

Animal Health Monitor



Abbotsford Agricultural Centre
1767 Angus Campbell Rd., Abbotsford B.C. V3G 2M3
Toll free (BC only): 1-800-661-9903
Phone: 604-556-3003

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IN THIS ISSUE

- 2 A Change in Leadership
- 3 Animal Health Centre opens a high level containment laboratory
- 4 Short Cuts from the Post Mortem Room
- 6 Japanese Pieris toxicity
- 7 In the News:
 - Malignant Catarrhal Fever in WA
 - BSE in British Columbia
 - Avian Influenza in BC
 - BC Cattle Program
- 9 Veterinary Staff Directory

Welcome to the first edition of the Animal Health Monitor

You may remember the Animal Health Center's *Diagnostic Diary* that was printed and distributed some years ago. Our objective with this new effort is to revitalize communications with you, our clients and stakeholders in the livestock industry, and to promote opportunities for us to work together to maintain healthy animal populations.

The Animal Health Monitor will include articles about animal diseases occurring in the province, current issues in animal health, updates on the scope of diagnostic services, expertise, programs and support available at the Animal Health Centre, information about food safety, biosecurity and issues that are or may affect local animal, human and environmental health.

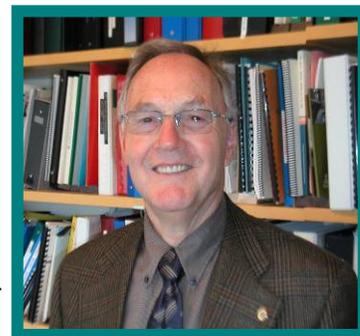
You can find these bulletins on our website: <http://www.agf.gov.bc.ca/ahc/ahcwho.htm>. We will always be pleased to receive feedback from our readers.

Suggestions on future topics or even potential contributions are encouraged. What do you want to know about the Animal Health Centre and/or animal health issues, and how might we better serve your needs?

The Animal Health Centre offers more than 400 laboratory diagnostic tests for agents that may be found in wild and domestic birds, mammals, fish, reptiles and amphibians. Submission forms and a list of our laboratory tests are available at <http://www.agf.gov.bc.ca/ahc/ahclist.htm> or http://www.agf.gov.bc.ca/ahc/poultry_health/lab_services.htm

A Change in Leadership

After 28 years of exemplary service at the Animal Health Centre, **Dr. Ronald John Lewis**, Chief Veterinary Officer and Director, Animal Health Branch retired at the end of January 2009. Dr. Lewis has been a profoundly positive force in the growth and leadership of the Animal Health Centre (AHC), serving first as a veterinary pathologist and Section Head of Toxicology and subsequently being promoted to Laboratory Manager, Assistant Chief Veterinary Officer, Chief Veterinary Officer, and Branch Director positions. It was Dr. Lewis's vision and initiative that led to the successful accreditation of the Animal Health Centre as a full-service animal diagnostic laboratory by the American Association of Veterinary Laboratory Diagnosticians. Under Dr. Lewis's direction, the Animal Health Centre recently opened a state-of-the-art Containment Level 3 laboratory addition. You can read more about the purpose and scope of the new laboratory facility on page 3.



Over the years, Dr. Lewis earned an abundance of recognition and respect from national and provincial authorities. His work has been celebrated with many awards including CFIA's *Ken Wells Award* presented "in recognition of contribution to policies, programs, implementation and delivery of Canada's National Animal Health Program," the *Recognition Award* for "development and implementation of Annual Zoonotic Disease Symposium" from BC Centre for Disease Control and BC Ministry of Agriculture and Lands and the *Hill's Public Service Award*, Canadian Veterinary Medical Association, "in recognition for his work towards enhancing the public image of the veterinary profession.

Dr. Lewis leaves a legacy in veterinary medicine and animal health as a distinguished, thoughtful, gentle and powerful veterinary mentor and leader in British Columbia. All of his colleagues at the Abbotsford Agricultural Centre and beyond will miss his wisdom and leadership. We wish him well in the future.



