

Animal Health Surveillance

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QUARTERLY REPORT

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Preface

During the quarter, there was an outbreak of virulent Newcastle disease affecting a single farm in Victoria. A number of matters relating to emergency animal disease are mentioned in this issue: the simulation Exercise Minotaur; a review of rural health services; and the use of rural veterinarians in an emergency.

Other topics include highlights of disease surveillance activities, items of interest from States and Territories, and summaries of disease monitoring and surveillance programs reported to

Australia's National Animal Health Information System (NAHIS). Only summary information is recorded in NAHIS, with detailed data being maintained by the source organisation. The information included in this report is accurate at the time of publication but, because of the short reporting and production time, minor discrepancies may occur. *AHSQ* is available on the Animal Health Australia website (at www.aahc.com.au/nahis).

Gardner Murray
Australian Chief Veterinary Officer

Newcastle disease

In early May, virulent Newcastle disease (ND) virus was detected in poultry on a large Victorian commercial layer farm near the town of Meredith, about 75 km west of Melbourne. The outbreak was contained to the farm by quarantine, stamping out and decontamination, and there has been no evidence of spread of the virus to other farms.

ND is a highly contagious viral disease that can cause rapidly spreading outbreaks of sickness and death in unvaccinated domestic chickens. It can affect turkeys, pheasants, pigeons, quail and guinea fowl. Ostriches and some species of wild birds are also susceptible.

The infected flock was a large poultry layer (egg production) enterprise of about 250 000 birds. The layers were housed in nine sheds, each containing around 22 000 birds. In late April, a marked drop in egg shell quality with shell discolouration in two sheds prompted investigations by the farm's

private veterinary consultant and animal health staff of the Department of Natural Resources and Environment (DNRE). Egg production soon fell in all sheds, and large numbers of eggs with poor quality shells and yolks were produced. About 5% of the eggs produced had white rather than their normal brown pigmentation. Only a slight increase in mortalities occurred, well within industry limits.

Diagnostic samples were submitted to the Australian Animal Health Laboratory (AAHL) in nearby Geelong where a virulent DNA sequence was identified. The diagnosis was confirmed by further viral isolation, immunohistochemistry and intracerebral pathogenicity index testing. The virus was found to be of Australian origin (amino acid sequence of F cleavage site RRQRRF and a 9 amino acid extension at the HN gene, indicating that the virus is identical to, or almost identical to, the 1999 Mangrove Mountain isolate of virulent ND virus of Australian origin). Epidemiological

investigations including examination of the results of routine serology for ND show that the virus probably infected the birds about mid-March 2002.

The property was quarantined, with immediate implementation of movement controls. A restricted area (RA) of about 3-km radius and a control area (CA) of about 10-km radius around the affected property were established along local government area boundaries. Australia's trading partners and the Office International des Epizooties (OIE, the world organisation for animal health) were notified, and the international export of poultry and poultry products from Victoria was suspended.

An Emergency Animal Disease Response Plan to eradicate the disease was developed by Victoria and approved by Australia's Consultative Committee on Emergency Animal Diseases (CCEAD) and by the National Management Group on 13 May 2002. The plan involved a stamping-out policy, with the destruction and disposal of the 250 000 birds on the farm and the maintenance of strict quarantine and movement controls to prevent any spread of the disease. Detailed and targeted tracing, monitoring and surveillance programs were carried out to determine the origin of the virulent virus and whether the disease had spread. Contaminated products and materials were disposed of as necessary or disinfected as part of an intensive clean up and decontamination of the infected premises. A Local Disease Control Centre (LDCC) was established at the Geelong DNRE office and an infected premises operations centre was established on the infected property.

There were no other commercial poultry farms within the RA. Five broiler farms within the CA were intensively monitored and showed no evidence of ND. Birds on two commercial layer farms with links to the infected farm remained healthy, with no clinical, serological or virological evidence of ND.

The geographical isolation of the farm and the surveillance testing that indicated the disease had not spread enabled the rest of Victoria outside of the CA to retain its ND free status with no additional quarantine or movement restrictions being imposed by other Australian States and Territories and the requirements of some individual importing countries for ND certification could be met.

A large proportion of the DNRE Animal Health and Welfare Group involved with the outbreak were experienced in emergency responses from previous emergency animal disease responses, involvement in natural disasters such as bushfires, and training courses provided under the National Emergency Animal Disease Program. The roles of infected premise site supervisors, RA movement controls, tracing and

surveillance, veterinary epidemiology, mapping and the use of the ANEMIS data management program were all undertaken by experienced staff and used as a training opportunity for others. Other business units within DNRE including the Fire Operations Branch and Land Information Group provided resources, and skilled people from around the state for a wide range of duties. Destruction of the 250 000 birds took ten days using carbon dioxide gas chambers with disposal by burial on-site. Approximately 3000 cubic metres of manure and potential fomites were buried. A few very small non-commercial or 'backyard' flocks in Victoria that had previously received birds from the infected farm were placed in quarantine, with precautionary destruction of all birds in these flocks.

Cleaning and disinfection of the infected premises was an enormous task because of the sheer size of the farm. They were done in accordance with the Australian Veterinary Emergency Plan (AUSVETPLAN) for Newcastle disease and used farm staff in a major cleanup operation before shed disinfection commenced. Cleaning and disinfection of 14 sheds (over 30 000 square metres) was done over four weeks by a professional poultry shed cleaning contractor using state of the art high pressure foaming equipment and cleaning agents. Sampling of a first batch of sentinel chickens that were placed for three weeks (15 July – 5 August) in the separate northern section of the infected premises, where grower and brooders sheds are located, has confirmed the absence of the virus. The affected farm should be restocked in September, with Australia able to meet international requirements for country-freedom from ND by late November.

No other infected flocks have been found. How the virus was introduced to the farm is unknown. Extensive surveillance, tracing and testing of other flocks has found no evidence that the infection has spread from the infected property. Surveillance testing was carried out a second time in the CA and was negative, thus enabling lifting of the CA restrictions. This was completed by 18 July. DNRE has established protocols for issuing permits for voluntary vaccination of Victorian poultry flocks as part of a risk minimisation strategy. Most layer and broiler breeder operations in Victoria and NSW will probably adopt protective vaccination strategies for Newcastle disease.

This response has seen the first test of the new government–industry Emergency Animal Disease Response Agreement to share the costs of controlling and eradicating the disease. Under the agreement for virulent ND, the Commonwealth Government will pay 25% of the cost of control of the outbreak; States and Territories, another 25%; and the chicken meat and egg industries, the remaining 50%.

Contributed by: Tristan Jubb, DNRE

OIE General Session

The 70th General Session of the International Committee of the Office International des Epizooties (OIE) was held in Paris in May. Delegates from its 162 member countries attended. The meeting made a number of decisions of importance to Australia, including new standards for the control of foot-and-mouth disease (FMD) and bovine spongiform encephalopathy (BSE). New directions in animal welfare and food safety in collaboration with other international organisations such as the Codex Alimentarius, the World Health Organization (WHO), and the Food and Agriculture Organization (FAO) were discussed.

Other key issues were covered at a range of satellite meetings included the FMD International Vaccine Bank, 'quadrilateral' country meetings on animal health, and bilateral discussions on specific trade-related issues. These meetings set the agenda for changes in the requirements for international trade in animals and animal products, help to distribute information on the animal health status of countries, and are considered essential to Australia's agricultural animal health and trade interests.

OIE operates five Regional Commissions to promote cooperation at a regional level. The May meeting gave all member countries the opportunity to be updated on programs and activities of these regions.

Regional animal health activities

AUSTRALIAN CVO VISIT TO CHINA

Australia's Chief Veterinary Officer, Gardner Murray, in his role as president of OIE's Regional Commission for Asia, the Far East and Oceania, and the Director General of OIE, Bernard Vallat, were invited to visit the People's Republic of China (PRC) to discuss increasing the PRC's participation in OIE activities, particularly since the accession of PRC (and Taiwan) to the World Trade Organization. Taiwan has been a member of OIE since 1954 and, as a result of the visit, a proposal will be prepared for consideration by PRC and Taiwan to reach agreement to allow both to participate fully in OIE activities. Other matters discussed during the visit included import risk analysis, gene technology, border quarantine control, and international trade standards.

FOOD SAFETY IN THE ASIAN REGION

In recent years, there has been a move internationally to protect public health from food-borne risks by adopting principles that are important in food safety systems. These include adopting a multidisciplinary approach through the entire production chain, compliance with internationally agreed standards,

ANIMAL WELFARE

OIE is broadening and reinforcing its field of activities and animal welfare is now an integral part of its priorities, as it is a growing source of concern among consumers and decision-makers. Animal welfare was a major item on the agenda of the General Session.

Although animal welfare is not currently covered by the World Trade Organization's Agreement on Application of Sanitary and Phytosanitary Measures (the 'SPS Agreement'), many countries want to see strong involvement by OIE to help them to resolve potential bilateral disputes and to support dialogue with consumers and animal protection organisations.

Animal welfare issues include establishing norms for animal protection on the farm, during transport, and at the time of slaughter. To ensure that these problems are dealt with on a scientific basis, OIE has formed an *ad hoc* group comprising specialists from five regions. The group met in April to determine the potential scope, roles and functions of OIE involvement in animal welfare issues, and to provide initial recommendations to the General Session in May.

Contact: Gardner Murray, Australian Chief Veterinary Officer

transparency, wide consultation in the decision-making process, and comprehensive emergency planning and preparedness. Gardner Murray chaired a meeting of an advisory panel in Singapore to advise on biosecurity and food safety. The panel considered that Singapore has a food safety system equal to if not better than that of most countries in the world. The panel made a number of recommendations that will be considered by the Minister (Agri-Food) and the Veterinary Authority of Singapore.

EMERGENCY ANIMAL DISEASE MANAGEMENT WORKSHOP IN INDONESIA

In May, a collaborative training workshop on emergency animal disease management was conducted in Indonesia between Agriculture, Fisheries and Forestry — Australia (AFFA) and the Indonesian Directorate General of Livestock Services, with input from Victoria's Department of Natural Resources and Environment (DNRE). The workshop was a component of Biosecurity Australia's ongoing strengthening of quarantine in Indonesian Papua funded by AusAID. Chris Bunn from AFFA and Richard Rubira from DNRE acted as workshop

coordinators and trainers. The workshop provided provincial and district animal health staff with an overview and understanding of procedures for emergency animal disease management. It included a particular emphasis on the global threat of FMD and will assist with Indonesia's further development of manuals on emergency animal disease management and technical procedures. The workshop provides another example of the extensive effort being made at the pre-border level to help protect Australia from incursions of major animal diseases.

REGIONAL FMD ACTIVITIES

In July, Gardner Murray visited Myanmar with John Edwards, Regional Coordinator for the South-East Asian Foot-and-Mouth Disease Campaign (SEAFMDC) to meet with senior government officials in Yangon to discuss a range of disease management issues, particularly FMD in the region. Work continues

on establishing an FMD-free zone in the Malaysia–Thailand–Myanmar peninsula. Australia has played an important part in SEAFMDC by providing financial and technical support to this initiative to reduce the risk of FMD in the region.

