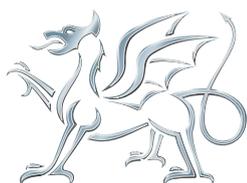


Animal Health 2004

The Report of the Chief Veterinary Officer



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



SCOTTISH EXECUTIVE



defra

Department for Environment
Food and Rural Affairs

The Report of the Chief Veterinary Officer

Animal Health 2004

Department for Environment, Food and Rural Affairs
Scottish Executive Environment and Rural Affairs Department
Welsh Assembly Government
May 2005

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Foreword



I am delighted to present this Annual Report on animal health which will be my first as Chief Veterinary Officer (CVO) UK. The year 2004 was another of considerable achievement in the development of animal health and welfare issues in Great Britain (GB).

Defra aims to make animal health and welfare policies more effective and sustainable. To reinforce this strong vision, we launched the Animal Health and Welfare Strategy (AHWS). This is a key milestone and forms the first comprehensive integrated strategy for animal health and welfare, setting out our vision for the next 10 years. It reflects a move to a more strategic role for Defra, and clearer partnership working with delivery partners. As we engage in a major programme of change and modernisation, much has been done in developing the way in which we work. The developing Defra Change Programme aims to improve our ability to think and work strategically. Central to this will be the relationship between us (as policy developers) and our delivery partners.

Once again, the number of bovine spongiform encephalopathy (BSE) cases in 2004 declined. As reported in last year's report, this has led to us continuing towards the transition from 'high' to 'moderate' risk status. This is an important step as it will allow the UK to be subject to the same export control measures as most other EU member states. Furthermore, such has been our progress, towards the end of the year we were able to announce a managed transition towards the lifting of the Over Thirty Month (OTM) rule.

2004 saw much work being done on developing sustainable measures to control tuberculosis (TB) in GB. Work has included developing a new 10 year strategic framework for the control of TB in cattle and farmed deer in GB. This is built on the guiding principles set out in the AHWS and is to be launched in 2005.

Contingency planning for the control of an outbreak of an exotic animal disease also had a high profile during 2004. During the year, we published contingency plans for BSE in sheep and goats, foot and mouth disease and Newcastle disease. We also made progress on developing plans for other diseases, notably rabies.

I would like to congratulate and thank all my staff who have continued to show great commitment and achievement of our objectives. We have a challenging period ahead as we take a more strategic approach to policies. But I am confident that the Animal Health and Welfare Directorate General in Defra and our delivery stakeholders are well placed to meet these challenges, and make a substantial contribution to the delivery and reform of animal health and welfare in GB.

A handwritten signature in black ink, appearing to read 'D Reynolds'.

Dr Debby Reynolds BSc PhD MRCVS
Chief Veterinary Officer (UK),
Director General Animal Health and Welfare (Defra) and
Veterinary Head of Profession.

Executive Summary

The Animal Health and Welfare Strategy (AHWS) for Great Britain was launched in June 2004. The Strategy, developed following a recommendation from the Policy Commission on the Future of Farming and Food in January 2002, and the foot and mouth disease (FMD) inquiries, establishes a 10 year vision for animal health and welfare. The Strategy has been developed jointly with the Scottish Executive and Welsh Assembly Government.

This follows the launch of the Veterinary Surveillance Strategy (VSS) in 2003. The VSS sets out strategic goals through which it aims to deliver faster, better targeted disease prevention and control measures.

We have already made real progress under both strategies. Supporting the AHWS are Implementation Plans for England, Wales and Scotland. These plans are to be updated regularly informing stakeholders of progress made in delivering our targets. In addition, good progress has been made in developing sector-specific sub-strategies. For example, Defra has worked with the pig industry, which introduced a pig health and welfare strategy for Great Britain. The new British Pig Health and Welfare Council, a good example of partnership working, is taking forward the implementation of the pig strategy including setting priorities for research and development.

BSE cases continued to decline during 2004 as the United Kingdom moved closer towards its goal of lifting the Over Thirty Month (OTM) rule. The number of confirmed BSE cases has fallen for the twelfth year running and the UK is closer to meeting the international classification criteria for 'moderate' risk status, which would enable the UK to trade in beef on the same basis as most other EU member states.

Research has continued into the experimental transmission of BSE in sheep. In the wider context of improving our contingency planning and emergency preparedness in the event of a major outbreak of disease, a contingency plan for action in the event of an occurrence of BSE in sheep and goats was issued for consultation during the summer of 2004. The plan has been developed in partnership with the Department of Health, the Food Standards Agency (FSA) and the Devolved Administrations.

Other contingency planning work included the development of plans for FMD and Newcastle disease. These plans provide the overall framework for the strategic, tactical and operational levels for managing a disease outbreak. The detailed operational guidance and instructions for FMD have been reviewed and updated to take on board lessons learned from 2001.

In 2004, Defra led in a cross-departmental emergency planning exercise codenamed Hornbeam with the aim of updating FMD contingency plans and establishing readiness for an outbreak. The exercise related to the developing phases of disease from initial report through to national spread, and covered a full range of control measures. It is clear that

considerable progress has been made since the 2001 outbreak and that generally the plans are very robust. Instructions for dealing with other exotic diseases are also being reviewed and updated.

In February 2004, Defra began an extensive consultation exercise to review its strategy for the sustainable control of bovine TB in GB. This took in stakeholder organisations and relevant parties nationwide. To better inform the policy making process, Defra funded research by Reading University on the economic impact of TB. Its findings were published in April. Other programmes of research have continued, including the Randomised Badger Culling Trial.

A TB Strategy Development Core Stakeholder Group was established in September, and in November new measures to tighten surveillance and reduce the risk of TB spreading to new areas were announced.

Following the outbreak of Avian Influenza in Asia and China during 2004, a national surveillance programme for certain subtypes of the virus was completed. Serological testing of poultry populations formed part of wider EU initiatives. The survey was voluntary and sampling took place at farms and slaughterhouses in England, Wales and Scotland. In total, 213 holdings were tested and all the results were negative.

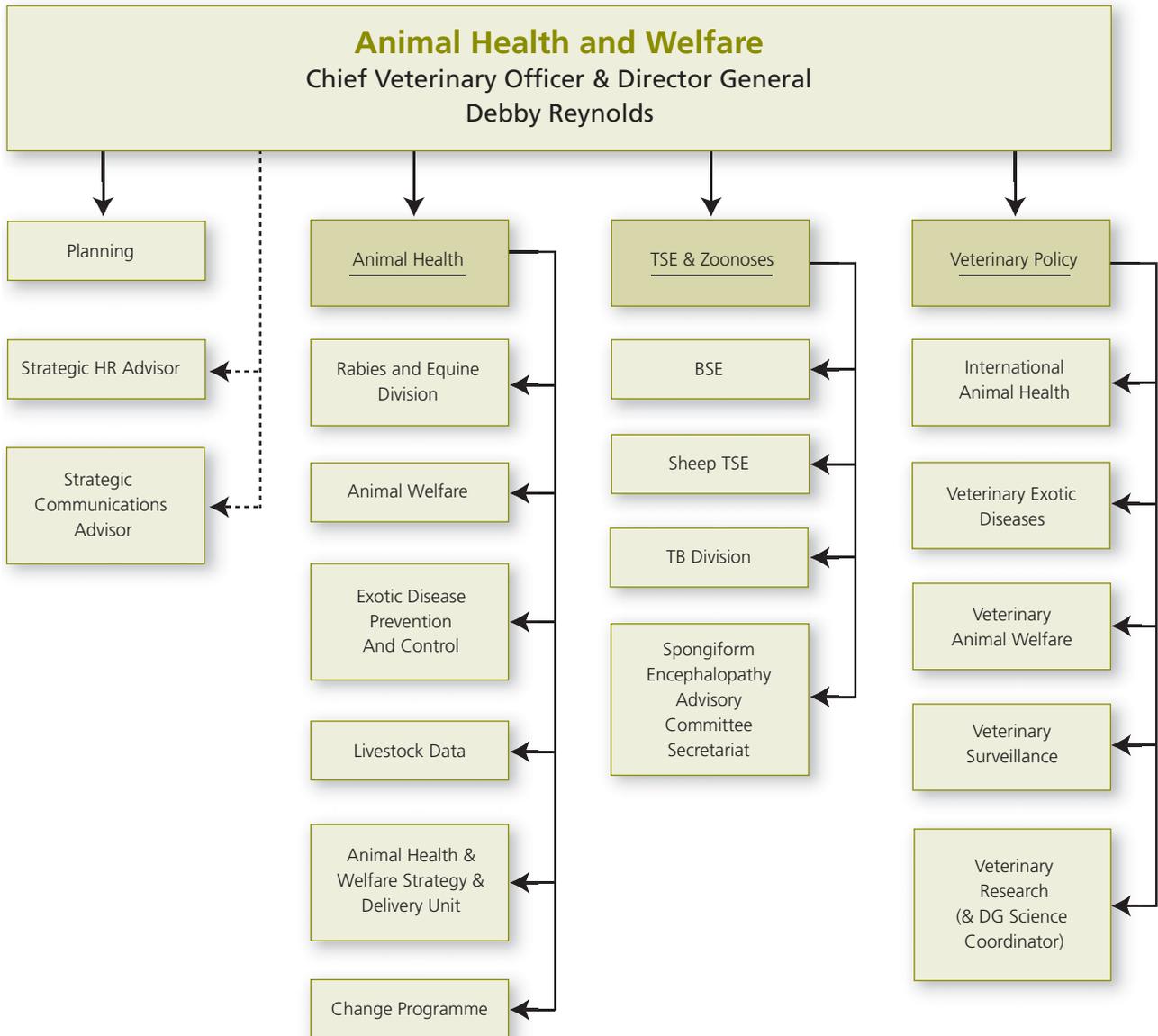
In April 2004, the first phase of a new Trade Control and Expert System (TRACES) was launched throughout the EU and its use by Member States became compulsory by the end of the year. TRACES allows electronic applications for intra-Community trade certificates and Third Country imports to be monitored. To prepare for the effective use of the system, extensive training was delivered to staff in the State Veterinary Service (SVS) and Border Inspection Posts.

There has also been significant progress made in the area of international disease surveillance. Over the course of the year, eighteen qualitative risk assessments on disease outbreaks in countries that have trade with the UK have been published.

The draft Animal Welfare Bill was published in July 2004, and when enacted will represent the most comprehensive and radical overhaul of animal welfare legislation for nearly a century. It will require those responsible for companion animals to take positive steps to promote their welfare. This will enable action to be taken where an animal, although not currently suffering, is being treated in such a way that suffering will be an almost inevitable consequence. Such a requirement already exists to protect farmed animals.

Among other things the Bill will extend the power to make regulations, which currently only apply to farmed animals, to companion animals. This will enable existing laws relating to the welfare of companion animals, which go back to 1925, to be repealed and replaced by ones that are more relevant to present day needs. It will also allow currently unregulated activities to become subject to regulation where there is evidence that welfare improvements can be made.

AHW DG Leadership structure



Section A: Strategic overview

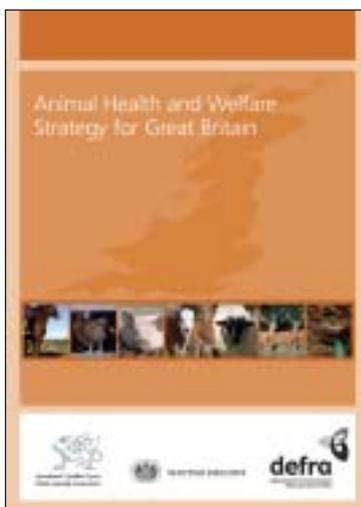
Chapter A1: Animal health and welfare strategy

The Animal Health and Welfare Strategy for Great Britain has been developed by Defra, the Scottish Executive and Welsh Assembly Government. The Strategy aims to develop a new partnership in which we can make a lasting and continuous improvement in the health and welfare of kept animals, while protecting society, the economy and the environment from the effect of animal diseases.

Launch of the Strategy

The Animal Health and Welfare Strategy for Great Britain was launched on 24 June and is based on the Outline Strategy published for consultation in July 2003. The Strategy is a response to the widely shared view that the current approach to animal health and welfare is neither adequate nor sustainable. It forms the first comprehensive integrated strategy for animal health and welfare setting the direction of travel to be followed over the next ten years.

The Strategy forms the umbrella under which all of the work in this report falls. It provides a vision, developed from the bottom up with animal owners, vets and industry, that we can collectively work towards, and the principles for us to follow in getting there. Its key theme is partnership between Government and all those with an interest in animal health and welfare. While Government has a key role to play, the Strategy can only be implemented effectively if all stakeholders work together and accept their respective roles and responsibilities in delivering the vision.



Cover of Animal Health and Welfare Strategy and Implementation Plan

This **vision** inspires the Strategy and represents where we want to be in ten years.

- Animals in Great Britain kept for food, farming, sport, companionship, entertainment and in zoos are healthy and treated humanely.
- Our disease status is amongst the best in the world, and we are able to trade our animals and animal products internationally.
- The costs of livestock health and welfare are appropriately balanced between industry, and the taxpayer.
- All disease emergencies are dealt with swiftly and effectively using an agreed approach.
- Consumers value the confidence they have in food produced safely from healthy animals that are well cared for. Consumers and retailers accept that higher standards of animal health and welfare are not cost free.
- Livestock keeping is part of a competitive British farming industry which succeeds by meeting the needs of consumers at home and abroad, producing food safely and to high standards of health and welfare.

The Strategy identifies five **ways of working** that will realise this vision:

- Working in partnership;
- Promoting the benefits of animal health and welfare – prevention is better than cure;
- Ensuring a clearer understanding of the costs and benefits of animal health and welfare;
- Understanding and accepting roles and responsibilities; and
- Delivering and enforcing animal health and welfare standards effectively.

Also published as an annex to the Strategy was *The Evidence Base – A Work in Progress*, which gives an overview of animal health and welfare in Great Britain. This evidence provides a benchmark from which improvements in animal health and welfare can be measured. The document also gives an overview of the initial work on indicators being developed to assess progress of the Strategy towards its aims. The final versions of the animal health and welfare indicators are due to be published in summer 2005.

Implementing the Strategy

Implementation Plan for England

We also launched *Delivering the Animal Health and Welfare Strategy in England: Implementation Plan 2004* alongside the Strategy. This sets out the breadth of Defra's work in animal health and welfare, demonstrating our commitment to deliver in this area. It also contains examples of stakeholders working in partnership with Government to deliver real

improvements in animal health and welfare, as well as projects which show what can be achieved when partners outside of Government work together to deliver a joint aim. The Implementation Plan will be updated regularly to inform stakeholders on progress as the Strategy evolves.

Implementation Group for England

In line with the Strategy's principle of partnership, we are establishing the independent England Implementation Group. The Group, representing a broad range of stakeholder interests, will drive and oversee the delivery of the Strategy in England. It will monitor progress against the England Implementation Plan and will hold both Government and other delivery partners to account. It will also provide an open and transparent framework for discussions on the priorities, direction and progress of the Strategy. The first meeting of the Implementation Group is expected to take place in July 2005.

Progress to date

Each section of this CVO's annual report gives specific examples of some of the good work that has been done over the past year under the Strategy. It has already made a big difference to the way we are conducting business in important areas such as the Fallen Stock Scheme, the Equine Database, Bovine TB, the National Scrapie Plan and Farm Health Planning.

In particular, over the past year we have made important progress in developing sector-specific sub-strategies. A number of sectors, following the lead of the pig industry, are developing their own strategies for health and welfare. The British Equine Veterinary Association (BEVA), for example, are developing a strategy for British horse health and welfare. In addition, Defra is facilitating an industry consortium to create a strategy for research priorities for poultry health and welfare. There are also plans to establish a dairy health and welfare strategy. Furthermore, we have made good progress on various partnership projects, such as work in the beef sector looking at Johne's disease, and in the sheep sector addressing the sustainable control of parasites.

It is important that the Strategy is firmly embedded not just within Defra's work but in the work of all those outside of government with an interest in animal health and welfare. Over the next twelve months we will therefore continue to work in partnership with all interested parties to ensure that the Strategy delivers improved animal health and welfare for all.

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Chapter A2: Veterinary surveillance strategy

Veterinary surveillance can be defined as ‘the on-going systematic collection and collation of useful information about disease, infection, intoxication or welfare in a defined animal population. This is closely integrated with timely analysis and dissemination of relevant outputs to stakeholders, including those responsible for control and preventative measures’.

Background

The purpose of veterinary surveillance is to detect changes in these areas in the animal population, in particular:

- outbreaks of exotic diseases;
- the appearance of a new disease, particularly one which may have zoonotic potential; and
- changes in the occurrence or effects of known conditions.

Veterinary surveillance systematically gathers information on the location and quantity of animal diseases or other conditions, so that the threat to animal or human health can be assessed and tracked. The Veterinary Surveillance Strategy (VSS) aims to co-ordinate and improve the way this is done, in order to provide timely evidence for those deciding on the best approaches to disease prevention and control.

Nomenclature

Surveillance has traditionally been described as either ‘active’ or ‘passive’. However, since these terms can be confusing, the strategy adopts the terms ‘targeted’ and ‘scanning’.

- **Targeted** surveillance collects specific information about a defined disease or condition so that its level can be measured or its absence monitored.
- **Scanning** surveillance maintains a continuous watch over the endemic disease profile so that unexpected and/or unpredicted changes can be detected.

Strategic goals

The strategy entitled, 'Partnership, Priorities and Professionalism' was launched in 2003 and is one of the key cross-cutting new initiatives identified within the Animal Health and Welfare Strategy. The VSS contains five strategic goals:

1. To strengthen collaboration, with a comprehensive network of interested parties working in partnership, in the planning and funding of surveillance activities, in collecting and sharing samples and data, and in the delivery of relevant and intelligible reports. The network includes collaborators from across Government including the human health and food safety authorities as well as private sector partners.
2. To develop a new process to enable open, transparent and risk-based prioritisation of surveillance activities. This is based on surveillance 'profiles', each of which summarises key information about a disease, indicator or group of similar conditions. This will include its epidemiology, importance to different stakeholders, availability of different tests, pertinent legislation, existing surveillance and a qualitative risk assessment. The profiles will be assigned a risk and impact score which will form the basis for proposals for ranking different surveillance topics in order of priority.
3. To derive better value from surveillance information and activities by improving the handling and sharing of data. RADAR (Rapid Analysis and Detection of Animal-related Risks), a new integrated information management system to support veterinary surveillance activities, is being developed over the next 10 years. It will increasingly be used to capture data from a wider range of existing systems and data sources, and to collate and analyse the data using epidemiological and mathematical modelling techniques to produce risk models and a variety of other relevant outputs.
4. To share information more widely with both RADAR and the veterinary surveillance website becoming increasingly important tools.
5. To enhance the quality assurance of outputs with a 'flag' that describes the quality and limitations of each output.

Through these goals the strategy aims to deliver faster, better-targeted disease prevention and control measures via:

- earlier detection of animal-related threats;
- open, transparent and defensible prioritisation of surveillance activities; and
- a clear, well-defined evidence base taken from surveillance activities and reports.

Progress to date

'Veterinary Surveillance in the UK'

In December, the CVO (UK) launched the new veterinary surveillance section of the Defra website at <http://defra.gov.uk/animalh/diseases/vetsurveillance/index.htm>. This is the first time that animal disease surveillance information covering England, Scotland, Wales and Northern Ireland has all been brought together in one place. The web pages have been designed and written to be widely accessible, both to the animal owner looking for general information and to the veterinary surgeon or researcher looking for detailed surveillance information on specific conditions. The site contains an A-Z index of diseases, information on farmed and domestic animals, and wildlife, as well as details on what veterinary surveillance is carried out in the UK and who does it. There are pages with information on the strategy and progress on its implementation. The first surveillance reports from RADAR, on animal populations, have been published.

Information is also available describing RADAR, how it works and its future development. These web pages will provide access to RADAR.

Business Assurance Groups

The four Business Assurance Groups, comprising of key stakeholders with an interest in each of the five strategic goals, all met twice in 2004, in spring and winter. Their role is to work in partnership with Government as the 10 year programme of work for the strategy is delivered. In particular, they help review current thinking, contribute ideas and develop and review the programme of work. Full reports of all meetings held in 2004 are available at <http://defra.gov.uk/animalh/diseases/vetsurveillance/gettinginvolved.htm>

Disease Profiles

The template for the production of disease profiles has been reviewed and validated by the Business Assurance Groups and the design of the database to hold the information on RADAR is in progress. These profiles are central to the strategy and capture information on diseases or other conditions considered for surveillance, enabling surveillance activities to be

Figure A2.1: A screen shot of 'veterinary surveillance in the UK' home page



Data Sharing

It is vital for the success of the strategy that owners of observations or data on animals or animal diseases contribute to the RADAR resource. Fundamental to securing their confidence is the agreement of a data-sharing protocol to take account of many issues including the Data Protection Act, data validation and data access permission. The data-sharing protocol has been drafted in conjunction with the Devolved Administrations, Data Protection Officers and the Business Assurance Groups.

Data Quality

RADAR incorporates a wide variety of data sets from differing organisations, therefore the quality of the data within each data set may be very different. Metadata (that is information or labels describing the provenance of the data) standards for RADAR, both its data and reports, have been agreed. Due to the differing quality of the data sets within RADAR, the metadata standard includes a mandatory element known as quality to describe any issues, limitations or possible faults in the data. A data quality framework for RADAR has been developed, which explains how the quality of data held in RADAR will be determined, described and reported.

Further Information

Further information on the VSS can be obtained at
<http://defra.gov.uk/animalh/diseases/veterinary/index.htm>

Chapter A3: Animal Health and Welfare Research

The Departmental Animal Health and Welfare Strategy has provided the framework from which our research programmes are directed. The work commissioned and funding allocated are aligned with policy programmes with the purpose of providing the scientific evidence base that underlies decision making and supports regulatory activities. During the course of the year, the Science Directorate has introduced a Code of Practice applicable to research contractors to maintain high standards in the scientific quality of the evidence base. This has been applied across the animal health and welfare programmes. Over the past year the control of TSEs in cattle and sheep as well as the control of bovine tuberculosis have received the largest investment of research funding.

Partnership

In keeping with the partnership principles of the Animal Health and Welfare Strategy, the Veterinary Research Division has been establishing how the various sectors of the livestock industry can be involved in the prioritisation and financing of continuing research on non-statutory endemic diseases affecting livestock production. In the first initiative a Poultry Health Research Advisory Forum has been created with a range of stakeholders to advise on research requirements within the poultry industry. Interaction to facilitate partnerships with other animal production sectors will follow a similar format.

Defra funding supports largely strategic research, this in turn may depend on research in basic science which is funded by the Research Councils. In recognition of this, the Department is jointly funding projects with the Biotechnology and Biological Sciences Research Council (BBSRC) from which the output is of value to both partners. Several projects have been included this year under the Government Partnership Award Scheme jointly supported by funds from the Defra Chief Scientific Adviser.

The co-ordination of research across Government has been a continuing priority of the Directorate, particularly where there are cross-cutting issues relating to public health and the environment. Representation on cross-departmental groups involving in particular the Department of Health, Food Standards Agency, Health & Safety Executive, Health Protection Agency and the devolved regional administrations has had positive outcomes in defining interests, guiding research and avoiding gaps and duplication. This also has the added value of feeding a wider evidence base into Departmental policy making.

Programme Reviews

Three Reviews of major programmes have been held during the year:

- Review of Non-Food-borne Zoonoses;
- Review of Welfare of Animals at Slaughter; and
- Review of Antimicrobial Resistance Research.

The purpose of these reviews is to evaluate the output from individual projects, to assess the programme in relation to Departmental objectives and to recommend future lines of enquiry. Reports from these Reviews are in preparation and will be published on the Defra website.

The appropriate and sustainable use of antimicrobial chemicals in sustainable livestock production is important to Defra strategy. The projects within this programme have not generated evidence to suggest that the present use of antimicrobials in farmed animals significantly affects the development of resistance in important clinical pathogens in humans.

Key Progress from Programmes

- Several of the Government sponsored projects into the effects of organophosphate exposure on human health came to an end during the year. The findings supported earlier work which focussed Government policy on regulations limiting the risk of acute exposure to organophosphates. To reduce reliance on chemical dips for controlling sheep scab, the Departmental research programme on alternatives has been extended for a further three years. The objective is to enable vaccines, biological and biochemical methods of control to be developed to a point where the industry takes the ideas through to commercial development.
- The cross-Government sponsored investigation into the effects of sea-lice treatment agents used in salmon farming ended during 2004. No effects of either water column or in-feed sea-lice treatments were detected on the ecology of Scottish lochs.
- Defra has established a TB Vaccine Projects Advisory Group to harness scientific expertise. The terms of reference are to oversee the TB vaccine research currently being funded and to advise on the future direction of research. Workshops have also been used to identify and make recommendations on the regulatory process that would be necessary to introduce a tuberculosis vaccine suitable for use in badgers in the field.
- An independent review of the scientific evidence and the action being taken by the Department on the cases of BSE in cattle born after the reinforced feed ban in 1996 is underway and due to report in mid-2005.

- A large part of the TSE research programme is currently directed at scientific support for the National Scrapie Plan. Work is in place to refine our understanding of the epidemiology, transmission and improved diagnosis of TSEs in sheep. Significant progress has been made during the year on the differentiation of scrapie and BSE in small ruminants. This has aided clarification of the EU measures which would be required to confirm diagnosis in the event that BSE is suspected in sheep populations.
- Following reports of human infections with bat rabies, research has been put in place to determine the significance of bat lyssaviruses in Great Britain.
- To assess the effect on the UK industry of ongoing and proposed EU regulations on the broiler industry work has started, alongside Defra economists, to complete a Regulatory Impact Assessment on the industry.
- With the transfer of some areas of responsibility for companion animals to Defra, a number of topics are moving forward into research programmes. There are plans for work on the effect that electric collars for training have on the welfare of dogs. The need for research on Methicillin-Resistant Staphylococcus Aureus (MRSA) in companion animals and farm livestock is being considered in response to increasing reports of problems arising in the companion animal sector.

Veterinary Training and Research Initiative (VTRI)

Projects selected by Open Competition under the VTRI, an initiative funded jointly by Defra and the Higher Education Funding Councils, started during 2004. This initiative is designed to promote veterinary research in the UK and to ensure training in the expertise that will be required by Government and the profession in years to come. The five projects selected by the panel are:

- a joint proposal from Edinburgh and Glasgow Veterinary Schools with research focused on quantitative epidemiology;
- a proposal from Liverpool Veterinary School on the transmission, pathogen evolution and control of food-borne zoonotic pathogens;
- a proposal from Edinburgh Veterinary School on functional genomics and immunology and their application to infectious diseases in ruminants;
- a proposal from Bristol Veterinary School on susceptibility to infection and diseases and the role of husbandry and welfare in driving microbial colonisation and immune development; and
- Cambridge Veterinary School proposes to establish the Cambridge Infectious Diseases Consortium to study the quantitative dynamics of host-pathogen relationships across a spectrum of animal diseases.

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Each project includes collaboration with other research institutes and universities as well as a wide variety of research training opportunities for veterinary undergraduates, graduates, vets in practice and for scientists with an interest in animal health research.

Lists of current animal health and welfare research projects funded by Defra can be found at www.defra.gov.uk/science. The broad categories and allocation of research funding within the Directorate's programmes are outlined in table A3.1.

Table A3.1: Main veterinary science research activities and associated budget allocations for the financial year 2004/05 (in £'000s)

Veterinary Science Programme	Includes Research on	Allocation for 2004/05 (£'000s)
Statutory and exotic diseases	Bovine tuberculosis	4,378
	Foot and Mouth Disease	2,300
	Swine fever	566
	Rabies (and related viruses)	510
	Brucella	240
	Influenza and Newcastle Disease	607
	New and emerging diseases	270
	Others (including VTRI)	2,682
Zoonoses	E.Coli O157	895
	Salmonella	1,158
	Campylobacter	443
	Cryptosporidium and yersinia	287
Transmissible spongiform encephalopathies (TSEs)	BSE in cattle	2,713
	TSEs in sheep	9,088
	Diagnostics	3,806
Endemic diseases and alternatives to pharmaceutical control	Bovine mastitis	283
	Non-statutory viral disease	845
	Non-statutory parasitic disease	673
	Antimicrobial resistance	736
	Others	102
Veterinary medicine	Veterinary medicine	2,017
Animal welfare	On-farm	2,535
	Slaughter	478
	Transport	367
Total		37,979

Chapter A4: Roles and responsibilities

Defra has a responsibility to ensure that its decisions and delivery mechanisms are robust to meet the demands of modern day government. Central to this is the Department's pivotal role as strategic policy developers and its relationship with key delivery partners. These 'new' roles and relationships will continue to develop and evolve, particularly over the next couple of years.

Relationship with Devolved Administrations

The CVO (UK) has a role in relation to animal diseases at an EU Member State level. To fulfil this role, close working relationships are maintained with the Devolved Administrations, in particular Wales and Scotland. The CVO (UK) chairs a monthly meeting with CVOs from Scotland, Wales and Northern Ireland and the appropriate policy leads to update them on and discuss a range of issues that are of mutual interest.

The setting up of the State Veterinary Service as an agency within Great Britain in 2005 will necessitate close working relationship between the relevant countries. The CVO has fully involved the relevant policy leads in Wales and Scotland in the process and ensured that they have been given the opportunity to have their needs and views taken into account.

Relationship with Delivery Partners

Defra's Delivery Strategy describes how we will achieve our outcomes through more effective partnerships between policy and delivery. There will be an organisational separation of policy making from the delivery functions, with clear and agreed roles and responsibilities. This is central to Defra's Five Year Strategy 'Delivering the Essentials of Life'.

To meet this need, the Animal Health & Welfare Directorate General in Defra is seeking to build new relationships with our delivery partners, facilitated by the setting up of a dedicated team – the Delivery Partners Coordination Unit. This team is responsible for ensuring Defra's Delivery Strategy is achieved and animal health and welfare priorities delivered.

In 2004, the team began work with the SVS to agree performance management arrangements and to put in place mechanisms to allow the SVS to feed into policy development. Formal arrangements are also being developed with other delivery partners, starting with the Meat Hygiene Service.

In early 2005, the CVO (UK) is to chair a meeting with the heads of delivery partners to highlight priorities for animal health and welfare and to develop a shared sense of purpose. It is intended that these meetings will be repeated on an annual basis.

The role of the State Veterinary Service

The State Veterinary Service (SVS) is a GB wide organisation dealing with animal health, public health, animal welfare and international trade. Operating a network of veterinary, technical and administrative staff, the SVS carries out a range of responsibilities, many of a statutory nature, including:

- dealing with outbreaks of notifiable diseases;
- carrying out welfare visits to farms and markets;
- advising farmers on disease prevention and requirements for importing and exporting;
- taking samples from animals for detecting residues of veterinary medicines;
- approving bulls and boars for use in artificial insemination;
- enforcing legislation in all these areas; and
- training, appointing and directing the work of 7,000 Local Veterinary Inspectors who work as agents in delivering a wide range of tasks, including testing of cattle for TB, and export certification of animals and animal products.

SVS staff liaise with farmers, local authorities, private veterinary surgeons, market operators, transporters, slaughterhouses and many other groups, as well as the general public.

Developing the SVS as an Executive Agency

A major review was undertaken in 2003 to explore ways in which we might enhance SVS delivery capabilities and deploy its resources in the future to best effect. This followed detailed planning and consultation and is a key step toward meeting Defra's strategic principles of separating policy from delivery and contributing to a smaller policy core. The review concluded that the SVS should be established as an Executive Agency for Great Britain.

Having agreed to this in principle Defra and the Devolved Administrations conducted a public consultation in summer 2004, the results of which informed our way ahead and confirmed earlier conclusions.

In October 2004 Ministers appointed Glenys Stacey as the first Chief Executive (Designate) of the new Agency. Alongside colleagues in Defra, the Scottish Executive, and the Welsh Assembly Government, Glenys played a central role in building the foundations for the new Agency, including arrangements for governance, finance, performance management, human resources and the drafting of a Framework Document, Key Targets, and Corporate and Business Plans.