Welcome Dr. Paul Kitching

Dr. Paul Kitching joined the Animal Health Centre in October 2008 as the AHC Laboratory Manager and Assistant Chief Veterinary Officer. He is a graduate of the Royal Veterinary College in London, holds an MSc in Tropical Veterinary Science from the University of Edinburgh, and completed his PhD on the epidemiology and control of sheep and goat pox. His former positions include Head of the World Reference Laboratory on Foot and Mouth Disease (FMD) and Deputy Head of the Pirbright Laboratory in England. In the latter position, he was responsible for maintaining and organizing the government response to the outbreak of FMD in the United Kingdom in 2001. In his most recent former position as the Director of the National Centre for Foreign Animal Diseases for the CFIA in Winnipeg, we worked closely with him during the 2004 outbreak of Highly Pathogenic Avian Influenza in the Fraser Valley. His experience includes supervising the diagnostic response to the discovery of BSE in Canada, an OIE expert on FMD, swine vesicular disease, sheep and goat pox,

and lumpy skin disease, technical advisor to the North American FMD Vaccine Bank, and he is an Honorary Member of the Canadian Veterinary Medical Association.

Dr. Kitching has authored more than 200 publications in referred journals, book chapters, conference proceedings, reference books and he is the senior author of 4 chapters in the OIE reference manual. He has recently taken on the role of Editor-in-Chief of *Transboundary and Emerging Diseases* which highlights the latest research on infectious animal diseases that hold the greatest economic threat to animals worldwide. He was a key initiator of the Canadian Animal Health Surveillance Network (CAHSN), the nation's early warning system for high risk animal diseases. In 2007, he and other network members received the Public Service Award of Excellence for Innovation for this achievement.

We very much look forward to his leadership and expertise in the Animal Health Branch, Ministry of Agriculture and Lands.



The Animal Health Centre Opens a High Level Containment Laboratory

On December 11, the Hon. Stan Hagen, Minister of Agriculture and Lands officially opened a new Containment Level 3 (CL3) facility as part of the Animal Health Centre (AHC). The new facility is approximately 10,000 sq.ft. of which 3,000 sq ft is net laboratory space; the remaining area is necessary to service the highly complex air handling and waste disposal systems. To provide an additional level of safety, the CL3 laboratory also has redundancy to the primary services. Built at a cost of \$14 million, this new facility will extend the ability of the Centre to further identify and characterize potential foreign animal disease agents, disease-causing agents that are significant to both human and animal health, as well as, newly-emerging pathogens. The need for this facility was identified before the large outbreak of highly pathogenic avian influenza (HPAI) in the Fraser Valley in 2004 and the need to further study the virus in high level containment during that event reinforced the importance to British Columbia of developing such a facility.

The AHC is part of the British Columbia Ministry of Agriculture and Lands. The Centre provides high quality diagnostic laboratory service to livestock industries and veterinarians within the Province, including salmon aquaculture, free-ranging wildlife and exotic animals as well as companion animals (e.g. horses, cats, dogs, and pet birds). These services support efficient livestock husbandry by identifying losses due to infectious and production diseases as well as providing the laboratory capacity for provincial surveillance programs, such as Bovine Spongiform Encephalopathy (BSE) and certain poultry diseases. The AHC is one of only two veterinary diagnostic laboratories in Canada that is accredited by the American Association of Veterinary Laboratory Diagnosticians. The laboratory employs highly trained and specialized staff, including those who perform necropsy on animals and offer more than 400 diagnostic tests for a large variety of infectious and toxic agents including those that may affect both animals and people.

The CL3 laboratory will initially focus on avian influenza (AI) and Newcastle disease (ND) viruses. Influenza isolates collected from the wild bird survey currently underway in British Columbia (and

across Canada), and low pathogenic avian influenza (LPAI) isolates collected from ducks and other domestic poultry will be analyzed. Newcastle disease has not been isolated from domestic poultry in Canada, but is present in some wild bird species, such as cormorants and pigeons. The AHC, as part of the Canadian Animal Health Surveillance Network (CAHSN), has capability for the identification of foot-and-mouth disease, classical swine fever, AI and ND, using protocols provided by the National Centre for Foreign Animal Disease. While the basic diagnostics can be done without a CL3 containment facility, any manipulation of the viruses causing these diseases requires CL3. Therefore, should an outbreak of a foreign animal (or emerging) disease occur in BC, the AHC will now be able to work safely in support of the control and eradication program.

