Organisation of veterinary public health in Australasia and the Pacific Islands

S. NEWMAN and A. MCKENZIE *

Summary: The authors present the structure and functions of the Veterinary Public Health Services in Australasia and the Pacific Islands. Services in the region range from the extensive and highly developed organisations of Australia and New Zealand to those meeting the needs of the subsistence agriculture economies of some of the smaller island groups.

Geographic isolation and strict quarantine measures have kept the region free from serious infectious animal diseases, and veterinary public health efforts are concentrated on preventing and combating epizootic diseases.

KEYWORDS: Disease control - Legislation - Meat inspection - Veterinary public health.

ORGANISATION OF VETERINARY PUBLIC HEALTH IN AUSTRALIA

ANIMAL HEALTH IN AUSTRALIA

Australia is one of the leading countries in the world in the export of livestock products (meat, wool and dairy products), livestock (for slaughter, fattening and breeding) and livestock genetic material (semen and embryos). Continued success in this trade is assisted both by the efficiency and reliability of the livestock industries and Veterinary Services in the country and by the favourable animal health situation.

There are approximately 3,600 professionally active veterinarians in Australia; about 67% are engaged in private practice, 16% are employed by government (Commonwealth and State) and the remaining 17% are employed by other organisations (mainly universities and industry).

Official Veterinary Services in Australia comprise input from Commonwealth government officials, State governments and quasi-local government officials as well as from private practitioners.

The animal health role of the Commonwealth government is mainly delivered through the Australian Quarantine and Inspection Service (AQIS), which is located within the Department of Primary Industries and Energy (DPIE). In this role it is

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supported with independent scientific advice by the Bureau of Rural Resources (BRR), which is also part of DPIE.

AQIS has responsibilities covering the export and import of almost all animals and plants and derived products. The veterinary functions of AQIS include:

- veterinary public health inspection responsibilities for meat, including the provision of a National Inspection Service (AQIS Food Inspection Branch);
- responsibility for quarantine of imports of live animals and animal products and the zoo-sanitary certification of live animals and animal reproductive material exports (AQIS Animal Quarantine and Exports Branch).

The rapid expansion of Australian involvement in international trade in animals and animal products, together with a demand for access to genetic material only available from foreign sources, highlight the importance of a modern and effective animal quarantine service for imports and a reputable zoo-sanitary certification facility for exports. AQIS operates a number of on-shore quarantine stations as well as a high security station on one of the Cocos (Keeling) Islands. This latter station in particular enables Australia to safely import genetic material from countries which would otherwise pose unacceptable disease risks.

The Australian States are responsible for disease control and eradication within their own boundaries. The Commonwealth provides advice and co-ordination, and in some circumstances financial assistance for disease eradication.

Each State is subdivided into veterinary regions or divisions which are under the control of a State Government Veterinary Officer (SGVO). These areas are then further subdivided into either animal health districts or rural lands protection boards which are administered by inspectors who may be veterinarians or qualified animal technicians.

The SGVO is responsible for monitoring and improving the health of livestock in the region, supervising inspectors and administering the relevant State Government Acts. The States also have government animal health laboratories which undertake applied research, as well as providing a disease diagnosis and investigation service. These laboratories work in close association with the field veterinary staff.

Private veterinary practice can be broadly divided into agricultural or farm work and what might be called town practice, the latter involving companion and leisure animals. Practitioners in agricultural practice offer herd health, clinical and surgical services. Some practitioners offer specialised services in a particular expertise such as artificial breeding.

Australia, the island continent, is fortunately free of all of the major livestock diseases and is relatively free of other serious animal diseases. This has occurred mainly because, until the middle of this century, the geographic isolation of the country meant that travelling time served as an effective quarantine barrier. Despite this, at various times, a number of serious animal diseases have entered Australia and been subsequently eradicated.

For instance, early colonial records indicate that foot and mouth disease may have been introduced and eradicated four times between 1800 and 1872 and that rabies may have been introduced and eradicated in 1866-1867. Sheep scab (*Psoroptes ovis*) was eradicated late in the nineteenth century, having been introduced in 1788 at the
time of European settlement. In more recent times, rinderpest (1923) and scrapie (1951) have been introduced and have been rapidly eradicated.

Hog cholera (classical swine fever) entered the continent four times between 1907 and 1961 and was eradicated on each occasion. Contagious bovine pleuropneumonia entered in 1858 and has now been eradicated, with Australia being officially declared free in 1973. Bovine babesiosis was introduced in 1872 and is now endemic in the northern coastal regions; eradication is not feasible.

Bovine tuberculosis and brucellosis eradication campaigns have progressed rapidly. All States and the Northern Territory were declared officially free of bovine brucellosis in 1990. Bovine tuberculosis has been eliminated from the more intensive cattle raising areas, but low levels of residual infection still occur in the far north of Australia.

PREVALENCE AND CONTROL MEASURES
OF ZOONOTIC DISEASES IN AUSTRALIA

Through fortunate geographical positioning, a relatively high standard of living and enforcement of strict quarantine measures, Australia is free of many of the major animal diseases which are capable of being spread directly or indirectly to man (e.g. rabies, Rift Valley fever, Chagas’ disease).

However, more than 60 zoonoses have now been reported in Australia, although most of these occur at a very low prevalence and are of minor public health significance. The few diseases which are of major public health significance are, fortunately, of low prevalence.

Figures for the prevalence of zoonotic diseases throughout Australia are gathered from a variety of sources — State Departments of Health, surveillance laboratories and the Australian Sentinel Practice Research System of private practitioners. All information is collected and collated by the Commonwealth Department of Community Services and Health. However, it is accepted that some degree of under-reporting may occur due to differing reporting requirements within each State, the different “notifiable disease” status of some diseases between States and the potential for misdiagnosis.

