



supermarket shelf. Biosecurity practices incorporated in Good Management Practices, Quality Assurance and On Farm Food Safety programs increase the effectiveness of pathogen control on the processing side of food production. The relationship between farm-level production practices and food safety risk remains inextricable. In the future, control of pathogens along the food supply chain will require a more acute consideration of biowaste management. And this is destined to be part of future biosecurity standards.

BIOSECURITY CHAMPION PROFILE

Emily McDonald- Industry Development Coordinator, Alberta Milk

Born and raised on a dairy farm in Southwestern Ontario, Emily's life and career evolved around the dairy industry. It started with daily chores on a busy dairy farm, extended to showing calves as a 4-H member and maintaining farm records for a registered Holstein herd.

Emily always knew she wanted a career in agriculture. A visit to the University of Saskatchewan during a beautiful Saskatoon summer lured Emily westward where she graduated with an Animal Science degree in 2007. Following graduation it was off to Calgary for a stint in feed sales. In February 2009 Emily found what she describes as the "perfect job" at Alberta Milk. In her role as Industry Development Coordinator came the responsibility for animal health and welfare issues, research project coordination and some new product development initiatives.

In October of 2009, Emily married Ian McDonald, a Saskatchewan boy she met at University. Ian is a certified Chartered Accountant and works as a Senior Accountant for McCoy Corporation.

Outside of work, Emily and Ian keep busy landscaping the yard of a new home and training a new pup. Camping, running, hiking, playing sports and trips back to Ontario and Saskatchewan to visit family and friends fill in any remaining days of the calendar.



Alberta Milk is a non-profit organization established on August 1, 2002 under the authority of the Marketing of Agricultural Products Act of Alberta. The Agricultural Products Marketing Council regulates producer boards and marketing commissions in Alberta and provides oversight for the organization representing Alberta's 604 dairy producers. Alberta Milk is funded primarily by producers through three mandatory membership assessments: marketing, nutrition and education; research; and administration. There is also a transportation pool operated on a cost-recovery basis, with producers sharing equally in the cost of operating the pool. Alberta Milk works to leverage other funding for specific activities like research, new initiatives, and nutrition education. An overall goal is to provide dairy producers with accurate, timely and balanced information regarding the dairy industry.

If you have any questions or comments about this newsletter, or if you have any ideas for future articles, please contact the ARD Biosecurity Program office in Edmonton at: 780-422-6630. This is a toll-free call through the Government RITE line by dialing 310-0000-780-422-6630

Growing Forward Biosecurity Program is accepting applications for 2011/2012

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ALBERTA BIOSECURITY CHAMPIONS

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SUMMER EDITION

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INCENTIVIZING BIOSECURITY

Biosecurity is more than a buzzword.

Biosecurity is now recognized as the combination of strategy, effort and planning to protect human, animal and environmental health against biological threats, the primary goal being reduction of infectious disease risk. The essential tools of biosecurity include exclusion, eradication and control, while support of these activities depends on expert system management and biosecurity protocols that are both realistic and usable. Overall success is tied to efficient sharing of information. Biosecurity is, therefore, the sum of risk management practices in defense against biological threats¹.

Biosecurity is a critical element of disease control in any management system, yet it is frequently overlooked or not considered important. Constraints to adopting biosecurity measures cover the gamut from individual farmers and veterinarians not understanding biosecurity to reluctance to invest in biosecurity measures. The list of reasons given by farmers, veterinarians and service providers as to why biosecurity practices are not a part of day to day operations most often include:

- The need for additional proof of efficacy
- Little faith in the farm-level efficacy of biosecurity measures in the absence of action by others
- The inability to show economic benefits of many proposed farm biosecurity practices
- Failure to have clearly defined biosecurity protocols for farm visits by food animal practitioners and other people regularly visiting farms
- Lack of time to implement biosecurity measures
- Inconsistency in understanding biosecurity principles and reasons for implementation
- Lack of facilities
- Lack of training, mentoring and know-how
- Risk of animal health issues misunderstood

Behavior is an outcome of two variables: personal beliefs and individual assessment of potential consequence. Even though positive outcomes like improved profitability through better health and welfare seem intuitive and incentive enough for adopting basic biosecurity measures, personal attitudes about biosecurity and perceptions of value remain major hurdles.

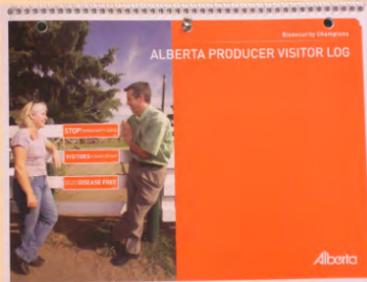
1. G. Gunn, C. Heffernan, M. Hall, A. McLeod, M. Hovi. Constraints to improved biosecurity amongst Great Britain farmers, veterinarians and the auxiliary industries. May 15, 2008. Veterinary Biosecurity. Volume





Biosecurity is...

Doing small things right every day to positively influence animal health, food safety and public health. For example:



and



People make the difference!

Uncertainty about the efficacy of farm-level biosecurity is often given as a reason for not complying. The absence of action by others is frequently cited as a corollary to the hesitation.

Scientific literature comparing the cost of disease prevention versus the cost of control clearly define the benefits accrued by investment in prevention. This is true for both highly contagious trans-boundary diseases like foot and mouth disease and everyday production diseases of domestic herds and flocks². The precursor to future progress in animal production is disease prevention.