Australia was recently invited by the Republic of Korea to provide a veterinary epidemiologist to assist in evaluating its efforts to eradicate the recent outbreak of FMD in two provinces there. Graeme Garner, from AFFA's Office of the Chief Veterinary Officer, undertook this role (along with epidemiologists from New Zealand and the United States as part of an international team) and built on advice he had previously provided during the 2001 outbreak in Korea. The exchange of technical experts between Australia and its regional trading partners continues to strengthen knowledge and understanding on FMD and assist with the control of this and other significant animal diseases.

Flock Identification Scheme

The Sheepmeat Council of Australia has launched the National Flock Identification Scheme (NFIS). NFIS is a voluntary scheme developed to identify sheep and lambs using permanent, visually readable ear tags printed with a Property Identification Code (PIC) and the National Livestock Identification Scheme (NLIS) logo.

In reviewing the epidemic of foot-and-mouth disease in the United Kingdom last year, the Australian sheepmeat industry identified that a lack of a national identification scheme (and consequently the lack of a robust tracing system for sheep and lambs) could be a major impediment to a rapid response to a similar disease outbreak here. NLIS will be the foundation for a national identification and traceback system to remedy this by providing faster and more accurate traceback of sheep for disease and food safety purposes using visually readable tags. The scheme is supported by a National Vendor Declaration (NVD) to identify sheep and lambs on their property of birth and/or last property of residency. NFIS is endorsed by SAFEMEAT, the industry–government partnership responsible for strategic policy advice on red meat safety and hygiene issues.

NFIS has two types of tags, both identified with a PIC and the NLIS logo. Sheep Breeder Tags (applied on the property of birth, before moving to another

property) will be produced under a 'colour of the year' system, allowing for the visual identification of sheep and lambs at a distance. The Sheep Property Tags (applied to sheep or lambs no longer on their property of birth) will be pink. When sheep or lambs are consigned for sale or slaughter, the PIC is noted on the vendor declaration form to provide a means of traceback.

For properties already tagging sheep and lambs — more than 10 million tags are sold each year — there should be very little extra cost. NFIS tags are expected to cost from 25 cents to \$1.20 each (depending on the size, design and number of tags) or about one to two cents per tag more than those already used to cover the cost of NFIS identification. Producers who want to participate in the NFIS will be able to purchase tags from their usual manufacturer, simply by ordering their normal tags, printed with the NLIS logo and their PIC. Producers may find their PIC by contacting their State Department of agriculture or primary industries (or Rural Lands Protection Board in NSW).

Further information on NFIS is available on the internet at the Sheepmeat Council of Australia website (<http://www.sheepmeatcouncil.com.au>) or at the Meat and Livestock Australia site (<http://www.mla.com.au/>), and on the Meat and Livestock Australia's Hotline (1800 635 445).

Disease Watch Hotline — 1800 675 888

The Disease Watch Hotline is a toll-free telephone number that connects callers to the relevant State or Territory officer to report concerns about potential exotic or other emergency disease situations. Anyone suspecting an exotic disease outbreak should use this number to get immediate advice and assistance.

For information about the Disease Watch Hotline, contact Jamie Penrose, Animal Health Australia.

The role of non-government veterinarians in emergency disease outbreaks

The epidemic of foot-and-mouth disease in the United Kingdom in 2001 focused attention onto Australia's emergency response arrangements, not the least being the limited resources that are available to respond. Because of these concerns, a workshop was held in Canberra in April, drawing particularly on the experience gained from the many non-government veterinarians (NGVs) who went to the UK during the outbreak.

The workshop was organised jointly by the Australian Veterinary Association, Animal Health Australia, and Agriculture, Fisheries and Forestry — Australia, and was restricted to 20 participants to encourage in-depth discussion.

The concept of a national veterinary reserve was the major recommendation to be developed at the workshop. Veterinarians in the reserve would undertake annual training, for which they would be paid. They would be included in exercises and

competency-assessed for specific roles. The group not only identified basic roles that could be undertaken by NGVs but also proposed that individuals could have or develop skills that would enable them to undertake supervisory or managerial roles based on demonstrated aptitude and interest. Additionally, the group emphasised there is an important need for advisory services to help farmers make short and long-term decisions during an emergency. Many NGVs are well suited to provide such services.

Discussion about the interim AUSVETPLAN Veterinary Practice Manual emphasised that the manual needed a major revision, including greater emphasis on biosecurity. It was suggested that the manual should be presented in a multi-media format, and if so, there should be 'hot' links to other key manuals such as the Decontamination Manual. The workshop nominated four veterinarians to be part of a new writing group.

Aquatic animal health

AQUAPLAN MANUALS

Two new operational manuals have been released as part of a series known collectively as AQUAVETPLAN (Australia's National Strategic Plan for Aquatic Animal Health). The manuals are an important part of AQUAPLAN and are designed to complement various State, industry or farm-based emergency plans.

Operation Procedures Manual — Destruction provides specific technical information on the rapid harvesting and destruction of aquatic animals and *Operation Procedures Manual — Disposal* provides specific guidance for the safe disposal of diseased aquatic animals. Both manuals are designed to minimise the spread of disease in the face of an aquatic animal disease emergency.

The manuals can be used in a number of situations: operationally, either as primary manuals or as a back-up for specific action plans; as planning tools to help develop more specialised procedures; and as reference sources in training exercises. They can be used in all jurisdictions and for all emergency diseases or conditions to provide Australia with an integrated, planned approach to aquatic animal disease emergencies.

AQUAVETPLAN is available on CD-ROM, and this medium together with the AQUAVETPLAN website

(at <http://www.affa.gov.au>) will be the preferred ways of access, although printed copies of each manual will still be produced in limited numbers. Copies of AQUAVETPLAN on CD-ROM or paper can be obtained (e-mail aah@affa.gov.au).

DISEASE EMERGENCY TRAINING FOR FISHERIES COMPLIANCE OFFICERS

In May, fisheries compliance officers from the States/Territories of Australia, as well as from Papua New Guinea and New Zealand, attended the annual Australasian Fisheries Law Enforcement Conference in Cairns. For one day of the conference, the compliance officers participated in a simulation exercise focusing on the outbreak of a fictitious disease in the abalone industry. During the exercise, the participants planned and directed the response required to control the disease incident. The aim of the exercise was to familiarise the compliance officers with the role that they would play in a real disease emergency and in doing thus to identify any shortcomings in current plans that need addressing.

Staff from AFFA, supported by the Queensland Department of Primary Industries, organised and ran the exercise, which examined the operation of a Local Disease Control Centre during an outbreak of 'abalone blight'. The exercise was based on the AQUAVETPLAN Control Centres Manual but focused on the compliance aspects of emergency

management. It addressed a range of contemporary compliance issues including poaching of infected stock, control of recreational fishers, and design of a publicity campaign to make the general public aware of the dangers associated with spreading diseases that affect aquaculture and other fisheries industries.

The participants worked in one of three teams, which each effectively managed the emergency and the simulated problems as they were presented. Discussion and debate between the three teams during the debriefing sessions allowed the participants to benefit from the views of participants from other jurisdictions and to compare the variety of views and approaches to managing disease emergencies in aquaculture.

NATIONAL FISH PATHOLOGISTS' WORKSHOP

The Office of the Commonwealth Chief Veterinary Officer convened the Second National Fish Pathologists' Workshop in June at the Tasmanian Department of Primary Industries, Water and Environment laboratory in Launceston. Twenty-seven aquatic animal health specialists, mostly from governments participated in the workshop.

Workshop participants agreed that aquatic animal health certification relating to interstate trade is a critical issue that needs to be considered by the future Aquatic Animal Health Consultative Committee (AAHCC). It was suggested that updating AQUAVETPLAN should be a core function for AAHCC, and that the National Fish Pathologists' Workshop be formally appointed the scientific committee underpinning the work of, and reporting to, the future AAHCC.

Participants did not identify any additional changes to either the National List of Reportable Diseases of Aquatic Animals or the current system for reviewing and altering it. However, it was agreed that an efficient

mechanism should be established to disseminate information on the occurrence of new and emerging pathogens or diseases in Australia.

It was hoped that existing standard diagnostic techniques could be made available through AFFA on a CD ROM and via its website, as well as by hard copies published through the Subcommittee on Animal Health Laboratory Standards. It was agreed that a sampling statistics standard operating procedure should be completed and cross-referenced to both the OIE *Diagnostic Manual for Aquatic Animal Diseases* and the *Survey Toolbox for Aquatic Animal Diseases*. It was felt a set of disease fact sheets could be useful preparation for emergency planning, and that funds should be sought for a project to determine and fill the gaps in the existing fact sheets.

Workshop representatives from each potentially interested laboratory indicated their agreement to participate in a project to develop inter-laboratory proficiency testing for the detection and identification of white spot virus in Crustaceans.

Workshop participants noted the perceived risk of spread of disease from ornamental fish imports, the need to have better access to records of the fate of ornamental fish imports at the border, and the need for better training for AQIS inspectors.

The overseas submission of research samples was discussed. It was felt that notifying the State Chief Veterinary Officer of such submissions would provide a mechanism to prevent potential 'surprises', to alert the researcher to potential effects on Australian industries, and to suggest laboratories preferred for confidentiality. Advice on such a formal process would need to be readily available for it to be effective.

Contributed by: Eva-Maria Bernoth, Office of the Chief Veterinary Officer

National Arbovirus Monitoring Program

The National Arbovirus Monitoring Program (NAMP) is a national program jointly funded by industry and government to monitor the distribution of economically important insect-borne viruses such as bluetongue, Akabane and bovine ephemeral fever (BEF) and their vectors.

This report covers the first half of 2002, during which levels of arboviral activity in northern Australia were generally depressed. Rainfall during the wet season in northern Australia was below average and southern areas of Queensland remained drought affected. No seroconversions were detected at sentinel sites in the southern States of Victoria, South Australia or Tasmania.

AKABANE VIRUS

In the Northern Territory (NT), Akabane viral activity was widespread in early 2002 with seroconversions recorded at five sites. Activity occurred at most coastal sites in Queensland and extended inland to the Central Highlands at Clermont. Some activity was recorded at Kynuna in the first quarter of this year. Viral activity in New South Wales (NSW) was slower and later than usual, probably due to low rainfall. During the period, there were seroconversions along the entire coastal plain as far south as the Cumberland region. There was no evidence of viral transmission in the Kimberley, but seroconversions were detected in the Pilbara region of Western Australia (WA) during June this year.

BLUETONGUE VIRUS

The dry conditions in the north of Australia delayed bluetongue viral activity in this area with most transmission being detected in April and May. In NT, activity was first detected at Katherine about four weeks earlier than at a site near Darwin. Viral activity was limited, with no activity recorded in the Victoria River District. In Queensland, bluetongue activity was recorded in the northern coastal centres of Weipa, Townsville and Rockhampton. In WA, there was no evidence of transmission in the Kimberley, but seroconversions were detected in the Pilbara region of WA during the second quarter of this year.