The SVS will be launched as an Executive Agency of Defra on 1st April 2005. Further information can be found at www.svs.gov.uk

Figure A4.1: SVS senior management structure in 2004

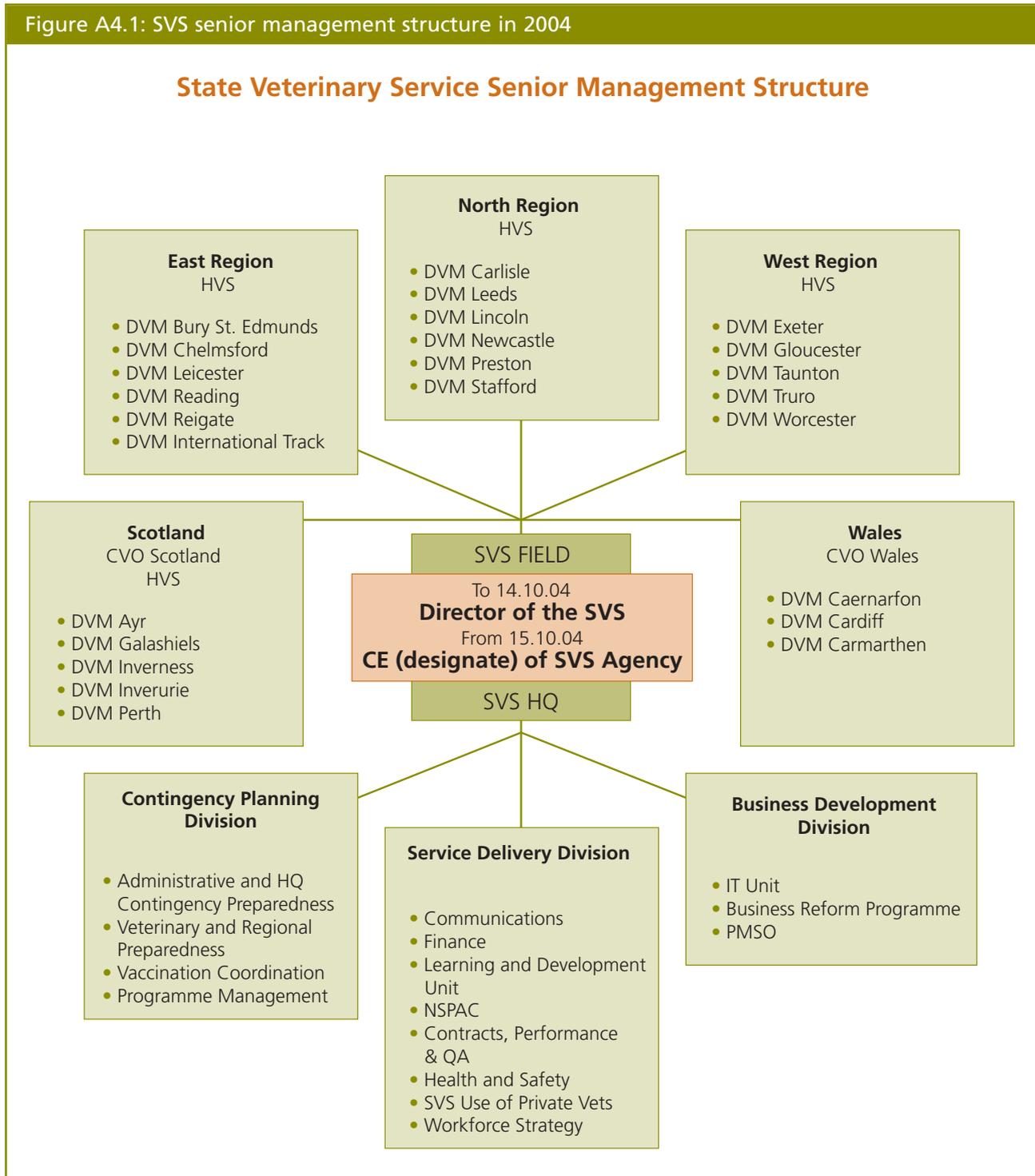
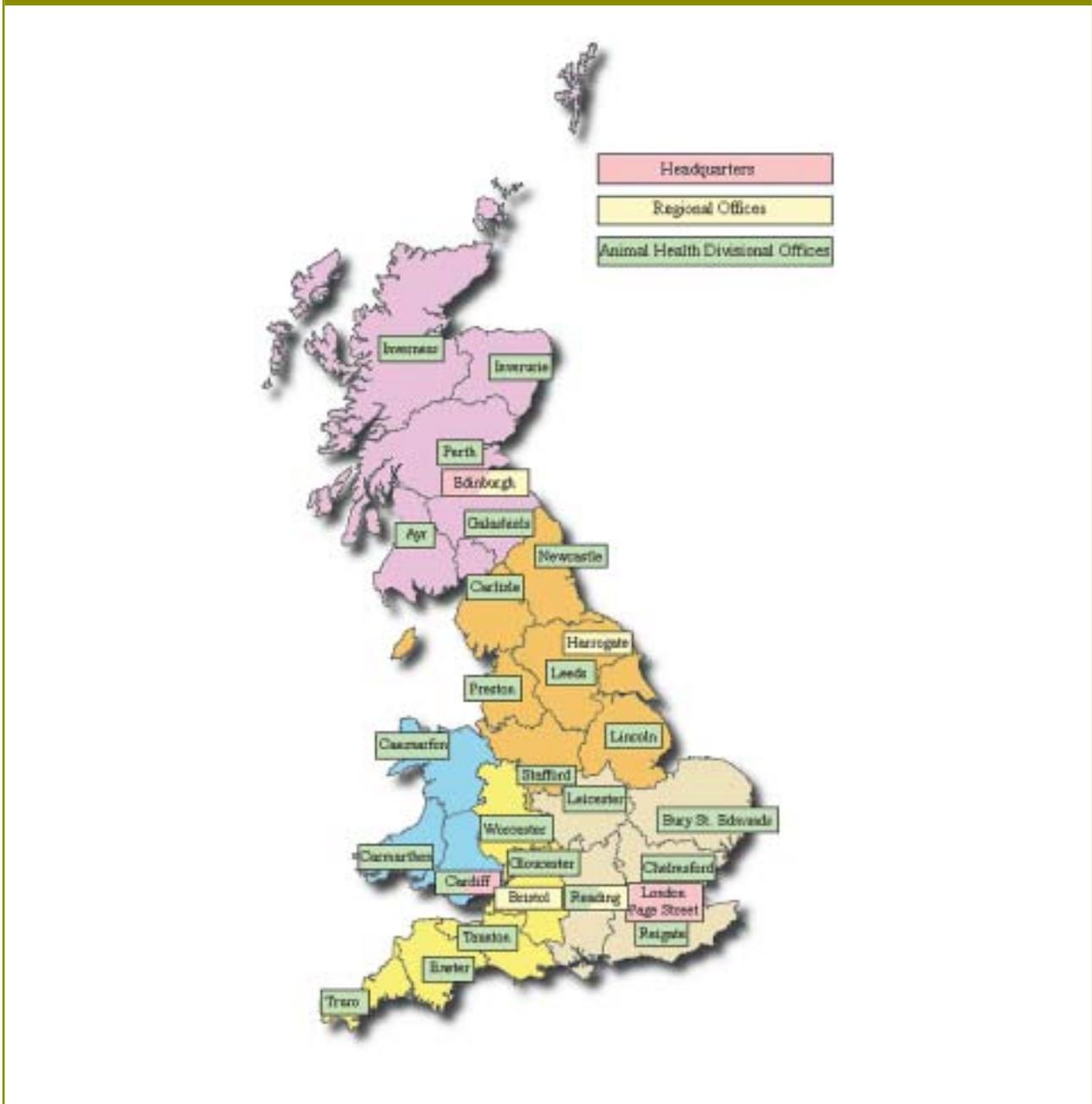


Figure A4.2: Map showing SVS headquarters and Animal Health Divisional Offices in GB (2004)



The role of the Veterinary Laboratories Agency

The Veterinary Laboratories Agency (VLA) is an Executive Agency of Defra and comprises of a regional network of 16 laboratories including one in Scotland, two in Wales, a central research and diagnostic testing facility near Weybridge in Surrey, and two joint surveillance centres at the Liverpool and London veterinary schools.

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The VLA safeguards public and animal health by providing all sectors of the animal health industry with a wide range of applied research and consultancy on diseases of farmed livestock and wildlife, diagnosis of diseases of statutory and public health importance and surveillance of new and emerging diseases throughout the country.

Figure A4.3: Organisational structure of VLA (2004)

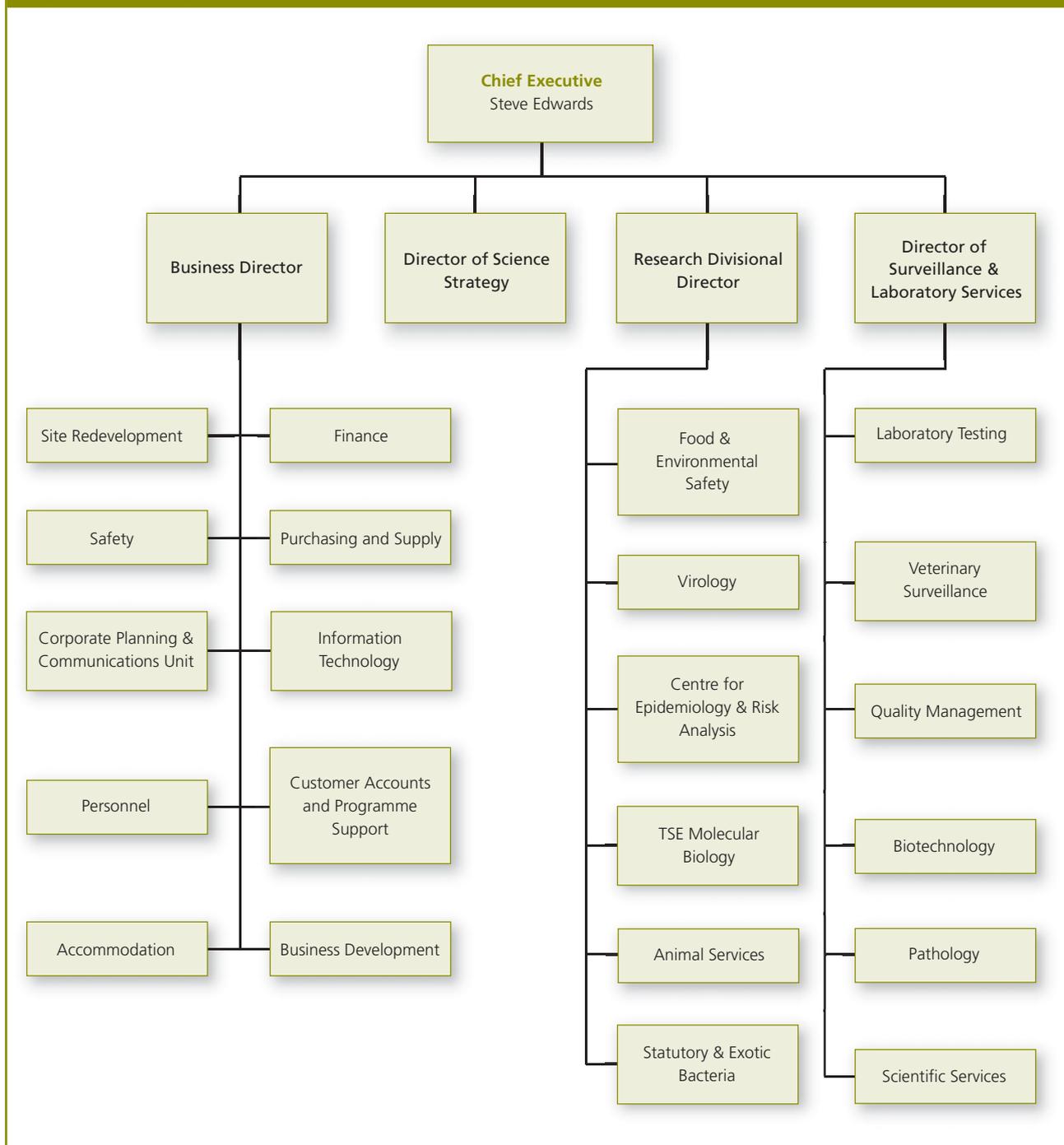


Figure A4.4: Map showing VLA and Scottish Agricultural College laboratories (2004)



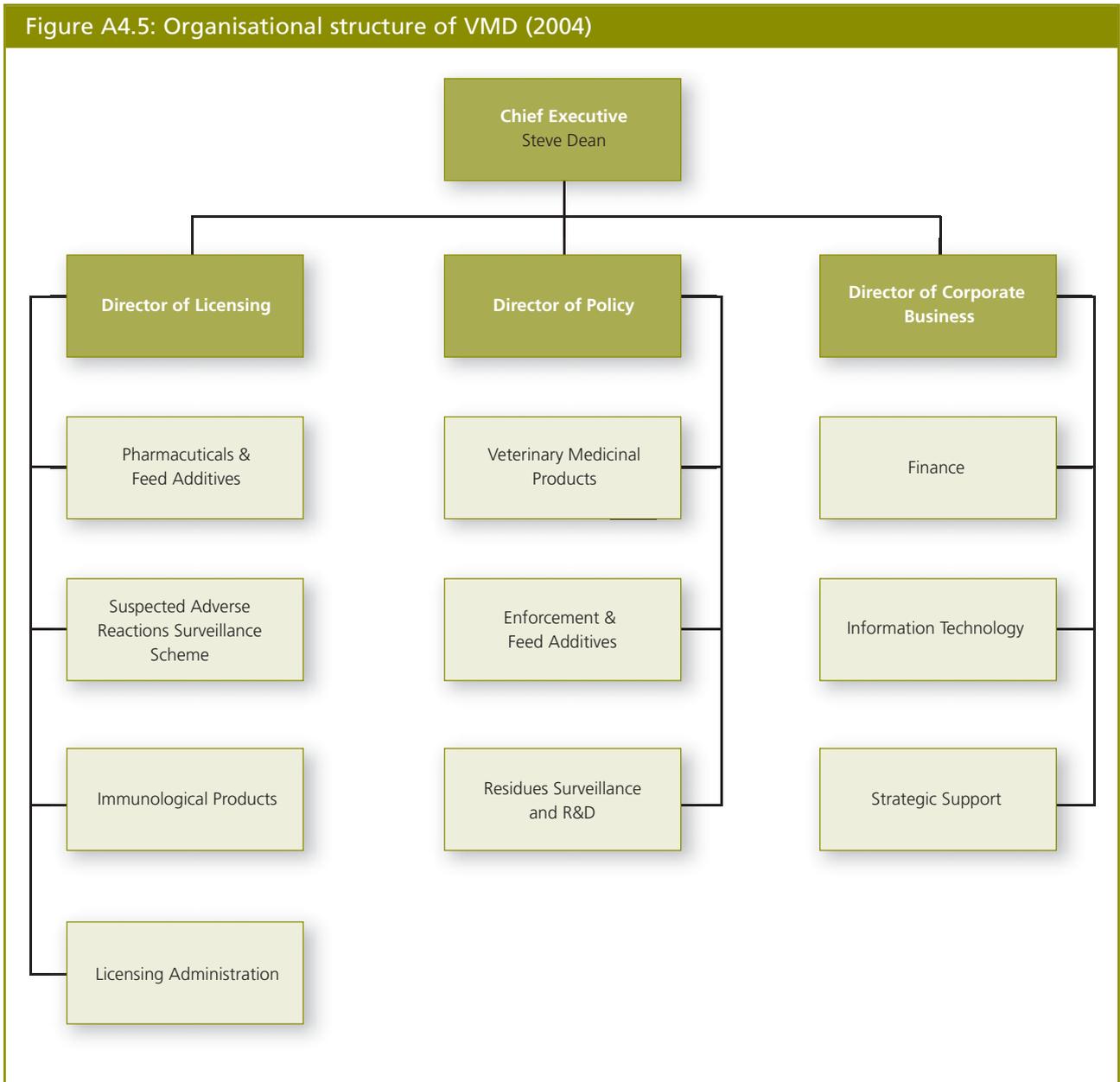
Veterinary Medicines Directorate

The Veterinary Medicines Directorate (VMD) was established in 1989 and became an Executive Agency of Defra in 2001. Its main aim is to protect public health, animal health and promote animal welfare by ensuring the safety, quality and efficacy of all aspects of veterinary medicines in the UK.

The VMD is responsible for the assessment, issue and maintenance of all national marketing Authorisations for veterinary medicines in accordance with European and domestic legislation.

The VMD is also responsible for controls on the manufacture and distribution of veterinary medicinal products, and the surveillance for residues of veterinary medicines in animals and animal products. It also provides and implements policy advice on such matters to the Health and Agriculture Ministers, who jointly form the Licensing Authority for Veterinary Medicines.

Figure A4.5: Organisational structure of VMD (2004)



Veterinary Head of Profession

Background

The Veterinary Head of Profession (VHoP) initiative was launched in 2002. Its aim is to bring together government vets from across the Home Civil Service to share the veterinary knowledge and experience gained in a wide range of specialist areas. The Veterinary Head of Profession, currently the CVO (UK), has a clear remit to lead government vets, ensuring that individual career aspirations match the requirements of the wider Government Veterinary Service, and consult with veterinary bodies including the Royal College of Veterinary Surgeons (RCVS) and the British Veterinary Association (BVA).

The VHoP is supported by a Government Veterinary Surgeons (GVS) Steering Group, the membership of which is made up of senior veterinary managers from each of the departments or agencies that employ vets and a small secretariat, the Veterinary Professional Unit.

Currently there are vets working in the following departments/agencies:

- Centre for Environment, Fisheries and Aquaculture Science
- Defra (including the SVS)
- Department for International Development
- Devolved Administrations
- FSA
- Home Office
- Meat Hygiene Service
- Ministry of Defence
- VLA
- VMD

Aims and objectives

The VHoP initiative aims to draw together and disseminate information on professional matters and discuss issues of interest, reach solutions and feed back to veterinary staff. It is also responsible for encouraging and facilitating interchange opportunities between disciplines and departments. Other key objectives include to:

- Develop succession planning as a career structure
- Maintain the GVS website

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- Develop and progress a strategy for continuing professional development (CPD)
- To work with the Professional Skills for Government Initiative
- Maintain professional standards
- To represent the interests of government vets
- To liaise with organisations and professional bodies
- To organise veterinary conferences and other related events.

Progress

In 2004, road shows were held across the country to raise awareness of the VHoP. A CPD Strategy paper has been drafted for discussion by the GVS Steering Group in spring 2005. The Group will also discuss a draft GVS Business Plan, as well as draft papers on succession planning and interchange policy.

More about the GVS can be found on the GVS website at www.gvs.gov.uk

GVS Factsheet issued to all Government Vets



Screenshot of GVS website homepage



The working group on Vets and Veterinary Services

The House of Commons Environment, Food and Rural Affairs (EFRA) Committee report on *Vets and Veterinary Services* was published on 15 October 2003. The report responded to concerns that there were not enough large farm animal practitioners. Defra issued a public consultation on the report and formed a working group with the RCVS, BVA, NFU and other interested organisations, to help inform Defra's response to the EFRA Committee. Five workshops were held at veterinary schools between 26 February and 27 May 2004, and involved local veterinarians, farmers and students. Research was also commissioned to investigate the factors underlying the supply and retention of large animal vets.

Defra's response to the EFRA Committee recognised that there are opportunities as well as threats to the profession in the variety of challenges that it faces. Defra did not rule out intervention if a case could be made, however, there is currently no evidence of market failure. We are training more veterinarians than ever before and there is clear evidence that they want to be involved in large animal work. However, our research does indicate that the early bad experiences of some new qualifiers has resulted in a drift towards small animal work.

Defra's response reflected one of the key messages in the AHWS; that the veterinary profession needs to provide the types of services required by a changing livestock industry. The role of the vet has traditionally focussed on the treatment of disease and this remains a crucial aspect of their responsibilities. There is, however, a strong case for a shift in focus towards services which prevent disease, such as farm health planning.

Defra has agreed that the range of issues that face the veterinary profession needs to be considered with the RCVS, BVA and farmers organisations on an ongoing and strategic level. The Working Group which we formed following the publication of the EFRA report has been retained to provide this role.

The Veterinary Surgeons Act 1966

The Animal Health and Welfare Strategy implementation plan for England announced the Department's intentions to introduce a Bill to replace the existing Veterinary Surgeons Act. There have been positive responses to the consultation on proposals to modernise the Act, and Defra has published an analysis of the responses. The Royal College of Veterinary Surgeons have been considering some of the issues in greater detail, following their response to our consultation.

The Veterinary Surgery (Artificial Insemination of Mares) Order 2004 came into force on 6 July 2004. This exemption order permits any person, over the age of 18 years who is not a veterinary surgeon, to carry out artificial insemination of mares. This is conditional upon such persons meeting the requirement of attending a Defra approved training course and gaining a certificate of exemption.

Following a consultation on proposals for introduction of an exemption order for lay people to perform TB testing, the Department and the Royal College have been in discussions on a pilot trial using Defra animal health officers.

There has also been a consultation on a Veterinary Surgery (Equine Dental Procedures) Order to allow lay people to carry out some aspects of horse dental care. This can be viewed at <http://www.defra.gov.uk/corporate/consult/vetsurgeons/index.htm>

Relevant strategic documents

The AHWS sets the direction for all of our work on animal health and welfare. However, there are various other relevant strategic documents that shape the overarching direction of animal health and welfare policy.

Defra's Five Year Strategy, titled 'Delivering the Essential of Life', sets out five strategic priorities for the Department, all under the overarching aim of promoting sustainable development. One of the priorities is to create a sustainable farming and food sector, which includes animal health and welfare. The Five Year Strategy can be viewed at <http://www.defra.gov.uk/corporate/5year-strategy/index.htm>

Defra's and the UK's Sustainable Development strategies set the vision and tone for much of our work. These are strongly linked to the AHWS, which complements and takes forward the other strategies to support a sustainable agricultural industry. The AHWS can be viewed at <http://defra.gov.uk/animalh/ahws/default.htm>. The VSS can be viewed at <http://defra.gov.uk/animalh/diseases/veterinary/index.htm>

Improvements to animal health and welfare is an important element of the *Sustainable Food and Farming Strategy*. The health and welfare of farmed animals makes a major contribution to the sustainability of the livestock sector. The Strategy can be viewed in full at <http://defra.gov.uk/farm/sustain/newstrategy/index.htm>

At the core of Defra's Change Programme and its future relationship with stakeholders and delivery partners is the *Defra Delivery Strategy*. This sets out the principles that shape the Defra family and effective delivery from our agencies and partners. This document can be viewed at <http://www.defra.gov.uk/corporate/delivery/pdf/defra-deliverystrat.pdf>

Section B: Protection of public health in relation to food safety and diseases transmissible to humans

Chapter B1: Bovine Spongiform Encephalopathy (BSE) and other Transmissible Spongiform Encephalopathies (TSEs)

The decline in the BSE epidemic has continued and the announcement of a managed transition towards the lifting of the Over Thirty Month (OTM) rule was a significant milestone at the end of the year. During the year, over 73% of the confirmed BSE cases were identified by the programme of targeted (active) surveillance. The remainder are identified by scanning (passive) surveillance and were presented as clinical suspects. The number of animals presented as suspects is now very small and is declining only gradually. However, the proportion of slaughtered suspects in which disease is confirmed has fallen markedly again this year. Cases born after the reinforced feed ban of 1996 continue to appear but there is some evidence of a reduction in risk for later born cohorts.

Scrapie has been present in GB for over two hundred years. There continues to be no evidence that scrapie represents a risk to human health. Sheep and goats are likely to have been exposed to the same infected feed that resulted in BSE in cattle. Accordingly, there is a theoretical possibility that BSE is also present in sheep and goats. This risk was highlighted when, in October 2004, the possibility of BSE was reported in a goat slaughtered in France in 2002. A proposal for a Contingency plan for BSE in Small Ruminants was issued for consultation in June.

Scrapie controls in GB took a major step forward in 2004. In April the Voluntary Scrapie Flocks Scheme was launched. The Compulsory Scrapie Flocks Scheme started in England and Scotland in July, and in Wales in November. A consultation on longer term plans for a breeding programme for resistance to scrapie was undertaken in autumn 2004.

Further 'atypical' cases of scrapie were identified by targeted (active) surveillance. Positive immunohistochemistry has now been detected in these cases using an alternative antibody to that previously employed. Investigations into these cases are continuing in conjunction with other countries and with the EC.

The BSE epidemic

Confirmed cases of BSE in animals reported as suspects scanning (passive) surveillance fell from 173 in 2003 to 82 in 2004, a reduction of over 52%. Among the animals slaughtered as suspects, disease was confirmed in just over 26%, a further decline from the 41% seen in 2003. This is to be expected as BSE becomes less common and diseases with similar clinical signs form a larger proportion of suspects.

A further 226 BSE cases were confirmed from the 515,506 animals tested in the targeted (active) surveillance programme, a 39.5% reduction from the 374 cases detected among the 394,685 animals tested in 2003, while the number of animals tested rose by 31%.

The total number of confirmed cases, identified by both scanning (passive) and targeted (active) surveillance since 1988 is shown in figure B1.1. Cases over the last five years are shown in figure B1.2. The chart shows the increase in targeted (active) cases detected since the introduction of the EU wide surveillance programme in 2001. Detailed statistics of scanning (passive) and targeted (active) BSE cases since 1988, updated weekly, are available on the Defra website at <http://www.defra.gov.uk/animalh/bse/statistics/index.html>.

Figure B1.1: Confirmed BSE cases from 1988: scanning (passive) surveillance cases by year of restriction and targeted (active) surveillance cases by year of death

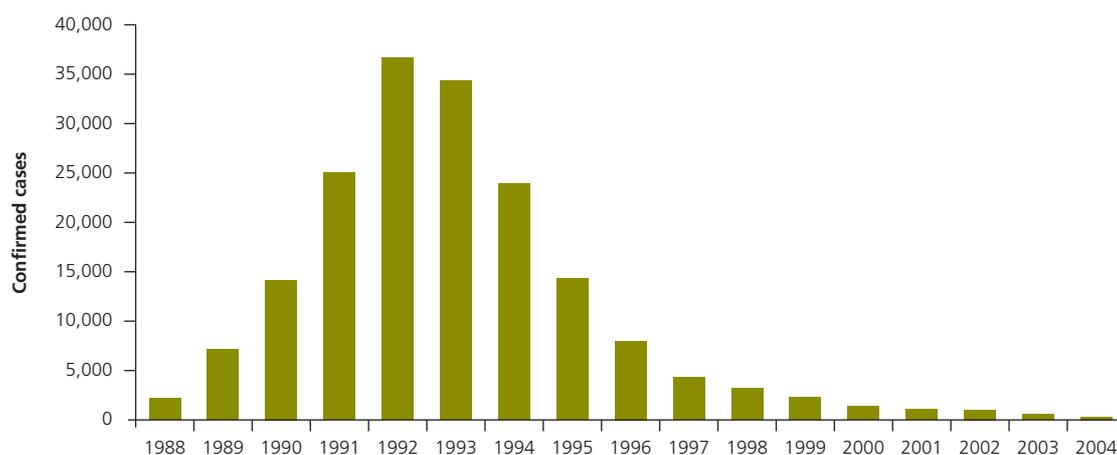
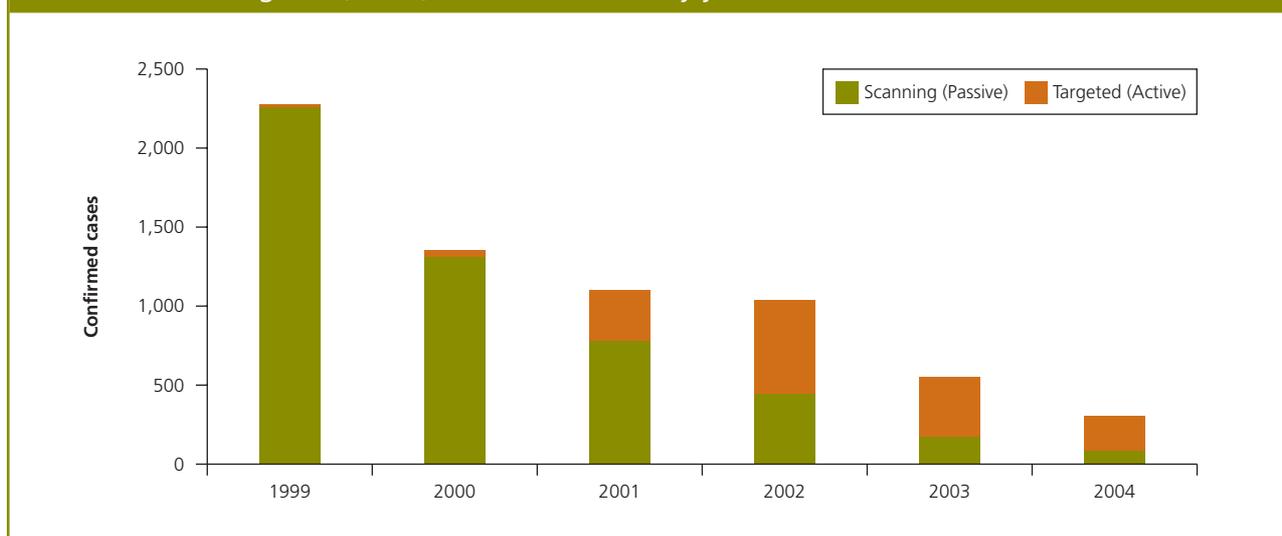


Figure B1.2: Confirmed BSE cases from 1999: scanning (passive) surveillance cases by year of restriction and targeted (active) surveillance cases by year of death



Cases born after 1 August 1996

During 2004, BSE was confirmed in 21 animals born after the effective date of the reinforced feed ban of 1996. This is a 42% reduction on the 36 cases seen among these animals during 2003. Although the numbers of these animals are small, an epidemiological analysis provided evidence of a decline in risk the later the cohort was born. This was particularly marked in the reduced prevalence between the 1996/97 and the 1997/98 cohorts. The results are shown in Table B1.1.

Table B1.1: The estimate of infection in the born after the reinforced feed ban (BARB) cohorts using scanning (passive) and targeted (active) surveillance data up to 30 June 2004, and using a previously developed model (Arnold and Wilesmith, Proc R Soc B, 270, 2141-2145, 2003)

Birth Cohort	Prevalence* Infected animals/10 ⁶	95% CI	Estimated numbers of infected cattle
1996/97	130	80 – 190	443
1997/98	90	50 – 140	317
1998/99	40	10 – 70	142
1999/2000	30	8 – 70	97

*maximum likelihood estimate

Moderate risk status

Although the UK is still regarded as a high BSE risk country under the international classification criteria for BSE incidence, we have made substantial progress in our efforts to be recognised as meeting the criteria for moderate risk status, the same classification as most other EU Member States. Achieving recognition of moderate risk status is a top priority for the Government, as this would then enable the UK to trade in beef on the same basis as other Member States. For practical reasons we will only look to export beef from cattle born after 1 August 1996, in line with the OTM rule change for the domestic market.

The continuing decline in the epidemic is evident, to the extent that the UK considers that we are now well below the numerical incidence threshold to be considered moderate risk status (which is set at 200 cases per million adult cattle (aged over 24 months) over a 12-month period).

An important step towards this was the European Food Safety Authority's (EFSA) response to the paper the UK submitted to them last year. EFSA's main conclusions were:

- using precautionary estimates, in the latter half of 2004, the UK's overall BSE risk status should fall from the international 'high risk' category to 'moderate risk', the same category as most other EU member states. Unlike other Member States, the UK has not tested all healthy cattle aged over 30 months because these cattle cannot currently be slaughtered for human consumption. The UK paper provided a methodology for simple scaling-up of the results from the UK testing programme. Using upper 95% confidence limits as recommended by EFSA, the Authority agreed that the UK would fall below the 200 cases threshold between July and December 2004; and
- the OTM rule in the UK could be replaced by testing for cattle born after August 1996 without increasing the risk to EU consumers.

The Opinions can be seen at <http://www.efsa.eu.int>

However, before the beef ban can be eased, there are a number of further steps which must be taken:

- a wide-ranging mission by the EU's Food and Veterinary Office (FVO) will need to be satisfied with our BSE controls. The FVO visited the UK in spring 2004 and, although noting that progress had been made since the previous mission, certain shortcomings were highlighted, which we are working hard to address before the next mission in June 2005;
- EFSA will need to confirm that the UK's incidence of BSE is now in the moderate risk category after reviewing further data to be provided by the UK in early 2005; and
- the Commission will then need to make a proposal for the approval of other Member States in the EU Standing Committee on the Food Chain and Animal Health (SCoFCAH) and perhaps the Agriculture Council.

However, it is by no means clear when these changes will take effect. Following a positive EFSA opinion and FVO mission, we will look to the Commission to put forward proposals as soon as possible in Autumn 2005 and to Member States to vote in favour of them shortly afterwards. We therefore hope that the UK beef export ban will be lifted by the end of 2005.

Scrapie

In 2004, fewer suspect cases of scrapie were reported than in 2003. This may have been due to concerns about the effects of compulsory flock controls under EU Regulation 999/2001 (as amended). The main decline in the number of cases reported was in England. Numbers of reports increased in Scotland and Wales in the Spring prior to the launch of the Voluntary Scrapie Flocks Scheme (VSFS), but declined throughout GB after the Compulsory Scrapie Flocks scheme (CSFS) was introduced in England and Scotland in July and in Wales in November. In 2004, CSFS was implemented in 64 flocks on 38 holdings. 367 applications (for 198 holdings) were received for VSFS. The numbers of confirmed field scanning (passive) surveillance cases are indicated in Table B1.2.

Table B1.2: Summary of scrapie cases in Great Britain 1993–2004

Year	Positive	Negative	Inconclusive
1993	328	163	3
1994	235	90	2
1995	254	56	1
1996	460	87	3
1997	508	83	3
1998	499	99	1
1999	598	117	2
2000	568	86	0
2001	295	57	9
2002	404	105	1
2003	378	98	0
2004	309	124	0

Assessment of the potential impact to rare breeds of sheep on the introduction of a compulsory breeding programme

The Rare Breed Survival Trust were commissioned to assess the impact that genotype based selection strategies for scrapie resistance might have on rare breeds of sheep. The conclusions of this study will help inform how the requirements of EU legislation for the introduction of EU wide compulsory genotype based breeding programmes from April 2005 should be applied to rare breeds in Great Britain.

Suspect case of BSE in a Goat from France

In 2002 the French identified laboratory results similar to BSE in a goat. All goats from the herd were culled and no other suspect cases were detected. The sample was bioassayed in mice to confirm this preliminary observation. During the later part of 2004 the EU reported that the initial results from mouse bioassay appear to confirm the presence of BSE, however the data was passed to a group of experts for evaluation. The expert group concluded that further work was necessary for them to be able to reach a conclusion. It is anticipated that the outcome of this further work and the conclusion from the expert group will be available in early 2005.

UK contingency plan for BSE in sheep

In June 2004 the UK issued a consultation *“The UK contingency plan for the emergence of naturally occurring BSE in sheep”* for action in the event that BSE is identified in sheep or goats. This plan was developed with the assistance of the Department of Health (DH), the Food Standards Agency (FSA) and the Devolved Administrations. This overarching plan will be followed up by more detailed operational plans on genotyping, disposal and communications.



The millionth sample taken under the NSP. The Chief Veterinary Officer (left) with the owner, David Uffold, John Thorley of the National Sheep Association and Michael Dawson, NSPAC Veterinary Adviser.

The National Scrapie Plan

The National Scrapie Plan (NSP), a joint initiative of British agriculture and rural affairs departments, was officially launched in 2001. Now in its fourth year of testing, over 1.3 million sheep have been genotyped under the plan (by the end of 2004). The principal objective of the plan is to reduce the risk of TSEs occurring in the national flock by reducing the number of sheep with the most susceptible genotype to scrapie (VRQ/VRQ) and increasing the number of sheep with the most resistant genotype to scrapie (ARR/ARR). As a consequence, this will reduce the theoretical risk to human health arising from the possible presence of BSE in sheep. Since the launch of the NSP, several new initiatives have been introduced. Extensive information on the plan is published at www.defra.gov.uk/nsp

Ram Genotyping Scheme

In 2004, over 2,000 applications were received from farmers with either registered or non-registered purebred flocks. 11,588 flocks have been visited and over 340,000 samples taken. By the end of 2004, the number of participants in the RGS had risen to 10,394.

Strategic review of the NSP/Compulsory Breeding Programme

A consultation on long term plans for a breeding programme for resistance to scrapie was undertaken in the autumn of 2004. There were three primary reasons why our current policy needed to be reviewed and evaluated. First, the cost of operating the NSP in its first three years amounted to some £19 million. Against this backdrop of considerable public expenditure, it was appropriate to review and evaluate whether the NSP's publicly stated aims and objectives were being met. Also reviewed was whether there remained a scientific justification for breeding for resistance and, if so, whether it relates to public health, animal health, contingency planning for BSE in sheep, or all three.