Concerns about diseases that can be transmitted from animals to people are escalating and the new CL3 facility will provide laboratory scientists with a safe environment to detect and monitor pathogens that can jump species such as Q fever (*Coxiella burnetii*), swine influenza, and hepatitis E in swine. Wildlife diseases are also increasing their profile as reservoirs of disease for domestic animals and humans. The CL3 laboratory will be used to handle agents such as those causing tuberculosis, brucellosis, tularemia, and Lyme disease that may originate in wildlife species. The viruses that cause Bluetongue and epizootic hemorrhagic disease are occasionally found in diseased sheep and wild ungulates in BC and must be handled with CL3 protocols and conditions. These two trade-limiting pathogens may become more important in the future as they increase their distribution due to climate change and adaptation to new vectors.

The CL3 laboratory allows for the development of new areas of expertise, enhances diagnostic capacity, supports preparations to manage animal disease outbreaks and ensures the highest level of environmental safety and protection for laboratory workers. This fills a critical need for provincial preparedness in facing a future of increasing emerging disease threats.

Short cuts from the post mortem room

Cattle: Thrombotic meningoencephalitis (TEME) was diagnosed in two 8 month old feeder cattle that died following a brief period of being recumbent and comatose. There were characteristic lesions in the brain consisting of vascular thrombosis and hemorrhagic infarction.

Thrombotic meningoencephalitis is caused by the bacteria, *Histophilus somni*, previously known as *Haemophilus somnus*. It is still commonly referred to as Haemophilus Encephalitis, as well as TEME. The nervous form of the disease occurs most frequently in confined feeder cattle 6 to 12 months of age during the fall and winter after they have been in the feedlot for about a month.

In feeder cattle, infection with *Histophilus somni*, may also cause arthritis, myocarditis, and pneumonia

Equine: In early January 2009, a mature gelding resident in the Fraser Valley was attended for signs of colic. Despite prompt intervention, the gelding went on to exhibit progressively worse pain with declining response to treatment and euthanasia was elected. Marked cecal dilation and impaction was found with a 360 degree volvulus of the large colon involving the sternal and diaphragmatic flexures. Large numbers of tapeworms were present in the cecal impaction most intensely accumulated at the ileocecal junction.

This colic with cecal impaction occurred during a prolonged cold snap in the Fraser Valley and may have been associated with reduced water intake. Horse owners are advised to devise strategies to ensure that water intake is maintained at an adequate level during cold spells. Frequent refilling or thawing of water buckets, especially within 1 to 2 hours of feeding hay, wetting down of hay or feeding well soaked beet pulp or mashes can help to minimize risk. Thermostatically controlled water heaters, insulated water buckets and insulated heater cables on water lines can ensure maintenance of water at the barn and in paddocks.

This horse also exhibited a tapeworm infestation compatible with the cecal tapeworm, *Anoplocephala perfoliata*. Tapeworms have an interesting lifecycle which involves an intermediate host. Following passage of eggs in horse feces, free living oribatid mites consume the eggs which then develop into cystocercoids (larval tapeworm) in the mite body cavity. Horses ingest infected mites while grazing and the mature tapeworm develops in the cecum completing the life cycle. Tapeworms can cause intestinal disease in some horses, usually young horses, but is often observed as an incidental finding with no evidence of disease. Tapeworms are difficult to diagnose, as eggs are released in proglottids, or egg packages, in the feces and thus do not usually appear in routine fecal flotation tests conducted for fecal parasite analysis. We are occasionally asked how often we see tapeworms in horses submitted for necropsy. No official study has been conducted at the Animal Health Centre to determine the prevalence of equine tapeworm infestation, however, tapeworms are seen sporadically in horses submitted for post mortem.

Poultry: In 2007, small outbreaks of Infectious Laryngotracheitis (ILT) were detected in the Fraser Valley, principally affecting broiler chickens. With the cooperation of producers and board auditors, an ILT investigation and response protocol was developed to coincide with disease control measures that were implemented in the BC Poultry Industry Biosecurity Standards. Consequently, only one case of ILT in broiler chickens was reported in 2008 and the BC Chicken Marketing Board auditors quickly responded to stop further spread of the disease. ILT is a respiratory disease of poultry, caused by a Herpesvirus. The virus is highly contagious among unvaccinated poultry. ILT is a notifiable disease in British Columbia.