The major zoonoses within Australia of which regular and relatively reliable reports are made are salmonellosis, campylobacteriosis, Q fever, brucellosis and leptospirosis. While salmonellosis and campylobacteriosis are spread throughout the general human population, the other three diseases are of major importance in the meat production and processing industries.

With a human population in excess of 17 million, the prevalence of the above five diseases in Australia, as reported in the 1990 Annual Report of the Communicable Diseases Network of Australia, was as follows: 4,564 cases of salmonellosis; 5,683 cases of campylobacteriosis; 431 cases of Q fever; 46 cases of brucellosis; and 121 cases of leptospirosis. Recorded prevalence of other zoonoses was much lower.

Methods to prevent, control or reduce the incidence of zoonotic diseases in Australia are many and varied. Tuberculosis, a major zoonosis in the 1960s, has been almost eliminated from the Australian cattle population by a comprehensive testing and slaughter campaign over more than twenty years. Likewise, brucellosis eradication
has almost been achieved, in this case by vaccination, blood testing and, lately, slaughter. In both cases, individual identification of stock and properties has been a major component of the control measures. Widespread vaccination of pigs and cattle has been encouraged to reduce the transmission of leptospires, while Australia is the world leader in the development of the vaccine against Q fever in humans.

In some areas of southern Australia, vigorous farmer-led worming programmes for dogs have seen a significant reduction in both hydatid and ascarid infestations in dogs and a corresponding decrease in the potential for zoonotic disease to occur. In other areas, reduction in numbers of feral animals is used to combat zoonotic disease.

Within workplaces in the meat industries, the supply of protective clothing and equipment, revised working practices, greater awareness of the importance of good hygiene standards and education campaigns to warn of the dangers of zoonotic diseases have all been widely encouraged. In the wider community, educational campaigns aimed at raising the awareness of good personal hygiene assist in reducing the incidence of direct infection, while the importance of correct care and preparation when handling foodstuffs continues to be broadly emphasised. Increasing numbers of highly trained epidemiologists are employed throughout the States to ensure a rapid and appropriate response in the event of an outbreak occurring.

Legislative arrangements are in place to allow compulsory slaughter of animals in some cases of zoonotic disease outbreaks, while a national “exotic disease preparedness plan” may be used in some instances should an exotic zoonosis outbreak occur.

MEAT INSPECTION IN AUSTRALIA

Meat inspection in Australia is organised by a number of different bodies.

The Australian Quarantine and Inspection Service (AQIS), within the Commonwealth Department of Primary Industries and Energy (DPIE), is responsible for:

- all inspection at export establishments;
- inspection at domestic red meat establishments in all States except Queensland and Western Australia;
- inspection at domestic poultry establishments in New South Wales.

State Government Inspection Services have responsibilities for some domestic meat inspection, for example:

- The Department of Primary Industries (DPI) in Queensland is responsible for all inspection at domestic meat establishments in the State.
- The Department of Health in Western Australia is responsible for all inspection at domestic meat establishments in the State.
- The State Departments of Agriculture in Victoria, South Australia and Tasmania are responsible for domestic poultry inspection within the State boundaries.
AQIS employs 80% to 90% of all meat inspection officers and inspects 85% of all red meat produced in Australia.

Export meat industry

There are approximately 175 Veterinary Officers and 1,650 meat inspectors throughout Australia employed by AQIS — essentially, all Veterinary Officers and approximately two-thirds of all meat inspectors are employed to deal with the export meat industry.

At an export abattoir, the Veterinary Officer in Charge (VOIC) (class 1-2) is ultimately responsible for meat inspection. He/she is also responsible for the performance of ante-mortem inspection. Large export establishments may have more than one Veterinary Officer to assist with the duties. In addition to ante-mortem inspections of all stock to be slaughtered, the VOIC:

- must ensure that all regulatory requirements are carried out as per legislation;
- supervises operations to ensure the production of a safe, wholesome product which is true to label;
- makes disposition judgements on carcasses;
- has direct involvement with plant hygiene, construction and equipment, security and documentation;
- has animal welfare responsibilities, including the authorisation of emergency kills;
- must ensure that all testing policies and programmes are running efficiently, e.g. organochlorine/organophosphate testing, microbiological testing, antibacterial residue testing and “hormone growth promotant” (HGP) exclusion programme.

Routine on-chain inspection is performed by meat inspectors at the grade 1 and 2 levels. The most senior meat inspector (at the grade 3, 4, 5 or 6 level) is directly responsible to the VOIC for the day-to-day running of meat inspection. Responsibilities of meat inspectors include:

- safeguarding public health by identifying and condemning unsafe and unwholesome meat;
- control of zoonoses;
- disease reporting;
- ensuring the hygiene and cleanliness of production areas, equipment and personnel;
- ensuring that refrigeration, sterilisers and other pieces of essential equipment are working efficiently;
- suspending operations in any processing department if major or critical deficiencies exist;
- assisting with ante-mortem inspections.

The Australian meat industry, like the meat industry in other countries, is currently in the process of implementing Quality Assurance (QA) programmes and using Hazard
Analysis Critical Control Point (HACCP) procedures to establish these programmes. Consequently, industry is accepting greater responsibility for the quality of its own product. Ancillary duties performed by meat inspectors (such as supervision of offal rooms, load-outs and boning rooms as well as lock-up security and preparation of documentation) are being taken over by the company in those establishments where approved QA programmes have been set up. Inspection duties at these plants now involve monitoring and auditing the QA programme of the company concerned.

Export abattoirs are reviewed monthly by Senior Veterinary Officers (class 3) who are based in either regional or district offices. All aspects of meat inspection are checked. Regional offices usually perform reviews once or twice a year.

Domestic meat industry

In all States except Queensland and Western Australia, red meat inspection is undertaken by AQIS staff, under a contract arrangement between AQIS and each State government for whom the inspection is carried out. A significant proportion of meat for the domestic market is produced at export abattoirs. At the domestic meat establishments, all aspects of meat inspection, including ante-mortem, plant hygiene, carcass disposition, etc. are the responsibility of meat inspectors; duties of meat inspectors are similar to those at export establishments except that the officer-in-charge is a senior meat inspector. Domestic establishments are reviewed, usually monthly, by a district meat inspector or a Senior (District) Veterinary Officer.