Second, EU legislation provides for the introduction of EU wide genotype based breeding programmes on a voluntary basis from 2004, and on a compulsory basis from 1 April 2005 for all flocks of 'high genetic merit'. Decisions on whether we should apply the EU minimum, the NSP in its current form or some measure in between on a compulsory basis could not be determined until we had reviewed and evaluated the benefits and outcomes of our existing national arrangements under the NSP. Announcements on our longer term plans for a compulsory breeding programme are expected to be made January 2005.

And third, the operation of the NSP needs to be guided by the Animal Health and Welfare Strategy for Great Britain. It will need to recognise the strategic outcomes defined in the Animal Health and Welfare Strategy and apply the principles for Government decision making and for Government intervention contained in it.

Compulsory Scrapie Flocks Scheme

The Compulsory Scrapie Flocks Scheme (CSFS) implements an EU requirement. Under these measures, farmers with confirmed scrapie cases on their farms will have their sheep flocks genotyped so that the more susceptible sheep can be identified and removed. Alternatively they may have their whole flock disposed of. Goats on affected holdings will be disposed of as genotyping in goats is not an option as they are not known to possess scrapie resistant genes. Compensation is paid for sheep and goats culled under the measures.

The CSFS was launched on 20 July 2004 in England and Scotland, and 1 November 2004 in Wales, when respective national enforcement legislation came into effect. Up to 31 December 2004, 64 flocks from 38 unique holdings in England and Scotland had been put under CSFS control measures.

Voluntary Scrapie Flocks Scheme

The Voluntary Scrapie Flocks Scheme (VSFS) was launched on 5 April 2004 following an expression of interest exercise to some 450 owners earlier in the year. The VSFS is open to all historically affected flocks – those that have had a case reported and confirmed since 1998 until the date the new European rules were enforced. Up to 31 December 2004, 367 flocks from 198 holdings in GB had applied to join the Scheme. Applications from owners of eligible flocks will be accepted up until 31 March 2005.

Under both the CSFS and VSFS, farmers receive free genotyping and veterinary advice on breeding for scrapie resistance which, in the long term, aims to eradicate scrapie in the national flock.

Semen Archive

Work has begun on establishing an archive of semen from rams with the more scrapie susceptible genotypes. The Archive will make it possible to re-establish viable breeding populations of these sheep in the future should it prove necessary.

Field capability

Around 210 SVS Animal Health Officers have been trained and certified for NSP work. In addition, more than 400 local veterinary inspectors and 55 Veterinary Officers have attended the NSP's training sessions.

Shows and sales

The NSP were present at a total of 18 events during 2004.

Targeted (active) surveillance for TSEs

EU Member States have been carrying out targeted (active) surveillance for TSEs since 2001 in accordance with the requirements in the EU TSE Regulation 999/2001 (as amended).

Cattle testing

Cattle surveillance continued throughout 2004 and the following categories of cattle were tested for evidence of BSE during the year:

- all cattle over 30 months of age which were slaughtered for human consumption (this is a small number of Beef Assurance Scheme cattle slaughtered between 30 and 42 months old);
- all fallen stock aged over 24 months;
- all casualty animals aged over 24 months;

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- all healthy cattle slaughtered under the Over Thirty Months Scheme (OTMS) born after 31 July 1996 and aged over 42 months. This cohort was extended on 25 October 2004, to include animals aged over 30 months; and
- a random sample of 10,000 animals from the OTMS, born before 1 August 1996.

Brain stem samples taken from these animals were tested using EU approved rapid test methods. All positive or inconclusive samples were tested again using approved confirmatory tests.

Table B1.3: Results from targeted (active) surveillance for BSE in cattle in Great Britain during 2004

Survey category	Number tested	Results pending	Number negative	Number positive
Fallen Stock	83,892	0	83,835	57
Casualties on farm	123,817	0	123,667	150
Casualties at OTMS abattoirs	14,235	0	14,224	11
24-30 month casualty cattle at fresh meat abattoirs	2,263	0	2,263	0
Over Thirty Months Scheme – Random Animals (born before August 1996)	10,695	0	10,689	6
Over Thirty Months Scheme – Animals born after July 1997	225,902	0	225,901	1
Animals sampled as 96/97 Cohort (excluding fallen stock, casualties etc)	54,346	0	54,345	1
BSE offspring	249	0	249	0
Animals slaughtered for human consumption: Over thirty months (Beef Assurance Scheme)	104	0	104	0
Total for animals born in 96/97 cohort (incl fallen stock, casualties etc)	75,442	0	75,440	2
Total for other test categories between 1 January and 31 December 2004	440,064	0	439,840	224
Total for all cattle tested between 1 January and 31 December 2004	515,506	0	515,280	227

Testing of targeted (active) surveillance samples from Sheep and Goats

The following categories of sheep and goats were required to be tested for scrapie during 2004:

- a random selection of 10,000 sheep aged over 18 months per annum, and slaughtered for human consumption (the sheep abattoir survey);
- a random selection of 10,000 fallen sheep aged over 18 months per annum (the sheep fallen stock survey);
- a random selection of 500 fallen goats aged over 18 months per annum (the goat fallen stock survey); and
- in December 2004, there was a requirement for the testing of all goats aged over 18 months at slaughter.

Table B1.4: Results from targeted (active) surveillance for scrapie in sheep and goats in Great Britain during 2004

Survey category	Number tested	Results pending	Number negative	Number positive
Sheep abattoir survey	10,589	13	10,567	9
Sheep fallen stock survey	4,372	4	4,356	12
Goat abattoir survey	90	0	90	0
Goat fallen stock survey	49	0	49	0
Total sheep tested	14,961	17	14,923	21
Total goats tested	139	0	139	0

In addition to the confirmed results from scanning (passive) surveillance, scrapie was confirmed in samples collected from 14 sheep in the abattoir and fallen stock surveys. Samples from 17 sheep also gave 'atypical' results (see the section on Targeted (Active) Surveillance for TSEs). Of the samples which gave 'atypical' results, 13 were abattoir samples, 4 were from fallen stock and none were from animals dead in transit. 4 of the 'atypical' samples were from NSP Type 1 (ARR/ARR) sheep and 5 were from NSP type 2 sheep. Results for 7 targeted (active) surveillance samples are still awaited. A total of 87 'atypical' cases have now been identified since 2002. 'Atypical' cases are those which tested positive by the Bio-Rad Platelia ELISA but negative by immunohistochemistry (IHC) or Western blot. However, by further optimising the IHC method and applying alternative antibodies, scientists at the VLA have now been able to confirm the presence of PrP^{Sc} in these samples. Investigations into these cases are continuing in conjunction with colleagues from other countries, especially the other European countries which have also made similar observations.

Over Thirty Month review

The OTM rule currently imposes an automatic ban on older cattle from entering the human food chain.

The incidence of BSE has been declining since its peak in 1992 and has now fallen by over 99%. The numbers of new clinical cases detected are also at the lowest level since recording began.

On 1 December 2004, in response to Food Standards Agency (FSA) advice that the current control measures are no longer proportionate to the risk, UK Government Ministers, the Scottish Executive and the Welsh Assembly Government agreed to announce the start of a managed transition towards the lifting of the OTM rule.

A final switch-over from the OTM rule to BSE testing will happen only when the FSA has advised Ministers that the testing regime is robust. This change, when introduced, will bring the UK into line with the arrangements which apply throughout the EU, except that UK cattle born before August 1996 would remain permanently excluded from the food chain.

The timing of any changeover will be dependent on the FSA advising Ministers that it is satisfied that the testing regime is robust and on other matters such as the outcome of a public consultation, amendments to legislation and the recruitment and training of additional Meat Hygiene Service staff. This is expected to take until the latter half of 2005. In carrying out its work the FSA will be assisted by a group of independent experts which includes experts in food safety and consumer affairs.

The main public health protection measure – the removal of specified risk material (SRM), which is estimated to remove over 99% of infectivity in cattle – has been and will continue to be rigorously enforced by the Meat Hygiene Service.

National Feed Survey

The National Feed Audit (NFA) monitors and enforces the exclusion of prohibited animal proteins from farmed animal feed at all stages of the feed supply chain, from production and distribution through to end-use. The NFA underpins the success of the feed ban, which is the primary BSE eradication measure, and as such is central to the successful delivery of the Department's Public Service Agreement target for the continued reduction of BSE cases in cattle. The Defra BSE delivery plan has noted that achieving moderate risk status will include taking into account whether the feed controls are considered to be operating effectively. Inspection of UK feed controls will therefore feature in the associated FVO visit in 2005.

More details on NFA activities are available on Defra's BSE internet site at <http://www.defra.gov.uk/animalh/bse/statistics/nfa.html>

Animal by-products

Animal by-products are animal carcasses, parts of animal carcasses and other products of animal origin which are not intended for human consumption. Regulation (EC) No 1774/2002 is an animal and public health measure which controls the collection, handling, processing, use and disposal of animal by-products and has applied in member States since May 2003. It requires premises which handle, treat or dispose of animal by-products to comply with specified standards and to be approved. Throughout this year, the SVS has continued inspections of these premises with a view to approving those that comply with the Regulation. This has been a major task as about 2,000 premises applied for approval, often requiring several visits to ensure that operations were brought up to the required standard.

Enforcement is by the Meat Hygiene Service in licensed slaughterhouses and cutting plants, and local authorities elsewhere. At local level there continued to be close collaboration between these authorities, the SVS and the Environment Agency. Defra also continued to liaise with industry representatives and other Government Departments, including the FSA and Cabinet Office, to address issues such as the phasing out of used cooking oil in animal feed, the disposal of former foodstuffs of animal origin and the handling of products of animal origin that are intended for human consumption.

In October, the FVO of the European Commission visited the UK to assess progress in applying the Regulation. Although the formal report has not yet been received, the team was generally positive about the procedures that the UK has put in place and the progress that has been made.

Negotiations took place on some further EU measures and proposals were agreed which will:

- permit the use of five new methods for treating or disposing of animal by-products;
- permit the use of some category 1 and 2 material for technical purposes;
- set standards for the processing of fish waste;
- introduce a model commercial document for intra-Community trade; and
- apply controls on milk which is to be fed to livestock.

Discussions also began on possible markers for animal by-products. A consultation exercise was carried out on some minor changes to the Animal By-Products Regulations 2003, to accommodate the new EU measures and make some minor, deregulatory changes to the Regulations. The new Regulations will be made once the EU measures have been published in the Official Journal.

The Regulation banned the burial and burning of animal by-products including fallen stock, other than in remote areas or in certain circumstances during an outbreak of notifiable disease. In order to assist with the extra costs this could incur for some farmers, the Government (in partnership with industry) set up the National Fallen Stock Company to run a voluntary collection and disposal scheme for fallen stock. All livestock farmers are eligible to join the Scheme, which started on 22 November 2004, on payment of a small registration fee. Farmers may choose their own preferred fallen stock collector and pay costs of collection less a Government contribution. This is made available on a digressive basis over the first three years of the Scheme and is worth £20 million in total. On biosecurity, a key concern, there are strict rules which apply to collectors of fallen stock under the Scheme. Further information about the Scheme can be found at www.nationalfallenstock.co.uk

Livestock Data Programme

The Livestock Data Programme, highlighted in the 2003 report under its previous title of the Livestock Identification and Tracing Programme, is working with representatives of the livestock industry to finalise the likely shape and content of a register of livestock information. This includes defining any supporting business processes. A new IT system and new ways of reporting information electronically, together with pilot trials of electronic identification methods, will significantly change the way cattle, sheep and pigs are tracked in Great Britain.



Defra's Sheep Electronic ID Pilot testing the use of electronic identification and recording.

The Livestock Data Programme features the provision of a single central set of livestock data. These will cover births, movements and deaths, encouragement for keepers to use electronic means of recording and reporting information, and the wider availability of livestock data to internal and external users. Trials have been set up to demonstrate the benefit of better quality data to the livestock industry, such that they see the livestock register and electronic identification as an integral part of their business. The programme will also provide the scope to introduce electronic identification of livestock and in particular to meet EU implementation requirements for sheep in January 2008.

A comprehensive register of up-to-date and accurate animal information will help farmers and government meet the objectives of the Animal Health and Welfare Strategy for GB. It will also help to turn the concept of sustainable food and farming development into reality, for example, by reducing regulatory burden through improved collection and reporting of livestock information, as well as by making livestock information more readily available to the livestock industry to support Farm Assurance schemes. Other important effects will be improving subsidy verification and, once migrated to the new Single Farm Payment, supporting cross compliance.

ID & Movements, Farm Health and Planning

Sheep and Goats

EU regulation 21/2004 governing improved sheep and goat identification, is due to come into force on 9 July 2005. However the UK has asked for a derogation to retain its national system with only partial enhancements. This is currently being reviewed by the EU commission board of auditors.

If successful in our derogation application, double tagging will be postponed until 1 January 2008, when electronic identification for sheep becomes mandatory. If unsuccessful however, the alternative may be the requirement to double tag all sheep and goats. The results of the audit will be known in March/April 2005.

Cross Compliance

EU Directive 92/102 and EU Regulations 21/2004 and 1760/2000 regarding the identification and traceability of pigs, sheep, goats and cattle will be subject to cross compliance checks from 1 January 2005.

Chapter B2: Tuberculosis (TB) in cattle

Bovine TB is one of the most difficult animal health problems that the farming industry faces in Great Britain today. The scale of the challenge facing both Government and industry in seeking to reverse the long-term upward disease trend is significant. The Government recognises it has a role in leading and facilitating the changes required to make this happen.

Bovine Tuberculosis (bTB)

Tuberculosis is an infectious disease of humans and animals caused by several species of a family of bacteria known as Mycobacteriaceae. *Mycobacterium bovis* (*M. bovis*) is the bacterium that causes TB in cattle (also known as bovine TB). Although cattle are the main reservoir and natural host of *M. bovis*, humans and a wide range of mammals are also susceptible to this bacterium. In addition to cattle, a number of wild animals can act as reservoirs of *M. bovis* in different regions of the world, posing major impediments to eradicating the disease in cattle. About 1% of all bacteriologically confirmed cases of TB in humans can be attributed to *M. bovis*.

Historical overview of TB

Until the 1930s, a large proportion of dairy cows were infected with *M. bovis*. Many were kept near large cities to provide urban dwellers with fresh milk and most were kept closely confined in poorly ventilated cowsheds, which are ideal conditions for the disease to spread. Many cows developed infections in the udders and, because most milk was drunk raw (untreated), *M. bovis* spread easily and was the major source of TB in humans. In 1934, a Government-appointed committee concluded that at least 40% of cows in dairy herds were infected with TB to some extent and that, on the evidence available, at least 0.5% of cows yielded tuberculous milk. It was also stated that bovine TB was responsible for over 2,500 deaths and for a larger amount of illness annually among the human population (over 50,000 new human cases each year).

To try to control the problem, in 1947 the Government launched a voluntary scheme of tuberculin testing of cattle with slaughter of reactors. To prevent TB spreading to other herds, movement restrictions were introduced to stop cattle being moved from farms that had a case of bovine TB. This test and slaughter programme became compulsory in 1950, and by 1960 it had reduced the number of cases of TB in cattle to a very low level. By the mid-1960s, cases of TB in cattle were confined to a few pockets of infection in south-west England. In other areas bovine TB remained at a very low level until the early 1990s.

Although the incidence of bovine TB have increased over the last 15 years, the test and slaughter scheme remains central to the strategy to stop its spread. The details of the current testing programme are determined by Council Directive 64/432/EEC, which was last amended by Community Regulation (EC) No. 1226/2002 of 8 July 2002 to allow for the use of blood-based diagnostic tests.

Regular tuberculin testing of cattle is intended to curb cattle-to-cattle transmission of *M. bovis*. This measure also ensures the early removal of infected cattle before they have developed clinical signs of disease or, in the case of dairy cows, started to shed *M. bovis* in the milk. In addition to this, routine pasteurisation (heat treatment) of cows' milk and inspection of cattle carcasses at slaughterhouses were put in place to further protect public health.

Since 1993, less than 45 cases of bacteriologically confirmed human *M. bovis* infection have been diagnosed annually in Great Britain, with only 17 cases reported in 2003 and a provisional total of 8 in 2004. These represent between 0.5 and 1.5% of all culture-confirmed cases of TB in humans, a proportion similar to that recorded in other industrialised countries. The vast majority of these cases are attributed to (i) recrudescence of long-standing latent infection contracted prior to widespread pasteurisation of milk, or (ii) *M. bovis* infection contracted abroad. The geographical distribution of these human cases does not seem to mirror the spread of bovine TB in the cattle population. The threat to public health is considered to be low and *M. bovis* in humans is treatable.

Level of bovine TB

Bovine TB currently affects only a small proportion of the national cattle herd. About 5.6% of herds in Great Britain were affected by TB restrictions at some point in 2004, though in hotspot areas such as the south-west of England, the percentage was much higher. The average annual increase in the number of animals slaughtered as a result of bovine TB control measures between 1990 and 2001 was 20%. Since 1990, the number of confirmed herd breakdowns has been increasing at an average rate of 18% per annum.

In 2001, the TB testing and control programme was largely suspended due to the FMD outbreak. When testing resumed in 2002, resources were concentrated on herds with overdue TB tests which would have had a longer period in which to contract the disease. Provisional figures indicate that this increase did not occur during 2004 when compared to 2003, but, it is too early to say whether this is a feature following the FMD epidemic or whether the long term trends will be maintained over future years.

Development of new TB strategic framework

Throughout 2004, Government worked with stakeholders to review its strategy for the sustainable control of bovine TB in Great Britain. In February 2004, Defra published a consultation document '*Preparing for a new GB strategy on bovine tuberculosis.*' As part of the consultation process, stakeholder organisations were invited to discuss a new ten year

vision for the control of the disease at workshops across the country. Around 350 attendees of these workshops also discussed the series of cattle based measures outlined in the consultation document. Detailed written submissions were received from 70 organisations and individuals. To help give weight and balance to the views expressed during the consultation, Defra, the Scottish Executive and Welsh Assembly Government established a TB Strategy Development Core Stakeholder Group – a small group of experts that met three times between September and December.

The new strategic framework, which was developed following consultation (and published in 2005), builds upon the 5-point plan of action set out in 1998 following the publication of the Krebs Review and applies the guiding principles set out in the AHWS. A key element was considering how options for wildlife intervention should be developed in light of possible outcomes of the Randomised Badger Culling Trial and emergence of other evidence.

The consultation document published in 2004 also set out options for action to reduce the risk of spread of disease through cattle movements, one of which was the introduction of pre-movement testing. An independently chaired stakeholder group (a sub-group of the TB Strategy Development Core Stakeholder Group) was established to develop a detailed proposal for a new statutory requirement for pre-movement testing in Great Britain (on the basis that costs would be shared with farmers). The Government is committed to pre-movement testing. There will be further consultation on the details of the proposal in 2005. A separate stakeholder group has been established in Scotland to develop proposals for post-movement testing there, in addition to pre-movement testing.

Other proposed cattle based measures to tighten surveillance and reduce the risk of TB spread to new areas were announced in November 2004 (see Enhanced TB Surveillance below).

Overview of work on bovine TB in 2004

- Defra spent £88.2 million on the bTB programme in the financial year 2003/04;
- Consultation on review of bTB Strategy and measures to prevent further geographical spread between February and June;
- bTB Strategy Development Core Stakeholder Group established in September. Developed a Strategic Framework for publication in early 2005;
- Pre-Movement Testing Sub-group established in September to develop detailed proposals for implementation of pre-movement testing of cattle;
- New measures to tighten surveillance and reduce the risk of bTB spreading to new areas announced in November;
- An independent scientific review of the Randomised Badger Culling Trial and associated epidemiological research was carried out. The resulting report (the Godfray Report) was published in April;

Overview of work on bovine TB in 2004 (*continued*)

- Results of Defra-funded research on the economic impact of bTB was carried out by Reading University published in April;
- Changes made to gamma-interferon pilot in May to encourage farmer participation;
- More detailed breakdown of bTB statistics published on the Defra website from June;
- Environment, Food and Rural Affairs Committee Inquiry on bTB. Committee's Report published in July. Government's response published in October;
- Publication of the Third Independent Audit Report on the Humaneness of Dispatch of badgers in the Randomised Badger Culling Trial in July;
- Results of Defra-funded Central Science Laboratory survey of wildlife in south-west England published in July; found TB in some species for the first time e.g. muntjac;
- Revised arrangements for valuing animals slaughtered under TB control measures applied from 4 August;
- Seminar on bTB held for MPs in September;
- Wide-ranging programme of research has continued, including the Randomised Badger Culling Trial. Research requirements for 2005/06 advertised in September;
- Work underway on requirements for a field experiment for badger and cattle vaccines;
- Three meetings of the TB Forum held;
- Publication of an independent audit of bacteriological culture carried out on badger tissue samples collected during the Randomised Badger Culling Trial and Defra's response in October;
- Consultation on proposals for a new cattle compensation system, based on table valuations, between October and December;
- Food and Veterinary Office (FVO) mission carried out a review of GB's bTB controls in November;
- Open meeting of the Independent Scientific Group on Cattle TB held in November.

Overview of bovine TB statistics for 2004

The descriptive statistics presented below reflect the TB position in Great Britain at the end of 2004, according to the information recorded by the SVS on their IT support system (VetNet) as at 8 March 2005. The statistics are cumulative for the period 1 January to 31 December 2004, except where indicated otherwise. The figures are considered provisional and may be subject to minor adjustments.

Provisional year-end statistics for 2004 – Herds

Table B2.1 compares the cumulative TB surveillance statistics for 2004 with the equivalent statistics for 2003. Overall figures for Great Britain are also broken down by country (England, Wales and Scotland) and, for England, by administrative region of the SVS (West, North and East). Detailed (county-level) statistics are presented for the high TB incidence region of the West of England.

Table B2.1 shows that the number of tuberculin herd tests carried out in 2004 was about 1% less than in 2003 (44,720 against 45,122). In terms of animals tested, the effort in 2004 was also broadly similar to that of 2003 (4.6 million against 4.5 million) and about 10% greater than in 2002 (4.1 million). During 2004 the number of tuberculin herd tests completed each month continued to show a highly seasonal distribution as illustrated in Figure B2.1.

Figure B2.1: Monthly number of tuberculin tests carried out in unrestricted herds

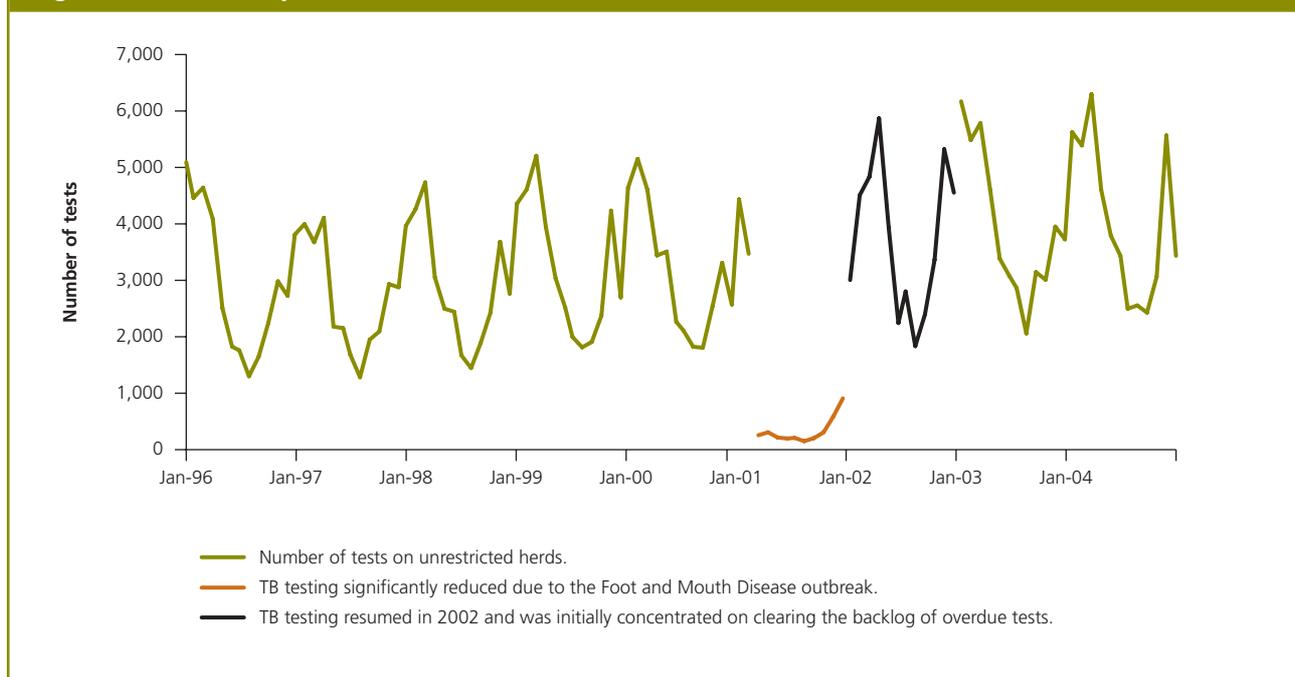


Table B2.1: Detailed TB statistics for Great Britain, for the period 1 January to 31 December 2004*

County/SVS region/country	Cornwall	Devon	Somerset	Dorset	Gloucestershire	Avon	Wiltshire	Hereford & Worcestershire	Shropshire	West Region	North Region	East Region	Total England	Total Wales	Total Scotland	Total Great Britain (2004)	Total Great Britain (2003)
1. Total Number of Cattle Herds registered on Vetnet	3,563	5,686	3,001	1,616	1,460	1,036	1,480	2,967	2,873	23,682	25,914	13,001	62,597	15,721	14,847	93,165	97,129
2. Total Number of which were under TB restrictions due to a TB incident during the year	641	978	263	116	375	152	215	569	149	3,458	485	130	4,073	1,072	118	5,263	5,496
3. Herds under TB restrictions at the end of the year (due to a TB incident, overdue TB test, etc)	367	702	154	68	175	64	86	322	85	2,023	359	186	2,568	1,007	94	3,669	3,039
TB tests carried out																	
4. Total Number of Herd Tests	3,846	5,464	1,782	912	1,872	1,020	1,415	2,677	1,618	20,606	9,076	2,579	32,261	8,335	4,124	44,720	45,122
5. Total Number of Cattle Tested	478,248	728,418	210,859	114,086	212,599	113,945	189,610	289,188	189,735	2,526,688	834,241	151,453	3,512,382	824,878	299,795	4,637,055	4,552,608
TB incidents (started in 2004)																	
6. Total New Herd TB incidents	397	651	171	70	219	96	141	316	104	2,165	352	93	2,610	647	82	3,339	3,220
7. Number of incidents which are considered Confirmed New	204	383	72	21	130	45	70	196	62	1,183	160	29	1,372	307	23	1,702	1,662
8. Number of which are considered Unconfirmed TB Incidents	171	247	90	42	84	48	66	107	41	896	180	58	1,134	288	55	1,477	1,533

Table B2.1: Detailed TB statistics for Great Britain, for the period 1 January to 31 December 2004* (continued)

County/SVS region/country	Cornwall	Devon	Somerset	Dorset	Gloucestershire	Avon	Wiltshire	Hereford & Worcestershire	Shropshire	West Region	North Region	East Region	Total England	Total Wales	Total Scotland	Total Great Britain (2004)	Total Great Britain (2003)
9. Total number of which are still Unclassified TB Incidents (pending culture results)	22	21	9	7	5	3	5	13	1	86	12	6	104	52	4	160	25
10. Total number of confirmed new incidents in 2003	187	294	63	23	157	47	85	219	51	1,126	160	27	1,313	327	22	NA	1,662
Animals slaughtered under the TB orders																	
11. As Reactors (including unresolved inconclusive Reactors)	2,338	4,234	910	405	1,182	541	838	2,256	665	13,369	1,500	203	15,072	4,668	198	19,938	20,124
12. As Inconclusive Reactors	64	81	4	5	31	9	36	60	4	294	22	30	346	126	17	489	635
13. As Direct Contacts	13	431	16	3	60	17	212	369	87	1,208	599	52	1,859	691	26	2,576	3,044
Other animals																	
14. Slaughterhouse cases reported to the SVS (of which confirmed)	58 (47)	3 (0)	125 (82)	6 (5)	6 (1)	26 (8)	2 (1)	11 (0)	41 (2)	278 (146)	38 (20)	18 (9)	334 (175)	31 (14)	26 (5)	391 (194)	305 (161)

*Provisional data as extracted from Defra's Animal Health Database (Vetnet) on 8 March 2005. Subject to change as more data becomes available.

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The total number of new bTB incidents (herd breakdowns) disclosed in 2004 was up by 3.6% on 2003 (3,339 against 3,220) and was similar to the 3,323 new breakdowns reported in 2002. The proportion of new breakdowns confirmed by *post mortem* examination and/or culture in 2004 was 51% (1,702 of 3,339), very similar to the 52% overall confirmation proportion observed in 2003.

A total of 5,263 cattle herds were under restrictions due to a bTB breakdown at some time during 2004, compared with 5,496 herds in 2003. These are cumulative figures for the year and include new herd breakdowns plus any unresolved breakdowns that began in previous years and carried on into 2004. At the end of 2004 a total of 3,669 cattle herds were under bTB restrictions. This figure represents approximately 3.9% of the national cattle herd, but includes some 700 herds placed under restrictions because of an overdue tuberculin test.

Figure B2.2 shows the evolution of the number of total and confirmed new bTB breakdowns reported each month in Great Britain between January 1990 and December 2004. The disruption of the TB testing programme during the FMD outbreak of 2001 resulted in a marked fall in the number of bTB breakdowns detected by tuberculin testing.

Figure B2.2: Monthly numbers of total and confirmed new bTB incidents

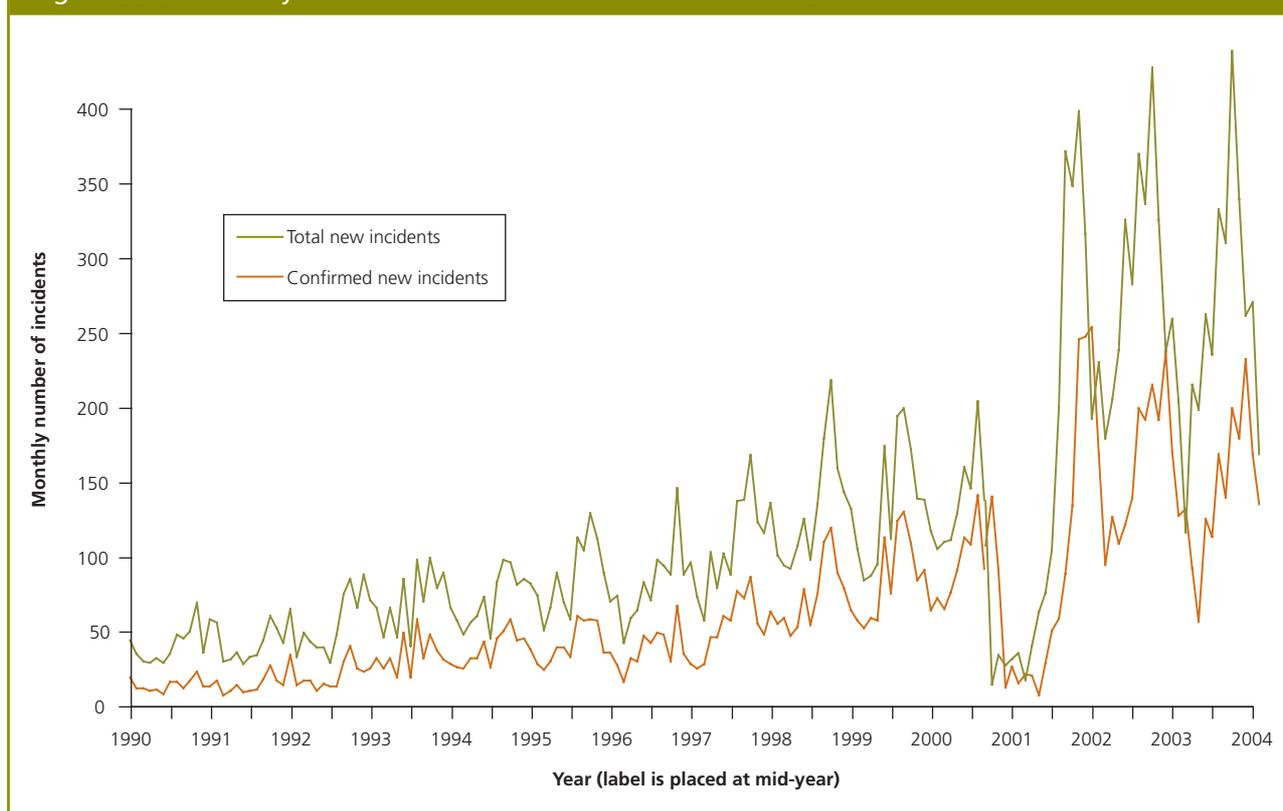
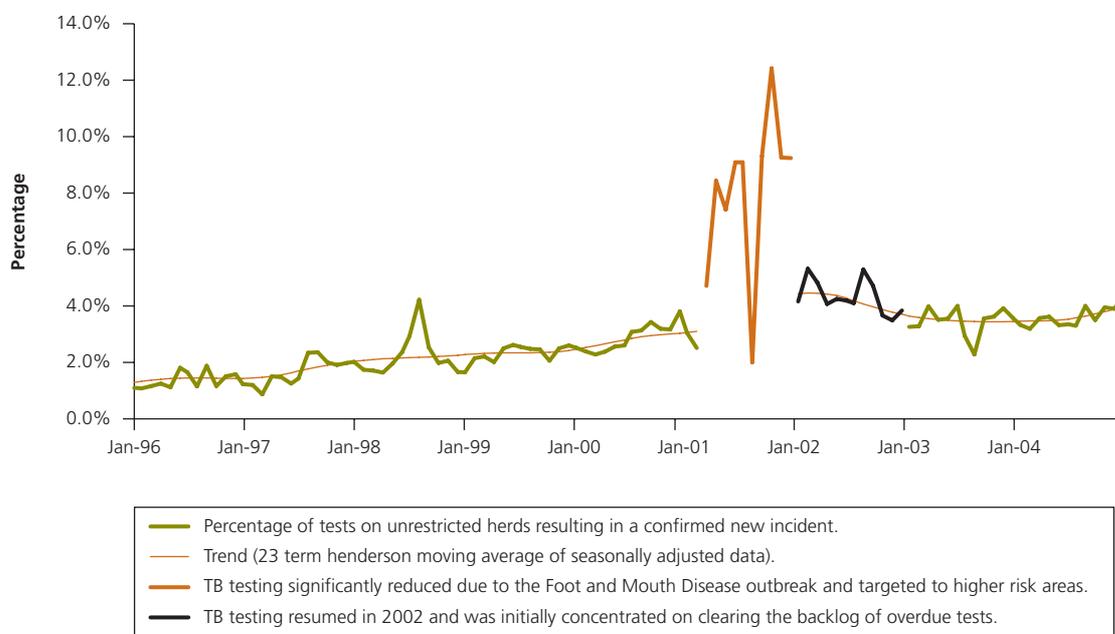


Figure B2.3 shows the monthly percentage of tests in unrestricted herds that have resulted in confirmed bTB incidents since 1996. In this chart, the number of breakdowns is divided by the number of tests carried out each month, to account for seasonal variations in the frequency of testing. In 2004, for every 100 tests in unrestricted cattle herds a provisional average of 3.6 new confirmed incidents were detected. The equivalent rate for 2003 was 3.5 new confirmed incidents for every 100 tests. The average rates for 2003 and 2004 are similar to that of the months immediately before the onset of the FMD outbreak of 2001 and lower than in 2002 (4.3 new confirmed incidents per 100 tests).

