinds of bacteria commonly associated with livestock (*Campylobacter*

and *Salmonella*) have consistently been the cause of illness in one county in eastern Washington. The rates were two to three times higher in the county compared to the whole state. This county leads in dairy production and in number of cattle among all Washington counties. But do these strains causing the human cases have the same fingerprints as those in dairy cows?

## Measurement techniques

Meschke is developing techniques to allow more precise measurement of these problem bacteria in workplace air, water and surfaces. Specialized microbiological typing will allow him to investigate where they occur, if at levels significant enough to be associated to illness, and finally if they can be traced back to the resident cattle.

He is genotyping samples from cow droppings, work site tools, steering wheels and clothing to establish if these microbes leave the work site. Samples are also being taken in workers' homes from kitchen sinks, floors, shoes and family member's hands.

So far the clothing route has not turned up as a pathway.

Meschke is seeking other dairy partners. Only by studying a wide range

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The OSU Extension Service 4-H Wildlife Stewards Program is the first to be recognized with this award. For more information about the 4-H Wildlife Stewards program, visit the Web site at [wildlifestewards.4h.oregonstate.edu](http://wildlifestewards.4h.oregonstate.edu).

of sites with a variety of practices will questions about this potential problem be answered. With this knowledge, new control methods can be designed not only to minimize worker exposure, but also to reduce transmission of animal-specific diseases, such as John's disease.

## Study accepting partners

If you would like to partner with Meschke in this study, contact him at [jmeschke@u.washington.edu](mailto:jmeschke@u.washington.edu) or by phone at 206-221-5470.

Murphy, outreach and education director at the University of Washington Pacific Northwest Agricultural Health and Safety Center, may be reached by phone at 206-616-5906 or by e-mail at [hmurf@u.washington.edu](mailto:hmurf@u.washington.edu).

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