Queensland and Western Australia have their own domestic meat inspection services, located in the State Department of Primary Industries (DPI) in Queensland, and in the State Department of Health in Western Australia. Registration of domestic establishments in all States is carried out by the State Meat Industry Authorities – each a statutory authority of the particular State government.

Meat entering interstate domestic trade (produced in one State and sold in another) must be produced in a domestic abattoir registered with the relevant State Meat Authority. The meat is still subject to inspection in the receiving State (either by State inspectors or by AQIS inspectors on behalf of the State) before being cleared to be sold to the public.

The level of inspection can vary between States:

- in some States, all meat is inspected irrespective of whether it is for local or interstate trade;
- some States allow slaughterhouses under prescribed conditions to produce meat for the local market without the full-time presence of a meat inspector;
- in Western Australia, the inspection at some slaughterhouses is provided by a local shire government employee.

Inspection standards are co-ordinated through the Sub Committee on Veterinary Public Health (SCVPH) which is a sub-committee of the Animal Health Committee and ultimately responsible to the Australian Agricultural Council, which is the supreme policy-setting body for agriculture in Australia, composed of Ministers for Agriculture from each State and chaired by the Minister for Primary Industries and Energy from the Commonwealth government.
SCVPH has veterinary public health representation from all State governments and the Commonwealth government, and has formulated Codes of Practice for inspection procedures which help to ensure uniform standards between the States and so facilitate interstate trade in meat.

**Structure of AQIS**

As well as staff employed at export and domestic meat establishments, AQIS has an administrative structure consisting of five regional offices and a Central Office located in Canberra.

**Regional offices**

Regional offices are located in the five State capital cities around Australia. The most senior Veterinary Officer (class 4 or 5) in each State, the Chief Veterinary Officer (CVO), is based in the regional office, along with a variable number of Senior Veterinary Officers. The CVO is responsible for the efficient provision of meat inspection in the region.

The role of the regional offices is:

- to manage all departmental activities in the region and administer and implement policy;
- to advise Central Office of allegations of malpractice;
- to provide feedback to Central Office on inspection;
- to ensure effective allocation of staff;
- to resolve any problems associated with the application of inspection standards, policy and procedures, specify appropriate corrective action and ensure that such action is implemented.

Some regions have developed a "district" system, whereby the region is divided into a number of geographical areas each usually having control over several establishments both export and domestic. The District Veterinary Officer (class 3) and District Inspector are responsible for the supervision and review of the inspection activities at the meat works in their district.

**Central Office**

Several branches within AQIS assist in administering meat inspection policy:

- the Food Inspection Branch.
- the Technical and Regulatory Services Branch;
- the Corporate Services Branch.

The responsibilities of Central Office include:

- the control of technical aspects, the provision of meat inspection services throughout Australia and the determination of relevant policy;
- negotiation with overseas governments to ensure animal and public health restrictions are scientifically based and facilitate trade;
- maintenance of the integrity of inspection systems;
- residue sampling and analysis policy;
- investigations of allegations of malpractice and initiation of prosecutions;
- registration of establishments;
- liaison and negotiation with State governments, statutory marketing authorities and industry groups;
- ensuring adequate standards are set for animal welfare;
- programme evaluation and approval.

Veterinary staff (approximately twenty in number), consisting of a Senior Assistant Director and Principal and Senior Veterinary Officers (classes 3-5) within the branches in Central Office, assist in developing and implementing this inspection policy.

**ORGANISATION OF VETERINARY PUBLIC HEALTH IN NEW ZEALAND**

**BACKGROUND**

Agriculture, particularly the sector based on livestock production, is of major importance in the New Zealand economy (Table I). For the year to 30 June 1990, agriculture contributed $NZ 8,263 million towards a total export income of $NZ 14,588 million. Livestock-based industries contributed $NZ 7,694 million, or 52% of this total value.

**TABLE I**

*Value of exports of New Zealand livestock-based industries ($NZ million f.o.b.)*

<table>
<thead>
<tr>
<th>Type of produce</th>
<th>Year to 30 June 1989</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat and meat products</td>
<td>2,424.9</td>
<td>2,083.4</td>
</tr>
<tr>
<td>Dairy products</td>
<td>2,234.1</td>
<td>2,534.2</td>
</tr>
<tr>
<td>Wool</td>
<td>1,909.0</td>
<td>1,424.1</td>
</tr>
<tr>
<td>Hides and skins</td>
<td>556.2</td>
<td>494.8</td>
</tr>
</tbody>
</table>

New Zealand has a land area of 26.8 million hectares, 17.4 million hectares of which is in agricultural production. There are approximately 81,000 holdings, most of which are farmed by working owners, leaseholders and sharemilkers. Livestock graze outdoors on pasture all year round, with sheep, dairy and beef cattle the main classes of livestock, although deer and goats are gaining prominence.
STRUCTURE OF THE VETERINARY PUBLIC HEALTH SERVICE

In New Zealand, the Ministry of Agriculture and Fisheries is responsible for agricultural security and the provision of quality assurance services to the agriculture industry. Although there are plans for restructuring, at the present time the Ministry comprises five businesses (Fig. 1):

- **MAF Technology**: Scientific research and development
- **MAF Fisheries**: Fisheries management
- **MAF Policy**: Policy advice, standard setting, audit
- **MAF Quality Management**: Agricultural security and quality assurance
- **MAF Corporate Services**: Provision of support services to MAF

The Director General of MAF is directly accountable to the Minister of Agriculture.

ZOONOTIC DISEASES IN NEW ZEALAND

Statistics on the incidence of a limited number of zoonotic diseases are compiled by the Communicable Disease Centre of the New Zealand Department of Health.