Figure B2.3: Monthly incidence of confirmed bTB breakdowns and trend, expressed as a percentage of tests on unrestricted herds resulting in confirmed new incidents



The counties of Cornwall, Devon, Dorset, Somerset, Gloucestershire, Wiltshire, Avon, Herefordshire, Worcestershire, Shropshire, Stafford and Derbyshire and South and West Wales accounted for 89% of confirmed new incidents and 94% of reactors (figure B2.4). Decreased herd incidence in Herefordshire, Staffordshire, Gloucestershire and Monmouthshire was offset against increases in Worcestershire, Shropshire, Cheshire, Derbyshire and Powys. Cumbria sustained 65 new breakdowns in 2004, 17 (26%) of which were confirmed (15 of 70 for 2003). Half (33) of the Cumbrian bTB breakdowns disclosed in 2004 occurred in cattle herds restocked after FMD and subjected to an annual testing regime. There were 82 new breakdowns in Scotland in 2004, of which 23 (27%) were confirmed. These figures are almost identical to the Scottish TB statistics for 2003. Of the 23 confirmed breakdowns in Scotland, 11 were attributed to purchase of infected cattle from England (five), Wales (four) and Ireland (two). The remaining cases are still under investigation.

Provisional year-end statistics for 2004 – Animals

A provisional total of 19,938 cattle were slaughtered as tuberculin test reactors in 2004, down 1% on the total for 2003 (20,124 reactors) (figure B2.5). The average total number of reactors per bTB incident (including new herd breakdowns and those that started in 2003 and continued in 2004) was 3.8, compared with 3.7 in 2003 and 4.7 in 2002.

In 2004, the total numbers of slaughtered inconclusive reactors and direct contacts fell substantially in relation to 2003. The number of suspect bTB cases detected by the Meat Hygiene Service during normal meat production (slaughterhouse cases) increased from 305 (53% bacteriologically confirmed) in 2003 to 391 (50% confirmed) in 2004.

Figure B2.4: Reactors in confirmed bTB breakdowns and *Mycobacterium bovis*-positive slaughterhouse cases disclosed during 2004 in Great Britain, per 1,000 cattle

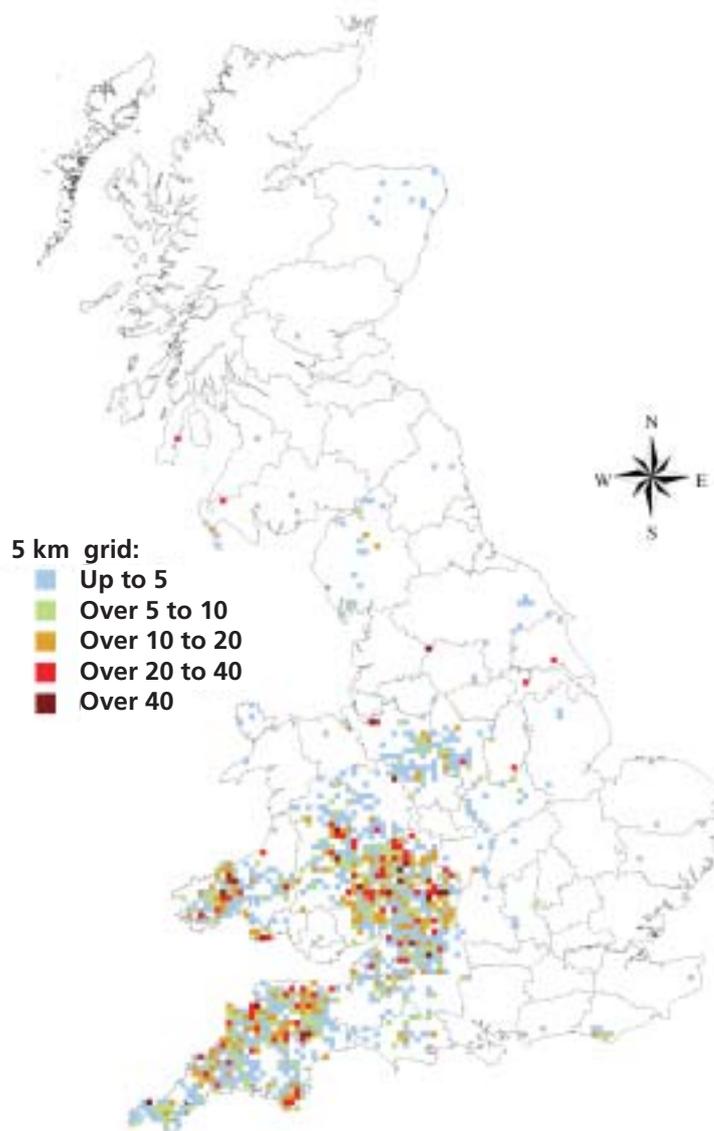
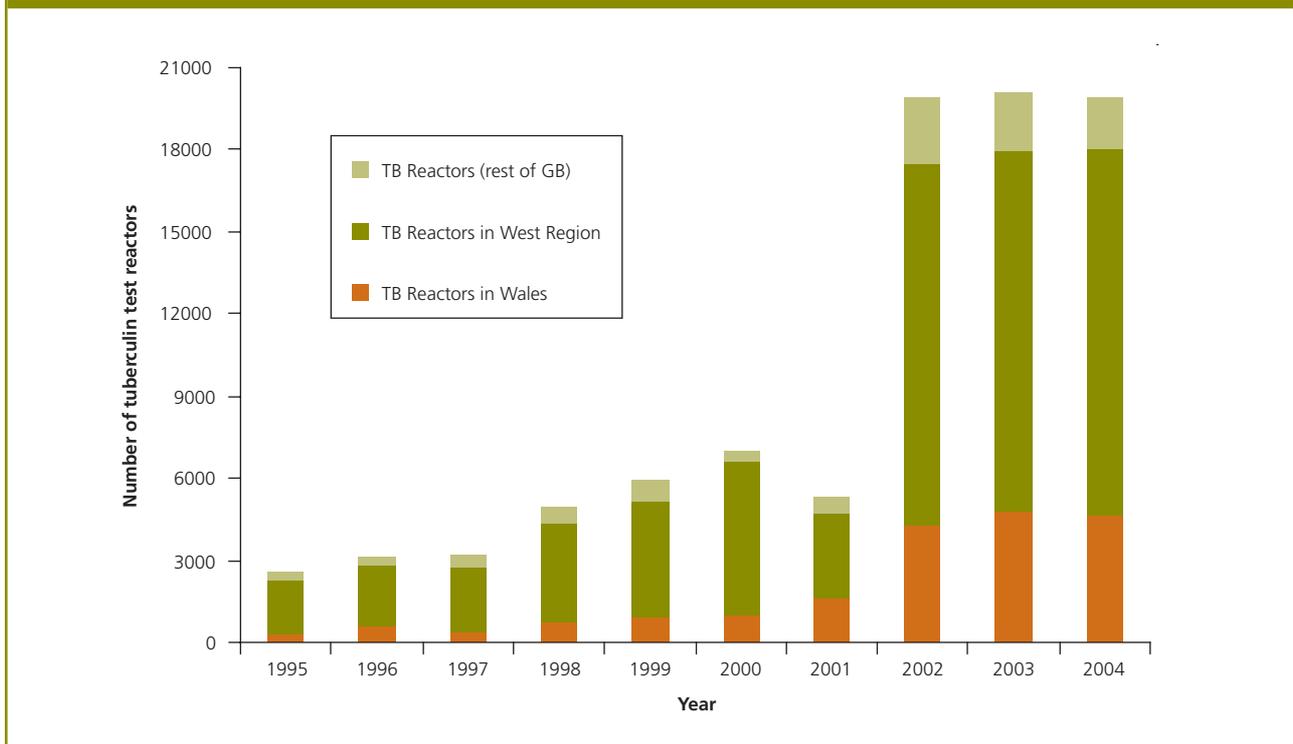


Figure B2.5: Number of skin test reactors slaughtered in Great Britain since 1995

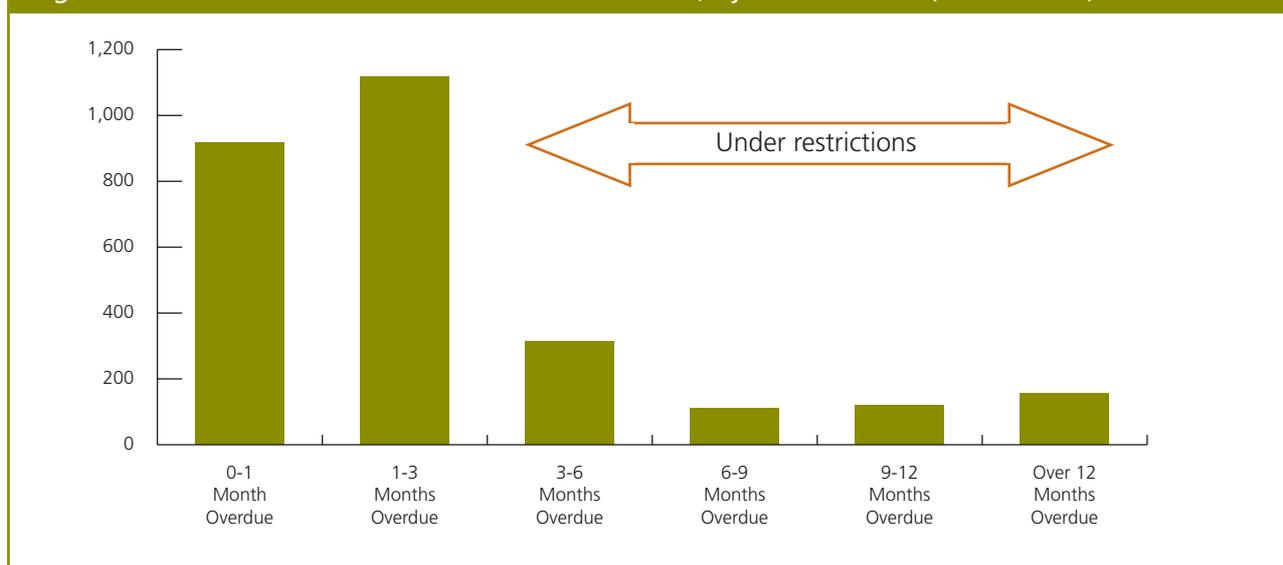


Overdue tuberculin testing

At the end of 2004 there were 2,739 overdue tuberculin herd tests across Great Britain, compared to the 3,623 tests overdue on 31 December 2003. As illustrated by figure B2.6, 917 (33%) of the total overdue tests were less than one month overdue and could be considered only “technically” overdue. Many of these tests may have been completed on or shortly after their due date, but delays either in the submission of test charts to SVS Animal Health Divisional Offices, or in the input of test results on VetNet may result in completed tests appearing as outstanding at the end of the reporting period. A total of 704 (26% of the total) were overdue by 3 months or more, thus triggering movement restrictions. From 16 February 2005, cattle herds will be placed under restrictions if their routine tuberculin test has not been completed by its due date.

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Figure B2.6: Number of herds with overdue bTB tests, by time overdue (end of 2004)



Changes in parish TB testing frequencies

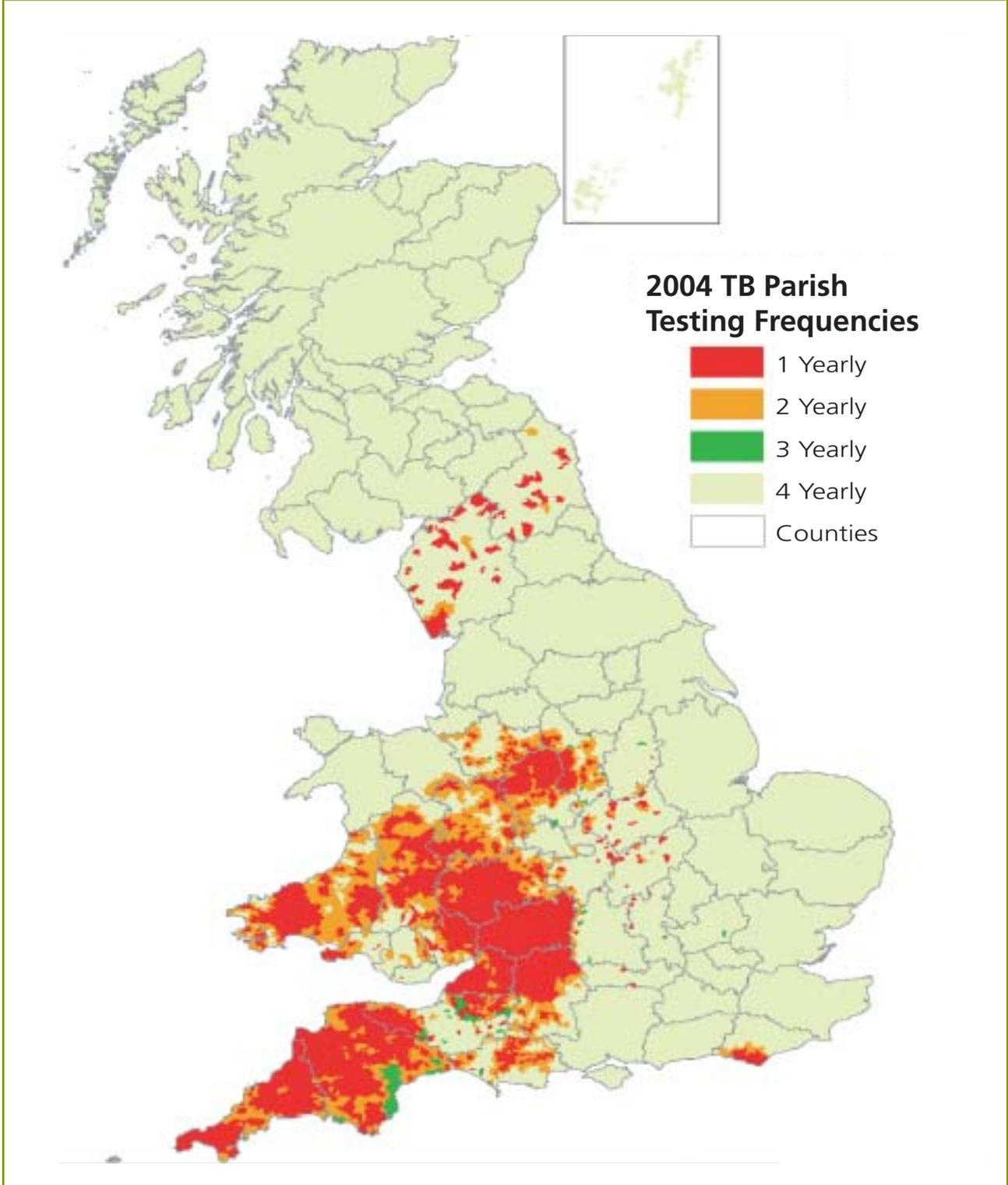
The map in Figure B2.7 shows the routine parish testing frequencies (PTFs) in Great Britain at the end of 2004. The proportion of herds and parishes under each testing frequency in Great Britain at the end of 2004 is summarised in Table B2.2.

Table B2.2: Distribution of British cattle herds and animal health parishes according to the frequency with which they were being tested for bTB as at 28 October 2004

	Default frequency of routine TB tests			
	1-year	2-year	3-year	4-year
Parishes (%)	15.7	9.6	0.6	74.1
Herds (%)	25.6	12.8	0.7	60.9

In October 2004, the SVS conducted a review of PTFs, as part of the “short-term” bTB control measures consulted upon between February and June 2004. The objective was to ensure that PTFs across Great Britain were compliant with the testing frequencies prescribed in EC Directive 64/432/EEC. As a result of this review, the number of parishes and herds under annual testing frequency rose substantially during 2004. Counties in which the average herd incidence of confirmed bTB breakdowns had not exceeded 0.1% since 1998 remained under four-yearly PTF. Otherwise, the testing frequency was set on a parish by parish basis. SVS Divisional Veterinary Managers (DVMs) were able to increase PTFs over and above the baseline testing frequency prescribed by the Directive.

Figure B2.7: Parish testing frequencies for Great Britain at the end of October 2004.
(All Scottish parishes remained on 4-yearly testing)



Enhanced TB Surveillance

Regular bTB testing of cattle is intended to identify infected cattle at an early stage before they have developed clinical signs of disease or, in the case of dairy cows, started to shed *M. bovis* in the milk.

Last year we reported that Government had taken steps to deal more robustly with the problem of overdue tests i.e. with effect from 1 October 2003 movement restrictions were applied on herds overdue a test by more than three months. On 1 November 2004 Government announced the launch of a group of new measures, including a further strengthening of controls in this area – i.e. from 16 February 2005 movement restrictions would be applied immediately a test becomes overdue. This would ensure compliance with EU legislation and support the broad objective of reducing the risk of bTB spreading to new areas.

The other new measures announced on 1 November were:

- i) a national annual review of cumulative bTB incidence to determine local routine testing intervals;
- ii) a more rigorous and systematic approach to identifying and dealing with potential new bTB hotspots;
- iii) the temporal spacing of tests in two, three, and four year parishes; and
- iii) the introduction of new, more rigorous testing schedules for new and reformed herds.

A background leaflet on the new measures was sent to all registered cattle owners.

The gamma interferon (γ -IFN) blood test

The γ -IFN assay is a blood test developed in Australia in the late 1980s for the diagnosis of TB in cattle in combination with the caudal fold tuberculin test.

The γ -IFN assay is considered to be as sensitive as the skin test and, in addition, it will detect a proportion of infected cattle that fail to disclose to skin testing and may be at an earlier stage of infection. Potentially, the most beneficial application of the γ -IFN test is as a 'parallel' test alongside an intradermal tuberculin test in herd breakdowns with high incidence of confirmed reactors or with persistent infection that cannot be cleared with



Processing cattle blood samples for γ -IFN testing at Veterinary Laboratories Agency, Luddington. Blood is added to antigen in ELISA plates prior to incubation.

the skin test alone. In Great Britain, there are five situations in which the γ -IFN test can be used as an adjunct to the skin test in TB reactor herds:

- as a 'parallel' test (i.e. in tandem with the tuberculin test) for non-reactor animals at the disclosing test in new, confirmed TB breakdowns that qualify for entry into the γ -IFN Field pilot (see below);
- as a 'parallel' test for non-reactor cattle in ongoing, confirmed bTB incidents that do not qualify for the field pilot, but have a chronic bTB problem;
- as 'parallel' test, to support decision-making in relation to whole or partial herd slaughters in severe TB incidents;
- as a 'serial' (i.e. confirmatory) test, to resolve the status of reactors/Indirect Reactors in unconfirmed TB incidents where there is evidence of non-specific reactions;
- more recently, the SVS has used the γ -IFN assay as a 'serial' test for re-testing of suspected fraudulent skin test reactors.

Gamma-interferon test field pilot

The policy pilot of the γ -IFN test that commenced in November 2002, continued in 2004. The objective of the trial is to assess whether the use of the γ -IFN test, alongside the skin test, can significantly (and cost-efficiently) shorten the duration of confirmed bTB herd breakdowns. On 31 December 2004 a total of 138 herds had been recruited in the six participating SVS divisions (the three Welsh Animal Health Divisional Offices, Worcester, Stafford and, from November 2004, Gloucester AHDO). The VLA hope to be able to provide preliminary data of statistical interest on the first 150 herds late in 2005. Eligible TB breakdown herds located in the Randomised Badger Culling Trial (RBCT) areas were excluded from the γ -IFN field pilot, although *ad hoc* blood testing in RBCT areas was permitted on a case-by-case basis.

Lay testing pilot

A consultation exercise on the potential use of non-veterinary staff to carry out bTB testing was completed in Autumn 2003. Some further progress was made on putting this proposal into action during 2004, and it is intended that a pilot project, designed to assess the viability and acceptability of lay staff doing this work, is intended to start during 2005.

Forthcoming ban on milk from TB reactors

At present, once a reactor is disclosed a farm's Officially bTB-free (OTF) status will be suspended. In such cases milk from reactor animals can continue to be sold for human consumption – provided it is heat treated.

However, Regulation (EC) 853/2004, which comes into force on 1 January 2006, will prohibit the sale of milk from bTB reactor animals for human consumption. The FSA, which has the policy lead on this, has set up a working group to discuss the requirements of the Regulation, consider the implications (for all stakeholders), and inform implementation plans. Defra is represented on the working group and attended/contributed to the inaugural meeting in November.

Randomised badger culling trial

The Randomised Badger Culling Trial (RBCT) was set up to measure the impact of culling badgers on the level of bTB in cattle herds, by comparing the incidence rates of herd breakdowns in the Trial areas subject to Proactive and Reactive culling with those in the Survey-only areas. In addition to addressing the effect of culling, the Trial has been designed to provide baseline epidemiology and other scientific data.

The RBCT is overseen by the Independent Scientific Group (ISG) on Cattle TB and is a key component of the ISG's programme to obtain scientific results to inform the development and implementation of TB policy.

Original design

The RBCT compares 30 areas of 100km² grouped into 10 triplets with each triplet allocated an area for treatment with:

- **Proactive Culling** – where badgers are trapped and culled at the outset of the trial to reduce badger densities to low levels, and at intervals afterwards to maintain low densities.
- **Reactive Culling** – where badgers are trapped and culled from social groups associated with farms that have had a confirmed TB cattle herd breakdown.
- **Survey-only (control)** – where no badger culling is received, but are subject to regular field surveys to record signs of badger activity and interference with sets.

Fieldwork

RBCT fieldwork began in late 1998, and for the period of this report there has been proactive culling and surveying but no reactive culling, which was suspended in November 2003.

The ISG has a commitment to present any relevant interim findings emerging from the Trial, to Ministers. So far the results on the effect of the proactive treatment have remained inconclusive and the treatment will continue. The ISG has said that a result on the proactive treatment to guide policy development could be expected by early 2006.

Finance

RBCT expenditure for the Financial Year 2003/04 amounted to £7.2 million.

RBCT audits

The RBCT has been the subject of a number of independent audits and the findings have been published by Defra together with Government responses. The areas covered in 2004 were the humaneness of badger dispatch procedures, the statistical design of the trial itself, post mortem examination procedures and associated bacteriological culture procedures. Further audits are planned up to the completion of the RBCT.

Badger Road Traffic Accident (RTA) Survey

The purpose of the RTA survey is to estimate the prevalence of *M. bovis* infection in badgers within and outside RBCT areas, as the estimates may be key to decisions about the geographic scope of badger control strategies.



An adult badger on farm lane.

Badger carcasses from the roadside in the seven counties namely Cornwall, Devon, Gloucestershire, Herefordshire, Worcestershire, Shropshire and Dorset have continued to be collected and subjected to post mortem for TB.

General TB research

The research projects set out below represent part of the research programme, albeit the main part, which is undertaken at Defra agencies.

Progress on the TB99 survey

The TB99 epidemiological survey was introduced in 1999, following comments in the Krebs Report (1998), and was designed to collect and analyse relevant data on a range of potential risk factors. In 2004, TB99 data collection focussed on collecting i) as much outstanding control data from 2003 as possible and ii) new sentinel case and control data from three of the 10 RBCT triplets. This approach was taken in recognition of the large number of breakdowns that had occurred in the two years 2002 and 2003 and allowed for data collection to be focussed on that which was key whilst reducing the strain on SVS staff

resources. Further, the sentinel data for the three triplets were only required for the first 100 cases and their associated controls. There has also been an independent audit on the TB99 epidemiological survey.

The Case Control Study 2005 (CCS2005)

Also in 2004, a small group involving members from the ISG, SVS, VLA and core-Defra undertook to re-design the TB99 form and its implementation for 2005. As a result a new Farm Management Questionnaire (FMQ) has been designed for a new Case Control Study for 2005 only.

Furthermore, the new study will operate across a wider geographical area and include emerging and established areas of TB as well as areas with low and high TB incidence. The study will operate from the areas administered by the SVS Animal Health Divisional Offices of Carmarthen, Carlisle, Stafford and Taunton, which means that TB99-type epidemiological data are being collected from herds in England and, for the first time, Wales.

The FMQ is shorter than a TB99 form and pilot trials showed it would take 50-70 minutes to complete. Much of the reduction in length has been achieved by allowing for data to be taken from sources such as Vetnet and the Cattle Tracing System database direct, so farmers do not have to supply data Defra already holds. Decisions over which questions to ask in the FMQ, and which questions to omit (compared to those in TB99), were informed by analyses of TB99 data. In particular, the analysis of pre-FMD data will appear in the publication 'Royal Society Biology Letters' due to be published online in 2005.

VLA research

Vaccine Research

To control bTB, Defra's eventual aim is to develop a vaccine for cattle or wildlife and, in an attempt to do so, has for the last five years spent between £1-2 million on such research each year. This has taken place principally at the VLA, Weybridge and at the Institute of Animal Health (IAH) Compton, Health Protection Agency, Porton Down and AgResearch, New Zealand, with the production and evaluation of a range of candidate vaccines which include a range of live attenuated vaccines and sub-unit vaccines.

Approximately 60 vaccine candidates, developed either by the VLA and its collaborators, or by the human TB research programme, have been tested in mice or guinea pigs, and over 10 have been tested in an experimental cattle challenge model. The most promising candidates have been those based on boosting the immune response to the existing Bacille Calmette-Guerin (BCG) vaccine.

Vaccine delivery systems are also being developed along with tests to differentiate between infected and vaccinated animals. The sensitivity and specificity of the most promising of these tests are now being evaluated in the field. Collaboration with researchers from Eire on the experimental vaccination of badgers with the BCG strain of *M. bovis* has also been maintained.

The natural progression for the research and development programme on vaccines is to move from the current laboratory studies to field experiments. This is needed to measure how efficacious various vaccines (and potentially associated diagnostics) perform under natural transmission conditions. These natural transmission studies for both cattle and badgers are, in the first instance, experimental models within which to test the efficacy of a particular vaccine and should not be confused with or seen as a substitute to large scale field trials that will be required in the future for the licensing of such a vaccine.

The Vaccine Programme Advisory Group oversees the research currently being commissioned by Defra on TB vaccines and formulates a strategic direction on vaccines for the future. It feeds this information to the Interdepartmental Vaccine Steering Group which is continuing to work towards identifying the legal and administrative processes that would need to be followed to enable a vaccine to be used with the minimum of delay.

Working papers for two approaches to natural transmission studies in cattle have been produced (UK and Abroad) and a project leader has been appointed to take forward a field experiment for badgers using BCG. In parallel with a natural transmission experiment the development of an oral BCG formulation is being continued.

A Defra-organised workshop was held to discuss, with industry partners and the Devolved Administrations, the issues of how to take BCG vaccination of badgers forward. During the year Defra representatives met with the vaccine research team from University College Dublin and Eire veterinary officials to discuss the control of bovine tuberculosis, the similar challenges it presents with regards to research and how this should be carried forward to provide evidence on which to base policy.

Badger-related work

A study to assess the safety of BCG vaccine in captive badgers has been completed and is being analysed. This is a first step towards using the vaccine under field conditions.

The VLA is also contributing to the development of a BCG study in naturally infected badgers. To complement this approach to TB control, the VLA has been pressing on with developing and validating diagnostic tests for badgers, given the relatively poor sensitivity of the existing ELISA test. Tests based on both serologically detectable responses and cell-mediated responses are being validated at present, including a possible trap-side test.

The VLA has continued its collaborative work with University College Dublin. The main deliverable from this will be an experimental BCG vaccination/challenge study in badgers to provide information on optimal vaccine dose, route, immunogenicity and efficacy. The work has progressed strongly, with both centres now supporting the move towards field-based studies.

Pathogenesis Research

Government recognises the high priority of assessing the relative importance of cattle to cattle transmission of bTB, and £7 million of funding for three research projects has been provided for this research.

- The first project at IAH, Veterinary Sciences Division, DARDNI, Stormont and the VLA was completed during 2004 and considered alternative methods for the detection and enumeration of *M. bovis* in clinical samples. Results supported the use of the currently utilised culture techniques as the most reliable and sensitive detection method. It was found that nasal shedding of *M. bovis* differed between animals, varied over time and could be sporadic in nature. The final report for this project will be published in 2005.
- The second project the VLA is undertaking involves the detailed pathological examination, including consideration of the relevant bacteriology, histopathology and immunology, of 200 tuberculin skin-test positive reactors and 200 suspect false negatives that had been in contact with reactor cattle. This is a major project involving three other organisations besides VLA: ADAS, the State Veterinary Service and the IAH. The project is on course to complete all its field and laboratory work by the middle of 2005. Detailed results from this project will be available in late 2005.
- The third project, also at VLA, is planned to end in 2006, and is the study of the disease dynamics and diagnostic strategies associated with low-dose TB infection and aims to appraise the minimal infectious dose of *M. bovis* in cattle and its temporal relationship with disease progression and shedding and should be able to establish an aerosol challenge model and elucidate primary sites of infection.

Other work

Collaborative work with the Environmental Research Group, Oxford has taken forward the analysis of risk variables for bovine TB spread. Cattle movements have been analysed and shown to be one of the most important cattle-related predictors of disease spread. A paper summarising this work has been accepted for publication in Nature. This work complements that on molecular typing of *M. bovis* isolates. Two typing methods are now being used routinely at the VLA – spoligotyping and Variable Number Tandem Repeats (VNTR). Together, the two methods provide good discrimination of the isolates, providing additional data to the SVS for disease tracing and control.

Central Science Laboratory (CSL) Research

Research continued at CSL in 2004 on a wide range of issues relating to the biology and management of bTB in wildlife.

Badgers

Long-term monitoring of the naturally infected badger population at Woodchester Park continued. A comparative study of the incidence of bite wounding in three badger populations was submitted for publication in the scientific press. Collaborative work with Sheffield University culminated in a paper published in 'Molecular Ecology' describing the maternity and paternity patterns of the badgers in the Woodchester population. Among other things, this analysis revealed that there is more movement between badger social groups by males in order to breed than was previously thought. Hence, the fathers of approximately half of all cubs in the population were from a different social group to the mother.

A radio-tracking study showing differences in ranging behaviour of healthy and infected badgers was published in the 'Journal of Applied Animal Behaviour Science'. This showed that infected badgers had larger home range areas, although it was not possible to determine whether this was the result of infection or an indication of a predisposition to infection.

CSL has continued to refine the model of badgers and bTB based on data from the Woodchester Park population. The likely effects of both reactive and proactive culling as performed in the RBCT were investigated, and work on a preliminary cost-benefit analysis building on the badger model and incorporating economic studies carried out with Reading University was commenced. During the short preliminary project only two badger management strategies were investigated, although this will be expanded in future analyses.

Estimating badger numbers continues to be one of the main challenges in their management. A paper reporting a modification of 'distance sampling' for estimating badger density, using spotlights, is in press in the 'Journal of Zoology'. This approach has been taken forward, and is to be used to estimate badger abundance in a number of the RBCT triplets in 2005. This will provide Defra with valuable information when interpreting the results of the RBCT.

A new project was initiated in April 2004 to investigate the ecological and epidemiological consequences of culling badgers. The study is being carried out in a proactive culling area of the RBCT and an adjoining area outside the RBCT. A combination of methods including bait-marking and radio-tracking are being used to determine whether culling affects the movement patterns of surviving individuals and neighbouring groups, and whether this in turn affects the dynamics of disease within the population. The results of this study will contribute to the findings of the RBCT and will play an important part in the formulation of future badger/TB management policy.

Further analyses have been carried out on the badger populations in the proactive areas of the RBCT by CSL's collaborators at Sheffield University's Molecular Genetics Facility. The genetic data has indicated a trend towards higher numbers of immigrants present at the time of the follow-up culls compared to the badgers present in the original culls.

A total of 36 farms in TB hotspots throughout south-west England have been surveyed over the past two years to identify relationships between farm management practices and badger activity. Preliminary results suggest that badger visits to farmyards and buildings are a widespread and frequent occurrence in TB hotspots. During the study badgers have been regularly observed foraging on cattle feed and cereal grains, and some individual badgers appear to be habituated to exploiting these on-farm resources. Badger excreta has been found inside the farmyard (some inside cattle sheds and feed stores) of 10 of the 36 farms. Two droppings were positive for *M. bovis*. Data from this study will be used to identify potential opportunities for disease transmission, and provide information on whether changes to farm management practices might help reduce such risks.

Other wildlife

An extensive survey of wildlife other than badgers for *M. bovis* infection was completed in 2004. (The full report is available on the Defra website at http://www2.defra.gov.uk/research/project_data/More.asp?I=SE3010&M=KWS&V=se3010&SCOPE=0).

A total of 4,714 carcasses from throughout south-west England were examined and tissue samples cultured. Infection was confirmed in foxes (3.2% of 756), stoat (*Mustela erminea*) (3.9% of 78), polecat (*Mustela putorius*) (4.2% of 24), common shrew (*Sorex araneus*) (2.4% of 41), yellow-necked mouse (*Apodemus flavicollis*) (2.8% of 36), wood mouse (*Apodemus sylvaticus*) (0.6% of 333), field vole (1.5% of 67), grey squirrel (*Sciurus carolinensis*) (0.4% of 450), roe deer (1.0% of 885), red deer (1.0% of 196), fallow deer (4.4% of 504) and muntjac (*Muntiacus reevesi*) (5.2% of 58). A preliminary risk assessment suggested that deer could constitute a potential, although probably localised, source of infection for cattle.