Seroconversions were recorded at three locations in northern NSW and followed relatively normal patterns for a season with generally suppressed arboviral activity. There was no evidence of transmission in the Hunter Valley for the second successive year.

BOVINE EPHEMERAL FEVER

Bovine ephemeral fever (BEF) virus activity occurred in all northern sentinel herds in the NT. All coastal sites in Queensland recorded evidence of transmission during the period and there was evidence of widespread activity in inland Queensland during the previous twelve months. In WA, transmission was detected in the Pilbara region and at Kununurra in the Kimberley region. In NSW, transmission was detected

at all sites along the North Coast and south to the Manning River. The limited spread of BEF in NSW this year is probably the result of a combination of poor seasonal conditions and high level of population immunity following widespread transmission last season.

INSECT TRAPPING

In the 'Top End' of NT, all four species of *Culicoides* regarded as vectors of bluetongue virus (*C. brevitarsis*, *C. fulvus*, *C. actoni* and *C. wadai*) were trapped. *C. brevitarsis* was the only vector species collected in Queensland, at fewer inland sites than in the last quarter of 2001. This apparent failure to persist throughout summer may be due to very dry conditions prevailing through much of southern and central Queensland. In WA, numbers of all species were low moderate at most sites and monitoring seems to confirm that there is an established population of *C. brevitarsis* near Broome. However, no *Culicoides* spp. were collected at Bunbury, Port Hedland, or Geraldton.

In NSW, patterns of movements were within predicted limits with *C. brevitarsis* being detected as far south as Nowra in February. Numbers of *C. brevitarsis* were consistent with those recorded in previous years and decreased progressively with distance from the endemic area. No *C. brevitarsis* was recorded west of the Great Dividing Range during the period.

Contributed by: Peter Black, Office of the Chief Veterinary Officer

Veterinary committee

Veterinary Committee consists of the Chief Veterinary Officers of the Commonwealth, the States and Territories, and New Zealand, together with CSIRO and Biosecurity Australia representatives. The committee met in April and addressed a number of issues.

FMD VACCINATION POLICY

As new FMD vaccines and arrangements for storage and use of these vaccines are developed, governments and industries around the world are beginning to look carefully at vaccination as a tool to minimise the risk of the establishment and spread of FMD. At the FMD-BSE Policy Forum held in November 2001 (see *AHSQ* Vol. 6, No. 4) industry and government participants discussed at length the matter of vaccination against FMD and the need to define more clearly a policy for use of FMD vaccine in an outbreak.

Veterinary Committee discussed a draft policy document containing decision criteria. The discussion included issues such as resources, carcass disposal, availability of vaccine type/strain, rare and endangered species, and social community reactions to use. A revised paper will be submitted to the Primary

Industries Standing Committee (PISC). New Zealand is currently developing its own vaccination criteria.

STOCK FEED MANUFACTURING CODE

During the past 12 months, there have been significant actions on the part of government and industry in response to the need for Australia to implement and audit strict preventive measures for BSE.

Veterinary Committee was requested to review the provisions of the 'Australian Code of Good Manufacturing Practice for Home Mixed Feed, Feed Milling Industry and Stock Feed Premises' to ensure the its provisions fully reflect the requirements of Australia's ruminant feed ban. The Committee discussed many issues including revisions to the Code, audit procedures, and incorporating the Code into legislation. Veterinary Committee has liaised closely with the Stock Feed Manufacturing Association of Australia, which is working to develop the Code as it relates to the Feed Milling Industry.

ENZOOTIC BOVINE LEUCOSIS

Veterinary Committee endorsed the first edition of the Standard Definitions and Rules for Enzootic Bovine

Leucosis, noting that implementation depends on advice from the Australian Dairy Farmers' Federation and the Australian Dairy Industry Council of national dairy industry support.

BOVINE JOHNE'S DISEASE

After some discussion, Veterinary Committee referred the review of the Victorian Control Program for bovine Johne's disease (BJD) to the BJD Technical Advisory Group (TAG) for further assessment. The risk analysis and proposed spectrum of JD status for cattle was also referred to BJD TAG for to further develop the system.

OVINE JOHNE'S DISEASE

Veterinary Committee endorsed amendments to two appendixes of the OJD Standard Definitions and Rules (SDR). Appendix 4 (guidelines for the investigation and progression of suspect, restricted and under surveillance flocks) was amended to include guidelines for the investigation of abattoir surveillance tracebacks and abattoir surveillance of mixed lots. Appendix 8 (guidelines for management of OJD using property

disease management programs, including guidelines for use of vaccine) was amended to include the use of an imported vaccine and reference to the overall SDRs and the Market Assurance Vaccinating (MAV) scheme in terms of the conditions and requirements for use of vaccine.

Veterinary Committee requested OJD TAG to further develop the scope and structure of the MAV proposal, including any relationship with the Market Assurance Program. Veterinary Committee endorsed the unrestricted use of vaccine in Restricted Zones and conditional use in Control Zones.

NEXT MEETING

The next face-to-face meeting will be 22–24 October in Brisbane. The online-newsletter *VetCommunique* (at <http://www.affa.gov.au/> — under publications for animal and plant health) provides information about Veterinary Committee's activities.

Contributed by: Jill Mortier, Animal Health Secretariat, PIAPH, AFFA

Review of rural veterinary services

In July 2002, the Commonwealth Government announced a Review of Rural Veterinary Services to determine:

- What will be the future needs of Australia's livestock enterprises and industries and animal health system?
- What are the expected roles and requirements for veterinarians in meeting these needs?
- What will be required (in and by the private and public sectors) to ensure people with the required veterinary and veterinary-related training and expertise are available where and when needed?

Peter Frawley, the Chairman of Livecorp and the Cooperative Research Centre for Cattle and Beef Quality, will conduct the review, assisted by a Consultative Committee. He will be consulting with stakeholder groups and interested parties to obtain their views and so assist with the preparation of a Policy Discussion Paper and his final report.

The key dates and deadlines for the Review are:

- 5 August: release of Issues Paper and invitation for submissions;
- 6 September: closing date for submissions on the Issues Paper;
- 30 September: release of the Policy Discussion Paper and invitation for submissions;
- 8 November: closing date for submissions on the Policy Discussion Paper; and
- 29 November: report of Review presented to the Commonwealth Government.

Further details, including the full terms of reference and the Issues Paper, are available on the internet (at www.affa.gov.au/ruralvets), by e-mail (to ruralvets@dest.gov.au), or by writing to:

*Review of Rural Veterinary Services Secretariat
Department of Education, Science and Training
GPO Box 9880
Canberra ACT 2601*

Exercise Minotaur, an FMD preparedness simulation

Exercise Minotaur (see *AHSQ* Vol. 7, No.1), has been scheduled for 9–13 September 2002 and will involve all levels of government, industry, the media and some international observers. The exercise will test the integration and functional capacity of national arrangements for the management of a large outbreak of FMD and its socioeconomic consequences. It will

do this by simulating an outbreak of FMD in a number of States/Territories and then testing the activation of national emergency operation centres and management groups.

Further information is available on the internet (at <http://www.affa.gov.au/exerciseminotaur>).

State and Territory reports

New South Wales

Contributed by:
Barbara Moloney
NSW Agriculture



NEW CVO FOR NSW

Bruce Christie has been appointed NSW Chief Veterinary Officer to replace Dick Jane who retired at the end of June.

AUSTRALIAN WILDLIFE HEALTH NETWORK

A bid by NSW Agriculture and Sydney's Taronga Park Zoo to host the Australian Wildlife Health Network has been successful. The network is currently considering wildlife disease surveillance requirements against which future surveillance programs may be planned.

EXOTIC DISEASE EXCLUSIONS

A NSW Agriculture emergency response team attended a saleyard following the detection of lameness and possible vesicular lesion on the snout of one pig, which had come from a piggery in central NSW. Detailed examination of the animals suggested that FMD was unlikely and samples taken for exclusion were negative on antigen and antibody ELISA and viral isolation tests for FMD.

A north-coast horse had multiple lung abscesses and was negative for antibodies to Hendra virus. *Pasteurella caballi* and *Peptostreptococcus* spp. were isolated from a lesion. Another horse from the same district was also negative to Hendra virus. Snakebite was suspected. Both animals showed sudden onset of pulmonary signs, which could have been consistent with infection with Hendra virus.

ANTHRAX

In late June, nine of 100 ten-month-old steers died on a property in the Dubbo area. The animals were unvaccinated and smears of bloody discharges were positive for *Bacillus anthracis* on polychrome methylene blue stain. The property and neighbouring properties had a previous history of anthrax.

Smears were negative for anthrax in four other investigations of deaths during the quarter. Three of these (two cattle and one sheep) were in the known 'anthrax belt', and the fourth was in 40 dairy heifers on the coast, where two died within a week of purchase from a sale.

FOOTROT

A significant milestone has been reached for the NSW Footrot Strategic Plan. There are no longer any Footrot Residual areas remaining in the State — all areas now have Control or Protected status.

CHLAMYDIOSIS

From March to June, the Wentworth Area (human) Health Service (WAHS) confirmed 50 human admissions for psittacosis in the Blue Mountains area. As part of an investigation in collaboration with WAHS and NSW Agriculture, one of four bird submissions from the Blue Mountains was found positive for chlamydiosis, the avian form of the disease. WAHS is commencing a study of cases treated by general practitioners over the same period. The bird specimen found positive was a result of a submission by Wildlife Information and Rescue Service (WIRES) and no association has been established between the human cases and the bird submission that was found positive.

In May, a wild pigeon was diagnosed with chlamydiosis after being found in a poor state in the outskirts of Sydney. There were reports of other wild birds in the area being found dead. In June, a bird purchased from a pet shop in Sydney subsequently died within few days. A private veterinarian diagnosed chlamydiosis. No human involvement has been found. Two human cases (two children in the north-coast area) are believed to be associated with a newly acquired canary. Investigations are pending.

AUSTRALIAN BAT LYSSAVIRUS

Four positive diagnoses for Australian bat lyssavirus were made in bats during the quarter. Two were from the Sydney area and two were from the North Coast. There were no reports of human injury associated with these cases. In each instance, clinical nervous signs were observed and brain material was positive for lyssavirus antigen. Histological examination of three cases confirmed meningoencephalitis and virus was isolated in all four cases.

TRICHOMONIASIS

Selective cultures were positive for *Trichomonas* spp. in three Angus bulls that had produced a 57% pregnancy rate in 74 heifers.

Northern Territory

Contributed by:
Diana Pinch
DBIRD



CATTLE

Deaths of 30 weaner cattle from a group of 1000 subsequent to castration and dehorning were investigated on a Barkly Tablelands property. The histological appearance of tissue in the scrotum was consistent with histotoxic clostridial infection. *Clostridium sordelli* was cultured from the liver. This bacterium is one of the agents noted for production of gas gangrene or malignant oedema in deep wounds contaminated by soil or faeces, leading to sudden death due to toxæmia. A build-up of contamination in yards is not uncommon on some properties in some years. Measures to reduce contamination levels are being implemented.