A number of zoonoses have never been reported in New Zealand (including human cases of anthrax, rabies, screw-worm myiasis, glanders, Japanese and Venezuelan encephalitis). Livestock is also free from some zoonotic agents (such as *Coxiella burnetii*, *Brucella melitensis*, *B. suis*) although rare cases acquired overseas are reported in humans.

The most commonly notified zoonotic diseases reported in humans in New Zealand are salmonellosis and leptospirosis. The most common causes of human leptospirosis are *Leptospira hardjo* (maintained in cattle) and *Leptospira pomona* (maintained in pigs). Humans are usually infected through exposure to the urine or tissues of infected animals. Leptospirosis is thus an occupational hazard to humans involved in farming or working in slaughterhouses.

The number of human cases of leptospirosis in New Zealand has declined in recent years from over six hundred per year in 1979 to fewer than one hundred per year. Much of this decline is attributed to a massive campaign in the early 1980s aimed at persuading dairy farmers (the most severely affected occupational group) to vaccinate their cattle.

THE NEW ZEALAND MEAT INSPECTION SERVICE

The Ministry of Agriculture and Fisheries is the independent competent authority responsible for certification and branding of all meat, game and game meat produced in New Zealand for both local and export consumption. Since 1 October 1990, the meat inspection service has been divided into the MAF Policy (Meat) section within MAF Policy, and MAF Quality Management Meat Services within MAF Quality Management.
MAF Policy (Meat)

MAF Policy (Meat), under the managerial control of the Chief Meat Veterinary Officer, is responsible for:

- negotiation of government-to-government agreements on requirements;
- setting of standards and specifications to ensure the safety and wholesomeness of meat, game, game meat and fish produced for the domestic market and to meet the certification requirements of importing countries;
- adjudication on standards and specifications where necessary;
- auditing compliance with these standards.

MAF Policy (Meat) is located in Wellington, although a number of staff are situated in regional offices who are responsible for compliance and specifications development. The group is made up of twenty-three members with skills in the areas of veterinary science, engineering, food technology, epidemiology and support.

Other functions include:

- providing advice on the legislative requirements of importing countries;
- assisting industries in gaining market access for new products and negotiating changes to operational procedures with importing countries;
- investigating the scientific rationale of meat inspection procedures and hygiene requirements to ensure relevance to New Zealand conditions;
- providing scientific evidence to support New Zealand inspection procedures;
- providing assurances that New Zealand meat, game, game meat and fish products do not contain residues which exceed internationally agreed levels or the requirements of importing countries and represent no risk to human health;
- ensuring that product labels accurately reflect the species from which the product is derived;
- providing necessary services to ensure compliance with domestic and importing requirements in the construction and licensing of premises;
- approving building materials and equipment for use in such licensed premises;
- ensuring that production systems are consistent with current regulatory requirements and/or good manufacturing practice;
- approving production processes and chemical production aids;
- developing standards for process control to meet the needs of new technologies and market requirements;
- setting relevant specifications to assure the safety and wholesomeness of fish and shellfish for domestic and export markets as necessary.

MAF Quality Management Meat Services

Under the Meat Act 1981, all meat produced for sale in New Zealand must be inspected by Ministry of Agriculture and Fisheries inspectors. This task is carried out by MAF Quality Management Meat Services on behalf of the Chief Meat Veterinary Officer.
Veterinary public health in the New Zealand Ministry of Agriculture and Fisheries
MAF Quality Management employs over 100 veterinarians and nearly 1,000 trained meat inspectors. Meat inspection staff are, in general, domiciled on meat premises, although approximately thirty inspectors and veterinarians are employed on circuits and visit fish packing houses, cold stores, by-product works and other licensed premises on a regular basis.

In all meat export premises, the Supervising Veterinarian is accountable for technical standards and for ensuring that meat produced does indeed meet the standards certified. A line of technical accountability runs from the Chief Meat Veterinary Officer to the Supervising Veterinarians on premises. Although approximately 35% of meat produced in New Zealand is consumed locally, 95% is produced in export premises licensed to export to the European Community and/or the United States.

On each premises, a resource centre manager is accountable for management functions and budget control. The manager may not be the Supervising Veterinarian, however the veterinarian retains technical control at all times.

MAF Quality Management Meat Services is structured into three regions. These cover the north of the North Island (North Region), the south of the North Island (Central Region) and the South Island (South Region). Each region has an operational and a technical manager, although structures vary slightly within the three regions. The Meat Services regional managers are responsible to MAF Quality Management regional managers, who in turn report to the Group Director of MAF Quality Management.

Throughput in premises is seasonal, particularly in plants processing sheep and lambs, with peak operation from November through to May or June each year. The employment conditions of meat inspectors reflect the seasonal nature of the industry, although the bulk of inspectors are employed for the full year. MAF Quality Management is increasingly using inspectors for discretionary work both on premises and in other areas during the off-peak periods.

ANIMAL HEALTH IN NEW ZEALAND

The geographical isolation of New Zealand in the south Pacific, together with MAF permanent surveillance of ports of entry and strict quarantine procedures, has kept New Zealand free from all OIE List A diseases and other serious infectious diseases important to international trade.

The group headed by the Chief Veterinary Officer (CVO) within MAF Policy is responsible for maintaining and enhancing animal health status within New Zealand. The group under the CVO is concerned primarily with matters of animal health and the prevention and control of zoonotic diseases. The group is responsible for negotiating government-to-government protocols on quarantine issues relating to the import and export of animals and animal products, setting zoo-sanitary and quarantine standards, setting standards for the use of official New Zealand certification and auditing compliance with these standards. MAF Quality Management, and a number of other groups, deliver services to ensure these standards are met.