Wildlife: A mature captive black bear was submitted for necropsy following an acute onset of lethargy, anorexia, vomiting and dark frequent urination. The bear had died after 6 days of progressive symptoms and 4 days of antibiotic treatment. Histopathology showed severe multifocal hepatic necrosis, intrahepatic cholestasis, icterus, and ascites. A protozoal infection was suspected. Tests for *Leptospira*, *Toxoplasma gondii* and *Neospora caninum* were negative however *Sarcocystis* was identified by immunohistochemistry.

There are previous reports of *Sarcocystis* infection in polar and black bears with similar pathologic lesions. *Sarcocystis* species follow a two host lifecycle with asexual reproduction in intermediate hosts and sexual reproduction with excretion of sporocysts in feces of the definitive host. It appears that bears may be an aberrant host for *Sarcocystis* similar to what is seen with *S. neurona* infection in horses. The source of *Sarcocystis* infection in bears has not been determined and it may be a result of ingestion of fecally contaminated food or infected meat. (abstracted from report by Dr. Jennifer Davies, Veterinary Pathologist)

Japanese pieris toxicity

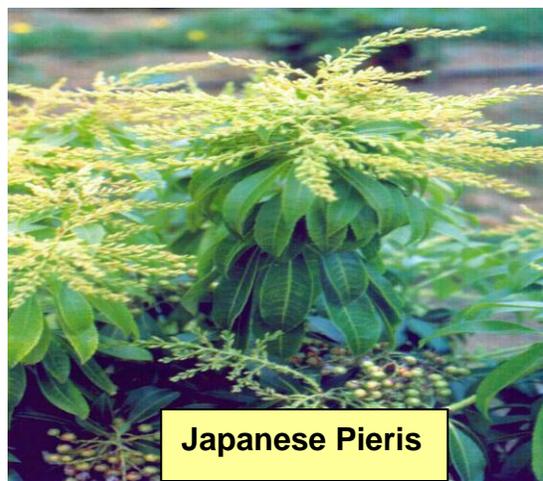
Dr. John Coates, Veterinary Pathologist, Animal Health Centre

In one case examined at the Animal Health Centre, a pregnant five year-old dairy goat died after a bout of acute distress characterized by staggering, weakness, repetitive vomiting, bloat and colic, that continued for 20 hours.

At necropsy the lungs were variably congested, and aspirated rumen contents were noted within the lower trachea and bronchi. Both heart chambers were dilated. The rumen was moderately distended with a homogeneous, porridge-like mass of macerated, dark green plant material. No grain was present within the rumen, and relatively intact fragments of plant leaves were readily collected, all identical in appearance. The elliptical leaves salvaged from the rumen had distinct, finely toothed or serrated edges, and were identified by a plant specialist at the Abbotsford Agricultural Centre as Japanese pieris (*Pieris japonica*). Three or four other mature pregnant females in the same paddock were similarly affected but less severely, and recovered with the aid of veterinary care. A neighbor had disposed of a quantity of freshly trimmed Japanese pieris cuttings by dumping them over the fence into the goats' paddock the previous day. These specimens were identical to fresh plant cuttings retrieved from the goat paddock.

Laurel, rhododendron and Japanese pieris are members of the *Ericaceae* (heath) family. All contain grayanotoxin (formerly known as andromeda toxin) that causes abdominal pain and vomiting when ingested (1,2,3,).

Although unrelated to digitalis, grayanotoxins have digitalis-like cardiotoxic effects and they increase the permeability of nervous tissue to sodium ions, a mechanism similar to pyrethroid insecticides (2). A variety of grayanotoxins are found in the stems, leaves and flowers of plants (3), and in food animals, no antidotal agents are known for these toxins (2).



The evergreen nature of the foliage predisposes to its consumption in winter, when other browse may be less available. Honey made from these plants has been reported to cause cardiac arrhythmias, vomiting, mild paralysis and convulsions in humans, and is known as “mad honey” disease (2).

References:

1. Kingsbury JM. *Poisonous Plants of the United States and Canada*, Prentice- Hall Inc, Publishers. 1964: 254–255.
2. Plumlee KH, Van Alstine WG, Sullivan JM. *Japanese pieris toxicosis of goats*. J Vet Diagn Invest 1992 (4): 363-364.
3. Smith MC. *Japanese pieris poisoning in the goat*. JAVMA 1978 (3): 78-79.