Four heavy weaners in a mob of 800 showed distress, became recumbent and died acutely on another Barkly Tablelands property. Post mortem examination of two animals showed severe bronchopneumonia (likely to be caused by weaning stress), consistent with viral infection and secondary bacterial infection.

One facet of the program conducted in the Northern Territory to maintain Protected Zone status for bovine Johne's disease (JD) is surveillance of cattle on properties that import cattle from areas elsewhere in Australia that are Control Zones. This was recently demonstrated to be effective. Two house cows on two different properties returned positive results for culture of *Mycobacterium avium* subsp. *paratuberculosis*. These cows were from a Northern Territory dairy that had imported animals from Control Zones interstate. The cows were examined because of positive reactions to an ELISA for JD. Histological changes characteristic of JD were not detected, and neither cow had exhibited clinical signs of JD. A traceforward program is operating for other cattle from the herd. At the end of June, 11 properties had been issued quarantine orders, pending resolution of their situation.

PIGS

In June, a backyard pig producer reported blisters on the feet and face of two piglets. The property was promptly attended, and a diagnostic team was called in. Samples were taken for FMD exclusion at AAHL, and all results were negative. Swine pox was diagnosed on clinical presentation and histology.

OTHER SPECIES

During the quarter investigations into a syndrome of weakness and unsteadiness of antelopes (gemsbok and

nilgai) were undertaken. Findings from post mortem examinations were unremarkable. Histopathology was consistent with senna plant (*Cassia* spp.) toxicity, which was the suspected cause of death based on history and clinical signs. The paddock had been sprayed with the herbicide 2,4-D and this apparently makes the plant more palatable to stock.

Queensland

Contributed by:
Janet Berry
QDPI



VESICULAR CONDITION

At the end of June, fresh vesicles were detected on the snouts of all three ten-week-old pigs on a hobby farm north of Brisbane. There were no mouth or foot lesions, temperatures were normal except for a slight elevation in one pig, and the pigs appeared otherwise healthy. The diet of the pigs included celery and a celery-induced photosensitisation was suspected as the cause of the vesicles. An emergency response was initiated, the property was quarantined, and samples sent to AAHL that night. Testing proved negative for the exotic diseases foot-and-mouth-disease, swine vesicular disease and vesicular stomatitis.

BRUCELLA SUIIS

Australia was declared free of bovine brucellosis in 1989. Because the complement fixation test for *Brucella abortus* occasionally gives false positive reactions, further investigation is necessary to confirm a positive result. Such a case occurred this quarter, when testing some export heifers from a Richmond property. The heifers had left the property and were traced to saleyards in Mt Isa. A full post mortem examination was conducted on the heifer concerned and a range of samples submitted for further testing. The remaining animals were returned to the property of origin and quarantined until the results of laboratory tests were known. The heifer was pregnant and the foetus was estimated to be about five months old. The placental cotyledons were necrotic and contained bacteria. Material was sent to the Australian Animal Health Laboratory where a supramammary lymph node isolate was confirmed as *Br. suis* Biotype 1.

HENDRA VIRUS RULED OUT

A five-year-old trotting horse from Thuringowa broke down in the warm-up lap at the regular night trotting meet in Townsville during May. The horse had respiratory distress and a copious blood tinged frothy nasal exudates. Heart rate, respiratory rate and temperature were all elevated, and the mucous membranes were dark red. At times, the gelding had

massive episodes of trembling. Hendra virus was suspected and the horse was isolated. Contact details were taken for approximately 60 harness horses and 13 mini-trotters (Shetland ponies) that were present. A post mortem examination revealed acute pneumonia. All testing for Hendra virus infection was negative. The pathological changes in the lungs were consistent with acute necrotising bronchopneumonia. The presence of foreign material, including plant material and large numbers of bacteria within the affected lung, indicated aspiration pneumonia. Hendra viral RNA was not detected in samples of fixed lung sent to Queensland Health for further examination. Fresh tissue was dispatched to AAHL for exclusion of Hendra virus. Three in-contact horses all tested negative to Hendra virus (ELISA).

SUSPECTED ANTHRAX

During May, a producer south of Morven reported the sudden death of two cattle. Anthrax was suspected, as they had blood coming from the nostrils and rectum. Soil samples collected from either end of the two carcasses were negative for *Bacillus anthracis*. Since then, there have been further sporadic cattle deaths in different paddocks on the property. The cattle die quickly with no sign of struggling. One autopsy conducted seven hours after death revealed congested and oedematous lungs and an enlarged congested spleen. Autopsy samples were negative for *B. anthracis*. There were no histopathological changes in the lung liver, heart, spleen or kidney. Fresh liver and kidney samples had negligible levels of arsenic and lead. The property is in Mulga country, and the cattle are fed a urea-phosphorus supplement all year. A small shrub growing in the paddock was identified as *Eremophila glabra*, black fuschia, which has not been recorded as causing deaths. In general, *Eremophila* species cause death only in stock that are under stress or being driven. The cattle are vaccinated annually for botulism. Water samples were negative for blue-green algae. 1080 baits were laid about three weeks before the first death and this is a potential cause of the deaths.

LEPTOSPIRA INTERROGANS

An investigation (mentioned last quarter) was continued on a property south of Barcaldine, in which a mob of 700 heifers showed an extended calving period and weak calves at birth. Of 25 heifers sampled at a second property in the same ownership, none was positive for *Leptospira pomona* and *L. hardjo* but 13 were positive for *L. interrogans* var. *tarrasovi*. When another 36 different heifers were tested from the same mob tested in February, 17 animals were serologically positive for *L. tarrasovi*, with titres as high as those found in February. Attempts were made to culture the bacteria from urine samples from these animals. No leptospira was isolated and there was overgrowth of

other bacteria. Two feral pigs from which blood and urine were collected were negative for *L. pomona* and *L. tarrasovi*. Further work is planned to attempt to isolate the bacteria.

NOCARDIOSIS IN AN ALPACA

In mid-May, nocardiosis was diagnosed in the lungs of a six-month-old female alpaca from a herd of ten from near Samford. The animal had been chronically losing weight and was euthanised. Post mortem examination revealed extensive necrotising bronchopneumonia and pleurisy. The worst-affected lung section had extensive lesions and a focus of fibrinous pleurisy associated with it. Stained sections revealed numerous Gram-positive branching filamentous organisms throughout the necrotic foci. The liver contained scattered irregular necrotic foci. *Nocardia asteroides* was isolated from the lesions in the lungs. Two cases of pulmonary nocardiosis are reported in the literature, both from the United States.

INFECTIOUS LARYNGOTRACHEITIS

A tracheitis of undetermined origin caused the deaths of 60 poultry in a show flock of 300 near Monto in late May. The property was quarantined on suspicion of infectious laryngotracheitis (ILT). There was a severe inflammation of the mucosa in both larynx and trachea, with a mixed infiltrate of heterophils and mononuclear inflammatory cells. Careful examination of the mucosal epithelium did not reveal inclusion bodies. Direct electron microscopy of trachea did not reveal virus and no virus was cultured.

SWINE POX

At Kingaroy, approximately 200 pigs, 4–14 weeks old, were found to have a skin disorder affecting the skin of the head, ears and dorsum with lesions extending onto the inside of the lips. The lesions were discrete raised papules, up to 6 mm diameter with umbilicated necrotic centres. Histological examination showed lesions typical of poxvirus infection and orthopoxvirus was demonstrated in scabs and skin sections by electronmicroscopy, confirming the diagnosis of swine pox.

SALMONELLA IN PIGS

Salmonellosis was diagnosed as the cause of dehydration, wasting and death of 60 out of 500 weaner pigs in overcrowded shelters in the south of the State. No clinical evidence of scouring was reported. Four pigs submitted for autopsy had a severe diphtheritic typhlocolitis. *Salmonella typhimurium* was isolated from each of the pigs.

EQUINE VIRAL ARTERITIS

Three thoroughbred horses in Oakey were investigated for equine viral arteritis (EVA). They were showing

elevated temperatures and oedema of the lower limbs but no other clinical signs. Paired sera showed no seroconversion to EVA virus. The horses were also negative for equine infectious anaemia virus.

LANTANA POISONING

About 800 cull cows were introduced to holding paddocks about 4–6 weeks before slaughter at an abattoir in the south east. An estimated 150 became clinically affected with photosensitisation of the ears, nostrils, mouth, eyelids, neck and brisket skin. There was a history of access to *Lantana camara* in the paddocks. Thirty-one carcasses were condemned at slaughter, being severely jaundiced with areas of liver necrosis, distended gall bladder, and oedema of the brisket. Liver sections showed lesions consistent with lantana poisoning.

South Australia

Contributed by:
John Weaver
PISA



PLANT AND FUNGAL POISONINGS

Two properties in the Mount Gambier region reported severe photosensitisation and illness among cattle. Clinical pathology indicated a severe hepatopathy. One of these farms had suffered a similar incident at about the same time last year but no cause has yet been established.

A beef property in the Upper South East area of the State had an outbreak involving liver damage in a group of young steers. Histology supported a finding of pyrrolizidine alkaloid toxicity. It was reported that there had been a heavy germination of *Heliotrope* spp. and this was thought to be the cause.

Oxalate nephrosis was confirmed in one report of sheep deaths and suspected in another. The sheep were young and there had been abundant *Oxalis* spp. in the paddocks being grazed.

PASTEURELLOSIS

Pasteurella multocida was isolated from two cases of severe respiratory disease. In one case, young calves exhibited pneumonic signs. The other case, involving older steers, also had bacterial emboli in the myocardium.

TOXOPLASMA

Abortions occurred over some weeks in a sheep flock. Bacterial culture was unhelpful but sera from three ewes showed toxoplasma titres between 320 and 640. No tissue samples were received to attempt confirmation.

Tasmania

Contributed by:
John Elliott
DPIWE, Tasmania



RICKETTSIA-LIKE ORGANISMS IN SALMONIDS

Rickettsial organisms were recognised as pathogens of fish in 1989. Since this recognition, the impact of rickettsia in fish has become increasingly apparent. Rickettsial diseases have been discovered among many species of fish from different geographical locations and aquatic environments. *Piscirickettsia salmonis* is the first of the previously unrecognised rickettsial pathogens of fish to be fully characterised. The source, reservoir, and mode of transmission of these agents — as well as appropriate methods of disease prevention and control — are not yet established.

Mortalities associated with piscirickettsiosis in salmonids range from a high of 90% among coho in Chile to a low of 0.06% in Canada and Norway. All salmonids are affected by this disease, but the highest mortalities occur in coho salmon cultured in salt water. A variety of clinical signs are associated with *P. salmonis* infection, but few are specific to piscirickettsiosis.

Rickettsia-like organisms (RLO) were detected in January 2001 in south-eastern Tasmania in salmon from a sea cage that had experienced elevated but low mortality for approximately two weeks. Similar organisms, sometimes associated with typical gross and histological lesions of piscirickettsiosis, were subsequently seen within the same limited geographical area. Overall mortality was less than 5%. PCR testing showed 99% agreement with a *P. salmonis* sequence. A similar high level of agreement with this sequence has been seen with other RLO strains of low pathogenicity for salmonids.