Other veterinary public health functions performed by the group headed by the CVO include:
- the publication of proposals for imports and the formulation of animal health policies on which future protocols will be based;
- the management of the two MAF quarantine stations at Somes Island and Silverstream, and the supervision of privately-owned and privately-operated quarantine grounds;
- setting standards and auditing compliance for the Border Protection Service, which operates at ports and international airports and is responsible for the inspection of animals and plants and their products imported as passenger baggage or cargo (this service is also responsible for mail inspection, aircraft and vessel clearance and the treatment of contaminated items, and works closely with other government departments, such as Customs and the Department of Conservation, and with overseas quarantine authorities).

Information on national animal health status in New Zealand is constantly monitored by the animal health laboratories, the meat inspection service and the veterinary and livestock offices of MAF.

MAF runs surveillance and eradication programmes for a number of diseases of veterinary public health significance. These include a bovine tuberculosis eradication scheme and a brucellosis surveillance programme. New Zealand was declared brucellosis-free in 1989; however surveillance will continue until 1994.

Delivery of these services is performed by MAF Quality Management.

Veterinary training

Anyone wishing to practise any form of veterinary science in New Zealand must be registered as a veterinary surgeon under the Veterinary Surgeons Act 1956. The Veterinary Surgeons Board, which represents all branches of the veterinary profession in New Zealand and is independent of the government, is responsible for deciding on the suitability of applicants for registration. The Board evaluates veterinary schools world-wide in relation to New Zealand standards and conditions, to determine the suitability of graduates from each school for registration in New Zealand.

Veterinary training in New Zealand is undertaken by Massey University, Palmerston North, which runs a five-year course, leading to a Bachelor of Veterinary Science degree.

Legislative provisions

The Ministry of Agriculture and Fisheries administers the Acts of Parliament governing veterinary public health and animal health and welfare. Major Acts administered by MAF are listed below:

- The Animals Act 1967 makes provision for the Chief Veterinary Officer to ban or exclude potential sources of animal disease.
- The Meat Act 1981 and Meat Regulations 1969 empower MAF to ensure the safety and wholesomeness of meat, game and game meat destined for local and export markets, governing the slaughter, processing and sale of meat and game for human consumption, imposing licensing requirements for meat exporters, local abattoirs, meat export slaughterhouses, custom killing premises, deer slaughtering premises, packing houses, by-product premises and export coldstores, and conferring the powers of inspectors as defined in the Act.
The Animal Remedies Act 1967 governs the manufacture, import and use of animal remedies, enabling the Animal Remedies Board to register and license all animal remedies and establish specific conditions of use. (The Pesticides Act 1979 provides similar powers to the Pesticides Board.)

The Veterinary Surgeons Act 1956 makes provision for the registration and control of veterinary surgeons throughout New Zealand. The Veterinary Surgeons Board, established under this Act, has powers to fine, censure, suspend or deregister a veterinary surgeon found to be guilty of "professional misconduct, or infamous conduct in a professional respect".

The State Sector Act 1988 governs the appointment of MAF inspectors responsible for enforcing the provisions of the Meat Act.

In addition, the Food Act 1981 governs food for sale on the local market and is administered by the Department of Health.

CONCLUSION

New Zealand places great importance on its enviable animal health status and its reputation as a supplier of safe and wholesome meat, game, game meat and fish products. The Ministry of Agriculture and Fisheries, particularly the Chief Veterinary Officer and the Chief Meat Veterinary Officer and their teams within MAF Policy are responsible for ensuring that standards and systems are in place to safeguard and enhance the livestock-based industries which are vital to the New Zealand economy.

ORGANISATION OF VETERINARY PUBLIC HEALTH IN THE PACIFIC ISLANDS

FEDERATED STATES OF MICRONESIA

Veterinary Public Health in the Federated States of Micronesia is the responsibility of the Department of Resources and Development. At present, the department has no veterinarian on the staff, but in view of increasing livestock activities for both local and export markets, the department is working with the United Nations Development Programme (UNDP) Livestock Project, and is hoping to establish a diagnostic laboratory and appoint a United States Department of Agriculture (USDA) certified veterinarian by 1992. The project will also provide training for local field staff.

With the exception of an outbreak of hog cholera in 1976-1978, the Federated States of Micronesia have had no recorded incidents of serious epizootic disease. The USDA recently declared the island free of hog cholera, however the lack of a permanent veterinarian will make monitoring for the disease difficult.

FIJI

Administration

The administration of veterinary public health services in Fiji is described in Figure 2.

The Ministry of Primary Industries and Cooperatives in Fiji also employs within its Animal Health and Production Division more than seventy additional technical and clerical personnel, including Area and Locality Livestock Officers.
Government of Fiji

Cabinet

Minister of Primary Industries and Cooperatives

Ministry of Primary Industries and Cooperatives
Permanent Secretary (MPIC)

Animal Health and Production Division
Director

Principal Veterinary Officer

Quarantine - Animal & Plant
Abattoir Control - Meat Inspection
Dairies Control
Dog Control
Veterinary Field Services
Veterinary Laboratory Services

Senior Veterinary Officers

Headquarters | Central/Eastern Division | Western Division | Northern Division | Veterinary Laboratory

FIG. 2

Veterinary public health services in Fiji
Slaughter

The Fiji Meat Industry Board (FMIB) operates two abattoirs near Suva and Nadi on the main island of Viti Levu. Approximately five rural slaughterhouses operate on Vanua Levu and Taveuni.

The nation has three poultry abattoirs.

The numbers of animals slaughtered during 1990 were as follows:

- Cattle 12,166
- Calves 46
- Pigs 12,775
- Goats 2,086
- Sheep 326
- Poultry 4.3 million

Disease

Because it has been relatively isolated from other countries by the surrounding Pacific Ocean and because of strict, well managed quarantine laws, Fiji remains free of virtually all serious transmissible diseases of animals.