In the NEWS:

Malignant Catarrhal Fever in Washington, 2008

Washington's State Veterinarian, Dr. Leonard Eldridge confirmed that nineteen cattle that had been exhibited at the Puyallup Fair in September 2008 have died of Malignant Catarrhal Fever (MCF). MCF is caused by a herpes virus and there is no treatment for the illness in cattle. The cattle were infected by lambs that were housed in the same barn. Though fatal to cattle, MCF doesn't cause any illness in sheep, goats and wildebeest, so there was no sign of a problem during the fair. The investigation revealed that affected cattle were directly beneath ventilation exhaust fans, and were likely exposed to the virus as air was circulated. The infected cattle can't spread the disease to humans or other animals, so no quarantine actions were taken.

More information about MCF is available through the Washington State University Veterinary Medicine Extension at <http://agr.wa.gov/FoodAnimal/AnimalHealth/docs/MCFNOV2008.pdf>.

15th Case of Bovine Spongiform Encephalopathy in Canada

OTTAWA, November 17, 2008 — The Canadian Food Inspection Agency (CFIA) has confirmed bovine spongiform encephalopathy (BSE) in a seven-year-old dairy cow from British Columbia. No part of the animal's carcass entered the human food or animal feed systems.

The animal's birth farm has been identified, and an investigation is underway. The CFIA is tracing the animal's herd mates at the time of birth and examining possible sources of infection. The age and location of the infected animal are consistent with previous cases detected in Canada.

This case was detected through the national BSE surveillance program, which has been highly successful in demonstrating the low level of BSE in Canada. The program continues to play an important role in Canada's strategy to manage BSE.

Canada remains a Controlled Risk country for BSE, as recognized by the World Organization for Animal Health (OIE). Accordingly, this case should not affect exports of Canadian cattle or beef.

For information: Canadian Food Inspection Agency Media relations: 613-228-6682.

Avian Influenza Detected in British Columbia

ABBOTSFORD January 29, 2009 — The Animal Health Centre has diagnosed the presence of H5 avian influenza virus in a commercial poultry operation in southern British Columbia. Samples from the infected premise were also forwarded to the National Centre for Foreign Animal Diseases (CFIA) in Winnipeg to further characterize the virus strain, subtype, and pathogenicity. Pathogenicity refers to the severity of the illness caused in birds; tests to date indicate that the AI in this case is 'low pathogenic'.

Avian influenza viruses do not pose risks to food safety when poultry and poultry products are properly handled and cooked. Avian influenza rarely affects humans, unless they have had close contact with infected birds; public health authorities determine precautionary measures as warranted.

All birds on the infected premises have been humanely euthanized and disposed of, in accordance with provincial environmental regulations and internationally accepted disease control guidelines. The birds will be composted in barn to ensure virus destruction and subsequently moved outside for normal composting procedures. Once all birds are removed from the barn, the CFIA will oversee the cleaning and disinfection of the barns, vehicles, equipment and tools to ensure the destruction of any infectious material. The CFIA is investigating any recent movement of birds, bird products and equipment onto and off of the infected property.

In order to limit any potential virus spread, the CFIA has applied restrictions on the movement of poultry and poultry products within three kilometers of the infected premises. Samples from all farms within the quarantine area are being collected and submitted to the AHC to monitor and assure AI free status. All birds or bird products that are scheduled to move out of the quarantine zone must have laboratory evidence of negative tests before the CFIA will issue a license allowing such movement. The CFIA relies on backyard poultry owners to monitor their flocks and immediately report sick or dead birds. Poultry owners are urged to take an active role in protecting their flocks by employing strict biosecurity measures on their property.

The situation is being managed according to the 2008 Foreign Animal Disease Emergency Support (FADES) plan and the Joint Emergency Operations Centre is co-managed and operated by the BC MAL and the CFIA. This response effort involves collaborations with animal health and public health authorities, local poultry specialists and industry. The CFIA and BCMAL are conducting a thorough epidemiological investigation of the premises. A shared commitment by all involved has maximized the Agency's ability to contain and eliminate this situation as quickly as possible.