No further evidence of RLO has been seen since March 2002. AAHL reports that attempted isolation from previously reported cases and fresh material continues to be unsuccessful. Initial genetic analysis suggests the Tasmanian RLO is different from *P. salmonis*.

OBSTRUCTIVE UROLITHIASIS IN LAMBS

Over a period of four days, about 20 animals died suddenly in a mob of more than 500 wether lambs aged 6–7 months. The lambs were grazing rape and turnips. One moribund lamb and two recently dead lambs were submitted. Urine from two of these lambs was brown–red, turbid, alkaline and had a high specific gravity. Large volumes of serosanguineous fluid containing fibrin or blood clots were seen in the

abdomens. Analysis showed that calcium carbonate was present in the stones. In one lamb, the urinary bladder was extremely distended. In the other two lambs, the bladders were ruptured. There was bilateral hydronephrosis. Many uroliths, up to 5 mm diameter, were found in the bladder, urethra, and vermiform appendage of each lamb. Clinical obstructive urolithiasis is rare in grazing lambs. Sudden onset in a number of lambs is also unusual. The cause and pathogenesis is assumed to be multi-factorial, and access to oxalate-containing plants is likely to be important.

TOXIC ABORTIONS IN CATTLE

Over a period of three weeks, two cows in a group of 20 aborted and one of the two died. The cows had not been vaccinated against leptospirosis and had no access to *Macrocarpa* spp. Histopathology, culture and serology were all negative. One of the aborted calves had cleft palate. A teratogenic toxin was suspected.

POSSIBLE MAREK'S DISEASE

Following the deaths of 80 chickens in a commercial flock, two sick birds were submitted. Neoplastic lymphoid infiltration was observed in the digestive tract, liver, kidney, spleen, bursa, heart, eye and brain. This is consistent with a virally induced neoplasm, probably avian leucosis-sarcoma virus.

FOG FEVER

Three yearling bulls had been ill for several weeks and one had died. The main signs were lethargy and staggering. The only lesions in the bull that died were marked atypical interstitial pneumonia with epithelisation of alveoli. These lesions were consistent with acute bovine pulmonary emphysema and oedema ('fog fever'). This has an uncertain and probably varied aetiology. It is often associated with a change to lush pasture and can be reproduced experimentally by administering 3-methyl-indole.

HAEMOLYTIC *E. COLI* IN CALVES

Three calves in a herd of 140 calves died within 48 hours of birth over a period of 3–4 days. Focal nephritis was found on autopsy. Haemolytic *Escherichia coli* was isolated from liver, kidney and intestine. These isolations from a number of sites suggested a septicaemic condition.

FOWL CHOLERA

Over three days, 90 partridges died in a flock of 2000 4–6-month-old birds. The flock lost 200 birds in a similar manner two months earlier. Six birds were examined. All had hepatic, splenic and multifocal necrosis with fibrinous exudates and haemorrhages, indicating a fulminating bacterial septicaemia. *Pasteurella multocida* was isolated from all birds

examined. *P. multocida* was also isolated from one of two ducks that died suddenly. The bird had severe necrotising hepatitis and splenitis.

BROILER MORTALITY

Losses totalling 96 birds over a period of seven weeks in a flock of 1700 broilers were investigated. Ten birds were submitted for laboratory investigation. There was no evidence of any of the major poultry diseases. Septicaemia due to *Pasteurella haemolytica* and *E. coli* was diagnosed but in addition, lymphoproliferative changes suggested concurrent Marek's disease. These birds had not been vaccinated.

SALMONELLA DUBLIN IN CALVES

Seven two-week-old calves from a group of 50 died over one week. Clinical signs included weakness, lethargy and ataxia. On laboratory examination, sub-acute enteritis, nephritis and multi-focal hepatic granulomatosis were found. Septicaemia was likely. These findings, particularly the liver granulomas, suggested salmonellosis. A heavy growth of *Salmonella* was cultured from the large intestines and identified as *Salmonella dublin*.

NOTIFIABLE DISEASES

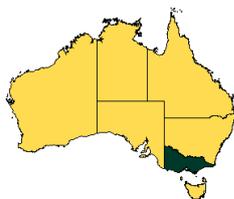
The following investigations into possible cases of notifiable diseases were undertaken during the quarter.

Disease	Investigations	
	Positive	Total
Anthrax	0	1
Avian psittacosis	0	7
Bovine tuberculosis (<i>M. bovis</i>)	0	14
<i>Brucella abortus</i> (bovine)	0	9
<i>Brucella ovis</i>	0	7
Clinical salmonellosis	5	42
Enzootic bovine leucosis	0	13
Equine viral arteritis	0	4
Johne's disease	26	163
<i>Leptospira hardjo</i>	1	10
<i>Leptospira pomona</i>	1	10
Piscirickettsiosis	0	29
Salmonid and other fish diseases#	0	33
Verotoxic <i>E. coli</i>	3	51

Aeromonas salmonicida ssp. *salmonicida*, bacterial kidney disease, epizootic haematopoietic necrosis, epizootic ulcerative syndrome, goldfish ulcer disease (*Aeromonas salmonicida*), infectious haematopoietic necrosis, *Lactococcus garvieae* of salmonids, *Oncorhynchus masou* virus disease, Piscirickettsiosis, spring viraemia of carp, viral encephalopathy and retinopathy, and viral haemorrhagic septicaemia

Victoria

Contributed by:
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BOVINE TUBERCULOSIS RULED OUT

Extensive laboratory and field investigation work has now established that the suspect cattle detected at slaughter recently in western Victoria and reported in the last issue of *AHSQ* were not infected with *Mycobacterium bovis*, the causative agent of bovine tuberculosis, but rather with harmless environmental strains of mycobacteria. The Australian Tuberculosis Reference Laboratory in Western Australia reported that restriction fragment length polymorphism (RFLP) testing have identified identical RFLP profiles for the two Victorian isolates and the Western Australian isolate used as the positive control at the Victorian Institute for Animal Science (VIAS). The results of exhaustive laboratory testing, together with extensive field investigations in which more than 1000 cattle were tested with negative results, led to the national Tuberculosis Freedom Assurance Program Property Program Group's decision that the two cattle were not infected with bovine tuberculosis. All field investigations have been halted, with quarantine and movement restrictions on affected farms lifted.

VIRULENT NEWCASTLE DISEASE

As reported on page 1, virulent Newcastle disease virus was confirmed on a poultry layer farm located approximately 75 km west of Melbourne. Surveillance to demonstrate the disease has not spread to other properties continues.

ANTHRAX

Anthrax was recently confirmed as the cause of death in two cattle on two separate properties in the Tatura–Shepparton area. Both properties had a history of anthrax in 1997 indicating that soil contamination with anthrax spores remains on some farms where the disease has previously occurred. Vaccination of the herd and a 42-day quarantine were implemented immediately. Vaccination was implemented on all farms where anthrax occurred in 1997, with contracted private practitioners delivering the program. The procedures of quarantine, disposal of carcasses, disinfection of death sites, and vaccination of stock on the premises as well as stock on properties deemed at-risk followed nationally agreed emergency response plans. A number of other sudden deaths of farm animals were investigated but all proved negative for anthrax. More than 12 000 cattle on properties affected during the 1997 outbreak were vaccinated. There is an ongoing surveillance program for anthrax in the area.

POST-WEANING COLIBACILLOSIS IN PIGS

Recently, on a number of piggeries in central Victoria, haemolytic *E. coli* (HEC) has been isolated from well-conditioned grower pigs dying 1–2 weeks after they have been transferred from weaner to grower accommodation. This is unusual because post-weaning infection with *E. coli* usually occurs within the first ten days after weaning. Once an animal has been weaned for about 14 days it has usually been exposed to the organism and is considered to be no longer susceptible. Similar predisposing stressors appear to have been operating in these outbreaks as for weaners — a change of accommodation, a change of diet (this time from a dry diet to a liquid diet), and remixing of pigs. It is thought that animals succumbing in this period were not adequately exposed to HEC in the weaner shed, and therefore did not build up adequate immunity. The affected piggeries plan to combat the problem by vaccinating the pigs orally as suckers to ensure adequate intestinal immunity no matter what age the animals are challenged.

BLEEDING DISORDER IN DAIRY HEIFERS

In mid-June, in South Gippsland, a number of heavily pregnant dairy heifers became sick and five died over a week with signs of vaginal and rectal bleeding, depression, fever, dependent oedema and, in some cases, knuckling over of the limbs. There appeared to be a tendency to bleed, with haematoma formation after injection and excessive blood loss following rectal examination. The heifers had been fed haylage (hay silage) for a number of months and it appears that this was probably a case of dicoumarol poisoning associated with haylage made from sweet vernal grass.

ACUTE BOVINE LIVER DISEASE

During April, May and June, three outbreaks of acute bovine liver disease affecting dairy cattle herds were investigated in east Gippsland and north-eastern Victoria.

In one herd, 30 of 230 cows were affected and nine died; in another herd most of the 80 cows were affected and 34 died; and in the third herd of 200 cows affected with repeated episodes, eight of 55 affected cows died. Depression, rectal straining, blindness and a sudden drop in milk production were common signs in severely affected animals. In some animals, death occurred within 12 hours of first showing signs of illness. Survivors developed severe photosensitisation and lost most of their unpigmented skin; many developed mastitis and these and others were culled in a debilitated condition a few months later. A variety of treatments including zinc have so far been unrewarding. Autopsy findings included icterus, widespread ecchymotic and petechial haemorrhages, and a severely congested abomasal mucosa. The gall

bladders were hugely distended with black bile and had grossly thickened walls; the livers were enlarged, grey and friable; and the kidneys seemed unaffected. Histologically, there was severe acute periportal hepatic necrosis and early ductular hyperplasia and necrosis of portal veins. The periacinar areas were intact. The liver lesions resembled the pattern of hepatic injury caused by *Myoporium* spp. (*Boobialla*) and blue-green algal poisoning.

This condition has now been recognised in recent years in most of the dairying areas of south-eastern Australia. There is a consistent association with grazing the annual grass rough dog's tail (*Cyanosurus echinatus*) in the autumn or early winter. Field investigators are confident that *Myoporium* spp. and blue-green algal poisoning have played no role in this disease despite the pathological resemblance, nor is the disease consistent, either epidemiologically or pathologically, with other recognised causes of bovine liver necrosis in south-eastern Australia. Toxic moulds *Drechslera siccans* and *Bipolaris bisepatum* have been found on the roots of rough dog's tail but not on other plants in suspect pastures. Epidemiological investigations continue and feeding trials are planned.

PERENNIAL RYEGRASS TOXICITY

Perennial ryegrass toxicity continued in the Western Districts of Victoria until late May on many properties, and affected animals were still present in late June on some badly affected properties. Apart from the thousands of recumbent sheep that were destroyed, large numbers of affected animals were reported to have drowned in troughs, dams and water-filled gullies. Flystrike and increased crow-pick of cast sheep were added complications.