The indications are that *B. abortus* of bovine brucellosis may have been eradicated. *Mycobacterium bovis* of bovine tuberculosis remains endemic to a relatively low degree in the southeastern third of Viti Levu, where most dairy cattle in the nation are located. Reactors (to *Brucella* and tuberculosis) are mostly sent to abattoirs for slaughter. Apart from mastitis in dairy cows and helminthosis in young ruminants, other diseases occur rarely if at all.

Fiji is free of the cattle tick (*Boophilus microplus*) and associated tick fever organisms (*Babesia bovis, B. bigemina* and *Anaplasma* spp.).

Livestock

Dairy cattle in Fiji are predominantly of the *Bos taurus* type, with *B. indicus* strains more prevalent in the beef areas.

Progress has been achieved in developing a breed of sheep unique to the islands and adapted to tropical conditions, based mainly on Barbados Black Belly.

Legislation

The Laws of Fiji which are geared specifically to protecting public health include Statutes administered by the Ministry of Health and Statutes administered by the Ministry of Primary Industries and Co-operatives (MPIC), as well as the following:

- the Animals Importation Act, which covers meat and other foods of animal origin;
- the Animals (Contagious Diseases) Act, which provides the legal basis for the control and eradication of transmissible pathogens affecting animals and animal products, including any which are also transmissible to human beings;
- the Dairies Act, which regulates the production, processing and distribution of milk and related products for human consumption;
- the Meat Industry Act, which regulates the production, processing and distribution of meat and related products for human consumption;
- the Dog Act, which regulates the ownership and control of dogs.

**FRENCH POLYNESIA**

**Introduction**

Food hygiene control is a priority in the protection of public health, particularly in a country situated in a tropical zone, like French Polynesia. Moreover, in an island territory, health protection at frontiers is a fundamental element of animal health policy.

**Legal framework**

The legal basis for action by the administration is provided by deliberations of the Territorial Assembly of French Polynesia, which is empowered to issue legislation concerning hygiene supervision and enforcement by virtue of the internal autonomy statute which governs relationships between the Territory and France.

Deliberation 77-116 of 14 October 1977 contains regulations for the inspection of foods of animal origin. This authorises the Council of Ministers to issue decrees on hygiene and quality standards applicable to animals and food of animal origin for human consumption. It stipulates that inspection be carried out by veterinarians of the Territorial Administration.

**Administrative organisation**

Control of the hygiene of food products is entrusted to two services of the Territorial Administration:

- the animal husbandry section (one veterinarian and five health officials) of the Rural Economy Department under the Minister of Agriculture, whose task is supervision of the health of animals and inspection of edible products of animal origin, by implementing Deliberation No 67-28 of 23 March 1967;

- the Department of Hygiene and Public Health (one veterinarian and five assistant hygiene inspectors), under the Minister of Health, whose tasks involve food hygiene and supervision of foods, including inspection of edible products of animal origin and the supervision of personnel and premises associated with food, by implementing Decree 526/I ADM of 3 February 1975.

In practice, the division of responsibilities between the Veterinary Services of the Administration is as follows:

- The Rural Economy Department looks after the inspection of local and imported foods of animal origin from the aspects of animal health, wholesomeness and quality, including quality control at the production (abattoirs), import (wholesalers) and transformation stages (cutting premises, storage facilities, meat processing plants) and the issuing of health certificates for exported foods of animal origin.
The Department of Hygiene and Public Health supervises foods during transit within and between islands, retail sales (shops, butchery premises and markets), restaurants and community canteens. The Department applies standards for premises and materials, and for the medical knowledge of those responsible for handling food.

Activities

Inspection of locally produced meat

Annual beef production in French Polynesia amounts to 250 tonnes. The health quality of the animals is good and the rare condemnations are mostly cows slaughtered because of dystocia and accidental injury. Tuberculosis and cysticercosis are absent. A Territorial Abattoir was constructed on Tahiti between 1988 and 1990, and commenced operation in 1991. However, this abattoir does not solve all the problems of slaughter hygiene throughout the archipelago.

Pig meat production is increasing steadily, and 1,100 tonnes are now being inspected annually. Ninety percent of the pigs produced and traded in French Polynesia are slaughtered at the Tahiti Territorial Abattoir, and this better supervision should lead to an appreciable improvement in the health quality of carcasses and a decrease in the amounts withdrawn from consumption. Condemnations (2,000 kg) were due mostly to respiratory disease (pleurisy) and abscesses caused by Corynebacterium pyogenes. Condemnations for parasitism (stephanurosis) were once common, but have now become rare. About 15% of local pig meat is sold at Papeete market, and 30% goes to the processing industry. Each year, 5,000 piglets (used in a traditional Polynesian dish) are inspected.

One private abattoir deals with 88% of local production of broiler fowls, which has increased to 350 tonnes annually. The rate of condemnations is high because of the poor hygienic conditions under which the birds are kept. Respiratory infections with purulent inflammation of air sacs are common, and 8.8% of birds are withdrawn from the commercial circuit and are not offered for sale. Inspection of fowls is supplemented by regular bacteriological testing, but salmonellae have never been isolated from locally produced broilers.

Inspection of other foods of animal origin produced locally

Fish are inspected regularly, particularly for export. Eggs and honey are tested periodically and production of milk and milk products is supervised by the Hygiene Department, including regular bacteriological and antibiotic residue testing.

Inspection of processing of animal products is of increasing importance. Poor slaughter hygiene and delayed or slow cooling due to inadequacy of refrigeration has caused difficulty in obtaining products of satisfactory bacteriological quality.

Inspection of imported foods of animal origin

The amount of food of animal origin imported is increasing constantly and now amounts to 18,000 tonnes, of which 14,000 tonnes is meat. On average, some 95 tonnes are rejected each year, usually because of transport at incorrect temperatures, absence of valid health certificates or inadequate quality.

Inspection of exported food

Exported food is mainly fishery products, which constituted 75% of the 170 tonnes inspected and granted export health certificates during 1990.
**Bacteriological testing of food**

About 700 bacteriological tests are conducted each year by territorial laboratories, and 98% of these tests are on local products. Salmonellae isolated from the samples tested are sent to the Pasteur Institute in Paris for serotyping.