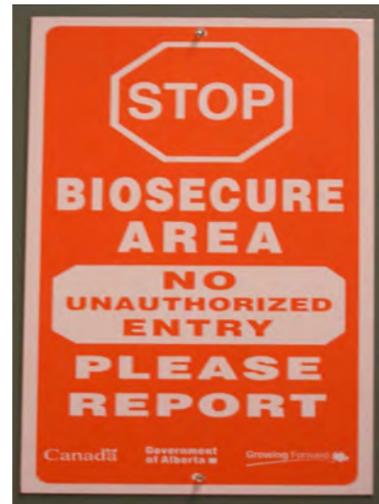
Second in importance to doing simple things right and doing them right all the time as a means of establishing a cornerstone for biosecurity, is understanding and believing the value that small things make in reducing risk – at the level of individual operations and for entire industries. In any chain of events associated with risk reduction, the small things like routine washing and disinfection of footwear can have an exponential impact industry-wide.

The prevailing attitude seems to be that little is to be gained by “doing my thing if the neighbor’s not doing his”. Arguably, a biosecurity risk to industry is addressed most appropriately when basic biosecurity principles are widely applied and the risk profile of all participants is reduced. However, the actions of a single lower-risk player in a related chain of participants can make a huge difference, even in the presence of high-risk participants in the same chain³.

2. The World Organisation for Animal Health (OIE). Prevention and control of animal diseases worldwide Economic analysis – Prevention versus outbreak costs
3 Biosecurity: Who and What can make the difference. Canadian Poultry Magazine. June 2007. http://www.agbiosecurity.ca/asp/article_biosecuritywhowhat.aspx

GENERIC BIOSECURITY PROTOCOLS

In response to a number of requests from different agencies and organizations for basic information on entering and leaving farms in a biosecure manner, the Biosecurity Team prepared a condensed version of biosecurity principles and a checklist for use by people visiting farms. Printed on water resistant paper, the biosecurity notes and checklist are meant to be carried in vehicles and serve as a reminder of the simple yet important components of biosecurity protocols. The documents are to be distributed to a broad cross section of Ag-sector clients including: commodity organizations, 4-H Specialists, Ag Service Boards, Livestock Identification Service staff, Ag Information and Extension offices, veterinary clinics, Ag tourism companies and municipal offices. They will be available at trade shows and could be used by school classes visiting farms. Copies will be available electronically on the Biosecurity Webpage on ARD’s Ropin the Web www.agric.gov.ab.ca/biosecurity



BIOSECURITY & LIVESTOCK BIOWASTE

Canadian livestock generate about half a million tonnes of manure daily or 180 million tonnes annually⁴. Of this total, 78% is produced by cattle, 16% by hogs, 3% by poultry and the remainder by other species. ⁴

Historically, animal waste was simply spread on fields with little thought to when, where or how much. Then as the value of manure shifted from costly by-product to a source of agriculture nutrients and something that had to be managed, views changed. Once described as the complete fertilizer, manure contains varying amounts of nitrogen, phosphorous, potassium and sulfur. As well, manure contains essential micronutrients calcium, magnesium, copper, manganese, iron and zinc. Application of manure also contributes to the physical transformation of soil.

In the background there has always been a negative side to managing wastes from animal enterprises. There are environmental issues, high among them being the negative impact of N and P on water quality. Odour and air quality



are perennial issues. The significance of microbial pathogens in manure, often overlooked as a problem, is commonly linked to outbreaks of gastroenteritis through direct contact with livestock or indirectly through contamination of surface run-off. *Salmonella*, *E. coli*, *Campylobacter spp.* and *Cryptosporidium spp.* are zoonotic pathogens commonly found in the gut and intestinal tract of food animals.

Current manure management practices, including those recommended in On-Farm Food Safety programs, place significant stock in separation standards, storage methods, and strategic application practices. Little is presently known about the effectiveness of buffer zones in preventing transmission and re-entry of disease

from manure. Likewise, little is known about the effectiveness of storage and land application on survivability of pathogens.

The survival of pathogens associated with animal operations depends on various factors. Key among them: animal species, concentration of pathogens in manure, manure type (solid or liquid), handling and treatment systems, time of year, soil water content, soil temperature, pH and permeability, competing microbial ecology, and the presence or absence of plants.

Scientists at Ohio and North Carolina State Universities, funded by a \$2.4 million grant from the USDA, are studying ways to prevent dangerous food-borne pathogens in animal manure from spreading to the environment and threatening public health. The project will evaluate public health risks associated with important food-borne pathogens. Study investigators have reported more than 150 zoonotic organisms exist in animal feces, urine and dead or culled animals. They include a wide variety of bacteria, viruses and protozoa.

Manure, considered a natural fertilizer for many crops, especially those grown organically, can be an accidental vector of disease. The persistence of some pathogens increases the risk. *Salmonella*, for example, survive in cold and frozen water for up to 6 months. *Cryptosporidium*, another organism capable of being transmitted from animals to humans, survives more than a year in cold water and ice and beyond the year in frozen soil and manure. *E. coli* survival in water at 5°C extends beyond 300 days and up to 100 days in frozen manure⁵.

The interplay of food processing and management of biowaste begins before raw product leaves the farm gate and continues upstream to the



4. A Geographical Profile of Manure Production in Canada. Statistics Canada. <http://www.statcan.gc.ca/pub/16f0025x/16f0025x2000001-eng.htm>
5. Human and Animal Pathogens in Manure (PDF). Merle E. Olson, Microbiology and Infectious Diseases, University of Calgary.