TICK PARALYSIS AND *IXODES CORNUATUS*

A dog from Daylesford in central Victoria died of probable tick paralysis, with no history of recent travel to Gippsland or other areas where *Ixodes holocyclus* is known to occur. A tick removed from the dog was identified as *Ixodes cornuatus*, which has been previously suspected of causing paralysis in animals in Victoria but never confirmed.

CYSTICERCUS OVIS

In a consignment of 107 prime lambs sent to an abattoir, ten carcasses were condemned and 60–70% of all carcasses had visible cysts of the intermediate stages of *Cysticercus ovis* detected. Dogs and foxes are the primary hosts of this tapeworm. The lambs originated from a prime and store lamb producing flock in the Western District where there were both unwormed farm dogs and a large fox population in a bordering river system. The owner was unaware of dog tapeworms and had never wormed his dogs. A dog-

worming plan has been developed with the owner but short of regular fox reduction programs there is probably not much more that can be done to reduce the problem.

ROTAVIRUS IN BEEF CALVES:

In a 250 beef-cow herd in south-western Victoria, of which 150 had calved, 50 calves succumbed to acute diarrhoea and 14 died in a three week period despite intensive treatment. Affected calves ranged from three days to three weeks old. The severe acute enterocolitis found at autopsy in these calves was attributed to a combination of rotaviral and cryptosporidial infection to which faecal samples subsequently tested positive.

INFERTILITY IN MERINO EWES

DNRE was notified of a mob of 400 merino ewes that were pregnancy-tested in February to a November–December joining by scanning with an ultrasound and found to be 100% in lamb but had produced no lambs by the end of May. The owner noticed no illness or external signs of abortion. Onion grass was considered as a possible cause, but this was absent from the pastures to which the ewes were exposed. Infectious abortions are usually very visible. It is unlikely the case will be resolved because of the retrospective nature of the investigation.

FOXTAILS AND HYDATIDS

Thousands of foxtails are being collected and redeemed in Victoria as part of a fox control program. The high risk of exposure to hydatids to people collecting and handling foxtails as a result of the bounty were recognised. *Echinococcus granulosus* (the hydatid tapeworm) infection has been found on several occasions from foxes from Victoria and southern NSW. However, the percentage infected and number of worms per infected fox is considerably lower than found in dingoes or dogs. A risk assessment process detailed the risk to staff and the necessary precautions they had to take to prevent them. A set of protocols for the handling of foxtails by staff involved in the collection was developed. A public brochure describing the fox bounty advised the public of the risks of disease and the measures necessary for handling the tails. Information on the risk of hydatids was included in media releases to remind the public. The precautions recommended involved attention to personal hygiene, wearing protective clothing, and use of hot water and chlorine bleaches for personal, clothing and equipment disinfection. As a minimum, persons handling foxtails should wear gloves and thoroughly wash their hands after handling the tails. DNRE staff directly involved in collecting tails provided samples of their blood for hydatid testing before the program and will be retested in 12 months. The fox bounty trial is an opportunity to collect tissue

for DNA analysis. Looking at the genetic differences between foxes from different locations will provide information on dispersal between populations. This will provide a better understanding of fox populations across the state and whether there are any barriers to effective dispersal. Such information will assist in planning future fox control programs.

AVIAN ENCEPHALITIS VIRUS

Avian encephalitis (AE) virus infection caused a sudden drop in egg production in a large free-range egg enterprise in western Victoria. Egg production dropped from 85% to 50% in three days and then recovered to previous levels after about one week. No morbidity, mortality or change in eggshell or egg contents was observed. Comparison of acute and convalescent sera showed a marked rise in antibody titres to AE virus. Tests for Newcastle disease viruses were negative. The hatchery from which the birds were sourced routinely vaccinates against AE but a vaccine supply failure prevented this batch of birds being vaccinated. The very heavy weight of these birds (2.8 kg) probably minimised the severity and duration of the drop in production often seen with this virus.

Western Australia

Contributed by:
Richard Norris
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ACUTE CEREBRAL OEDEMA

Acute cerebral oedema was seen in mixed age dairy cows at Williams. Ten affected animals died after showing signs of blindness, circling, tremor, head pressing and hypersensitivity. The lesions were acute and widespread through the cerebral cortex and although polioencephalomalacia was suspected, no immediate cause or predisposing factors were found.

SUSPECT MYCOTOXICOSIS

Further investigations were conducted into deaths in cattle fed sprouted barley (fodder factories). Clinical chemistry suggested evidence of severe liver damage, lending weight to the notion that this condition is caused by a mycotoxin(s). An *Aspergillus* sp. was isolated from both the clean grain and the sprouted grain. Several *Aspergillus* spp. are capable of producing hepatotoxins. Unfortunately, no post mortem examinations were conducted on animals with liver damage.

ANNUAL RYEGRASS TOXICITY

Annual ryegrass toxicity (ARGT) was diagnosed in cattle unresponsive to treatment for hypocalcaemia at Busselton. The producer and attending veterinarian

(thinking they were too far south for ARGT) had initially considered an oxalate-containing plant was the predisposing factor. However, a *Rathayibacter* assay on rumen contents and hay samples confirmed the diagnosis. There have now been several reports of ARGT on the coastal plain and an earlier report at Gelorup, just south of Bunbury, was previously regarded as the southern-most limit.

WHITE SCOURS

A particularly severe case of white scours was seen in Waygu calves at Eneabba. Rotavirus was demonstrated in gut contents and lesions suggested a *Clostridium* sp. might have contributed to the severity. The cows were in poor condition, which probably limited milk supply and increased the susceptibility of their calves to infection. Some response to electrolyte therapy was achieved.

ACUTE BOVINE LIVER DISEASE

A syndrome involving photosensitivity caused deaths and illness in Friesian cows at Northcliffe. Although liver lesions in submitted samples were mild, the disease resembled a new condition in Victoria being called acute bovine liver disease. An association has been drawn with ingestion of the plant rough dog's tail (*Cynosurus echinatus*), which was present in the Northcliffe pasture. Investigations in Victoria have found rough dog's tail involved in outbreaks of this disease to be infected with a fungus identified as a *Drechslera* sp. A similar fungus was also found in rough dog's tail specimens from the Northcliffe property. However, a causal relationship is not yet established.

CHRONIC LIVER DAMAGE

Photosensitivity affected older cattle at East Chapman where the cause was related to a lifetime of grazing blue lupins. Local experience indicates that cattle grazing blue lupins for 6–7 years have a high probability of suffering chronic liver damage. It is recommended that cattle with this grazing history should be culled before reaching 8 years of age.

SHEEP DEATHS SIMILAR TO MALIGNANT CATARRHAL FEVER

An unknown disease struck Merino hoggets at Tenterden causing lethargy and resulting in death in 50 out of 1000 animals. Lesions of fibrinoid vasculitis were present in kidneys, intestines and brain, and an interstitial pneumonia affected most of the lungs. Several likely and possible infectious agents were eliminated. However, the animals were positive for ovine herpesvirus 2, which causes similar lesions in cattle (malignant catarrhal fever), but which has not been recorded as showing such signs in sheep. Investigations are continuing.

LISTERIAL ENCEPHALITIS

Listerial encephalitis was seen in ewes with nervous signs at Mount Barker. The animals had been consuming silage for two weeks before the outbreak. *Listeria ivanovii*, rather than the expected *L. monocytogenes*, was isolated from the brain of affected animals. Cerebral listeriosis was also seen at Lake Grace in sheep consuming imported silage — the donor property also experienced the disease.

MALIGNANT OEDEMA

Malignant oedema was suspected as the cause of death in one-sixth of 600 of ewes and lambs housed in feedlot conditions at Merredin. Affected animals had massive subcutaneous swelling of the limbs, brisket and abdominal wall. Blood was seen oozing from the skin in these areas. Lesions were consistent with a clostridial septicaemia and clostridial rods were seen in tissue sections.

ENCEPHALOMALACIA AND COPPER POISONING

A number of rams that died over a few days at Quairading were shown to have focal symmetrical encephalomalacia and copper poisoning. The rams were not vaccinated for enterotoxaemia and were probably fed nutritional supplements, which boosted their copper intake.

ZAMIA PALM TOXICITY

Zamia palm toxicity caused the deaths of hoggets at Dandaragan. Lesions of haemorrhagic liver necrosis and evidence of zamia ingestion were sufficient to confirm the diagnosis. Although this syndrome was quite common 40 years ago, it is seldom seen these days — a reminder that very hungry sheep will try anything that is green.

OTITIS INTERNA IN PIGS

In a case investigated at Murdoch University, poorly grown post-weaning pigs with tilted heads were shown to have otitis interna caused by *Arcanobacterium* sp. As well, one affected animal was afflicted with systemic cytomegalovirus infection, with inclusion bodies in nose, brain and kidney lesions. Both conditions are considered to reflect poor husbandry standards.

PLEUROPNEUMONIA

Pleuropneumonia caused high mortality in weaner pigs in open-ended shelters at Kojonup. Laboratory investigations showed the lesions were caused by a combination of *Actinobacillus pleuropneumoniae* (the cause of porcine pleuropneumonia) and *Haemophilus parasuis* (the cause of Glässer's disease). These two pathogens can cause significant losses when acting together in susceptible pigs.

Quarterly Disease Statistics

Quarterly disease statistics — laboratory testing

The results of serological testing for a range of viral diseases from routine laboratory submissions for the quarter are shown in Table 1.

Table 1: Serological testing from routine submissions to State and Territory laboratories

	Akabane		Bluetongue		Bovine ephemeral fever		Enzootic bovine leucosis		Equine infectious anaemia		Equine viral arteritis	
	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve
Apr–Jun 01	4240	707	11399	443	3151	286	17340	9	1205	11	398	1
Jul–Sep 01	1971	318	7853	303	2130	300	10268	0	1268	27	370	5
Oct–Dec 01	7827	352	8138	242	2564	361	7298	2	1167	11	547	16
Jan–Mar 02	2732	410	4826	140	1896	318	3640	2	755	0	414	22
Apr–Jun 02	14469	123	15133	594	2219	532	9918	5	920	5	473	2
NSW	40	3	1051	34	19	2	223	0	450	0	220	0
NT	498	214	613	213	813	353	1039	0	5	0	0	0
QLD	542	207	3556	83	400	160	190	0	148	0	16	0
SA	39	0	1475	0	9	0	39	0	20	0	7	0
TAS	0	0	0	0	0	0	868	0	0	0	0	0
VIC	196	0	260	0	191	0	296	0	217	0	170	2
WA	13154	813	8178	264	787	17	7263	5	80	5	60	0

Quarterly disease statistics — control activities

BOVINE BRUCELLOSIS

Although bovine brucellosis is now exotic to Australia, surveillance is maintained through abortion investigations and miscellaneous testing of cattle for export or other reasons. A total of 275 abortion investigations were performed during the reporting period — all with negative results for bovine brucellosis. The results of recent brucellosis surveillance are shown in Table 2.