**Conclusion**

The Veterinary Services are contributing with satisfactory results to consumer protection and the development of the local economy, through their influence in improving the quality of animal products.

**GUAM**

The responsibility for veterinary public health activities on Guam is shared by several agencies.

The Department of Agriculture provides routine farm services, including advice on public health concerns such as salmonellosis. It also cooperates with United States agencies such as the Fish and Wildlife Service, the Food and Drug Administration and the Food Safety and Inspection Service in regulating the importation or transit of animals or animal products into or through the Territory. The Department also provides quarantine services where necessary.

The Department of Public Health cooperates closely with the Veterinary Services on matters of human health and zoonoses, including rabies quarantine procedures.

Meat hygiene and safety is the responsibility of an inspector from the United States Department of Agriculture. Most meat is imported into Guam, however, and imported meat and related products must be inspected prior to entry by a foreign service which has been evaluated as the equivalent of its United States counterpart.

**REPUBLIC OF KIRIBATI**

The Republic of Kiribati has a population of approximately 65,000 people, of whom 35,000 live on South Tarawa and the remainder on the other sixteen islands of the Gilbert group and on the more distant Line and Phoenix groups.

The Kiribati Veterinary Services are part of the Division of Agriculture of the Ministry of the Environment and Natural Resource Development and are situated on South Tarawa. The service comprises a Veterinary Officer (expatriate) and a local para-veterinary trained officer. Two local positions in the department remain vacant. The group liaises with the Public Health Department at the hospital on such matters as packaging of imported meats and general advice to nursing staff on zoonoses. Diagnostic tests are sent to Fiji or Australia, although haematology and some bacteriology is performed in South Tarawa.

Animal production on the outer islands is on a very basic subsistence level; pigs and chickens are the main livestock animals, while ducks are also farmed in smaller numbers. Livestock is generally only consumed on festive occasions (weddings, etc.) and receives no official inspection.
An Agricultural Assistant works on each of the outer islands, advising the population on basic animal husbandry and feeding, and conducting programmes for the control of parasites.

The only semi-commercial livestock production is on South Tarawa, where a government farm breeds Tamworth pigs and broiler and layer birds for the domestic market. A commercial slaughterhouse is presently under construction to process the meat but, for the present, slaughtering is carried out at the government farm on an ad hoc basis, frequently without ante- or post-mortem inspection.

Isolation and strict quarantine measures have kept the islands free from serious infectious animal diseases, although sarcoptic mange, kidney worm, lung worm and ascariasis are found in pigs, and fowl pox, eye worm and, occasionally, Marek's disease are found in poultry.

NEW CALEDONIA

Veterinary public health in New Caledonia is the responsibility of the Service Vétérinaire et de la Protection des Végétaux, the official veterinary service in the country. The service is divided into two sections: meat inspection and zoonotic disease surveillance (Fig. 3).

Meat inspection

In New Caledonia, 60% of animals from local production are slaughtered at one of two EEC-approved abattoirs. The largest of these is located at Bourail (180 km from Noumea) and has a capacity of 4,000 tonnes per annum. The other abattoir is in Paita (30 km from Noumea) and has a capacity of 1,000 tonnes per annum.

There are two meat inspectors at the Bourail abattoir and one at Paita, both graduates of a two-year course at the French Veterinary Service School. The inspectors are supervised by a veterinarian accountable to the head of the Meat Division. Butchers in Noumea are required by regulation to buy meat which is produced in one of these abattoirs. These butcheries are inspected by members of the Veterinary Service.

Other animals on the island are slaughtered on farm properties. Butcheries and restaurants in the outback are controlled by one veterinarian and two inspectors. Restaurants in Noumea are inspected by a communal service headed by a physician working with the official Veterinary Service.

Analyses of meat or meat products are conducted in two official laboratories, the Veterinary Diagnostic Laboratory and the Pasteur Institute.

Zoonotic disease control

Prevention of the introduction of zoonotic disease is the responsibility of the quarantine team. New Caledonia has a modern quarantine station staffed by a veterinarian and three agents, and all animals for import and/or export spend a minimum of fifteen days here, during which time testing for zoonotic diseases is carried out.
FIG. 3
Veterinary public health in New Caledonia
Meat inspectors identify lesions on animals which could involve zoonotic or parasitic diseases, and an epidemiologic surveillance team regularly samples animals for brucellosis, Q fever and leptospirosis. This team also performs traceback investigations when zoonotic diseases are identified by physicians.

Leptospirosis is the zoonotic disease of most concern on New Caledonia, and an average of twelve people die each year from this pathology. Education of the public and the medical profession about this disease is a major role for the Veterinary Service.

Zoonotic diseases transmitted by dogs (such as mange, worms and ring worm) are also of concern, and the Veterinary Service is involved in a dog population control programme.

Conclusion

The Veterinary Service is the main, but not the only service involved in veterinary public health. It acts together with human health services, especially for zoonotic disease, and with communal hygiene services for the inspection of food retailers and restaurants. Attempts are being made to strengthen this collaboration with other groups.

NIUE

Niue is free of all serious animal diseases and there are no qualified veterinary services available on the island. Diploma graduates within the Department of Agriculture, Forestry and Fisheries are conducting an eradication programme for external parasites of pigs, and provide simple clinical services (including the neutering of domestic animals) and animal health services when needed.

In 1990, a qualified veterinarian from the South Pacific Commission visited the island to investigate a high mortality rate among chickens in some areas of the island. *Ascaridia galli* parasite was identified as the cause of mortality and an eradication programme has now been proposed. During his visit, the veterinarian also conducted a survey of other animal diseases present on the island. *Leptospira* organism was identified in one pig, however no other serious problems were identified, and quarantine regulations have been strengthened to maintain this status.