Monitoring continued on the impact of badger removals on selected mammal and ground nesting bird populations in treatment areas of the RBCT. Fox and hedgehog numbers appeared to increase in proactive cull areas relative to control areas. Further monitoring and analyses are underway. Papers describing the ecological impacts of badger populations are currently undergoing peer-review for publication in the 'Journal of Zoology' and 'Mammal Review'.

Economic Research

In order to provide data for the cost-benefit analysis of bTB control policies that might involve badger culling, research has been completed during the year at Reading University to estimate the value that society would place on changes in the size of the badger population. Research involved a survey questionnaire and a choice experiment, that was administered by telephone interviews. Using statistical modeling techniques the research estimated that, based on people's current attitudes and preferences, society would attach a value of some £28 per year to a unit increase or decrease in the size of the badger population. An estimated value was also derived for a reduction in cattle slaughtered due to bTB of £3,750 per animal slaughtered per year. However, more work is required to develop a fuller understanding of society's attitudes and preferences concerning alternative bTB management strategies.

Wildlife survey in Cumbria

A survey of badgers killed in road traffic accidents and wild deer carcasses with suspect lesions of TB began in the Furness Peninsula of south-west Cumbria in January 2004, covering an area of 180 km².

Between January and December 2004 a total of 25 carcasses were collected, 24 badgers and one deer. Of the 22 samples suitable for testing, all tested negative for the presence of bTB.

TB in species other than cattle and badgers

Under the Tuberculosis (Deer) Order 1989 (as amended), TB in deer became notifiable on 1 June 1989. Any owner or person in charge of deer is required to notify the presence of affected or suspected animals to the DVM of the SVS. Under the same Order, DVMs have statutory powers to enforce TB testing at the owner's expense. Premises on which TB is suspected or confirmed may be put under movement restrictions pending further investigations. However, *post mortem*, culture and epidemiological investigations from suspected animals are normally undertaken by Defra at public expense. The Tuberculosis (Deer) Notice of Intended Slaughter and Compensation Order, 1989 came into force on 1 September 1989 and requires the slaughter of reactors with the payment of compensation and, in appropriate circumstances, enables Defra to slaughter deer exposed to infection.

In Great Britain there is no compulsory routine herd testing of deer for TB and skin testing is limited to farmed deer and, occasionally, park deer under TB restrictions. Therefore, surveillance for TB in deer relies almost exclusively on *post mortem* inspections of farmed, park and wild deer culled for venison production and *ad hoc* surveys of wild deer.

Lesions typical of TB have been observed occasionally in deer in Great Britain for many years. *M. bovis* infection has been confirmed in five of the six species of wild deer present in this country, with variable frequency depending on the species and geographical area. Every year about 20% of the national wild deer population is culled. Statutory submissions of deer carcasses with suspect TB lesions suggest that the incidence of bTB in the national wild deer herd is very low. Inspection of farmed venison provides an additional source of surveillance data to support the view that TB is not widespread in the farmed population. Although meat from wild deer destined for the domestic market will not be subject to statutory meat inspection until 1 January 2006, stalkers and deer managers may receive training in carcase inspection and have a statutory obligation to report suspicion of disease to the local DVM. Nonetheless, there may be under-reporting of disease, particularly in those areas of the country where bTB is an uncommon disease in cattle.

During 2004, *M. bovis* infection was confirmed in 44 of 88 tissue submissions suitable for culture, from a total of 98 suspect cases of TB in deer reported to Defra. All the positive submissions were from wild deer (table B2.3). All of these originated in south-west England and the Welsh Borders, except one positive red deer hind shot in December 2003 on a large estate south of Inverness, in the Highland Region of Scotland. Pathological samples were submitted to VLA in January 2004 upon discovery of pleurisy, pericarditis and peritonitis suggestive of TB on post mortem inspection of the carcase. This was the fourth isolation of *M. bovis* from wild deer ever recorded in Scotland. All four cases represent sporadic incidents not associated with concurrent disease in cattle.

Under the current animal health legislation in Great Britain, TB is not notifiable to the DVM in species other than cattle and deer. However, Defra encourages reporting of any suspected or confirmed cases of TB in other domestic animals to DVMs or VLA regional laboratories. Provided that the submitter is willing to supply information about the affected animal, the VLA will undertake, free of charge, confirmatory tests on pathological specimens from companion or farm animals where there is at least strong pathological evidence of mycobacterial disease. For bacteriological culture, tissue samples must be submitted to VLA fresh or frozen, never fixed or wax-embedded. At the next opportunity, a proposed amendment to the existing Tuberculosis Orders of 1984 will make the isolation of *M. bovis* in Great Britain notifiable in any mammal except humans.

M. bovis infection in mammals other than cattle, badgers and deer appears to be extremely rare in Great Britain. However, due to the persistence of *M. bovis* in cattle and badgers in the West of England, West Midlands and South and Mid-Wales, sporadic cases of *M. bovis* infection in companion animals and other spill-over hosts living on farms and in rural or suburban premises are not unexpected. Table B2.3 provides a summary of suspect TB cases in "spill-over" species investigated by the SVS or VLA during 2004.

The Report of the Chief Veterinary Officer – Animal Health 2004

Table B2.3: TB surveillance in animals other than cattle and badgers: number of samples investigated in 2004 and bacteriologically-positive results

Species	Number of suspect TB cases reported and investigated	From which mycobacterial culture was carried out	Of which positive for <i>M. bovis</i>	Origin of the <i>M. bovis</i> positive animals
Deer species				
Red (Farmed)	11	11	0	–
Red (Wild)	36	32	28	Somerset (26, mostly from Exmoor), Scottish Highlands (1), Cheshire (1)
Fallow deer	19	19	14	Gloucestershire (9), Herefordshire (4), Monmouthshire (1)
Roe deer	32	26 ^a	2	Gloucestershire (2)
Domestic animals				
Domestic cat	39	38 ^b	6	South Glos. (1), Cornwall (3), Somerset (1), Shropshire (1)
Dog	3	3	1	North Wiltshire
Ferret	1	1	0	–
Farmed animals (excluding deer)				
Domestic pig	9	8	1	Gloucestershire
Sheep	11	11	3	Slaughter sheep imported from Northern Ireland
Equine (pony)	2	2	0	–
Alpaca	2	–	1 ^c	Devon
Llama	1	1	0	–

Section B – Chapter B2

Table B2.3: TB surveillance in animals other than cattle and badgers: number of samples investigated in 2004 and bacteriologically-positive results (*continued*)

Species	Number of suspect TB cases reported and investigated	From which mycobacterial culture was carried out	Of which positive for <i>M. bovis</i>	Origin of the <i>M. bovis</i> positive animals
Zoo animals				
Scimitar-horned oryx	1	0	0	–
Elephant (trunk washings)	6	6	0	–
Roan antelope	2	1	0	–
Buffalo	1	0	–	–
Gazelle	1	0	–	–
Wild animals (excl. deer)				
Fox	2	1	0	–
Harbour porpoise	1	1	0	–
Otter	1	1	–	–
Domestic birds				
Chicken	2	1	0	–
Budgie	1	1	0	–
Duck	1	0	–	–
Total	185	164	56	

(a) One culture result outstanding was still outstanding when this report was compiled

(b) Two culture results outstanding

(c) Culture was not possible from this specimen, but PCR analysis identified a *Mycobacterium tuberculosis*-complex organism that could have been *M. bovis*

TB compensation consultation/new valuation procedures

Full market value is paid for cattle slaughtered under bTB control measures. Over £34 million compensation paid in 2003/04.

Interim arrangements for the valuation of animals slaughtered under TB control measures have been in place since 4 August 2004 in England and Wales. This change brought the system into alignment with existing legislative requirements.

Defra's long term objective is to rationalise compensation systems for all notifiable animal diseases. Stakeholders were consulted on proposals for stage one of this process (rationalising compensation for four cattle diseases, including bTB) at the end of 2004. Following a full analysis of stakeholder responses we are aiming to introduce a new compensation system in 2005.

Relevant website addresses

- http://www2.DEFRA.gov.uk/research/project_data/More.asp?I=SE3010&M=KWS&V=se3010&SCOPE=0.
- www.badgerecology.org
- <http://www.defra.gov.uk/animalh/tb/index.htm>
- Analysis of pre-FMD TB99 data, Royal Society Biological Letters. Published online at <http://www.journals.royalsoc.ac.uk/app/home/contribution.asp?wasp=55d94b89879f4a44b1062078e14bed98&referrer=parent&backto=issue,23,30;journal,1,7;linkingpublicationresults,1:110824,1>

Chapter B3: Rabies prevention and control

Rabies is a fatal viral disease of the nervous system which can affect all mammals including humans. The disease is usually transmitted in saliva from the bite of an infected animal. Clinical signs include paralysis and aggression leading to a painful death. Surveillance of bats for bat rabies has continued during 2004.

Although free of classical rabies for many decades, there is still concern about this disease being reintroduced into the UK by imported animals. On 10 December 2004, Defra published a draft rabies contingency plan. This sets out the structures and systems that would be used in the event of a rabies outbreak to contain and eradicate the disease. Comments on the plan were invited by 4 March 2005.

Rabies Quarantine

All rabies susceptible animals entering the UK are required to be licensed into quarantine for six months unless arriving under the Pet Travel Scheme (PETS) and complying with all the conditions of the European Regulation 998/2003 (as amended) on the non-commercial movement of pet animals and related national legislation.

Defra is responsible for authorising quarantine premises in England and Wales for dogs, cats and all other rabies susceptible mammals. The Scottish Executive Environment and Rural Affairs Department (SEERAD) licences these establishments in Scotland. These include zoos, research establishments and quarantine kennels and catteries. The current authorised premises in England, Scotland and Wales include 36 premises for dogs, cats and pet mammals and 118 zoos and research establishments.

Table B3.1: Number of dogs and cats entering quarantine 1999-2004

1999	2000	2001	2002	2003	2004
6,989	5,296	5,304	3,555	4,405	3,514

Since the introduction of PETS, the demand for quarantine has declined and the number of quarantine premises for dogs and cats has reduced from 66 in 2000 to the current 36. The number of illegally landed animals in England, Scotland and Wales has increased from 116 in 2003 to 151 in 2004 (an increase of 22%). This increase is mainly due to 97 pet animals failing their PETS check and having to enter quarantine until all conditions of PETS are met. The other 54 did not have documentation of any sort to enter GB.

Pet Travel Scheme and the EU Regulation

The Pet Travel Scheme (PETS) was launched on 28 February 2000. The scheme allowed dogs and cats which met certain conditions to enter the UK without the need for quarantine. In July 2003, EU Regulation 998/2003 which lays down the animal health requirements for the movement of dogs, cats and ferrets travelling within the EU, and into the EU from third countries, came into force. The Regulation has applied since 3 July 2004.

A derogation in the Regulation allows the UK to retain, for a period of 5 years, its requirements for animals to be blood tested and to be treated for ticks and tapeworms before entry to the UK. These requirements will then be reviewed on the basis of experience and scientific risk assessment, and this period may be extended.

Requirements

The rules for entry to the UK remain largely unchanged under the EU Regulation. Dogs and cats must be microchipped and accompanied by an EU pet passport or a third country certificate showing that the animal is vaccinated against rabies and has had a satisfactory blood test. An animal can then enter the UK six calendar months after the date the blood sample was taken. It must also be treated against ticks and tapeworms 24-48 hours before being checked in for travel to the UK.

Animals entering the UK under the Scheme must travel on an approved route. At December 2004, 53 air, sea and rail companies were authorised to bring pets into England under the Scheme on 319 separate routes.

As Wales and Northern Ireland have not made legislation implementing similar schemes, animals entering the UK must use an approved route into England or Scotland. After entry, they are free to move to any part of the UK as well as the Channel Islands, the Isle of Man and the Republic of Ireland. Dogs and cats entering the UK direct from third countries not listed in the EU Regulation must be quarantined for six months on arrival.

The EU Regulation also allows ferrets from other Member States and listed third countries to enter the UK provided they meet the relevant requirements. These are very similar, but not identical, to those applying to dogs and cats.

Section B – Chapter B3

Numbers

Over 200,000 animals (178,347 dogs, 23,286 cats and 10 ferrets) have successfully entered the UK under the Scheme since it began.

Table B3.2: Number of animals entering the UK under pets from 28 February 2000 to 31 December 2004

2000*	2001	2002	2003	2004	Total
14,584	26,720	40,741	54,905	64,693	201,643

*10 months only

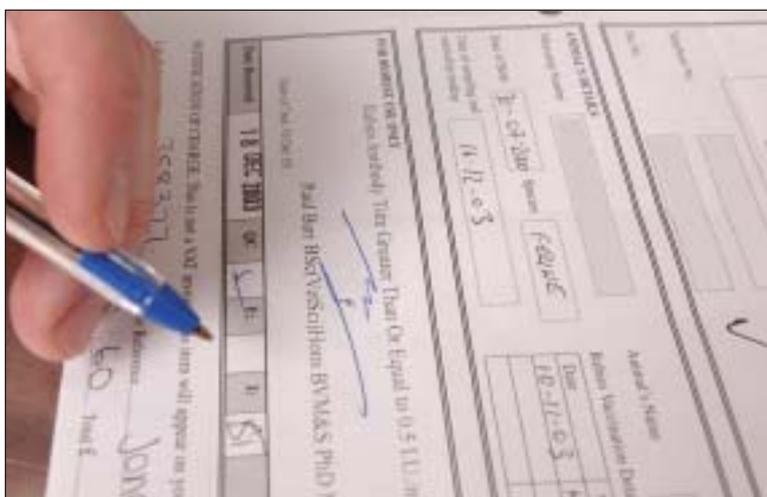
Other species

EC Regulation 998/2003 also refers to importation requirements applying to pet rodents, rabbits, invertebrates (except bees and crustaceans), ornamental tropical fish, amphibians, reptiles and birds (except poultry). EU Working Groups will finalise import requirements for these species.

Pet rabbits and rodents entering the UK are still required to undergo six months quarantine except those coming from EU and certain third countries. National rules continue to apply for the other listed species.

Countries covered by the Scheme

Since 3 July 2004, the countries covered by the Scheme have been determined by EU Regulations. They include all countries previously covered by the UK Pet Travel Scheme, as well as the accession countries which joined the EU in May 2004. A further 14 countries and territories (including the Russian Federation, Chile and the United Arab Emirates) are now covered by the Scheme.



Completed blood test certificate. Vet signing certificate to show the successful result. Preparing for travel under the Pet Travel Scheme

PETS checks

2,892 animals presented for checking under PETS failed the initial entry check at the port of embarkation (for ferry and rail companies) or the Animal Reception Centre's at the approved UK airports (for airlines). This is a 6% failure rate for the total number of animals presented. The main reason for failure was the animal not receiving tick and tapeworms treatment within 24 to 48 hours. The other main reason for failure was invalid or expired documentation (i.e. six calendar months had not passed since the date of rabies vaccination).

PETS information

More information on the EU Regulation and the rules for bringing pets to the UK is available on the Defra website at www.defra.gov.uk/animalh/quarantine/index.htm



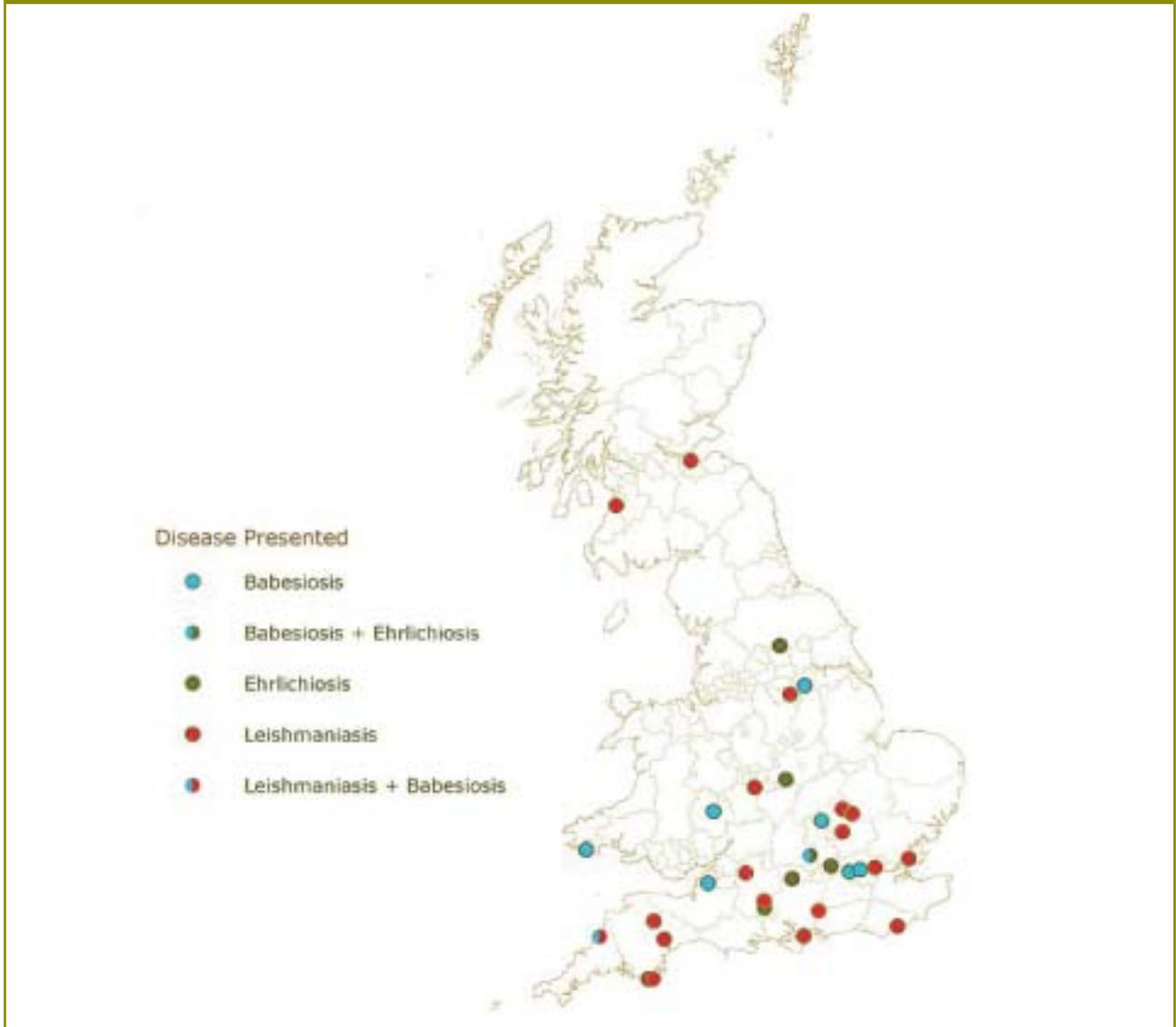
Vet implanting a microchip into a ferret, preparing for travel under the Pet Travel Scheme

DACTARI

Recent years have seen a large increase in the number of dogs and cats entering this country, largely as a consequence of PETS. Whilst abroad these animals are at risk from a number of exotic diseases, some of which are also zoonoses. Zoonoses are diseases and infection which can spread naturally between animals and people. In order to establish whether these diseases pose a threat to this country, the Dog And Cat Travel And Risk Information (DACTARI) scheme was set up in March 2003.

This voluntary reporting scheme is to record the incidence of exotic diseases which might enter the country with travelling dogs and cats. DACTARI was established with the help of the British Veterinary Association (BVA) and British Small Animal Veterinary Association (BSAVA). Information on the scheme has been widely distributed to vets, pet owners and others by means of PETS leaflets and Defraweb.

Figure B3.1: Cumulative results by geographical distribution



Findings

A total of 33 reports have been received to date. Results can be viewed at: <http://defra.gov.uk/animalh/diseases/veterinary/dactari/index.htm>

These have been published and commented on in the Veterinary Record, the Journal of Small Animal Practice, and more recently in the State Veterinary Journal.

Bat Rabies

To date European Bat Lyssavirus 2 (EBLV 2) has been confirmed in only four bats in GB despite over 4,000 bats being tested over the last 18 years for the virus. However, two of these cases were identified in 2004. The details of these are as follows:

September 2004, Surrey: EBLV 2 was confirmed in a juvenile female Daubenton's bat. The grounded bat was moved under cover by a member of the public, where it remained for several days between 17 and 21 September. It was then taken into the care of experienced bat conservation group volunteers but died on 23 September.

October 2003, Lancashire: An injured Daubenton's bat died on 2 October 2003 and was stored in a freezer until it was sent for testing in 2004. Tests undertaken in October 2004 confirmed EBLV 2.

Defra undertook a targeted surveillance programme in a small number of bats and bat roosts in 2003 to try and establish the prevalence of EBLVs in England's bat population. This mirrored the targeted surveillance carried out in Scotland. The results showed a low level of antibodies in Daubenton's bats in some areas of England and Scotland.

In order to investigate this incidence further, a three year longitudinal study commenced in 2004 in England. While there are some preliminary results, the full results of this longer term study will not become available until 2007. Another study is in progress in Scotland.

This study runs alongside Defra's ongoing scanning surveillance scheme, which has been operating in GB for the past 18 years. For this surveillance, dead bats found by the general public are tested for rabies viruses, including the EBLVs, by the Veterinary Laboratories Agency (VLA).

The VLA is the UK's national reference laboratory for rabies as well as the World Health Organisation Collaborating Centre for Rabies. For more information see <http://www.defra.gov.uk/animalh/rabies/default.htm>

Rabies investigations

In 2004, Defra undertook joint work with the Health Protection Agency and the Department of Health to define and communicate a standard operating procedure for human rabies cases.

The Defra led EBL Liaison group, which has representatives from government and interested organisations like the Bat Conservation Trust, has contributed to the policy for dealing with human contact cases. It has also helped to coordinate and advise on post exposure treatment, prevention (especially for at-risk groups such as bat workers) and emergency response.

Chapter B4: Consumer protection

An important part of Defra's input into consumer protection deals with zoonoses. People may become infected by a variety of routes including contaminated food and water, direct contact with the animal or its contaminated environment and through insect vectors. Successful management of the risks to public and animal health posed by zoonoses requires close collaboration between all those involved in managing animal health, producing food or safeguarding public health and the environment. Defra has continued to participate fully in these collaborative efforts during 2004. Defra is also involved with other authorities in protecting the food chain from chemical contaminants on farms, and in ensuring that residues from the necessary use of veterinary medicinal products to protect animal health and welfare do not enter the food chain.

UK Zoonoses Group

The UK Zoonoses Group (UKZG) met twice during 2004, in April and November. The UKZG fulfils an important function by bringing together all those with an interest and role in the assessment and management of the risks from zoonoses and zoonotic agents. It received a report from the Health Protection Agency on its review of arrangements for dealing with zoonoses.

The UKZG emphasised the importance of maintaining and building on existing links between the Health Protection Agency and Defra. Collaborations were evident in joint publications, meetings, international and European collaboration as well as the co-funding of some Health Protection Agency and Veterinary Laboratory Agency posts.

The UKZG was updated on the development of Defra's contingency plan for Avian Influenza and on the development of a contingency plan to deal with West Nile Virus. The UKZG received information on outbreaks of salmonellosis in humans caused by strains of *Salmonella* Enteritidis which were not commonly reported in GB livestock production.

These outbreaks had been noted since 2002 and an outbreak control team led by the Health Protection Agency was set up to address the problem. The Group was informed of a review by an expert group of a small number of cases spread over the last decade of poliоencephalitis and poliоencephalomyelitis in cattle and sheep for which a cause had not been identified. The expert group concluded that these cases represented a variety of clinical and pathological syndromes and were unlikely to pose a significant risk to human health. Defra will continue to monitor the occurrences. Details of the meetings and other issues discussed are available at www.defra.gov.uk/animalh/diseases/zoonoses/ukzg/minutes.htm

Zoonoses

No new zoonotic agents were identified in 2004. During the year the procedures for dealing with suspected new agents were further developed and strengthened with the formation of the Human Animal Infections and Risks Surveillance Group. This group meets regularly to consider laboratory and other information on any new conditions seen in animals and humans. The group is led by the Health Protection Agency and consists of representatives from the Department of Health, Defra and its Agencies, and the Food Standards Agency. The group which communicates with the UKZG may recommend or arrange for further information to be collected to enable assessment of risk.

The Zoonoses Report UK 2002 and the Zoonoses Report UK 2003 were both published during the year. These reports give an overview of the zoonotic situation in the United Kingdom and are available at www.defra.gov.uk/animalh/diseases/zoonoses/reports.htm. Work continued in relation to the new legislation on zoonoses following the publication at the end of 2003 in the Official Journal of the European Union of Directive 2003/99/EC on the monitoring of zoonoses and zoonotic agents, and of Regulation (EC) No 2160/2003 on the control of salmonella and other specified foodborne zoonotic agents. The Directive 2003/99 will enhance the monitoring of zoonoses and zoonotic agents in animals, feed, and food throughout the European Community.



Cover of Zoonoses Report UK 2003

Defra participated in a number of meetings with the European Food Safety Authority and the Commission Services to take this forward. Details of EFSA meetings are published on the EFSA website at <http://www.efsa.eu.int/>

To fulfil a requirement of the Regulation No 2160/2003, information was collected on the monitoring of breeding flocks of domestic fowl in the UK and submitted to the Commission for the purposes of defining a target for the reduction of certain *Salmonella* serotypes of public health significance in this sector on a European Community wide basis.

During the year, Decision 2004/665 concerning a baseline study on the prevalence of *Salmonella* in laying flocks of domestic fowl was published. Meetings were held to help set up the survey with representatives of the poultry industry. The survey, which covers a statistical sample of 436 flocks in the UK started in October 2004 and will finish in September 2005.

Additional epidemiological information is collected on a voluntary basis on the farms sampled. These data will help to inform the required future national control programme designed to achieve the target set for a reduction of salmonella of public health significance in this poultry sector.

The 12 month survey of zoonotic agents which started in 2003 of cattle, sheep and pigs arriving at GB slaughterhouses was completed at the beginning of 2004. The survey provided an assessment of the prevalence of *Salmonella*, *Campylobacter*, verocytotoxigenic *E. coli* (VTEC) and *Yersinia*. The antimicrobial sensitivity of the organisms (and of *Escherichia coli* and *Enterococci*) was also determined. Following analysis of the results in the first part of the year, a conference was held in November 2004 to publicise the findings on prevalence. The results in this survey were compared with a similar one carried out in 1999/2000. Only minor changes were seen in the prevalence rates found in the two surveys. Presentations given at the conference are available at <http://www.defra.gov.uk/animalh/diseases/zoonoses/abattoir-survey.htm>

Defra is taking an active role in monitoring the levels of resistance found in bacteria in livestock as part of its surveillance activities. On-going surveillance of resistance patterns has been identified as an important element within the Defra action plan to combat antimicrobial resistance. The results of surveys, such as the one previously referred to, will form the baseline on which future repeated surveys will build to provide trend data.

Salmonella in poultry and control programmes

The statutory monitoring of breeding flocks of domestic fowl for *S. Enteritidis* and *S. Typhimurium* continued during 2004, in line with the requirements of Directive 92/117 EC.

No *S. Enteritidis* or *S. Typhimurium* infection was confirmed in any breeding flock of domestic fowl. *S. Typhimurium* was suspected in one breeding parent meat production flock, but was not confirmed following official investigation.

The continued low levels of these two *Salmonella* serotypes in the breeding sector are illustrated in figure B4.1 and figure B4.2.

Section B – Chapter B4

Figure B4.1: Reported incidents of suspected *S. Enteritidis* and *S. Typhimurium* infection in Broiler Breeders 1989-2004

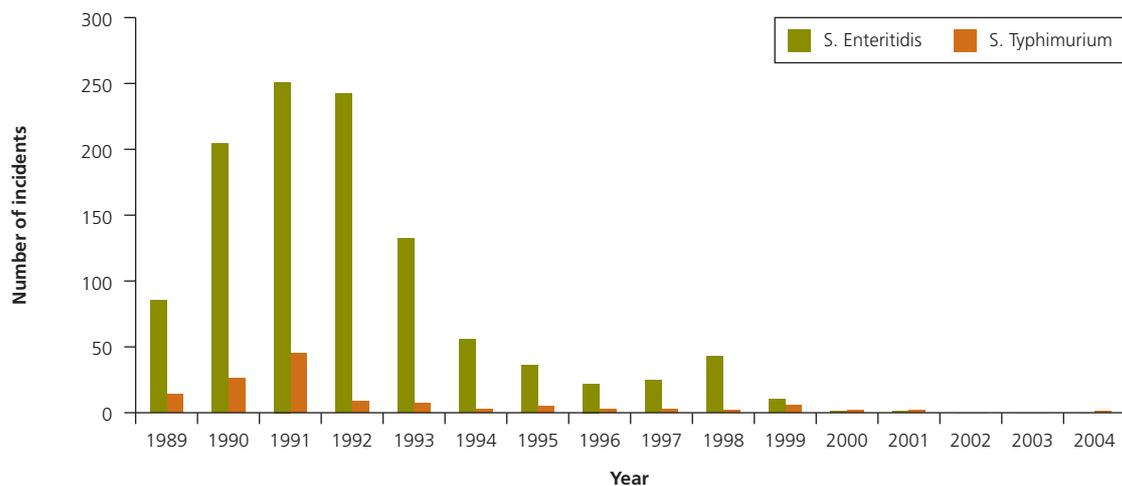
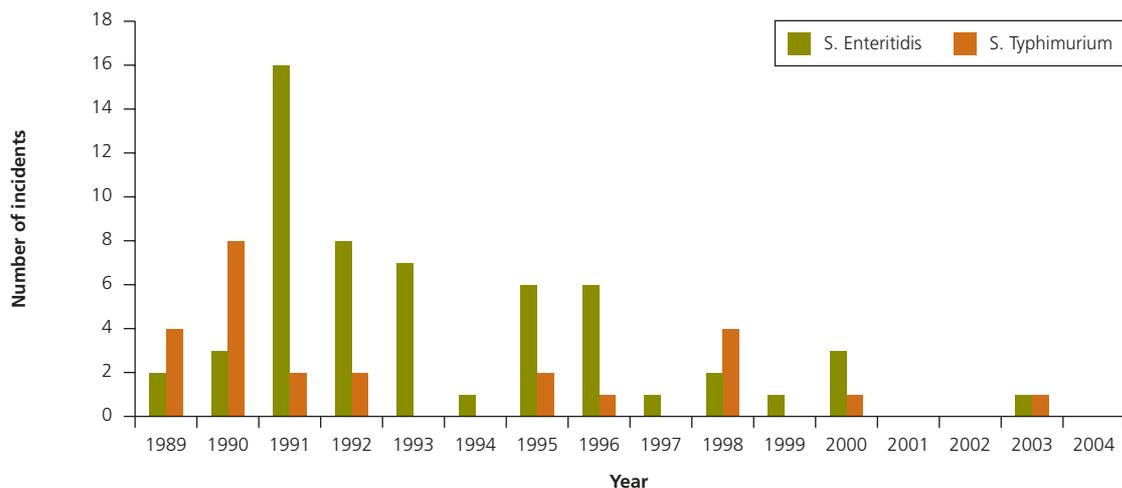


Figure B4.2: Reported incidents of suspected *S. Enteritidis* and *S. Typhimurium* in layer breeders 1989-2004



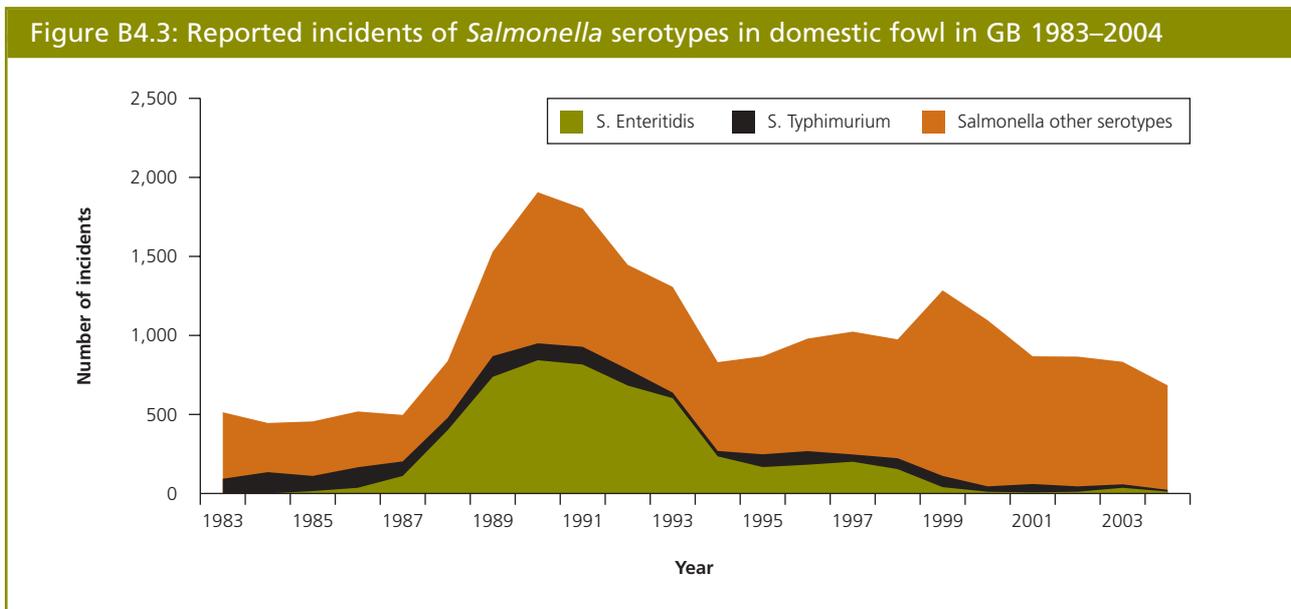
All laboratories finding salmonella in samples from livestock, their environment and in animal feed, are required to report the results to a government official. These results for Great Britain are collated and analysed each year and are published in 'Salmonella in livestock production in Great Britain' and at <http://www.defra.gov.uk/corporate/vla/science/science-salm-intro.htm>. The report for 2004 will be available in the latter half of 2005. These reports provide a good picture of serotypes which are commonly found in samples from livestock taken for a variety of reasons.

As a result of industry monitoring for *Salmonella* in chickens reared for meat, usually at three to four weeks of age, one *S. Enteritidis* incident was recorded (four incidents in 2003), and two *S. Typhimurium* incidents (one in 2003). The most common *Salmonella* serotype reported in chickens reared for meat, or their environment, was *S. Livingstone*, accounting for over 20% of reports.