The AHC staff have successfully completed proficiency testing for AI and diagnoses can be made at the AHC laboratory without the necessity of sending samples for confirmation to Winnipeg as in 2004 and 2005; this has greatly aided the rapid testing and response to the current event.

The CFIA has notified the World Organization for Animal Health (OIE) and international trading partners of this situation.

Cattle Program Great Success for B.C.

KAMLOOPS, December 22, 2008 — B.C.'s cattlemen have ensured the highest participation rate in Canada for an innovative program that is assisting in re-entering and expanding export markets for B.C. beef, Minister of Agriculture and Lands Stan Hagen announced.

After the 2003 BSE crisis, age-verifying of Canadian calves is vital to restoring and retaining beef exports. By 2010, age verification will also be increasingly important to market cattle in Alberta. While stakeholders looked for ways to increase participation, the British Columbia Cattlemen's Association was developing an incentive program to boost participation. The incentive of \$12 per calf brought on a steep increase in participation, boosting it to 47 per cent. The Province commended the Cattlemen on their handling of the program because the association reached beyond their membership to represent the whole sector and took a risk in developing a new program, which has turned into a provincial success story.

Veterinary Staff at the Abbotsford Agricultural Centre



Victoria Bowes, DVM, MSc, Diplomate American College of Poultry Veterinarians Avian Pathologist

Dr. Bowe's professional interests include avian influenza, production-related diseases of poultry and diseases of pet and free-ranging wild birds.



Ann Britton, DVM, MSc, PhD. Veterinary Pathologist

Dr. Britton has a special interest in equine pathology.



Sean K. Byrne BSc, Ph.D., Diplomate, American Board of Medical Microbiology Head, Bacteriology Laboratory

Interests: Development of nucleic acid based tests and epidemiological typing methods for microbial pathogens.



Bill Cox, DVM Poultry Health Veterinarian

Poultry Extension, Biosecurity, Emergency Planning, Disease Control. Industry liaison for animal and public health issues.



Gary D Marty, D.V.M., Ph.D., Diplomate, American College Veterinary Pathologists Fish Pathologist

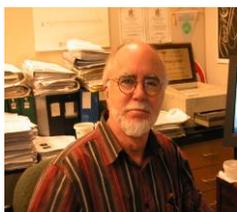
Dr. Marty's work includes histopathology of tissues collected as part of the ministry's Fish Health Auditing and Surveillance Program; diagnostic pathology for clinical case submissions from fish farms, public aquariums, and pet fish owners; and collaboration in research projects on wild and farmed fish.



Don McIntosh DVM, MVSc, Diploma, Veterinary Pathology

Mammalian pathologist with a special interest in livestock and production animal disease.

Stephen Raverty, DVM, PhD, Diplomate American College Veterinary Pathologists Veterinary Pathologist



John Robinson DVM, Ph.D. Head, Virology & Molecular Diagnostics.

Dr. Robinson oversees the diagnostics activities of the virus section and the 150 Polymerase Chain Reaction (PCR) tests done at the Animal Health Centre.



Merv Wetzstein, DVM
Manager Livestock Health and Regulatory Unit

Dr. Wetzstein's unit provides regulatory administration as well as risk analysis and risk mitigation concerning antimicrobial resistance, pathogens in the food chain and pharmaceutical residues from livestock and poultry production.

Nancy deWith, DVM, MSc Veterinary Epidemiologist

Develops protocols/action plans on issues related to food safety and quality, animal health management, animal disease, regulation, zoonoses, and animal welfare.



Mira J Leslie, DVM, MPH and Jane Pritchard, DVM, MSc
Public Health Veterinarians

We work to promote the health of humans, animals and the environment through innovative and cooperative disease monitoring, prevention and control. [Jane is currently in China for 2 years developing programs to enhance animal health systems.]



Contributors: Shawnee Landsiedel, Paul Kitching, Mira Leslie, Ron Lewis, Bill Cox, Ann Britton, Don MacIntosh, John Coates, Jennifer Davies

Send correspondence to:

Dr. Mira J. Leslie
BCMAL/ 1767 Angus Campbell Road
Abbotsford, BC V3G 2M3

Email: Mira.leslie@gov.bc.ca
Phone: 604-556-3066 Fax: 604-556-3015