Table 2: Surveillance for bovine brucellosis

	Abortion investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Apr–Jun 01	262	0	13325	0
Jul–Sep 01	181	0	11995	0
Oct–Dec 01	128	0	7008	0
Jan–Mar 02	146	0	5125	0
Apr–Jun 02	275	0	7082	0
NSW	6	0	414	0
NT	0	0	1003	0
QLD	38	0	1368	0
SA	9	0	1	0
TAS	5	0	5	0
VIC	25	0	252	0
WA	192	0	4039	0

TUBERCULOSIS

Australia was declared a Free Area for bovine tuberculosis (TB) on 31 December 1997. The National Granuloma Submission Program is the major surveillance tool for TB. Table 3 summarises results from the program.

Table 3: Results of the National Granuloma Submission Program

	Granulomas submitted	TB +ve
Apr–Jun 01	1247	0
Jul–Sep 01	1533	0
Oct–Dec 01	1508	0
Jan–Mar 02	1067	2
Apr–Jun 02	1432	0
NSW	357	0
NT	0	0
QLD	772	0
SA	97	0
TAS	10	0
VIC	99	0
WA	97	0

JOHNE'S DISEASE

Johne's disease (JD) occurs primarily in dairy cattle and sheep in Australia and to a lesser extent in beef cattle, goats, deer and camelids. JD occurs in NSW, Victoria, Tasmania and South Australia. Surveillance programs have not identified endemic JD in Queensland, Western Australia and Northern Territory, and active measures are taken to stamp-out any incursions. Table 4 shows the number of herds and flocks known to be infected. A National Ovine Johne's Disease Control and Evaluation Program will be completed in 2003. Programs for bovine JD are currently being developed. Market Assurance Programs (MAPs) are in operation for cattle, sheep, goats and alpaca, with the number of herds or flocks that have reached a status of Monitored Negative 1 (MN1) or higher shown in Table 5.

Table 4: Herds/flocks with JD at 30 June 2002

	Cattle	Sheep	Goats	Deer	Alpaca	Total
NSW	146	840	12	0	1	999
NT #	2	0	0	0	0	2
QLD #	1	0	0	1	0	2
SA	44	59	0	1	0	104
TAS	16	32	5	0	0	53
VIC	1154	47	8	7	4	1220
WA	0	0	0	0	0	0
AUS	1363	978	25	9	5	2380

The herds in Queensland and the Northern Territory are in quarantine in response to finding an infected animal introduced from an endemic area

Table 5: Herds/flocks with a JDMAP status of at least MN1/TN1 status at 30 June 2002

	Cattle	Sheep	Goats	Alpacas	Total
NSW	938	367	60	117	1482
NT#	0	0	0	0	0
QLD#	0	10	0	0	10
SA	237	224	13	36	510
TAS	114	37	2	0	153
VIC	311	147	6	38	502
WA#	0	0	0	0	0
AUS	1600	785	81	191	2657

#Herds/flocks in Free or Protected Zones are equivalent to status of MN1 or better because of the zone's status.

Information about components of the National JD Control Program can be obtained from State coordinators and Animal Health Australia's JD coordinators, David Kennedy 02 6365 6016 or Bruce Allworth 02 6036 9233. Lists of beef, dairy and alpaca herds and sheep flocks assessed in the Market Assurance Programs are available on the internet (at <http://www.aahc.com.au/jdmap>).

ENZOOTIC BOVINE LEUCOSIS

Enzootic bovine leucosis (EBL) accreditation programs have been operating in the dairy industries in Queensland and NSW for several years. Victoria, South Australia, Western Australia and Tasmania are undertaking a program of bulk milk testing of all dairy herds. Table 6 shows the number of dairy herds tested free of EBL at the end of the quarter.

Table 6: Dairy herds tested free of enzootic bovine leucosis at 30 June 2002

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Free	1341	0	1281	560	679	7364	360	11 585
Herds	1353	0	1289	560	741	7513	360	11 816

OVINE BRUCELLOSIS

Contagious epididymitis, caused by *Brucella ovis*, is present in commercial flocks at a low level that varies around the country. Voluntary accreditation programs (usually in stud flocks) for ovine brucellosis freedom are operating in all States. Table 7 shows the number of accredited flocks at the end of the quarter.

Table 7: Ovine brucellosis accredited-free flocks at 30 June 2002

NSW	NT	QLD	SA	TAS	VIC	WA	AUS
1266	0	59	482	103	645	86	2641

Quarterly disease statistics — surveillance activities

SALMONELLA SURVEILLANCE

The National Enteric Pathogen Surveillance Scheme (NEPSS) is operated and maintained on behalf of the Commonwealth and States/Territories by the Microbiological Diagnostic Unit at the University of Melbourne. Data on isolates of salmonellae and other pathogens are submitted to NEPSS from participating laboratories around Australia. Quarterly newsletters and annual reports of both human and non-human isolates are published, and detailed data searches are provided on request to NEPSS. Table 8 summarises *Salmonella* isolations from animals notified to NEPSS for the quarter.

Contact: National Enteric Pathogen Surveillance Scheme, Microbiological Diagnostic Unit, University of Melbourne

Table 8: Salmonella notifications, 1 April to 30 June 2002

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. Bovismorbificans	0	16	3	1	1	0	1	0	22
S. Dublin	0	51	2	0	0	0	0	0	53
S. Infantis	0	4	1	0	0	0	0	1	6
S. Typhimurium	5	114	2	1	6	6	2	0	136
Other	3	78	9	3	5	1	11	10	120
Total	8	263	17	5	12	7	14	11	337

ZOONOSES

The National Notifiable Diseases Surveillance System (NNDSS) of the Communicable Diseases Network Australia collects statistics about many human diseases. A summary of information about six important zoonoses is submitted to NAHIS each quarter (see Table 9).

The list of human diseases that are reportable to NNDSS has been updated. For zoonoses, data on hydatid disease will no longer be collected. Data on human cases of anthrax, Murray Valley encephalitis (MVE), Kunjin virus infection, cryptosporidiosis, and Australian bat lyssavirus will be added to the NNDSS database.

Contact: Communicable Diseases Intelligence, Australian Department of Health and Ageing
(Internet address: <http://www.health.gov.au/pubhlth/cdi/cdihtml.htm>)

Table 9: Notifications of zoonotic diseases in humans

Disease	Q1-01	Q2-01	Q3-01	Q4-01	Q1-02 AUST	Current quarter							
						ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis[#]	2	5	4	12	6	0	1	0	4	0	0	1	0
Hydatidosis	4	4	6	8	3	0	nn	0	3	0	0	0	0
Leptospirosis	67	59	38	71	55	0	10	1	39	1	0	2	2
Listeriosis	6	11	11	15	18	0	2	0	8	0	1	4	3
Ornithosis	27	35	37	17	52	0	41	0	nn	1	1	7	2
Q fever	212	142	169	183	193	0	58	0	102	6	0	22	5

nn disease is not notifiable in these States

[#] *Brucella melitensis* and *Brucella abortus* are exotic to Australia.

NATIONAL TSE SURVEILLANCE PROGRAM

The Office International des Epizooties (OIE) International Animal Health Code requires that countries (such as Australia) claiming to be free of transmissible spongiform encephalopathies (TSEs) have in place a surveillance system to detect bovine spongiform encephalopathy (BSE) and scrapie should they occur. The National TSE Surveillance Program (NTSESP) is an integrated national program jointly funded by industry and governments to demonstrate Australia's ongoing freedom from BSE and scrapie, and to provide early detection of these diseases should they occur. Table 10 summarises the activity of the program over the past five quarters. Specimens from a small number of animals were unsuitable for testing. All specimens tested were negative for TSEs. Information about NTSESP is available on the internet (at <http://www.aahc.com.au/surveillance/ntsesp>).

Contact: Chris Baldock, Animal Health Australia's NTSESP National Coordinator

Table 10: Number of animals tested under NTSESP (All were negative for TSE)

	Apr – Jun 01		Jul – Sep 01		Oct – Dec 01		Jan – Mar 02		Apr – Jun 02	
	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep
NSW	26	40	37	52	43	64	14	33	15	15
NT	6	0	2	0	14	0	4	0	0	0
QLD	42	14	54	7	82	19	38	14	33	3
SA	9	9	1	12	5	14	1	18	8	28
TAS	2	5	3	1	3	2	1	5	0	0
VIC	10	15	53	33	37	44	6	15	16	24
WA	12	37	2	34	14	31	3	29	3	18
AUS	107	120	152	139	198	174	67	114	75	88

AUSTRALIAN MILK RESIDUE ANALYSIS SURVEY

The Australian Milk Residue Analysis (AMRA) Survey is an independent monitoring program for agricultural, veterinary residues and environmental contaminants in raw cow's milk. The AMRA Survey is currently coordinated by Dairy Food Safety Victoria on behalf of the Australian Dairy Authorities Standards Committee (ADASC) and the Australian dairy industry. The AMRA Survey is an integral part of the Australian dairy industry efforts in securing access to major export markets, including the European Union. The samples taken in the Survey are from bulk milk farm pick-up tankers. During the quarter, a single antimicrobial residue for penicillin G (0.002, mg/kg in whole milk) was detected at a level above the Australian maximum residue level (0.0015 mg/kg). As happens with any positive sample, the relevant State dairy authority and dairy company investigated the residue and follow-up action was implemented. In this case, the primary cause of the residue could not be conclusively determined. Table 11 summarises the results for the quarter.

For further information contact: Kelly Long (AMRA Survey Coordinator), Dairy Food Safety Victoria, phone 03 9426 5999; fax 03 9427 1895; e-mail klong@dairysafe.vic.gov.au

Table 11: Australian Milk Residue Analysis Survey, 1 April to 30 June 2002

Each pair of figures gives the number of samples above the maximum residue limit and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUS	
Antimicrobials	0	36	0	0	0	22	0	18	0	26	2	204	0	8	2	314
Cadmium	0	8	0	0	0	2	0	2	0	6	0	42	0	2	0	62
Lead	0	8	0	0	0	2	0	2	0	6	0	42	0	2	0	62
Mercury	0	8	0	0	0	2	0	2	0	6	0	42	0	2	0	62
Organochlorines	0	8	0	0	0	6	0	4	0	4	0	44	0	2	0	68
Organophosphates	0	8	0	0	0	6	0	4	0	4	0	44	0	2	0	68
PCBs	0	8	0	0	0	6	0	4	0	4	0	44	0	2	0	68
Synthetic pyrethroids	0	8	0	0	0	6	0	4	0	4	0	44	0	2	0	68
Triclabendazole	0	36	0	0	0	22	0	18	0	26	0	204	0	8	0	314

NATIONAL RESIDUE SURVEY

Table 12 summarises the results of 3413 samples tested during the quarter for agricultural and veterinary chemicals. Six (0.16%) had residues above the maximum residue limit (MRL), maximum level (ML) or action level. The detections were in three chemical groups: metals (environmental contaminants), hormones, and antimicrobials.

The three metal detections were in sheep and included one for cadmium at 2.1 mg/kg and two for lead at 0.84 mg/kg and 0.61 mg/kg, respectively. No action was taken on these metal detections as they were below the regulatory

Table 12: National Residue Survey, 1 April to 30 June 2001

Each pair of figures gives the number of samples above the maximum residue limit or the maximum permitted concentration and the number of samples tested.