In commercial layer flocks producing eggs for human consumption, 10 incidents of *S. Enteritidis* were recorded, and six of *S. Typhimurium*. Where possible follow up visits are made to the farms and advice given on the control of salmonella.

The reports of *Salmonella* serotypes which are not *S. Enteritidis* or *S. Typhimurium* have remained similar in 2004 to previous years as illustrated in figure B4.3. The overall number of reports decreased in 2004 to 675 (854 in 2003).

Figure B4.3: Reported incidents of *Salmonella* serotypes in domestic fowl in GB 1983–2004



Salmonella in cattle

As reported in previous years the most commonly reported *Salmonella* serotype in cattle was *S. Dublin* accounting for 72% of the 923 reports. *S. Typhimurium* was the second most commonly reported with 119 incidents (a decrease in the 159 reported in 2003).

Salmonella in pigs

S. Typhimurium continued to be the most common serotype reported in pigs with 99 incidents (65% of reports). This was reflected in the survey of pigs arriving at slaughter mentioned above. Altogether there were 152 incidents reported in pigs (a drop in the 193 reported in 2003), as in 2003, *S. Derby* was the second most commonly reported. The most

commonly reported phage type of *S. Typhimurium* in 2004 was U288 continuing the situation seen since 2002. Defra continued to support the Zoonoses Action Plan of the Meat and Livestock Commission with research and advice to farmers with a problem herd.

Salmonella in sheep

For a number of years *S. Enterica* subspecies *diarizonae* (serovar 61:k:1,5,7) has been the most common *Salmonella* isolated from sheep, usually associated with abortions. In 2004 it accounted for 134 of the 249 reports in sheep.

Risk management of *Salmonella* in livestock

In addition to the measures taken for the control of *Salmonella* in the poultry breeding sector, on-farm visits are undertaken in collaboration with the owner's veterinary surgeon. Advice is given to the producers on measures which could be taken to reduce *Salmonella*. Over 160 farms were visited during the year, an increase on the 144 visits carried out in 2003.

Salmonella in feedingstuffs

Over the course of 2004 the Advisory Committee on Animal Feedingstuffs (ACAF) reviewed aspects of feed enforcement activities in the UK, with a view to rationalising and improving their effectiveness and promoting best practice by enforcement authorities. Stakeholders, including the NFU and local authorities, were consulted prior to the review. It is hoped that the review's recommendations will help enforcers and producers to ensure that zoonotic pathogens (such as salmonella) are prevented from entering the food chain via, for example, feed production and the feeding of livestock.

The ACAF is a UK-wide advisory Non-Departmental Public Body (NDPB) made up of experts appointed by UK Ministers and FSA. The Committee's primary purpose is to advise the FSA and Ministers in the Scottish Executive, the National Assembly for Wales, the Agriculture and Rural Development Department in Northern Ireland and Defra on the safety and use of animal feed in relation to human health and with reference to new technical developments. In carrying out its functions, the Committee liaises with other relevant advisory committees as appropriate. It also covers animal health aspects and a wide range of contemporary issues including advice on new EU proposals, animal feed ingredients including genetically modified organisms (GMOs), and labelling.

The Report of the Chief Veterinary Officer – Animal Health 2004

A laboratory isolating *Salmonella* in a feedingstuff or feed material is required to report the isolation to an official of Defra. In addition those laboratories which are authorised to carry out official testing for salmonella are required to submit to Defra each month the number of samples of product tested and the findings. The samples are often taken as part of the HACCP control procedures during manufacture. They provide an indication of the level of salmonella in feed materials before manufacture. Results are also collated on finished feeds which may be sampled before dispatch or later on the farm as part of a disease investigation or general monitoring. An outline of the results is given in Tables B4.1 and B4.2. More detail is published annually in 'Salmonella in livestock production in Great Britain' (see above).

Table B4.1: The levels of *S. Enteritidis* (S.E) and *S. Typhimurium* (S.T) in finished feedingstuffs and materials in Great Britain 2000-2004

Type of material	2000		2001		2002		2003		2004	
	SE	ST	SE	ST	SE	ST	SE	ST	SE	ST
Finished feeds	0	9	2	4	0	1	1	2	1	4
Animal Protein	0	2	1	0	0	0	0	0	0	1
Vegetable Material	1	3	0	3	0	5	0	4	0	5
Minerals	0	0	0	0	0	0	0	0	0	0
Miscellaneous	1	3	0	2	0	0	2	8	0	15
TOTALS	2	17	3	9	0	6	3	14	1	25

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Table B4.2: The levels of *Salmonella* in feedingstuffs and materials in Great Britain during 2004 from data supplied by authorised laboratories

Product	Number of Tests			Number of positive tests			% of positive tests		
	2002	2003	2004	2002	2003	2004	2002	2003	2004
Processed animal protein at GB protein premises	3,318	3,752	3,576	41	21	32	1.2	0.6	0.9
GB and imported processed animal protein arriving for feedingstuffs use	967	878	1,153	33	23	36	3.4	2.6	3.1
Linseed meal, rapeseed meal, soyabean meal and sunflower meal at a GB crushing premises and other tests on oilseed meals and products for feedingstuff use	6,035	12,475	10,364	258	376	337	4.3	3.0	3.3
Non-oilseed meal vegetable products	4,308	9,954	8,845	26	97	35	0.6	1.0	0.4
Pig and poultry meals	4,034	4,171	3,069	54	33	25	1.3	0.8	0.8
Poultry extrusions	5,183	4,346	5,299	24	21	12	0.5	0.5	0.2
Pig extrusions	2,057	1,411	1,591	12	13	9	0.6	0.9	0.6
Ruminant concentrates	2,336	1,859	1,982	23	6	5	1.0	0.3	0.3
Protein concentrates	726	724	511	12	6	6	1.6	0.8	1.2
Minerals/others	641	643	380	0	1	0	0.0	0.2	0.0

Salmonella Paratyphi B

A multiple antimicrobial resistant strain of *Salmonella* Paratyphi B variant Java was isolated from week old calves with diarrhoea on a South West calf rearing unit, associated with and contiguous to a 250 cow dairy herd. Since this was the first report of a multiple resistant *S. Java* strain from farm animals, genetically similar to strains isolated from human disease, a comprehensive investigation was undertaken on both the calf unit and the dairy farm. The investigation also included ten premises receiving weaned calves. Additionally, preventative advice was given to minimise any spread of infection within and off the two origin premises. No further clinical disease occurred on the two origin premises and no evidence of spread of infection to the recipient farms was found. Initially there was widespread environmental infection of the calf rearing unit and the dairy farm, but this rapidly declined. The origin of this infection was not determined.

Chemical Food Safety

The VLA is contracted to the FSA to provide assistance and advice in dealing with on farm chemical food safety incidents. This is to protect the food chain in England and Wales. During the year a total of 81 chemical food safety incidents were investigated. As in the previous year the majority of these were cases of lead poisoning, but again for the second year an increase was seen in the number of botulism cases in cattle. As a result, during the latter half of 2004, support was provided to an *ad hoc* group on Botulism in cattle formed by the Advisory Committee on the Microbiological Safety of Food (ACMSF).

This group was formed against a background of a marked increase in the reported incidence of suspected cattle botulism since 2003. In the 5 years before 2003 there was an average of 4 botulism incidents each year. In 2003 the number of incidents rose to 22 cattle premises and in 2004 19 premises were involved.

The *ad hoc* ACMSF group is examining foodchain issues linked to botulism or suspected botulism in cattle, and considering the potential human health risks associated with botulism or suspected botulism in cattle, particularly in relation to the spreading of poultry litter on agricultural land. A similar increase in the number of cases of botulism in cattle has been noted in Northern Ireland and in the Republic of Ireland. One of the 19 cases in 2004 related to sheep was only the third incident seen in this species in the last 15 years. Any risk to the food chain is managed by measures taken by the Food Standards Agency which include withholding animals and products from the market for a period of time.

Assistance to Health Authorities

Defra provided assistance when requested to Health Authorities investigating outbreaks of zoonotic pathogens in humans. This assistance is normally requested when a food source involved in an outbreak has been linked to a particular farm, or there is illness in people who have visited the same farm and there is suspicion that the infection was acquired there. The investigation and sampling of animals on the farm may be of value to the Public Health Authorities in confirming that the source of the outbreak has been identified. A total of eight outbreaks of human VTEC O157 infection linked to animal contact were investigated during 2004 at the request of the public health authorities. Assistance was also given on two occasions following outbreaks of Cryptosporidiosis in people who had visited open farms.

Residue surveillance

The VMD operated two surveillance programmes for residues of veterinary medicines in animals and animal products. The statutory programme, which implements European legislation, covers home production from primary points, including abattoirs. The non-statutory programme looks for residues primarily in imported meat, fish and honey. Summary results of the VMD's surveillance in 2004 were published quarterly in the VMD Medicines Act Veterinary Information Service (MAVIS) newsletter, which is available at www.vmd.gov.uk.

Officers from the State Veterinary Service collected samples on farms for the 2004 statutory programme, undertook follow-up investigations at farms where positive residues had occurred and checked on farm medicine records. Advice was provided to farmers on how further residues could be avoided.

The Independent Veterinary Residues Committee (VRC), which advises the VMD on the operation of its surveillance programmes, publishes an annual report which includes a summary of the annual results of the VMD's two surveillance schemes. Annual reports can be viewed at VRC's website at www.vet-residues-committee.gov.uk.

Horse passports and the establishment of the national equine database

Enforcement of horse passports in England and Wales will begin on 28 February 2005. During 2004 we held extensive consultations with various parts of the equine industry over the requirements for horse passports, and have made some changes in the details to try and overcome concerns expressed to us. Over 500,000 passports have now been issued by Passport Issuing Organisations. Full implementation of the EU passport requirement means we will retain the current authorisations for all but one of the horse medicines which are used in the GB, to the benefit of equine welfare.

The National Equine Database has been established and it is estimated that it will become fully operational in Spring 2005. It is a joint government and industry database that will be used by the government to help implement the horse passports requirements, for disease control and to help establish a strategy for the horse and its role in the rural economy and community. It will be used by the industry as the basis for a system to improve the breeding and performance of horses, particularly sport horses.



National Equine Database consultation workshops.

SECTION C: Exotic, endemic, and new and emerging disease surveillance

Chapter C1: Contingency planning

Three years after the foot and mouth disease outbreak in 2001, contingency planning for the control of an outbreak of exotic animal disease remains important. Its purpose is to ensure emergency readiness and provide the ability to build up resources quickly and effectively at the onset of an outbreak. Such an outbreak is one of the top threats to the department and much progress has been made both in developing readiness for a range of diseases and in checking and testing policies, plans and instructions.

Contingency Plans

In March 2004 the Contingency Plan for foot and mouth disease (FMD) and the Contingency Plan for Avian Influenza and Newcastle Disease were laid before Parliament as required by the Animal Health Act 1981 (as amended) and placed on the Defra website at <http://defra.gov.uk/corporate/consult/animaldisease-plan/consultation.pdf>. This followed 12 weeks of consultation.

The framework, organisation and structures that have been developed for FMD would also be introduced in the event of an outbreak of Avian Flu or Newcastle Disease and the plans have many common elements. The same, or similar structures would be introduced in the event of most exotic animal diseases such as classical swine fever were there to be an outbreak in this country and would provide the basis for others including rabies. Each also summarises the policies that would be implemented to control the disease.

The plans set out the policies to be implemented in an outbreak and capture the arrangements for ramping up resources to deal with an emergency. This includes engaging veterinary, technical and administrative staff. Also, the International Animal Health Emergency Reserve arrangement with the USA, Canada, Australia, New Zealand and Ireland has now been signed for implementation in an emergency; bringing in named individual staff for particular roles such as the Regional Operations Directors and Finance Managers; increasing accommodation; and the development of contingency contracts for slaughterers, valuers, hauliers and transport.

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One important aspect of readiness for foot and mouth disease is the capability to deliver emergency vaccination. In May, a three year contract was signed with Genus to provide the trained vaccination teams and all the support arrangements for an outbreak, and in September legal provision was made for lay handling and vaccination in an outbreak so allowing the best use to be made of scarce veterinary resources. Vaccine supplies were reviewed and arrangements confirmed for the availability of vaccines for the virus strains most likely to cause an outbreak here.

In December, consultation began on the Rabies Contingency Plan, supported by a Disease Control Strategy and Disease Profile which provide information about the disease and provide scenarios to explain the rationale for the control strategies and how the controls would be implemented. This can be viewed at <http://defra.gov.uk/corporate/consult/rabies-plan/contingencyplan.pdf>

Instructions

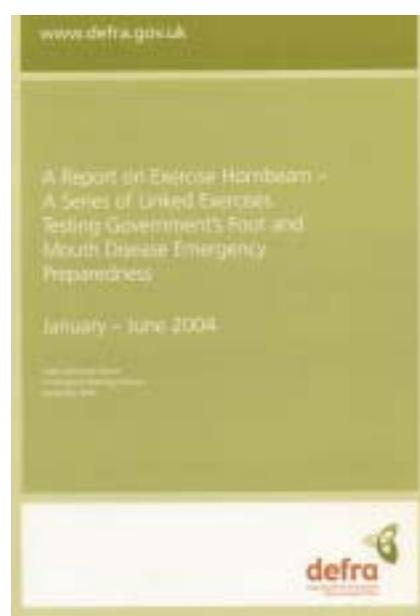
The contingency plans provide the overall framework for the strategic, tactical and operational levels for managing a disease outbreak. The detailed operational guidance and instructions for FMD have been reviewed and updated to take on board lessons learned in 2001. These were placed on the Defra website at <http://defra.gov.uk/animalh/viper/index.htm> in April and are now available for operational partners and others to read. This means that the instructions contribute to developing a better understanding by all who would be involved or affected in an outbreak. Instructions for dealing with other exotic diseases are being reviewed and updated.

Exercise Hornbeam

In 2004 Defra held *Exercise Hornbeam* with the aim of reviewing and updating the foot and mouth disease contingency plans and establishing readiness for an outbreak. The Exercise was made up of a series of 10 table top exercises that culminated in a two day real-time exercise in June involving five SVS Animal Health Divisional Offices across England, Scotland and Wales, Defra headquarters and other government departments, including the Cabinet Office, as well as operational partners – altogether over 500 people.

The table top exercises related to the developing phases of disease from initial report through to national spread and covered the various elements of the control effort.

Exercise Hornbeam demonstrated how much progress had been made since 2001 and generally that the plans were now robust. The Report is available at <http://defra.gov.uk/footandmouth/contingency/exercisehornbeam.pdf>



Report on Exercise Hornbeam.

Like all exercises, it also identified areas where more work is necessary. Overall it confirmed the existing policies as set out in the Contingency Plan and identified the importance of having policies developed in advance for the whole life of an epidemic, confirmed the value of the arrangements for scientific input to decisions, reinforced the importance of clear structures to enable effective decision making, confirmed the need for speed in responding to the first case and deploying resources, and confirmed the importance of openness, engagement with operational partners and good communication both internally and externally with stakeholders and the public.

Lessons learned from Exercise Hornbeam in relation to policy development and its use of scientific advice are being taken forward by the Animal Disease Policy Group and in consultation with the independent Science Advisory Council.

Major exercises in animal health divisional offices in 2004 focused on preparedness for rabies, foot and mouth disease and avian influenza and involved operational partners and stakeholders. Exercises both in local offices and at headquarters continued to provide training and develop understanding across a wide range of the skills and expertise needed in an outbreak.

Exercises will continue to play an important part in testing readiness and ensuring staff are aware of and able to deliver their responsibilities. Plans are being made for a major avian influenza exercise in 2006.

Chapter C2: Exotic diseases

The Chief Veterinary Officer (UK) has a responsibility to detect new and emerging diseases, and diseases that are usually exotic to Great Britain early so that they can be controlled effectively, minimising any impact on public health, animal health and welfare, and on rural communities and trade. This is achieved through working partnerships between Defra, the SVS, VLA and IAH. Routine disease surveillance also provides evidence to support GB's disease free status.

Ongoing scientific research and development, funded by defra, provides evidence to inform disease control policy decisions. Research and development also provides improved diagnostics, novel control methods, and an understanding of current and emerging threats.

Diseases of poultry

Great Britain remained free of Avian influenza and Newcastle Disease (ND) during 2004. However, there were a number of outbreaks worldwide during the period, emphasising the ongoing and apparently increasing threat to both veterinary and human health. The epidemic in Asia due to H5N1 affected a total of nine countries. This represents the most serious highly pathogenic avian influenza (HPAI) panzootic ever experienced in terms of the number of infected flocks, the geographical extent of the disease and the number of different host species affected.

Avian influenza

Investigations

In GB there were nine investigations of suspected avian influenza or ND cases that resulted in samples being submitted to the national reference laboratory at VLA for examination, all with negative results. A further 29 investigations were conducted in pigeons or doves for pigeon paramyxovirus type 1. Eighteen were confirmed positive through the isolation of virus.

The 2004 Avian Influenza Survey

In 2004, a UK national surveillance programme for avian influenza of H5 and H7 subtypes was completed. The survey was based entirely on serological testing of poultry populations. It was part of a wider ongoing EU initiative aimed at determining the prevalence of low pathogenic viruses that have the potential to mutate to virulence, and provide insights to the likely economic impact that would be involved for modified disease control measures.

All categories of poultry were examined according to a statistical design to ensure the identification of at least one infected flock if the prevalence of infected farms was at least 5%, with a 95% confidence interval (except turkeys – 99%) for each category of poultry. In addition, the number of birds sampled from each farm was defined to ensure 95% probability of identifying at least one positive bird if the prevalence of seropositive birds was larger than or equal to 30%. For the purposes of the survey the UK was treated as one geographical region but samples were collected on a pro-rata basis from England, Wales, Scotland and Northern Ireland. The following categories of poultry were sampled: domestic fowl, turkeys, ducks, geese, quail and ratites – all with negative results. In the light of these surveys it is envisaged that annual monitoring programmes will continue in all EU Member states.

The survey was voluntary and sampling took place at farms and slaughterhouses. In total 213 holdings were tested, and all the results were negative. The UK will undertake a further survey in 2005.

Reference Laboratory – VLA Weybridge

The Office Internationale Epizooties (OIE)/Food and Agriculture Organisation (FAO)/EU reference laboratory for avian influenza at the VLA has been heavily involved in a number of global investigations associated with outbreaks of HPAI. Support has been provided to many countries in Asia affected by H5N1 either through the provision of disease consultancy, the supply of diagnostic reagents or by the characterisation of the viruses involved. Specifically, several genes of H5N1 virus isolated from poultry in Thailand have been sequenced and shown to be distinct from other H5 viruses circulating in the wider region during the last few years prior to the epidemic. A specific mutation in one gene appears to be linked with increased potential for transmission to other hosts.

Data has been shared at an international level with other laboratories including those of the World Health Organisation.

Virus strains of H5 and H7 subtypes that have the potential to be used as part of any vaccination programme for 'differentiating infected from vaccinated animals' have been identified. Information has been passed to the commercial sector.

Research and development

A joint Biotechnology and Biological Sciences Research Council (BBSRC) and Defra project has been set up between the VLA and institutes funded by BBSRC to study the infection dynamics and evolution of Avian influenza viruses in chickens. The focus of the program will be to conduct infections of chickens experimentally with both HPAI and low pathogenicity Avian influenza (LPAI) viruses from the same epidemic. This is to investigate the trajectory of virus shedding, effect of virus dose, transmission dynamics and influence of prior immunity.

Studies conducted so far have investigated the effect of virus dose on infectivity, the minimum dose required to produce infection in all susceptible birds and the trajectory of virus shedding for both LPAI and HPAI. This work has generated opportunities for semi-automation of PCR testing to increase sample handling capabilities and has benefits for application to disease emergency response in the future.

Studies focussed on gaining insights into the processes involved and how the virus changes at the genetic level following interspecies transmission. This involved analysing changes in Avian influenza virus of H1 subtype on infection and adaptation to pigs from poultry.

Further insights into HPAI viruses from ratite species were obtained following characterisation of H5N2 derived from ostriches in South Africa. Initial investigations demonstrated that this virus, although classified as highly pathogenic, had moderate virulence for chickens on initial passage. Following further passage in chickens the highly virulent phenotype was revealed. This provides further evidence to suggest that virus adaptation in other host species, such as ostriches, may affect the virulence of the virus towards poultry.

In-vivo pathogenesis and transmission experiments in pigeons infected with H7N7 AI virus, derived from the outbreak in the Netherlands in 2003, revealed that the birds were largely refractory to infection and the virus failed to transmit to in-contact susceptible birds. These results indicate that for this strain of AI, pigeons are only likely to pose issues for disease control through mechanical transmission of infected faeces.

Other research has informed recommendations as to the most appropriate reagents for diagnosis and surveillance in current circumstances.

Newcastle disease and pigeon paramyxovirus type 1

Investigations

There have been no cases of Newcastle disease in this country since 1997. Seven suspect cases were investigated in 2004 and found to be negative.

Paramyxovirus in pigeons

33 cases in 21 counties were notified during 2004. This disease has been notifiable since 1983 with outbreaks occurring every year.

Table C2.1: Outbreak data of Paramyxovirus in pigeons

Year	Counties involved	Total number of Outbreaks
1983	29	192
1984	50	858
1985	40	377
1986	43	284
1987	51	318
1988	42	215
1989	43	181
1990	60	324
1991	36	96
1992	42	157
1993	40	103
1994	22	36
1995	14	26
1996	17	22
1997	12	17
1998	10	18
1999	22	36
2000	12	27
2001	16	20
2002	17	24
2003	21	39
2004	21	33*

* figures may be subject to revision due to late submissions of data.

Research and development

Two viruses associated with independent outbreaks of Newcastle disease in poultry in Sweden and Finland in the summer of 2004, were shown to be very closely related to each other at the genetic level and were very similar to the viruses responsible for the last ND outbreak in the UK in 1997.

Investigations of the molecular basis of pigeon paramyxovirus type 1 pathogenicity have been facilitated towards establishing a DNA copy of the viral genome. In parallel, a robust *in-vitro* system for the generation of viruses of high pathogenicity from low pathogenicity strains has been developed. This can be used to provide viruses that will offer insights into all genetic correlates of virulence.

In a limited study at the VLA, it was not possible to generate a virulent virus from an avirulent vaccine strain or from a wild waterfowl isolate. Results of studies further emphasize that the emergence of virulent ND is a complex process that probably occurs infrequently in relation to the number of transmissions of avirulent viruses to poultry hosts.

Progress has been made on the development and adaptation of real time RT-PCR tests to detect viral RNA and confirm virus pathogenicity. Initial results are promising and will be extended and validated using a panel of ND viruses.

Diseases of Ruminants and Pigs

Foot and Mouth Disease

Investigations

There were eight veterinary investigations into suspect foot and mouth disease in 2004, all were negative.

Epidemiology

The FAO World Reference Laboratory at IAH Pirbright is involved in global FMD surveillance by:

- compiling epidemiological information and changes in FMD status of countries around the world;
- serotyping internationally received diagnostic samples;
- tracing the origins of outbreaks through phylogenetic analysis; and
- studying antigenic relationships between isolates and vaccine strains.

This information is used by national and international authorities to establish risk assessments for trade in animals or their products. It is also used for the selection of vaccine strains to use and store in vaccine banks.

In 2004, no FMD outbreaks were officially reported in FMD-free countries that did not practice vaccination. However, outbreaks occurred in a surveillance zone around an FMD-free zone (South Africa) and in regions where FMD has not recently circulated (Russia, Mongolia, Peru, Brazil and Colombia). Many of these outbreaks have been brought under control. Other outbreaks involved countries in the Middle East, Asia, Africa and South America, all in areas where FMD was already endemic.

FMD can still be considered as present, endemically or sporadically in two thirds of the planet. 2004 was marked by the occurrence of serotype C in Brazil and in Kenya, after nearly ten years absence from international reports. The FAO World Reference Laboratory for FMD received clinical samples from 23 countries in 2004. Among different findings, genetic analysis of these isolates revealed a change in the classical pattern of prevailing FMDV serotypes and sublineages in South East Asia and a great diversity of African FMD viruses, including the existence of a new sublineage within serotype O. However, antigenic characterisation data suggests that current vaccine strains of FMDV stored in the UK vaccine bank remain appropriate.

Research and development at the Institute for Animal health (Pirbright)

Pathogenesis and Persistence

In some ruminants, FMDV can cause persistent infections resulting in carrier animals that may potentially be a source of new outbreaks. Strategies for control must recognise this. Discovering why the virus is not completely eliminated from all of the tissues at the same time, the nature of the virus that is able to remain, and the predisposition of the cells in which the virus remains may lead to effective strategies for the prevention of the carrier state.

A quantitative RT-PCR has been used to investigate kinetics of FMDV replication, excretion, transmission and clearance during acute and persistent infection in cattle, sheep and pigs.

Molecular structure

FMDV can use a number of arginine-glycine-aspartic acid (RGD)-dependent integrins as receptors to initiate infection of cultured cells. Integrins are believed to be the receptors used by this virus in the animal host. To study which of the integrins is/are important *in vivo*, improved immunohistochemical methods and quantitative "real-time" PCR have been used to investigate integrin expression in bovine and porcine epithelia.

Improved diagnosis

The routinely applied ELISA for the rapid laboratory detection and serotyping of FMD virus uses seven serotype-specific rabbit polyclonal antibodies as capture ligands and seven serotype-specific guinea pig polyclonal antibodies as detecting reagents.

Progress has been made on simplifying diagnostic procedures by investigating the use of integrin $\alpha v \beta 6$ protein as a capture ligand in ELISA tests. Further studies are planned to incorporate the integrin molecule into serotyping assays as well as other virus detection procedures (for example, pen side chromatographic strip tests, biosensors, Immunocapture RT-PCR, antigenic characterization procedures and monoclonal antibody profiling of emerging field virus strains) and antibody detection assays.

Avian influenza FMDV can be excreted in milk and this may precede first clinical signs. Therefore, analysis of bulk milk samples could provide a means of rapidly identifying infected herds. Since virus isolation is too slow and cumbersome for this type of screening, the automated real-time reverse transcription polymerase chain reaction (RT-PCR) has been examined as a diagnostic tool for detection of FMDV in milk using samples from infected dairy cattle. RT-PCR was found to be as or more sensitive than virus isolation and would be able to detect small numbers of infected cows by analysis of a bulk milk sample. Furthermore, unlike virus isolation, RT-PCR could detect virus in samples treated with a commonly used milk preservative, and following heat treatment that simulated pasteurisation.

Establishing a system for demonstrating freedom from infection after emergency vaccination of animals in the face of an outbreak is a high priority in support of the so-called “vaccinate-to-live” control option. To this end, a wide range of samples have been collected, tested and stored from cattle that have been vaccinated and then exposed to FMD virus as part of studies of the effectiveness of existing vaccines. Samples taken from cattle in Zimbabwe have been used to provide data on the sensitivity and specificity of various tests that can be used to detect infection in vaccinated animals.

In addition, new types of assay have been under development and may be suitable for use as confirmatory methods following screening with NSP tests.

Vaccine development and assessment

In collaboration with several other European laboratories, IAH Pirbright has been conducting trials on DNA vaccines for FMD virus in pigs and sheep. It has found that a combination of DNA and conventional vaccination increases the cellular and humoral immune response compared to that induced by conventional vaccination alone. However, further evaluation is needed to assess the potential benefit that this may provide in terms of increased potency and duration of immunity.

Other work has examined the effectiveness of existing vaccines. Two strains of vaccine from the recently established UK FMD virus vaccine antigen reserve have been tested for potency in cattle according to the requirements of the European Pharmacopoeia. To model the efficacy of vaccination in the field, cattle have also been vaccinated and then exposed to infection by direct contact with previously infected cattle. The results have been compared to earlier studies which involved exposure of vaccinated cattle and sheep to infectious aerosols generated from pigs.

This has confirmed that the outcome of challenge in vaccinated cattle is highly dependent on the challenge route and severity, as well as the time between vaccination and challenge. Further testing has revealed that although clinically protected animals could still become infected, the peak shedding of virus was approximately 100 fold less than in unvaccinated cattle. Use of very high vaccine doses did not prevent sub-clinical infection following a severe challenge, some such animals did become persistently infected, albeit at a lower rate than in cattle receiving a lower vaccine dose. The data from these experiments will help to refine mathematical models used to predict the effectiveness of FMD vaccines under different circumstances.

International coordination of FMD control

The FAO World Reference Laboratory for FMD has prepared new reference sera to be used as serological standards for FMDV serotypes O, A and Asia 1. These have been evaluated by nine European laboratories and approved by the OIE. A large panel of reagents and sera were distributed to laboratories in 22 countries to help establish and validate the solid phase competition ELISA and to provide quality assurance on serological testing in different national laboratories. The Reference Laboratory has also contributed to European workshops on NSP serology, laboratory contingency planning, OIE ad hoc working groups on NSP serology and on FMD antigen and vaccine banks.

Diseases of sheep and goats

Bluetongue

There were no reports of suspected bluetongue (BT) in Great Britain during 2004. Bluetongue continues to be active in southern Europe.

Vectors

During 2004 the presence of the major Old World vector of Bluetongue virus (BTV), *Culicoides imicola*, was reported across the whole of southern Europe and populations of this species at the northern edge of its range, in north east Spain and in mainland France, continued to expand.

In the UK, for the second consecutive year, populations of the potential BTV vectors, *C. obsoletus* and *C. pulicaris* with susceptibility levels equivalent to that of the major vector, *C. imicola*, were identified at a series of locations in central England. These findings



Culicoides obsoletus, a recently identified vector of BTV from northern Europe and the UK.

strongly suggest that transmission would be possible in the UK should BTV gain access to the country. It is therefore imperative that the regulations ensuring viraemic animals are excluded from import into the UK are maintained.

Proposed Changes to the BT chapter in the OIE Terrestrial Animal Health Code

It is proposed that the quarantine period for animals infected with BTV be reduced from 100 to 60 days on the grounds that viraemia does not extend beyond the shorter period. However, published accounts show that in a small proportion of ruminants (suggested to be around 0.2%) viraemia may extend significantly beyond the 60 day period. Furthermore, vector *Culicoides* have been shown to be susceptible to infection at low concentrations of BTV such as may occur beyond 60 days of viraemia. Consequently, the proposed changes, if implemented, are likely to enhance the risk of importing viraemic animals.

Climate change & the recent emergence of BT in Europe

For the first time a clear link has been established between climate change and the spread of a vector-borne disease. Since 1998, six strains (five serotypes) of BTV have spread more than 800 km further north in Europe than ever before, killing more than 1.5 million sheep in 12 counties in the process. This spread is associated with a dramatic extension to the range of the traditional vector, *C. imicola*, and transmission by novel vector species such as *C. obsoletus* and *C. pulicaris*.

At the same time and in the same places that these changes have occurred in Europe, there have been significant rises in recorded average temperatures. Recent research suggests that the emergence of BT in Europe is related to these warming events which are associated with recent climate change. The emergence is mediated through the effects of temperature on:

- vector population size and activity;
- rates of virus development in the vectors; and
- levels of competence for virus transmission in existing and novel species.

Other vector-borne pathogens that share similar epidemiological characteristics with BTV such as African horse sickness virus, West Nile virus and Rift Valley fever virus may also be likely to respond quickly and dramatically to increased climatic opportunities in Europe.

Molecular epidemiology

Sequence analysis and phylogenetic comparisons of BTV isolates from the Balearics in 2003, and mainland Spain and Morocco in 2004, confirm that the recent outbreaks in these areas are due to BTV serotype 4. Furthermore, analysis of the data indicate that BTV-4 has been circulating in North Africa since 2003 at least, and has spread to Europe on two separate occasions (2003 and 2004).

Brucellosis of sheep and goats

The annual survey is now completed, and is a requirement under the terms set out on animal health conditions governing intra-community trade of sheep and goats. This is conducted in order to maintain our disease free status for *B. melitensis*. Random samples from 1,379 sheep holdings and 193 goat holdings have been tested in total this year. This is on a voluntary basis with the full co-operation of the owners.

To date 13,632 animals have been tested by CFT comprising 803 goats and 12,829 sheep. Of these, 43 were tested by cELISA because of anticomplementary activity and one because it failed the CFT. All animals passed the cELISA.

Contagious agalactia

Contagious agalactia is a serious disease mainly of small ruminants caused by *Mycoplasma agalactiae*, which affects both sheep and goats and *M. mycoides* subsp. *mycoides* LC and *M. capricolum* subsp. *capricolum* which affect only goats. These mycoplasmas are exotic to Britain but cause significant economic losses as a result of milk production losses and mortality in young animals in Mediterranean countries.

National Survey

Britain is committed to monitoring the national herds and flocks for these mycoplasmas under EC Directive 91/68 on animal health conditions governing intra-community trade. In 2004, the annual on-farm survey found no evidence of infection with these mycoplasmas in 32,859 sera, received from 2,077 flocks and herds. In addition 65 mastitic milk and abnormal udder samples, submitted because they were suggestive of contagious agalactia, were investigated for exotic mycoplasmas. Mycoplasmas were isolated from only one sample and this was identified as *M. ovipneumoniae*, an endemic mycoplasma more often associated with pneumonia.

Contagious caprine pleuropneumonia (CCPP)

CCPP, caused by *Mycoplasma capricolum* subsp. *capripneumoniae*, was listed by the OIE as a 'list-B' disease (it is now included in the combined list of diseases notifiable to the OIE) because of the serious economic effects it can have on goat production in the Middle East and Africa.

Investigations (also in Europe)

VLA confirmed outbreaks of CCPP in the Thrace region of Turkey, a restricted area for livestock movement because of its proximity to the European Union. These represent the first outbreaks of this disease in Europe for over 80 years. Since its introduction in the autumn of 2002, the disease has spread rapidly to many goat herds in the area. When visits were made to the region, outbreaks centred on Kesan, 250km west of Istanbul and clinical signs were seen in herds up to 50kms apart. The disease has affected goats of all ages, which show a reluctance to walk, a fever of over 41°C, accelerated respiration, frequent coughing and mortality rates of up to 40%. The origin of the outbreak is as yet unknown but molecular typing of the strains involved in the outbreaks showed that they are closely related to strains isolated from other parts of Turkey.