SOLOMON ISLANDS

In recent times livestock industries in the Solomon Islands have virtually collapsed. The Ministry of Agriculture and Lands is presently attempting to rehabilitate these industries and re-establish production, however numerous structural changes in the Ministry over the past six to ten years have made this a difficult task.

Meat inspection is still technically the responsibility of the Ministry. However, there is presently no legislation for the inspection service, as the former Slaughterhouse Act has been revoked and draft legislation for a new Environmental Health Act under a different Ministry has not yet been finalised. Most meat for human consumption is inspected, however, and a central slaughterhouse in Honiara exports pork.
One of the main priorities for the Ministry is to maintain the apparent freedom from serious zoonotic disease by rigorous enforcement of strict quarantine regulations.

TONGA

In Tonga, the Ministry of Agriculture and Forestry is responsible for most of the small amount of veterinary public health work undertaken in the Kingdom. At present, there is only one qualified veterinarian working for any government department, and the emphasis of his work is on animal production.

There are, however, plans to institute several projects related to veterinary public health. A dog population control project is to be undertaken, subject to the results of a dog count and household questionnaire. This is motivated largely by the fear that rabies may enter the dog population, and by the public health problems posed by scabies, worms and dog bites. Although very few cases of zoonoses have been reported in the human population, small serological surveys are planned for zoonoses such as brucellosis and leptospirosis.

The Ministry of Agriculture and Forestry monitors local pigs for trichinellosis, but so far no positive samples have been detected.

The Ministry of Health is responsible for meat inspection.

TUVALU

In Tuvalu, the Department of Agriculture of the Ministry of Natural Resources Development is responsible for veterinary public health. At present there is minimal demand for veterinary services, although there are plans to send one or two staff overseas for training on para-veterinary matters or possibly to run a workshop in the country on para-veterinary matters for all agricultural staff.

In the interim, any services required are provided by veterinary officers from Suva (Fiji) and Noumea (New Caledonia).

REPUBLIC OF VANUATU

Structure

At the present time, three veterinary officers and eight meat inspectors are working in the animal health section of the Department of Agriculture, Livestock and Horticulture of the Ministry of Agriculture, Forestry and Fisheries. All veterinary public health activities are performed by the animal health section. Other staff include laboratory technicians, a veterinary clinical assistant and field testing teams.

Control of zoonoses

National tuberculosis and brucellosis control and eradication programmes have been in place since 1971. These programmes are supported by legislation on
compulsory testing and the declaration of infected areas. Although neither disease has been eradicated, there may have to be a reduction in the activities of the programmes due to reductions in bilateral aid funding. Reservoirs of infection still exist in feral cattle in remote areas of Espirito Santo. These have presented the biggest constraint to the control and eradication programmes for tuberculosis and brucellosis because these areas are composed of deeply dissected, rugged, mountainous terrain covered in secondary forest.

No specific control programme exists for other zoonotic diseases known to occur in Vanuatu (e.g. leptospirosis). However individual investigations are made into any suspected disease outbreak.

**Veterinary food hygiene**

The following food hygiene measures are in place:

- ante-mortem and post-mortem meat inspection at abattoirs (new legislation will also allow for poultry inspection);
- hygiene inspection of butcheries and meat-cutting plants;
- control over the importation of all animal products by means of import permits and quarantine inspection;
- participation in investigation into outbreaks of zoonotic disease;
- veterinary health certification of all exported animal products;
- controls on the importation of all biological products, to prevent and control residues in food.

**Provision of veterinary services**

Veterinary clinics in the two major towns of Port Vila and Luganville provide veterinary services for companion animals.

**Disease surveillance**

Investigations are carried out into reports of disease in livestock, and pathological samples are sent to overseas laboratories.

A comprehensive animal health survey is planned for Vanuatu, which will involve testing for all OIE List A and B diseases in cattle, sheep, pigs, goats, poultry and horses. In addition, the incidence of certain endoparasites and ectoparasites will be investigated.

**Quarantine control**

All imports of animals, semen and embryos are strictly controlled. Prior to any importation, a protocol is negotiated with the exporting country. Vanuatu has no quarantine station, thus all tests on animals must be performed prior to leaving the country of origin. Dogs and cats from countries which are not free of rabies must be quarantined in a rabies-free country such as Australia before being allowed to enter Vanuatu.
Waste disposal

All blood samples are sterilised prior to disposal. Other clinical waste (e.g. needles) is incinerated using hospital facilities. A proposal is in preparation for a project to develop quarantine services, which includes the acquisition of an incinerator.

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Résumé: Les auteurs décrivent la structure et les responsabilités des Services de santé publique vétérinaire en Australasie et dans les îles du Pacifique. Ces Services comprennent aussi bien les grandes organisations très structurées d’Australie et de Nouvelle-Zélande, que celles de certains archipels dont l’action se limite à répondre aux besoins d’une économie agricole de subsistance.

Cette région restant libre des plus graves maladies infectieuses des animaux grâce à son isolement géographique et à la stricte application des réglementations quarantinières, les efforts de la santé publique vétérinaire portent principalement sur la prévention et la lutte contre les épizooties.

MOTS-CLÉS : Contrôle des maladies - Inspection des viandes - Législation - Santé publique vétérinaire.

Resumen: Los autores describen la estructura y las responsabilidades de los Servicios de salud pública veterinaria en Australasia y en las islas del Pacífico. En esta región, dichos Servicios abarcan tanto las extensas organizaciones altamente desarrolladas de Australia y Nueva Zelanda como las de los pequeños archipiélagos, que se limitan a responder a las necesidades de economías agrícolas de subsistencia.

El aislamiento geográfico y estrictas medidas cuarentenarias han mantenido la región libre de las mayores enfermedades infecciosas de los animales; la salud pública veterinaria se dedica principalmente a la prevención y la lucha contra las enfermedades epizoóticas.

PALABRAS CLAVE: Control de las enfermedades - Inspección de carne - Legislación - Salud pública veterinaria.