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Anthelmintics								
cattle	0 85	0 3	0 96	0 11	0 4	0 40	0 11	0 250
pigs	0 12	0 0	0 10	0 4	0 0	0 14	0 1	0 41
sheep	0 65	0 0	0 9	0 20	0 3	0 30	0 14	0 141
other	0 7	0 0	0 4	0 6	0 0	0 6	0 2	0 25
Total	0 169	0 3	0 119	0 41	0 7	0 90	0 28	0 457
Antimicrobials								
cattle	0 107	0 2	0 102	0 10	0 4	1 68	0 19	1 312
pigs	1 131	0 1	0 79	0 75	0 0	0 113	0 26	1 425
sheep	0 186	0 0	0 16	0 76	0 7	0 60	0 51	0 396
other	0 0	0 0	0 0	0 6	0 0	0 2	0 1	0 9
Total	1 424	0 3	0 197	0 167	0 11	1 243	0 97	2 1142
Growth promotants								
cattle	0 143	0 6	1 176	0 16	0 15	0 56	0 10	1 422
pigs	0 36	0 0	0 13	0 18	0 2	0 13	0 5	0 87
sheep	0 102	0 0	0 10	0 30	0 3	0 31	0 16	0 192
other	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 1
Total	0 281	0 6	1 199	0 65	0 20	0 100	0 31	1 702
Insecticides								
cattle	0 120	0 5	0 122	0 17	0 13	0 72	0 29	0 378
pigs	0 26	0 0	0 11	0 24	0 1	0 18	0 6	0 86
sheep	0 98	0 0	0 12	0 28	0 2	0 20	0 22	0 182
other	0 14	0 0	0 22	0 3	0 0	0 4	0 4	0 47
Total	0 258	0 5	0 167	0 72	0 16	0 114	0 61	0 693
Metals								
cattle	0 38	0 1	0 24	0 4	0 1	0 13	0 5	0 86
pigs	0 17	0 0	0 11	0 5	0 0	0 7	0 2	0 42
sheep	1 30	0 0	0 6	2 12	0 1	0 13	0 5	3 67
other	0 0	0 0	0 12	0 1	0 0	0 5	0 0	0 18
Total	1 85	0 1	0 53	2 22	0 2	0 38	0 12	3 213
Miscellaneous								
cattle	0 28	0 1	0 34	0 2	0 2	0 15	0 5	0 87
pigs	0 12	0 0	0 10	0 2	0 0	0 17	0 2	0 43
sheep	0 34	0 0	0 8	0 9	0 1	0 11	0 8	0 71
other	0 0	0 0	0 0	0 3	0 0	0 1	0 1	0 5
Total	0 74	0 1	0 52	0 16	0 3	0 44	0 16	0 206

action level of 2.5 mg/kg for cadmium and 1.0 mg/kg for lead agreed between NRS and the State Departments of Agriculture.

A residue of sulphadimidine (sulphamethazine) at 0.39 mg/kg was detected in a pig kidney. A traceback investigation could not determine the cause of the residue. Circumstantial evidence points to the possibility that a finisher pig may have had access to spilled feed containing lincomycin and sulphadimidine used for piglets and weaners although the different feeds were kept separate.

There was residue detection for neomycin in a beef kidney of 1.7 mg/kg. Traceback revealed that the sample came from one of five culled cows sent to slaughter. The investigation showed that the producer had observed the required withholding period (WHP) of 30 days. No further action was taken in this case. Neomycin has been referred to the National Registration Authority for Agricultural and Veterinary Chemicals for review. This case of a residue violation occurring when the WHP appears to have been observed supports other similar cases for a review of the MRL/WHP for this chemical in cattle.

The other residue detection was for zearanol in beef faeces. The traceback investigation is still pending, but the range of zearalenol/zearalanol metabolites found in the sample is strongly supportive of natural exposure to zearalenone from pasture infected with *Fusarium* fungus.

Further results, reports and information on NRS can be found on the internet (at <http://www.affa.gov.au/nrs>).

Contributed by: Peter Miller, National Residue Survey, AFFA

NORTHERN AUSTRALIA QUARANTINE STRATEGY

In recognition of the special quarantine risks associated with Australia's sparsely populated northern coastline, AQIS conducts an animal disease surveillance program as an integral component of the Northern Australia Quarantine Strategy (NAQS). The NAQS surveillance program provides early warning of disease threats to livestock industries, and in some cases human health. NAQS surveillance activities include both offshore and onshore components. Tables 13 and 14 summarise NAQS activity in Australia over the past five quarters.

Contact: David Banks, Biosecurity Australia

Table 13: Summary of recent NAQS activity in Australia

	Apr – Jun 01		Jul – Sep 01		Oct – Dec 01		Jan – Mar 02		Apr – Jun 02		Notes
	Tested	+ve									
Aujeszky's disease	47	0	246	0	86	0	13	0	265	0	
Classical swine fever	47	0	169	0	86	0	9	0	265	0	
Japanese encephalitis	336	0	47	0	245	0	342	24	428	0	a
Nipah virus									265	0	
Porcine reproductive and respiratory syndrome	47	0	175	0	88	0	13	0	473	0	
Surra	276	0	283	0	99	0	23	0	265	0	

a In 1995–97, animals at sentinel sites on islands in the Torres Strait, but not the Australian mainland, seroconverted to Japanese encephalitis during the latter part of the wet season (March–April). In March 1998, seroconversions occurred at a number of sites on islands in the Torres Strait, and for the first time on the mainland at the tip of Cape York Peninsula. Since 1998, sentinel pigs at Badu Island have seroconverted each wet season and seroconversions have been detected on other central Torres Strait islands in surveys. No further seroconversions have been recorded at the mainland sentinel pig locations.

PORTS SURVEILLANCE PROGRAM

Biosecurity Australia conducts the Ports Surveillance Program for *Culicoides*, screw-worm fly, exotic bees and bee mites. Seaports, particularly those servicing returning livestock vessels and those dealing with high risk deck cargo such as timber, mining equipment and containers, are considered to be high risk locations for incursions of such pests. The program increases the capacity to detect any incursions at an early stage, and this in turn increases the probability of a successful eradication program. The *Culicoides* surveillance also supports the livestock export trade by confirming the continuous or seasonal absence of *Culicoides* vectors at ports from which livestock are loaded. Table 14 shows the number of times that insect trap sites were inspected for the Port Surveillance Program — no exotic insects or mites were detected.

Contact: David Banks, Biosecurity Australia

Table 14: Number of inspections of traps

	Apr – Jun 01	Jul – Sep 01	Oct – Dec 01	Jan – Mar 02	Apr – Jun 02
Port surveillance					
Asian bees	23	15	10	5	10
Bee mites		35	25	35	16
<i>Culicoides</i>	42	33	32	32	34
Screw-worm fly	42	35	36	35	36
NAQS					
Screw-worm fly	32	48	6	150	39

SUSPECT EXOTIC OR EMERGENCY DISEASE INVESTIGATIONS

There were 48 investigations of diseases suspected to be either exotic or a possible emergency reported during the quarter, as shown in Table 15. The response to an outbreak of virulent Newcastle disease is described on page 1, and to two cases of anthrax, on page 14.

KEY to highest level of response in Table 15:

- 1 Field investigation by Government Officer
- 2 Investigation by State or Territory government veterinary laboratory
- 3 Specimens sent to the Australian Animal Health Laboratory (or CSIRO Division of Entomology)
- 4 Specimens sent to reference laboratories overseas
- 5 Regulatory action taken (quarantine or police)
- 6 Alert or standby

Table 15 : Exotic or emergency disease investigations reported during 1 April to 30 June 2002

DISEASE	SPECIES	STATE	DATE	RESPONSE	FINDING
Anthrax (7 reports)	bovine	VIC	Apr, May, Jun	2, 3	negative (including grass tetany, hypocalcaemia, clostridial disease)
Anthrax (2 reports)	bovine	VIC	May	3	anthrax (see page 14)
Anthrax	bovine	QLD	May	2	negative
Australian bat lyssavirus	fauna	QLD	Apr	2	negative
Avian infectious laryngotracheitis	avian	QLD	May	2	infectious laryngotracheitis
Bovine brucellosis	bovine	VIC	May	3	protozoal abortion
Bovine brucellosis	bovine	VIC	Apr	2	Salmonella abortion
Bovine spongiform encephalopathy	bovine	WA	May	3	negative
Canine brucellosis	canine	NSW	Jun	3	negative
Equine viral arteritis	equine	QLD	May	2	negative
Foot-and-mouth disease	bovine	WA	Apr	3	negative
Foot-and-mouth disease	bovine	WA	Apr	3	negative
Foot-and-mouth disease	porcine	QLD	Jun	3	negative
Foot-and-mouth disease	porcine	NT	Jun	2	swine pox
Foot-and-mouth disease	porcine	NSW	May	3	negative
Foot-and-mouth disease	bovine	VIC	May	3	mucosal disease
Foot-and-mouth disease	bovine	QLD	Apr	3	negative
Hendra virus	equine	QLD	Jun	3	negative
Hendra virus	equine	QLD	Jun	3	acute bacterial pneumonia
Hendra virus	equine	QLD	May	3	negative
Hendra virus	equine	WA	May	3	negative
Hendra virus	fauna	WA	Jun	3	negative
Menangle virus	porcine	NSW	Apr	2	negative
Newcastle disease	avian	VIC	Jun	2	lymphoproliferative disease
Newcastle disease	avian	VIC	Jun	1	Salmonella
Newcastle disease (3 reports)	avian	NSW	Apr	2	negative (including toxic hepatopathy)
Newcastle disease (4 reports)	avian	NSW	May	2	negative (including neurotoxicity, hypocalcaemia)
Newcastle disease	avian	VIC	May	6	Newcastle disease (see page 1)
Newcastle disease	avian	VIC	May	3	septicaemia
Newcastle disease (2 reports)	avian	WA	Apr	3	negative
Newcastle disease	avian	WA	May	3	infectious bursal disease
Peste des petits ruminants	porcine	WA	May	3	negative
Potomac fever	equine	QLD	May	3	negative
Rabies	canine	WA	Jun	3	negative
Swine vesicular disease	porcine	WA	Apr	3	negative

NAHIS contacts

The National Animal Health Information System (NAHIS) collects summaries of animal health information from many sources. NAHIS is on the internet (at <http://www.aahc.com.au/nahis>). Because NAHIS does not duplicate the data in those systems, the person indicated below should be contacted if further details are required.

Name	Role	Phone	Fax	e-mail
Chris Baldock	National NAHIS Coordinator	07 3255 1712	07 3844 5501	chris@ausvet.com.au
David Banks	Northern Australia Quarantine Strategy	02 6272 5444	02 6272 3399	David.Banks@affa.gov.au
Janet Berry	Qld State Coordinator	07 4658 4414	07 4658 4433	janet.berry@dpi.qld.gov.au
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Animal Health Surveillance

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