Diseases of pigs

Classical swine fever (CSF)

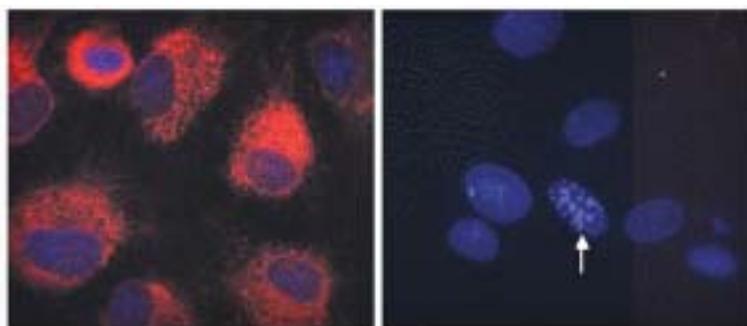
There were no cases of CSF in Great Britain in 2004. Two suspect cases were investigated and found to be negative. The last confirmed cases were in 2000 in East Anglia.

Research and development projects at VLA and IAH

A joint project between VLA and IAH Pirbright on the ability of CSFV to manipulate the pro-inflammatory response has continued. Results have shown that a key host defence mechanism that eliminates virus infected cells is programmed cell death or apoptosis. Research has shown that the CSF virus has the ability to prevent this (illustrated below) and this indicates how the virus is able to sustain infection. (*J Gen Virol* 85:1029-37).

To further investigate how the virus is able to manipulate the host defences, changes caused by the virus to the transcription of host cells in vitro are also being investigated, (in collaboration with Ark genomics), utilising porcine microarrays representing over 13,000 genes. Clues to the role of some of the individual viral proteins in infection are also being sought by the identification of host proteins that interact with the viral proteins.

Studies to inform strategies for the use of vaccines in the event of any future outbreak of CSF in the UK are in preparation. Future work will also investigate novel methods of preventing viral replication, which may lead to alternative options in the control of outbreaks of disease.



CSFV infected cells (stained red) were unable to undergo apoptosis, whereas control uninfected cells could readily be induced into apoptosis. (The white arrow indicates an apoptotic nucleus).

Brucellosis in pigs

Regional labs at the VLA have examined 125 pigs by culture for surveillance of brucellosis. No referrals were sent to VLA Weybridge containment laboratory for confirmation because there were no *Brucella* colonies suspected. For surveillance only seven animals were blood tested. For artificial insemination purposes 1,188 animals were tested by Rose Bengal test, 243 using serum agglutination test (SAT) and 229 by complement fixation test (CFT).

Swine vesicular disease (SVD)

In its capacity as reference laboratory for the European Community, IAH Pirbright received samples from SVD affected pigs from Portugal and Italy, which were the only countries in the world to report outbreaks in 2004. Phylogenetic studies were carried out to determine the likely origins of these outbreaks. The Pirbright Reference Laboratory also conducted an inter-laboratory comparative testing exercise and circulated a questionnaire. This was to establish information on the quality of the laboratory testing provided by the National Reference Laboratories within the EU and to identify the extent of surveillance for the disease within EU Member States.

Aujeszky's disease

The National Slaughterhouse Serum survey for Aujeszky's disease has been operating since 1991 under the then Ministry of Agriculture, Fisheries and Food (MAFF), and more recently Defra, to demonstrate the continuing freedom from Aujeszky's disease in Great Britain. The last outbreak of this disease in this country was in 1989.

African swine fever (ASF)

Reported Cases

ASF has never been recorded in Great Britain and there were no investigations of suspected cases in 2004. Outbreaks of ASF continue to occur in Italy (Sardinia) but the main focus of the disease remains in the African subcontinent.

Research

Research has involved progress in understanding the mechanisms that allow African swine fever virus (ASFV) to evade host immune systems and cause disease of varying severity. This has focussed on defining how the virus manipulates the function of infected macrophages. Preliminary studies suggest that this is encoded in viral genes, and that low virulent strains may lack genes encoding proteins that inhibit host immunity.

Section C – Chapter C2

Progress has been made in understanding indicators of protective immunity in infected pigs. These indicators include the production of interferon gamma (IFN- γ) from peripheral blood leucocytes and the presence of a high proportion of perforin positive lymphocytes.

Table C2.2: Summary of serum sampling at abattoirs in Great Britain 1987–2004

Year	Number of samples collected		Positive incidents
	Sows	Boars	
1987	53,655	12,117	5
1988	20,942	19,959	1
1989	38,389	17,701	5
1990	18,144	12,030	0
1991	18,239	15,196	0
1992	0	14,012	0
1993	0	13,531	0
1994	0	14,318	0
1995	0	15,132	0
1996	0	16,313	0
1997	0	14,718	0
1998	0	15,742	0
1999	0	17,749	0
2000	0	11,545	0
2001	0	1,833	0
2002	0	9,525	0
2003	0	8,001	0
2004	0	8,363	0

Diseases of cattle

Contagious bovine pleuropneumonia (CBPP)

There have been no reported outbreaks of CBPP, a disease notifiable to the OIE (previously a 'list-A' disease) caused by *Mycoplasma mycoides*, in Europe since 1999. However, the disease continues to have a major impact on cattle production in Africa where it now affects at least 30 countries.

Investigations

There were no suspicious cases of CBPP in Great Britain in 2004.

Research and Development

An improved PCR based diagnostic test, called denaturing gradient gel electrophoresis (DGGE), has been introduced to detect and differentiate most mycoplasmas, including exotic species. DGGE greatly improves the speed and accuracy of mycoplasma diagnosis and can be carried out directly on clinical samples. Significantly, it is the only test to date which clearly distinguishes the causative mycoplasma of CBPP from closely related non-pathogenic mycoplasmas of cattle.

Collaborative research between VLA, Pfizer and the Central Veterinary Laboratory, Windhoek, Namibia, showed that the use of the antibiotic, danofloxacin greatly inhibited the spread of CBPP from naturally affected to uninfected cattle. These findings may have important implications for the control of CBPP in Africa.

Enzootic bovine leucosis (EBL)

Britain had no cases of EBL during 2004 and remains an *Officially Enzootic Bovine Leukosis Free* region of the EU. The most recent confirmed case of EBL was in 1996.

The national EBL surveillance programme has continued with bulk milk ELISA testing of approximately 20% of dairy herds each year, and each selected herd is tested twice in the year. Beef breeding herds are blood tested every four years, so that approximately 25% of eligible herds are blood tested each year. Post-mortem inspections of all slaughtered cattle continue.

During the year, 3,845 (20%) dairy herds were bulk milk tested and 17,974 (32%) beef breeding herds were blood tested: all were negative. Bovine tumour samples were submitted for examination on 96 occasions, all were negative for EBL.

Bovine Brucellosis

Brucellosis in Cornwall

In March 2004 *Brucella abortus* was isolated from four cows in a beef breeding herd in Cornwall, following abortion investigations. The whole herd of 129 cattle were slaughtered and pre-slaughter blood testing of the herd showed that in addition to the cows which had aborted, 11 more cattle in the herd were seropositive. Detailed epidemiological investigation has established that the infection was most likely to have been transmitted within the herd during the twelve month period between the spring of 2002 and 2003. It has not, however, been possible to establish the origin of the infection. Although it is not possible to provide confirmatory evidence, it is possible that this herd suffered frank, clinical brucellosis as a result of an unusually protracted case of latent infection.

Tracing and check testing of all herds at risk was carried out and no other infected herds were identified. Genotyping of the isolate has ruled out any connection to the incidents in Scotland, which occurred in 2003. Following this incident there was extensive publicity to increase awareness of the risk of brucellosis and remind cattle keepers to report all abortions and premature calvings.

Brucellosis surveillance

Great Britain has remained an Officially Brucellosis Free Region of the European Union since 1991. The national brucellosis surveillance programme has continued throughout Great Britain, with monthly bulk milk ELISA testing of all dairy herds and blood testing of beef breeding herds every two years, approximately half of all eligible beef breeding herds are blood tested each year. Reporting of all abortions and premature calvings is required, with abortion investigations carried out on the basis of a risk assessment in dairy cattle and for all reported cases in beef cattle.

Post-calving blood tests are carried out on imported cattle following their first calving in Great Britain. This is facilitated by the use of the British Cattle Movement System (BCMS) to notify Divisional Veterinary Managers (DVMs) each week of imported cattle which have calved for the first time in Great Britain, or imported female cattle which require breeding history checks. Breeding history checks are carried out on imported heifers which reach 30 months of age without a recorded calving and adult females which do not have a recorded calving within 12 months of import.

During 2004, 19,378 (100%) dairy herds were bulk milk tested and 35,949 (65%) beef breeding herds were blood tested. Excluding the single confirmed incident in Cornwall (see above), 11 other seropositive cattle from 11 separate herds were identified and slaughtered, these were all culture negative for *B. abortus*. In addition, 8,650 bovine abortion investigations were carried out, apart from the four positive abortion investigations on cattle from the single herd in Cornwall (see above), all the other abortion investigations were negative for *B. abortus*. Post-calving check tests were carried out on 5,003 imported cattle, all were clear tests.

Post-import testing for brucellosis was carried out on 4,361 cattle, with six seropositive results – all six were culture negative for *B. abortus*.

Other Brucellosis monitoring and research

Monitoring

Freedom from brucellosis in sheep and goats caused by *Brucella melitensis* is monitored under the scope of Council Directive 91/68 EC. This year approximately 14,000 randomly selected animals have been tested and all animals have passed.

Evidence that *Brucella suis* remains absent from pig herds in England and Wales takes the form of monitoring animals which show clinical signs of brucellosis, for example, abortion, infertility and lameness. Samples are taken for culture and serum for antibody activity. Surveillance for *B. suis* is also required for international trade purposes. Again, this year, there were no incidences of disease.

Supplementary serological monitoring is performed because of links to International Trade regulations. Dogs are serologically tested for *Brucella canis* prior to export and 1,400 tests were performed in 2004. *Brucella ovis* tests were used on sheep and goat samples, totalling 958 animals this year. All projects are linked and support the UK trade position and provide early warning systems if the disease enters the national herd/flock.

Brucella canis

The rapid slide agglutination (RSA) test is used for diagnosis of *B. canis* in dogs being exported to New Zealand, 791 animals were tested of which eight failed. The VLA tested 1,609 by SAT pre-export to Australia – there were no failures.

Brucellosis of sea mammals

This year the VLA had a total of 118 submissions, of these the most unusual was a fin whale washed up on the beach during storms off the Cornish coast. The majority of these animals came from around the Cornish coast. Tissues were also received from the Netherlands and USA. From these submissions *Brucella spp* was recovered from five animals, three harbour porpoises, a common dolphin and a common seal. A further six suspect isolates were received from SAC Inverness for confirmation, all were *Brucella marine spp*.

Brucellosis Research

The VLA has further evolved their molecular detection through the development of real-time PCR assays and assessment of multiplex formats for the detection of abortifacient microbes. During the last year the VLA has addressed the notorious problem of diagnosis of porcine brucellosis through comparison of various serological methods (RBT, cELISA and FPA) and compared this with an immunological assay for IFN-gamma. Results of these tests were compared with PCR and cultivation. The IFN-gamma assay showed excellent specificity, with no cross-reactivity observed when used to test serum from animals infected with *Yersinia enterocolitica* 0:9, a frequent cause of false positive results in serological assays. Comprehensive field-testing would validate this assay further. Samples collected from the above study will be used for biomarker discovery, possibly revealing novel diagnostic hallmarks of brucellosis.

Over the last year the VLA has focussed their research efforts towards refining Variable Number Tandem Repeat (VNTR) typing for *Brucella* spp. To deploy this technique for maximum benefit, there is now a need to analyse isolates from diverse locations and establish a comprehensive database. This will then provide a resource beneficial to all those interested in brucellosis epidemiology.

Evaluation of *Brucella* DNA vaccine candidates in a mouse model has allowed the VLA to select candidates for further study. Work is now proceeding to improve the efficacy of the vaccine formulation.

Diseases of horses

Contagious Equine Metritis Organism (CEMO)

Only one horse remained under Infectious Diseases of Horses Order 1987 restrictions put in place as a tracing from the 2002 outbreak. The mare had initially tested positive and completion of the post treatment swabbing regime was not possible until she foaled in the summer of 2004. A live foal was born and the mare subsequently tested clear, with the restrictions lifted in August 2004.

No further cases have been detected in the UK as a result of routine industry testing and the VLA received no suspect isolates of CEMO in 2004. Most swabs sent to the VLA are to comply with international trade requirements and over 5,600 swabs were submitted for that purpose. Overall, CEMO submissions to the VLA were 10% higher, and swabs were 8% higher, than for 2003.

A novel PCR for CEMO has been developed by the VLA Biotechnology and Laboratory Testing Departments and is in the process of validation. This hopefully will allow differentiation of CEMO from a closely related organism and may help pick up the organism's presence in cases where a viable organism is hard to isolate (for example, some carrier stallions).

The Industry Code of Practice will continue to be the first line of management for CEMO and EVA within Great Britain. The Horse Betting Levy Board substantially revised and updated this Code and the new version was issued for the 2004 season. Defra contributed to this revision. The reaction of the Industry to the new edition has been very good.

Equine Viral Arteritis (EVA)

The UK remained EVA free until mid-December when a stallion imported from the Netherlands and placed immediately into quarantine premises in anticipation of onward shipment outside the EU was found to be positive. In pre-export testing required by the importing country, the stallion was found to be EVA sero-positive, and with no history of vaccination. Restrictions under the Equine Viral Arteritis Order 1995 were put in place and the stallion was found to be a shedder on semen testing by virus isolation in cell culture and PCR tests. The stallion was re-exported to the Netherlands early in January 2005. Investigations revealed that there had been no onward transmission in the UK and no history of use for breeding purposes.

The Equine Viral Arteritis Order 1995 and the Horse Betting Levy Board Code of practice continues to be the means of controlling this disease in the UK. Blood samples are submitted for EVA serology. Seropositives are notifiable under the EVA Order 1995 and are investigated as to their vaccination status, sex, and recent mating history. Information is then entered onto a database maintained by the Veterinary Exotic Diseases Division within Defra.

Seropositive stallions without a proven vaccination history are placed under restrictions provided by the EVA Order 1995. If the stallion is not subsequently gelded, then semen samples are tested for presence of virus. If the test produces positive results, the stallion remains under restrictions until either it has been certified as gelded, or it has a test mating with two seronegative mares supervised by a Veterinary Surgeon, with no subsequent seroconversion.

The VLA undertook in excess of 4,800 EVA serology tests in 2004. More than 2,700 of these were tested as part of export requirements. The VLA has also made further progress in the development and validation of a single tube RT-PCR. This will aid future sequencing and phylogenetics of new virus isolates.

Other Diseases

Anthrax

Veterinary Officers and private veterinary surgeons investigated 8,621 cases of anthrax during 2004. These are normally single cases on a premises and are associated with a sudden and unexpected death of an animal. Suspected cases were investigated in 8,564 cattle, one deer, three goats, two horses, 23 pigs and 28 sheep. Anthrax was not confirmed in any of these investigations in 2004.

Table C2.3: Number of investigations carried out in cattle and number of investigations in which anthrax was confirmed in Great Britain from 1993 to 2004

Year	Number of investigations	Number of cases
1992	8,516	2
1993	8,662	2
1994	8,301	3
1995	7,902	1
1996	7,845	2
1997	7,424	1
1998	7,405	0
1999	5,855	0
2000	5,328	0
2001	10,553*	0
2002	10,085*	1
2003	7,534	0
2004	8,564	0

* The reason for the increase in investigations during 2001/2002 was a heightened awareness of anthrax as a potential bio-terrorist threat

A working collaboration has been established with the Health Protection Agency's (HPA) Centre for Applied Microbiology & Research (CAMR). Close collaboration with CAMR means that we will be able to respond readily should there be a bio-terrorism incident involving anthrax.

Staff from the VLA bacteriology section have undergone training at CAMR in order to harmonise diagnostic culture and polymerase chain reaction (PCR) methodology and a working group is being set up to draft a 'National Reference Method' for diagnosis of naturally-occurring anthrax in animals.

A test development project has been carried out to further develop molecular typing techniques for *B. anthracis* using strains from both HPA and VLA. Future collaborative work is planned and a concept note has been submitted to Defra.

Rinderpest/Morbilliviruses

Developments at IAH Pirbright

The Institute for Animal Health laboratory at Pirbright was designated the FAO World Reference Laboratory for Rinderpest in 1994 and was re-designated as the FAO World Reference Laboratory for Morbilliviruses (WRLM) in 2004. As such it provides a world-wide diagnostic service for morbilliviruses and houses reference collections of past and current virus strains.

The WRLM plays an integral role in the Global Rinderpest Eradication Programme, which aims to eradicate rinderpest from the world by 2010. Serological assays developed at Pirbright have been used throughout the campaign for seromonitoring and are now used for targeted sero surveillance.

A pen-side diagnostic test has been developed at Pirbright. The tests only takes 10 minutes and is capable of detecting rinderpest antigen present in eye swabs collected at 'pen-side' in the field. These pen-side tests played a major role in identifying and eradicating the last remaining foci of infection in Pakistan and are currently being used in east Africa for the same purpose.

The IAH provides expert advice to wide range of countries and globally distributed organisations.

The major role the IAH has played in developing, validating and supplying diagnostic tests for use in the Global Rinderpest Eradication Programme (GREP) and their essential role in training the National Laboratory staff has had a major impact on the success of the eradication programme. The resulting reduction in the world-wide incidence of rinderpest greatly reduces the risk to the UK. Since the UK does not import animals or animal products from the remaining endemic rinderpest infected zone, the risk of introduction is very low. The most likely source would be the introduction of game animals captured in East Africa destined for zoos in the UK. However, this would appear to be extremely rare since, over the last ten years, the Reference Laboratory has never been asked to test pre-importation samples from such animals.

Sheep and goat pox and Lumpy skin disease

Developments at IAH Pirbright

With the appointment of staff to the OIE Sheep and goat pox and Lumpy skin disease reference laboratory in July 2004, diagnostic services have been expanded with the introduction of a range of tests for sheep and goat pox and lumpy skin disease. There have been a considerable number of enquires for testing services, vaccines and biological material for sheep and goat pox and lumpy skin disease. Requests have also been received for camel pox and as a result tests for camel pox have been introduced to the reference laboratory. Disease investigations have been undertaken in the Middle East and Asia and it is expected that the demand for capri-pox testing and training will continue to increase. This will enhance the diagnostic preparedness in the event of an outbreak in the UK and the EU.

Warble fly

The annual warble fly survey takes place each winter between November and February. This is the time when the highest antibody response to first instar larvae that would be present in tissues of infested animals would be expected. Larvae of subsequent stages avoid the immune system, so do not elicit an antibody response.

The survey is based on a random sample of cattle from the Brucella eradication scheme and aims to screen 200,000 cattle per year.

Following an eradication campaign, the UK was declared free of warble fly in 1990. To avoid the associated health and welfare problems and losses to the meat and leather industry, it is important that the UK remains free of this parasite. Import testing for warble fly is no longer a requirement.

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Table C2.4: Number of clinical Warble Fly outbreaks since 1978

Year	Number of clinical cases
1978	c. 4 million
1982	713
1983	518
1984	500
1985	419
1986	34
1987	8
1988	4
1989	2
1990	*
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0

* One dead warble found at a slaughterhouse in 1990.

Section C – Chapter C2

Table C2.5: Summary of notifiable disease veterinary investigations in Great Britain 2004

Disease	Total investigations	Negative	Positive
Avian diseases	12	12	0
Brucellosis of pigs (<i>B. suis</i>)	2	2	0
Brucellosis of sheep (<i>B. ovis</i>)	3	3	0
Contagious bovine pleuropneumonia	1	1	0
Equine encephalitis	1	1	0
Equine viral Arteritis (EVA)	1	0	1
Foot and mouth disease	8	8	0
Glanders	1	1	0
Rabies	6	6	0
Bat rabies (human contact)	20	20	0
Swine fever	2	2	0
Warble fly	1	1	0

* There may be discrepancies between the data shown in the above table and those reported elsewhere in this chapter as a result of the way in which data is collected. Data for this table is compiled from Defra disease investigation notifications (circulated each time a notifiable disease veterinary investigation takes place).

Chapter C3: Scanning surveillance for endemic and new and emerging diseases

New or exotic diseases, or changes in the effects of endemic diseases, can be detected by appropriate examination of material submitted for diagnosis to veterinary laboratories. Material in this chapter is derived both from the regular surveillance reports provided by the Veterinary Laboratories Agency (VLA) and the summary and monthly surveillance reports supplied by the Scottish Agricultural College (SAC).

Cattle

2004 was both one of the warmest and wettest on record, with plenty of grass. However, the frequent wet conditions made harvesting difficult for both grass and arable crops. This resulted in silage of variable quality and a shortage of feed quality straw. The weather conditions also favoured some diseases, notably parasitic gastroenteritis with significantly more diagnoses recorded than in previous years.

Johne's disease

There has been a two and a half fold increase in the number of incidents of Johne's disease recorded over the last six years, with 2004 being 20% greater than 2003. There was also a similar increase in the number of agricultural holdings in which the disease was confirmed. The Defra booklets 'Johne's Disease in Dairy Herds' and 'Guidance on Control of Johne's Disease in Dairy Herds' were welcomed by both farmers and veterinary surgeons and greatly helped in increasing the awareness of this widespread disease together with its animal health and economic importance. Both booklets can be ordered from Defra Publications or downloaded from the Defra website at <http://defra.gov.uk/animalh/diseases/other/johnes.htm>

Polioencephalomyelitis

Following the diagnosis of Polioencephalomyelitis of unknown origin in a heifer, the Health Protection Agency (HPA) convened a meeting of experts from Defra, the VLA, Department of Health and the Food Standards Agency (FSA) to assess the public health implications of this and 21 other similar cases in cattle and sheep occurring over the previous 10 years. The recently developed Veterinary Investigation Data Analysis (VIDA) Diagnosis Not Reached (DNR) Analysis revealed that there had been no increase in submissions to the VLA for the investigation of non-notifiable nervous diseases in cattle and sheep in recent years. From this analysis and available pathology data, the expert group concluded that this undiagnosed nervous condition in ruminants was unlikely to pose a significant risk to human health. Further work is being undertaken to attempt to clarify the cause of the infection in these cases and an enhanced investigational and sampling protocol was instituted for any further cases submitted to the VLA.

Respiratory disease

Pneumonia, particularly in young stock, was widely reported with an increase in the number of respiratory cases where a definitive diagnosis was not reached. However, there was a slight reduction, in comparison to 2003, in the number of incidents involving the main respiratory pathogens: respiratory syncytial virus, *Histophilus somni*, *Mannheimia haemolytica* and *Pasteurella multocida*.

'Tyre wire disease'

'Tyre Wire Disease' (traumatic reticuloperitonitis) continues to be regularly encountered. This is despite publicity in the farming and veterinary press of the risk of deteriorating tyres, used to weigh down silage sheeting, releasing wire fragments directly onto the silage face or inadvertent loading of tyre fragments into feed mixer wagons. On occasion the consequences can be serious, with up to a third of the cows in a herd affected. The condition also occurred in a small herd of buffalo, resulting in a 10% mortality.

Bovine viral diarrhoea

Bovine Virus Diarrhoea Virus (BVDV) type 2 infection, as opposed to the previously endemic BVDV type 1 infection in the UK, has now been confirmed on four occasions. All have involved the relatively mild 'Nebraska' strain and a cluster of cases occurred in a small area on the south Welsh borders. Enhanced surveillance to type all BVD virus positive samples is now routinely undertaken by the VLA.

Enteritis

The predominant neonatal calf diarrhoea pathogens are now rotavirus and cryptosporidia, with coronavirus an infrequent cause. However, coronavirus infections in adult cattle, particularly dairy cows resulting in Winter Dysentery, were a feature in the latter quarter of 2004. Clinical signs of transient profoundly haemorrhagic scours with reductions in appetite of up to 25% and milk production of up to 20% were encountered. These could affect most of the herd, but with no associated mortality.

Idiopathic Necrotising Enteritis has increased in comparison to previous years, although numbers are still small. The condition had previously been exclusively diagnosed in suckler calves, but was confirmed in a dairy calf for the first time in the summer of 2004. Enhanced surveillance for this novel finding was instituted, with no further cases encountered.

Fascioliosis

In Scotland, both the number of outbreaks of fascioliosis in cattle and the number of farms affected increased in 2004 compared to 2003. This is in contrast to the situation in sheep described below.

Small ruminants

In the early part of the year, lamb values showed an improvement on 2003, but in the early summer did not reach the same peaks seen the previous year. Cull ewe values reached exceptionally high levels at auction markets in England for a short period in April, with heavier weight ewes exceeding £55/head. However, values then eased back and finished the year approximately 10% lower than in 2003 at around £30/head.

Parasitic gastro-enteritis (PGE)

PGE continues to be one of the most common diagnoses in sheep submissions. Continuing the trend of recent years, disease was recorded in the winter months as well as the more traditional late summer/autumn period. Disease was mainly seen in lambs and yearlings, but PGE in two year old ewes was also reported as well as sporadic cases in older sheep. In Scotland, the prevalence of PGE in sheep has increased steadily over the past six years. There are increasing indications that parasites are not being well controlled on some farms. One factor that may be associated with this, is that the number of farms that have parasites resistant to both benzimidazoles and levamisole anthelmintics appears to be increasing.

Cases of nematodiosis were seen early in the year associated with the mild weather in January, although the dramatic increase in diagnoses seen in May 2003 was not repeated in 2004. However there was evidence of disease occurring in lambs in different areas over a longer period when compared to 2003.

PGE was also seen in goats, with the majority of diagnoses made in the non-commercial sector since the larger dairy herds are housed all year. The need to include goats of all ages in any parasite control programme remains a concern. As an example, acute PGE causing death was recorded in one eight year old goat.

Sustainable Control of Parasites in Sheep (SCOPS)

Defra and the National Sheep Association are working in partnership under the Animal Health and Welfare Strategy to promote sustainable animal health and welfare practices. SCOPS offers farmers and vets advice on how to combat the growing problem of anthelmintic resistance.



Tony Edwards (CVO Wales) at launch of SCOPS at the Malvern National Sheep Event in July 2004.

A Defra funded endoparasite workshop led to the production of a Technical Manual for Veterinary Surgeons and Advisors which was published in March 2004. Defra and the Scottish Agricultural College have contributed to the work of the group alongside industry and stakeholders such as the National Farmers Union of Scotland, the National Office of Animal Health, the Animal Health Distributors Association, the Responsible Use of Medicines in Agriculture, CSLVLA and the Sheep Veterinary Society and have sponsored research and the production of the manual. Subsequently SCOPS was launched at the Sheep 2004 Malvern Show and has recently held an ectoparasite workshop along similar lines to the endoparasite workshop.

Clostridial disease

The trend for increased diagnoses of pulpy kidney and lamb dysentery seen over the past three years was reversed in 2004. This reduction of cases seen may reflect increased vaccine usage following the improved trading conditions mentioned previously.

Clostridial enterotoxaemia involving *Clostridium perfringens* type D was one of the most common diagnoses made in goats. However the amount of surveillance data available from the goat population remains sparse.

Fasciolosis

There was a reduction in the number of incidents of fasciolosis, both acute and chronic, compared to 2003. This decrease probably reflects the generally dry spring and autumn of 2003, followed by a dry May in 2004. However there were some acute cases seen later in the year and there was evidence of infection establishing in the more eastern areas of the country.

Listeriosis

Incidents of enteric listeriosis were reported early in the year in Wales and overall listeriosis was diagnosed more commonly in 2004 than 2003. Some incidents were not associated with silage feeding, and the unusually wet weather experienced in some areas may have been a predisposing factor.

Tick related disease

Tick related diseases, including louping ill were reported in several areas. In one outbreak, where louping ill was diagnosed for the first time, examination of the affected sheep showed numerous *Ixodid* ticks attached to the face and legs. In another incident, cattle on the same farm showed neurological signs with serological evidence of exposure to louping ill.

Both tick pyaemia and tick borne fever were diagnosed, in some cases causing high mortality. An unusual case of intense pruritus in sheep in Wales, was caused by the presence of the tick *Dermacentor reticularis*. This ectoparasite is not commonly found in Welsh sheep. The numbers of ticks in the flock had increased since the farmer had become a member of an environmental scheme, which prevented the burning of scrub.

In Scotland there has been an increase in a variety of tick-borne diseases in recent years.

Ovine Abortion

There has been a steady fall in the number of incidents of enzootic abortion recorded over the past few years and this continued in 2004. A similar picture was seen with toxoplasmosis between 1999 and 2001, but since then the recorded incidents of this disease have increased. Vaccine usage is likely to have helped reduce the incidence of both diseases and the recent increase in toxoplasmosis may be explained by the difficulty experienced in the supply of toxoplasma vaccine in recent years.

Also notable this year was the increase in listerial abortion. This may have been due to contamination around feeding sites during wet weather, rather than poor quality bagged silage, since the 2003 summer had been ideal for forage conservation.

Pigs

An overview of the pig sector by Meat and Livestock Commission (MLC) economists suggested that the pig breeding herd may now be stabilising after several years of decline. The census data for June was revised upwards to give a UK breeding herd of 515,000 head, similar to the previous year. However, the British Pig Executive (BPEX) have reported that Great Britain still has the highest costs of production compared with other major pig producing countries.

Disease reports indicate continuing occurrences of gastrointestinal, respiratory and reproductive diseases. Trends in disease diagnoses continued to highlight the relative importance of Postweaning Multisystemic Wasting Syndrome (PMWS), Porcine Dermatitis and Nephropathy Syndrome (PDNS), pleuropneumonia and reduced fertility. Some diseases have declined in recent years and, in the case of swine dysentery and enzootic pneumonia, this is attributed to more effective control or eradication policies throughout much of the industry.

PMWS/PDNS

Indications are that the majority of herds in England and Wales now only experience occasional 'flare-ups' of PMWS and PDNS. Nevertheless, a very few herds experienced the diseases for the first time, and a few others continued to have significant ongoing disease. The trend is a decrease in the mortality of weaner pigs but there is increasing concern regarding high mortality in growers and finishers. Some of these incidents appear linked with PMWS, some with PDNS, and some apparently with neither, although there is wide variation in the extent to which different incidents have been investigated. A variety of pathogens and husbandry systems have been involved.

In Scotland PMWS continued to spread within the national herd. It is now estimated that over 90% of herds have been affected, with only more isolated herds having escaped the disease. Mortality rates of up to 25% are still being reported. Elimination of other diseases such as porcine reproductive and respiratory syndrome (PRRS) and enzootic pneumonia, by either partial or total depopulation programmes, has brought about dramatic improvements in mortality rates on several units.

The Wholesome Pigs (Scotland) abattoir monitoring scheme, funded by the pig industry, has now been running for 18 months. Although analysis of the data has yet to be completed, initial estimates of herd prevalence for several diseases among the 125 monitored farms, representing around 70% of Scottish production, have been produced.

Respiratory diseases

Respiratory diseases represented a major cause of losses in pigs but less so than in 2003. There was little evidence of significant influenza virus involvement in the national herd and no evidence of new strains of the virus in pigs. Nevertheless, an incident of severe respiratory disease attributed to a previously unrecorded variant of porcine reproductive and respiratory syndrome virus (PRRSV) was encountered, which led to increased monitoring for this virus.

Other conditions

Interesting and unusual conditions reported during the year included *Haemophilus parasuis* isolated in cases of polyserositis with scrotal swelling, several incidents of sunburn in outdoor pigs during the hot weather conditions in May (despite the availability of mud for wallowing) and coccidiosis in adult pigs.

Poultry & gamebirds

The number of chicken and turkey submissions received for diagnosis increased in 2004, compared to last year, by 36% and 17% respectively. Although the overall health status of the industry changed little during the year, it is clear that many of the current health problems are multifactorial or as yet ill defined. However, progress was made, for example, with the identification of astrovirus in turkeys with enteritis. There continues to be a decrease in the incidence of necrotic enteritis, which was a major problem in broilers a few years ago.

Protozoal infections

Blackhead (histomoniasis) in turkeys, although regularly diagnosed, has not developed into a problem of the magnitude that some feared following the withdrawal of medications licensed to control it. In the absence of a specific licensed treatment, some affected flocks have been medicated with tetracycline or received anthelmintic medication. This has

remained principally a seasonal disease in turkeys. However, the rise in diagnoses of blackhead in chickens, particularly free range chickens, has become a concern to the industry. The control of the disease in chickens may be more problematic than in turkeys.

There was no evidence that the reduced availability of dimetridazole had adversely affected the welfare of reared game birds, since there was no apparent increase in the incidence of either hexamitiasis or trichomoniasis.

Airsacculitis and meningitis in turkeys

Cases of airsacculitis and/or neurological signs in turkeys were reported. The laboratory results to date implicate *Mycoplasma gallisepticum* in the aetiology, and this organism has been associated with meningocephalitis in turkeys elsewhere. Particularly important is distinguishing the condition from notifiable disease as the presenting clinical signs can be confused with Newcastle disease and avian influenza.

Avian intestinal spirochaetosis

Investigations into this disease were begun following the isolation of *Brachyspira pilosicoli* from a 20 week old layer flock and *B intermedia* from two flocks aged 25 and 70 weeks. Both of these organisms are recognised as causes of enteritis, frothy droppings and poor production in layers in other parts of the world, although they have been little documented in this country.

Goose parvovirus

Goose parvovirus infection (also known as Derzsy's disease), a highly contagious disease of goslings and muscovy ducklings under six weeks of age, was diagnosed in goslings from several farms in England, Scotland and Wales. Isolation of this virus had not been reported in Great Britain since 1981. The source of infection was traced to a breeder farm, which had supplied the affected premises. However, it was not clear how the breeder farm had become infected initially. No imports of geese or eggs had occurred before the outbreak, but wild geese were known to visit the farm. There is serological evidence that wild geese can become infected. The virus is not known to affect other birds. Control relies upon good biosecurity, hygiene and the elimination of any adult carrier birds, who may be infected while showing no clinical signs of the disease.

Infectious bronchitis virus (IBV)

A variety of health problems were seen in layer and broiler breeder flocks associated with various new and emerging strains of IBV. These are being analysed by molecular methods.

Infectious laryngotracheitis (ILT)

During 2004 several outbreaks of ILT occurred in backyard and free range chickens resulting in virus isolation on several occasions, an increase compared to 2003. This upward trend has continued since 2000 which suggests that ILT is becoming more ubiquitous in this type of poultry breed.

Wildlife

Fulmar (*Fulmaris glacialis*) mortality

Approximately 500 fulmars were found as a tide-line mortality on the Norfolk coast and on beaches of other North Sea countries over a six week period around March 2004. It is estimated that several thousands fulmars were actually involved. Starvation was the principal finding in birds from this country, France and Belgium. The precise reason for the starvation is unknown, but it may reflect a complex sequence of events resulting in a widespread disruption to their food supply. Female birds, rather unusually, predominated in the mortality.

Seabird breeding failure in North Sea colonies

Several species of seabirds at North Sea breeding colonies were reported to have had very poor breeding seasons, some with no eggs or chicks produced. A variety of species were involved including Common Guillemot, Kittiwake, Northern Fulmar, and the Arctic Tern. The cause was considered to be a lack of fish, specifically sand eels. (This is not necessarily the cause of the fulmar deaths discussed above). Changes in plankton distribution and abundance in the North Sea appeared to be the reason for the low sand eel population.

Red squirrel (*Sciurus vulgaris*) parapox virus infection

Further cases of this disease were seen in new areas across the North of England during 2004. It is thought to be a major factor in the displacement of red squirrels by grey squirrels (*Sciurus carolinensis*). These cases appear to mark the northward expansion through England of the grey squirrel population. It had been considered that the mountainous areas in the North of England would act as physical barriers to the northerly movement of the grey squirrel. This has proved not to be the case. The concomitant displacement of the red squirrel, now restricted to limited regions of England, usually follows a few years after the first sighting of grey squirrels in new areas. Grey squirrels carry the parapox virus but usually suffer no adverse effects.



Red Squirrel in North Cumbria – one of the few places in England where they are still found.

West Nile virus (WNV)

With continuing excellent help from the public, major bird charities and wildlife rescue centres across the country, surveillance for this viral disease in wild birds has continued, with 295 birds submitted for examination in 2004. The disease has caused sporadic losses in several continental countries in Europe and significant losses across North America. Insects, specifically mosquitoes, are required to transmit the virus from infected birds to mammals. With the end of the UK mosquito season in the autumn, it can be reported that, as in previous years, there was no evidence of WNV in wild birds in the UK during 2004.

Grey seal (*Halichoerus grypus*) bacteria

Submissions of samples and carcasses of grey seals from Scotland and Cornwall have led to the discovery of a new species of Lancefield group B Streptococci. So far the organism has been isolated in mixed culture from bite wounds caused by other seals. It has been given the name *Streptococcus halichoeri* after the genus name of the grey seal.

Porpoises

Several post mortem examinations were carried out on porpoises in Scotland. A variety of pathogens were isolated including *Brucella cetacae*, *Aspergillus* spp. and host-adapted group B salmonellas. The salmonella isolates were frequently from lung tissue, which is an unusual site for salmonella infection in land mammals and in cetaceans is probably the result of concurrent nematode infection (*Pseudalius inflexus*) and mechanical vectoring of the bacterium by the parasite.

Dramatic cetacean decompression sickness lesions were seen in an old male harbour porpoise, the second porpoise to have been reported with this condition.

Phocine distemper

A common seal, which had recently aborted and was infected with *Mycoplasma phocidae*, was confirmed on histopathology and immunohistochemistry as also being infected with phocine distemper virus (PDV). This is the first seal in Scotland to have been diagnosed with PDV since the 2003 outbreak.

Swans

In Scotland necrotic enteritis, associated with *Clostridium perfringens*, caused the death of twelve mute swans (*Cygnus olor*) in May and June. The deaths occurred on three lochs and ponds within 11 km of each other.

Miscellaneous

Numbers of South American Camelids, especially alpacas, continue to make up a significant proportion of submissions. The number of deer submissions was increased compared to 2003.

Tuberculosis

Tuberculosis due to *Mycobacterium microti* was diagnosed in a three-year-old female llama with lesions in the lung, liver, spleen and associated lymph nodes. Tuberculosis due to *Mycobacterium avium* was diagnosed in a kangaroo from a wildlife park. Enlarged abscessated mesenteric lymph nodes were found at post mortem examination. Tuberculosis was reported in a four month old alpaca, by histopathology. There was no fresh material available for culture with this case.

Johne's Disease

Johne's disease was diagnosed in three alpacas in 2004, with one case being confirmed by histopathology and the others by faecal microscopy. Johne's disease was confirmed by the isolation of *Mycobacterium avium* subspecies *paratuberculosis* in a 16 month red deer hind. Ten out of a group of forty had been affected with ill thrift and five animals had died.

Coccidiosis

One interesting development in 2004 was the identification of *Eimeria macusaniensis* as a cause of ill thrift and death in adult alpacas. This coccidial species has been cited as a frequent cause of death in adult alpacas in the USA, especially soon after moving premises. The reason for this is probably that the animals have not previously been exposed to the parasite and have no immunity. The same pattern has been seen in this country.

Malignant catarrhal fever (MCF)

Wildebeest associated MCF was the cause of death of at least two Ankole cattle from a wildlife park. The cattle shared an enclosure with wildebeest. Two outbreaks of MCF were recorded in Sika deer and in an adult Lechwe (an African antelope).

Lungworm

Lungworm infestation was diagnosed in a herd of five Forest Buffaloes. An unweaned calf suddenly collapsed and vast numbers of adult *Dictyocaulus viviparus* worms were found in the airways at post mortem examination.

Deer

The most frequent diagnosis recorded in farmed deer was lungworm, which normally presented as ill thrift in the winter. It was a particular problem in the winter months. Copper deficiency, generally presenting as enzootic ataxia was the second most frequent diagnosis.

Rabbits

Nine diagnoses of Rabbit Haemorrhagic Disease (RHD) were recorded in 2004.

Fish

A small number of investigations into diseases of farmed fish were carried out by VLA, with Enteric Redmouth Disease (ERD) caused by *Yersinia ruckeri* diagnosed in rainbow trout.

In Scotland, rainbow-trout in a commercial “put and take” fishery were showing skin lesions and irritation. Two fish were submitted live and were euthanased. Pale and dark discolouration of the skin on both flanks and raised scales with haemorrhage were seen grossly. Histopathology at the Institute of Aquaculture, Stirling University revealed lesions consistent with papillomatosis. This was only the Institute’s third record of this condition in rainbow-trout although the disease is relatively common in salmon. The condition is thought to be viral in origin and is usually self limiting.

Further information

Further information on the material in this chapter can be obtained from the surveillance reports of the VLA at <http://www.defra.gov.uk/corporate/vla/science/science-end-survrep-qtly.htm> and the SAC at <http://www1.sac.ac.uk/vet/external/MonthlyReport/>

The VLA annual report on wildlife diseases in the UK (produced on behalf of Defra and the World Organisation for Animal Health (OIE)) can be accessed at <http://www.defra.gov.uk/corporate/vla/science/science-end-ann-wild-disrep.htm>

Further information on the SCOPS initiative and a copy of the Technical Manual can be found at http://defra.gov.uk/animalh/diseases/control/parasite_control.htm

Section D: Prevention and control of animal diseases

Chapter D1: International Trade Imports

The Chief Veterinary Officer (UK) has overall responsibility for animal health and welfare in the international trade of animals and animal products. Agriculture Departments in Great Britain continued to play an important role in maintaining Great Britain's defences against the introduction of serious livestock diseases.

All consignments imported from Third Countries are subject to checks at the port of entry into the EU. Checks on animals are carried out on the basis of a disease risk assessment at their destination in Great Britain.

Border Inspection Posts

Animals and animal products from Third Countries subject to veterinary checks under EU law must be imported through an approved Border Inspection Post (BIP) where they are subject to a documentary check, an identity check and, for a specified percentage, a physical check with samples taken for laboratory analysis if appropriate. BIPs must have facilities meeting the requirements of EU law and may operate only after listing following satisfactory inspection by the European Commission.

There are seven BIPs approved to inspect live animals and 28 approved to inspect animal products. During 2004 Tyne and Newhaven decided to stop handling animal products. Glasgow airport have decided to stop handling live animals but will remain listed for animal products. Newhaven has been removed from the list of BIPs but the new Decision amending the status of Tyne and Glasgow has yet to be published. Lists of BIPs are available on the Defra website at <http://www.defra.gov.uk/animalh/int-trde/animl-im/livebips.htm> for live animals; and <http://www.defra.gov.uk/animalh/int-trde/prod-im/prodbips.htm> for animal products.

State Veterinary Service/Border Inspection Post Liaison

During 2004, SVS officers made regular visits to BIPs which check animal products to offer advice and check their compliance with EU legislation. These visits have helped to build good relationships with port health authorities, who are responsible for carrying out the veterinary checks, and the port operators. If deficiencies are found a procedure has been introduced to ensure their correction in a timely manner.

Imports of live animals and germplasm

Intra-community trade

Cattle

A total of 7,212 cattle entered Great Britain from other EU Member States, mainly from the Republic of Ireland and Denmark. In addition 4,124 cattle were imported from Northern Ireland of which almost half were for breeding.

Sheep and goats

19,062 sheep and goats entered Great Britain from other EU Member States mainly from the Republic of Ireland. Additionally 94,791 sheep and goats were imported from Northern Ireland, 87,670 of which were for slaughter.

Pigs

56,880 pigs entered Great Britain from other EU Member States (mainly from the Republic of Ireland), whilst 6,463 pigs were imported from Northern Ireland, 6,420 of which were for slaughter.

Horses

6,893 horses entered Great Britain from other EU Member States during 2004. The majority of these came from the Netherlands, Germany and Belgium.

Poultry

13.5 million birds were imported from EU member states. France accounted for the largest number of imports with 11.2 million birds. 21.5 million hatching eggs were imported from the EU.

Semen, ova and embryos

Due to the new EU internet based trade certification system (TRACES) being introduced during 2004 and a finalised data collection programme not being available, data specific to semen, ova and embryos could not be extracted.

Third countries trade

Livestock and other ruminants

Six goats were imported from New Zealand in 2004. There were imports of cattle, sheep or pigs from Third countries.

Horses

2,413 horses were imported from Third Countries, the majority of which came from the USA, Argentina and United Arab Emirates.

Poultry

Most British poultry imports consist of grandparent breeding stock destined for the main chicken and hen breeding companies. The principle country of origin was the USA, reflecting the multinational character of the poultry breeding industry.

Several countries have reported outbreaks of highly pathogenic avian influenza in 2004. None of these countries were previously allowed to export live poultry or hatching eggs into the EU.

Captive birds

There was a steady increase in the number of premises approved as import quarantine premises. By the end of 2004 there were 101 approved premises in Great Britain. All imports were tested for Newcastle disease and avian influenza.

Bees

In 2004, 743 queen honey bees were imported from two third countries – New Zealand and Argentina.

In October 2004, the European Commission granted specific authorisation for the import of live queen bees from the state of Hawaii, based on its geographical and epidemiological isolation from mainland USA, and its freedom from notifiable bee diseases including the small hive beetle and tropilaelaps mite. All imports of bees to the Community from the remaining States of the USA remain prohibited. Revised certification requirements for the importation of queen bees will be published through an amendment to Commission Decision 2003/881.

Imports of animal products

The Products of Animal Origin (Third Country Imports) (England) Regulations have been updated on a quarterly basis to take account of changes to import conditions. The first of these amendments, which came into force on 1 May 2004:

- Introduced the Common Veterinary Entry Document (CVED), a new form to be used for notification of imports of animal products and to certify the results of the checks.
- Implemented the Act of Accession with regard to veterinary import conditions and checks on animal products, which extended the definition of Member State to include the accession countries.
- Changed the rules on personal imports.

The other amendments in August and November were routine updates to take account of changes to EU import conditions for animal products.

Illegal imports

We continue to make progress in tackling illegal imports. Although the disease risk posed by illegal imports can never be eliminated, Defra accepts there is still more to do. On 1 May 2004 the personal food imports regulations changed in line with the enlargement of the EU. Meat and dairy products are banned from outside the EU and restrictions apply to other products.

Border controls

Customs have responsibility for anti smuggling controls on imports of products of animal origin (POAO) from outside the EU and have continued to be effective.

All Customs' detection staff have anti-smuggling responsibilities for products of animal origin (over 3,500 staff). Within this, Customs has a dedicated extra resource (c.100 officers). There are now nine meat detector dogs and handlers operational, with a tenth expected soon.

Customs have been successful in taking forward six prosecutions in 2004. In each case the defendant pleaded guilty, was fined and costs were awarded against them. Seizures of illegal imports of animal origin has more than doubled to 15,838 (weighing nearly 185,888 kg), in the year ending March 2004. This reflects the increased enforcement activity. Indications are that seizures have continued to increase since then. Seizures in 2004 (April to December alone) are 16,910 (Customs seizures only). Customs seizures account for about 97% of seizures.

Section D – Chapter D1



Stand outside the QE2 Conference centre (London) raising public awareness of the risks of bringing in food items from abroad.

During 2004 we have again written to a large number of organisations (universities, student groups, volunteer organisations, charities and travel guide companies) who provide information to individuals coming to, or returning to, the UK. The aim is to increase awareness of the personal import rules, and also of biosecurity measures for those who may come into contact with livestock/farms overseas. We have sent out over 50,000 leaflets. We also sent leaflets to all 11,000 GP surgeries in England and uptake has been very good. 125,000 leaflets were distributed from July-September 2004 and the pick up rate across all surgeries was 78%. The average pick up rate for all leaflets in this quarter was 57%. We will be repeating the distribution from January-March 2005.

Customs have produced revised high-impact leaflets and posters to take into account the enlargement of the EU on 1 May 2004. Seven million ticket wallets and inserts explaining the rules have been issued to UK travellers and Customs have placed advertisements in travel magazines. Customs have also been working with foreign Embassies and High Commissions, as well as airlines, to press the message of the controls. UK passport offices in Glasgow, Liverpool and London display the rules on plasma screens visible to half a million visitors each year.

The launch of the next phase of the public awareness campaign took place on 25 October at the QE2 Conference centre. The aim of this part of the campaign is to raise awareness amongst British black and minority ethnic communities who may bring back food items from their trips abroad. This campaign has been created primarily to inform these communities, about the rules and implications, using specifically targeted messages and materials. Bi-lingual leaflets and posters have been produced in nine different languages: Arabic, Urdu, Bengali, Punjabi, Hindi, Gujarat, Chinese, Turkish and English and a branded mobile unit toured the country, visiting more than 30 specific cultural, religious, and community events.

There has been positive feedback plus good media coverage in national, local and ethnic press. We have also developed a new TV filler with the Central Office of Information (COI) and our website has been redesigned and we have added a searchable database of products for personal imports and countries.

In December we began press advertising to run in 20 selected black and minority ethnic publications that will coincide with peak travel times.

Risk assessment

In July we published the updated Risk Assessment undertaken by the VLA to assess the risk of FMD, Classical Swine Fever, African Swine Fever and Swine Vesicular Disease virus being brought into Great Britain (GB) in illegal imports meat and meat products and infecting livestock. The report is available on our website at www.defra.gov.uk/animalh/illegal/reports.

Chapter D2: International disease monitoring

Defra's International Animal Health Division monitors outbreaks of high impact diseases wherever they occur around the world. The main diseases of concern are those which would have a significant impact if introduced into the UK (i.e. those classified until recently as World Organisation for Animal Health (OIE) list 'A' diseases: African horse sickness, African swine fever, bluetongue, classical swine fever, contagious bovine pleuropneumonia, foot and mouth disease, highly pathogenic avian influenza, lumpy skin disease, Newcastle disease, peste des petits ruminants, Rift Valley fever, rinderpest, sheep and goat pox, swine vesicular disease and vesicular stomatitis).

Other diseases such as rabies, bovine spongiform encephalopathy, scrapie and West Nile virus are also monitored for incidents of significance to the UK. The two main objectives are to be alert to disease outbreaks in countries that trade with the UK and, should such outbreaks occur, to conduct qualitative risk assessments to inform import policy decisions in the UK and other interested parties.

Monitoring disease outbreaks and increasing awareness

The team monitors closely the occurrence of specified diseases in the EU, countries neighbouring the EU, and third countries; with the objective of maintaining an on-going awareness in the UK of the current status of disease threats worldwide. This is communicated through quarterly reports on international animal health, disease surveillance and trade issues that are published in the 'Veterinary Record'. The 2004 reports can be found at <http://www.defra.gov.uk/animalh/diseases/monitoring/vetrecord.htm>

Risk Assessment

UK imports of animals and animal products from EU Member States or third countries must comply with strict EU rules designed to mitigate the risk of introduction of disease. Imports of live animals and animal products may present an increased risk if a disease outbreak is reported in the exporting country. Should an outbreak occur, the team conducts a qualitative risk assessment to ascertain the likelihood of disease being introduced to the UK through legal trade and other possible pathways.

The main objective of these risk assessments is to inform policy decisions on the initiation of appropriate, risk-based safeguard measures to mitigate the risk to UK animal health. This includes assessing the effectiveness of safeguard measures the affected country has put in place to control disease on the ground, and to prevent its spread to other countries through export controls. If there has been a delay in detecting or reporting disease, then the team carries out investigations to determine whether disease could have been introduced through imports that took place before the outbreak was reported and confirmed. The assessments are usually produced within 24–48 hours of the event and are then published on Defra's website <http://www.defra.gov.uk/animalh/diseases/monitoring/index.htm>

If the increase in the risk is assessed as significant, the International Animal Health Division acts quickly to mitigate the risk, usually in concert with the EU. The Division may also take unilateral safeguard measures to block legal imports from countries or regions with outbreaks of disease, but aims to co-operate with the EU Commission from the outset. It also ensures that appropriate tracing and checking of recent imports, of any trade commodities that may present a risk, takes place.

The team recognises that there is a background level of disease in many countries that is not always reported. Many diseases are endemic in much of the world and there is a risk that such diseases could enter the UK at any time, for example through illegal imports. The EU and UK have enhanced their controls on imports of illegal meat and meat products to reduce this risk. However, it is important to note that this cannot be reduced to zero risk. The team is working closely with HMCE to mitigate this risk to negligible levels. In addition, the risk posed to the UK by some diseases may increase because of natural phenomena (for example, migrating birds, windborne spread, insect vectors, climate change) or human activities including movement of contaminated objects, movement of people. Many of these cannot be controlled by Defra.

During 2004, the team published eighteen qualitative risk assessments on disease outbreaks in countries that have trade with the UK. The team has also produced two risk assessments on LPAI to support the EU position on the proposed OIE's Code on avian influenza.

It is possible for readers both within the UK and elsewhere to submit comments on both these risk assessments using the webmaster's e-mail address (ahweb@defra.gsi.gov.uk). In order to ensure an on-going improvement in the quality of the risk assessments, the team has also requested the Royal Veterinary College, University of London to carry out an official peer review of a number of the published risk assessments. This review has now been completed and the recommendations arising are in the process of being implemented.

Section D – Chapter D2

EU law requires that all Member States should send detailed information on each outbreak of a specified notifiable disease in animals to the European Commission via the Animal Disease Notification System (ADNS). The ADNS is a notification system that has as its main purpose the registration and documentation of certain important infectious animal diseases.

List of specified diseases required to be reported to ADNS:

AHS = African horse sickness
AI = Avian influenza (was fowl plague)
ASF = African swine fever
BSE = Bovine spongiform encephalopathy
BT = Bluetongue
CBPP = Contagious bovine pleuropneumonia
CP = Capripox (sheep and goat pox)
CSF = Classical swine fever in domestic swine
CSF WB = Classical swine fever in feral pigs
DO = Dourine
FMD = Foot and mouth disease
IHN = Infectious haematopoietic necrosis
ISA = Infectious salmon anaemia
LSD = Lumpy skin disease
ND = Newcastle disease
PEE = Porcine enterovirus encephalomyelitis (was Teschen disease)
PPR = Peste des petits ruminants
RP = Rinderpest
RVF = Rift valley fever
SVD = Swine vesicular disease
VHS = Viral haemorrhagic septicaemia
VS = Vesicular Stomatitis

The following diseases were not reported under ADNS in 2004: FMD, RP, CBPP, AI, PEE, VS, PPR, LSD, CP, AHS, RVF, DO, GL, SHB and TM.

The following countries did not report any disease outbreaks to ADNS in 2004:

Andorra, Estonia, Faroe Islands, Greece, Hungary, Iceland, Lithuania, Luxembourg, Latvia, Malta and Romania.

A summary for 2004 of the number of outbreaks and the date of the last outbreak notified to the Community is given in the following table.

The Report of the Chief Veterinary Officer – Animal Health 2004

Table D2.1: Disease outbreaks in EU Member States during 2004

COUNTRY	DISEASES											
	SVD	BT	CSF	CSF WB	ASF	ND	IHN	BSE	ISA	VHS	EEM	EIA
Austria										1 (30/04)		
Belgium								11 (10/12)				
Bulgaria						1 (21/12)						
Cyprus		1 (10/03)										
Czech Republic								7 (27/10)		1 (17/06)		
Denmark								1 (13/05)				
Finland						1 (19/07)						
France		34 (17/12)		1 (28/10)			6 (09/07)	54 (29/12)			32 (08/11)	
Germany				3 (12/11)			1 (11/03)	65 (23/12)				
Ireland								126 (24/12)				
Italy	125 (24/12)	183 (01/10)			248 (29/12)			7 (06/12)		9 (06/12)		3 (15/11)
Netherlands								6 (10/12)				
Norway									15 (22/12)			
Poland								11 (26/11)				
Portugal	1 (09/01)	11 (16/12)						92 (30/12)				
Slovakia			5 (18/11)	3 (09/08)				7 (14/10)				
Slovenia								1 (26/03)				
Spain		317 (27/12)						133 (28/12)				
Sweden						2 (20/07)						
Switzerland								3 (02/12)				
United Kingdom								363 (29/12)				
TOTAL	126	546	5	7	248	4	7	887	15	11	32	3

Date of last outbreak shown in brackets.

Chapter D3: International trade exports

British Agricultural Departments are responsible for ensuring that intra-community trade in live animals, their genetic material and animal products is undertaken in accordance with EU rules. In the case of exports to Third Countries, Defra negotiates and drafts the necessary health certification to meet the conditions for import into the country of destination.

Intra-community trade

Perhaps the most significant development within the European Union in 2004 was the accession of Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia to the European Union. Each of these new Member States (MS) has traded in animals and animal products like any other Member States since their accession on 1 May 2004. This will result in the number of exports to fellow Member States and third countries altering from previous years and explain the rise in exports to the EU in some of the tables below.

Trade Control And Expert System (TRACES)

TRACES is an internet based system which allows electronic applications for intra-community trade certificates and enables such trade, and third country imports, to be monitored by Competent Authorities. The first phase of TRACES was launched throughout the EU on 1 April 2004 and its use by Competent Authorities became compulsory on 31 December 2004. Economic operators are invited to use the system but it is not compulsory for them to do so.

In order to ensure that the UK was ready to efficiently operate the system when its use was to become compulsory on 1 January 2005, extensive training was delivered to staff in all Animal Health Divisional Offices and Border inspection Posts. It is intended that training will be offered to economic operators during 2005.

Further information can be found at www.defra.gov.uk/animalh/int-trde/export-cert/index.htm

Balai Directive

Council Regulation EC No. 998/2003 (the 'Pets Regulations') came into force in July 2004 as part of The Animals and Animal Products (Import and Export) (No.2) Regulations 2004. The Pets Regulations set out the animal health conditions relating to non-commercial movement of pet animals between Member States, or imported from Third Countries. This Regulation, in principal, has simplified the movement of cats, dogs and ferrets, but import of these animals into the UK is still subject to the same Rabies conditions as under the Pets Regulations. Rabies quarantine is retained for pet animals coming from countries which do not appear on an approved list, or which do not satisfy all the requirements for identification, vaccination etc.

The Balai Directive 92/65/EEC (which deals with animal health requirements governing trade in and imports into the Community of animals, semen, ova and embryos not subject to animal health requirements laid down in specific Community rules referred to in Annex A (I) to Directive 90/425/EEC) has been amended to make the rules for commercially traded cats, dogs and ferrets correspond exactly to the Pets Regulations.

New EU Directive on trade in sheep and goats

Council Directive 2003/50/EEC with regards to intra-Community trade of sheep and goats came into force on 1 July 2004 as part of The Animals and Animal Products (Import and Export) (No.2) Regulations 2004. The Directive made permanent the requirement for all sheep and goats to meet certain residency and standstill provisions. It also introduced new model health certificates for export to Member States of breeding, fattening and slaughter sheep and goats. Specimen copies of health certificates relating to trade in sheep and goats are now available from animal health offices or from the Defra website. The new Directive also aligned other health controls (e.g. on assembly centres, dealers, transporters) with the conditions contained in the equivalent trade Directive for cattle and pigs (EU Directive 64/432/EEC).

Poultry Health Scheme

In October 2003 it was discovered that the legislation governing the poultry health scheme needed to be revised to ensure that the charges made to members under the scheme could be collected lawfully. In addition to making new legislation it was also necessary to repay fees collected over a six year period.

During 2004, all fees collected unlawfully since October 1997 and subsequently reclaimed were repaid. Amendments were introduced in the Animals and Animal Products (Imports and Exports) (No.2) Regulations 2004. Wales, Scotland and Northern Ireland are in the process of making similar legislation and Defra will not recommence charging of the fees in question until all Devolved Administrations are in a position to charge these as well.

Section D – Chapter D3

Table D3.1: Export of animals to other EU Member States 1998–2004

	1998	1999	2000	2001	2002	2003	2004
Cattle	0	0	0	0	0	0	0
Sheep	703,183	1,159,989	607,561	84,220	138,684	70,018	214,382
Goats	287	441	238	12	34	52	331
Pigs	182,476	103,221	85,819	12,201	22,083	27,410	97,883
Horses ^a	9,250	7,952	8,313	13,433	9,800	8,054	7,709

^a The figures for horses do not include exports to the Republic of Ireland (ROI) or registered horses exported to France, for which export health certificates are not required and are not recorded on ANIMO. However, during 2001 and early 2002, horses to the ROI and France had to be accompanied by health certificates as a result of the 2001 FMD outbreak.

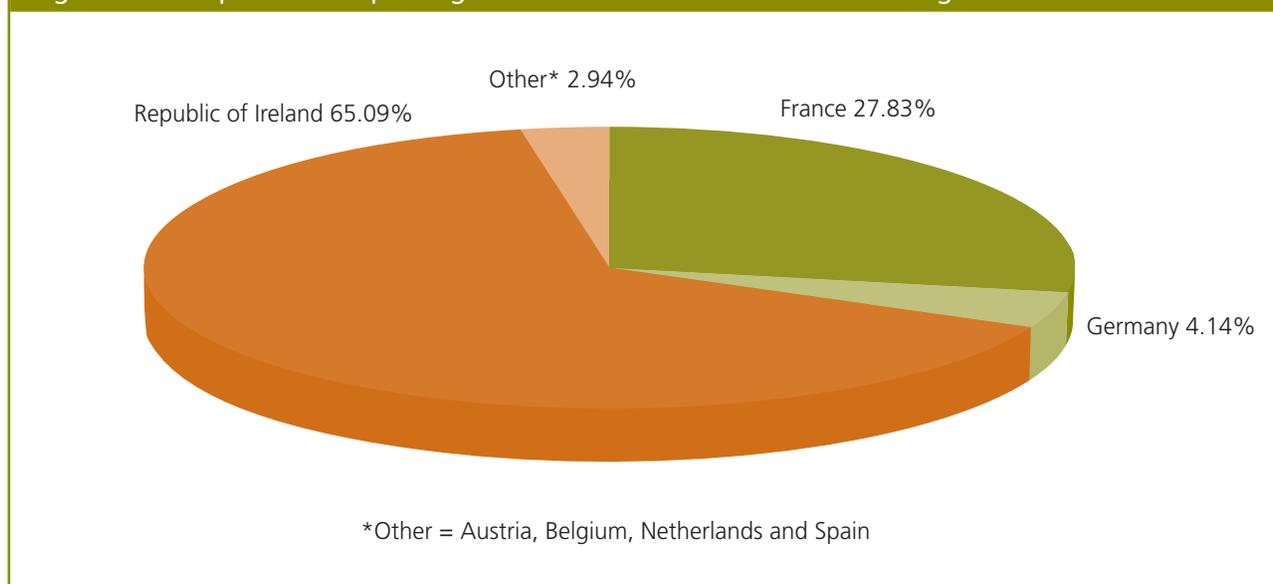
Cattle Germplasm

The main destinations for trade in embryos and semen during 2004 were the Netherlands (73,000), France (67,000) and the Republic of Ireland (51,000). We traded with new EU members such as Poland, the Czech Republic and Cyprus.

Sheep and Goats

The great majority of sheep and goats were exported to the Republic of Ireland (139,555 sheep and 201 goats). Other sheep exports included France (59,689), Germany (8,880) and the Netherlands (5,256).

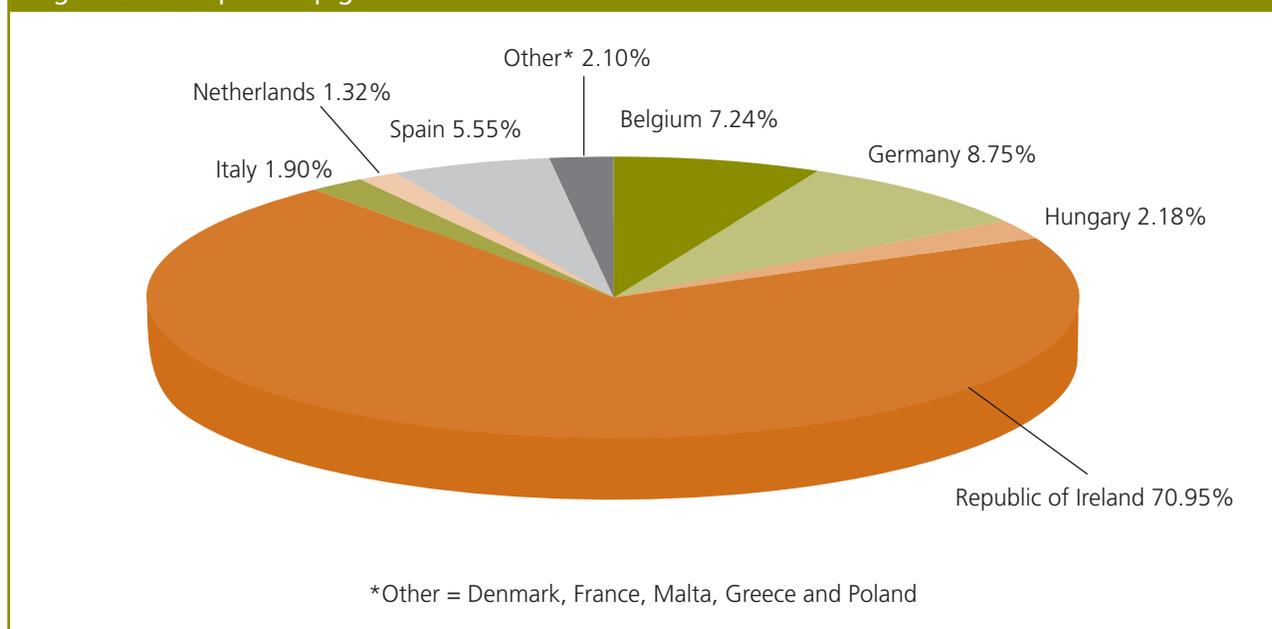
Figure D3.1: Export of sheep and goats to other EC Member States during 2004



Pigs and porcine semen

Pigs were mainly exported to Ireland (69,451), Germany (8,561) and Belgium (7,091). Pigs were also exported to new EU Member States including Hungary and Malta. Due to the new EU internet based trade certification system (TRACES) being introduced during 2004 and a finalised data collection programme not being available, data specific to porcine semen could not be extracted.

Figure D3.2: Export of pigs to other EC Member States 2004



Horses and equine germplasm

The main countries to which horses were exported during 2004 were the Netherlands (1,841), Germany (1,826) and Italy (905). Due to the new EU internet based trade certification system (TRACES) being introduced during 2004 and a finalised data collection programme not being available, data specific to equine semen could not be extracted.

Poultry

The vast majority of poultry exports during 2004 were to the Republic of Ireland (8,780,148) and the Netherlands (7,009,362). Main destinations for hatching egg exports were Spain (4,302,770), the Netherlands (3,981,282) and France (3,344,781).

Section D – Chapter D3

Figure D3.3: Export of poultry to other EC Member States 2004

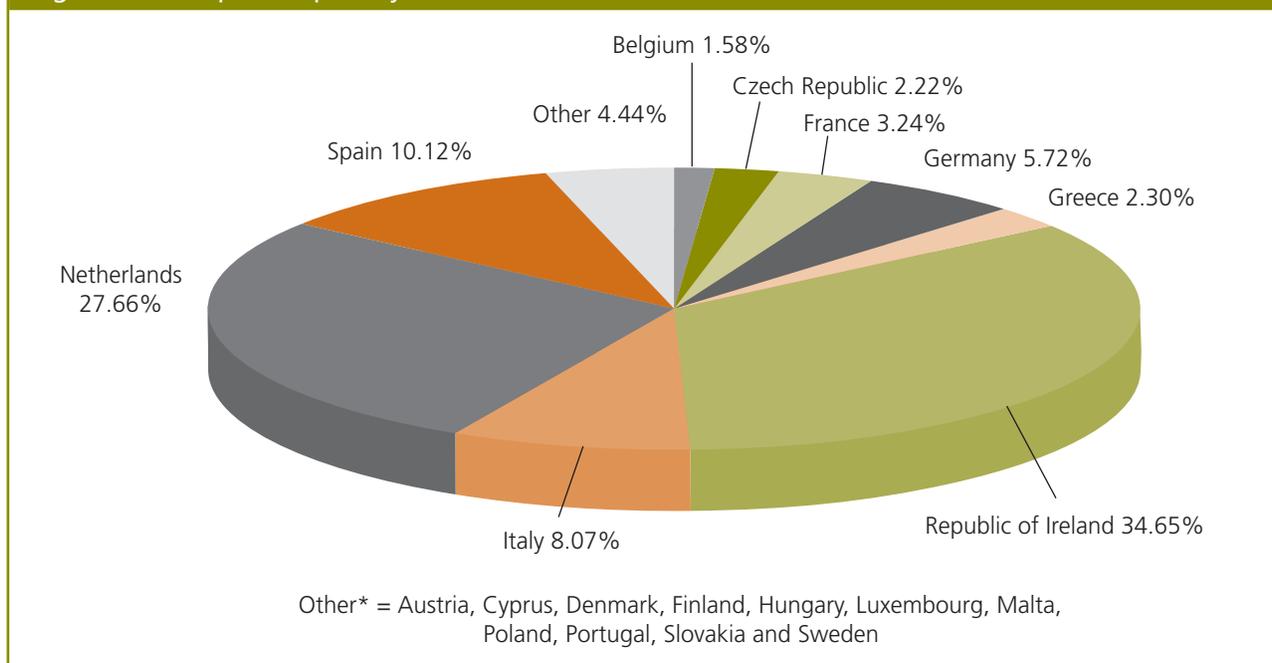
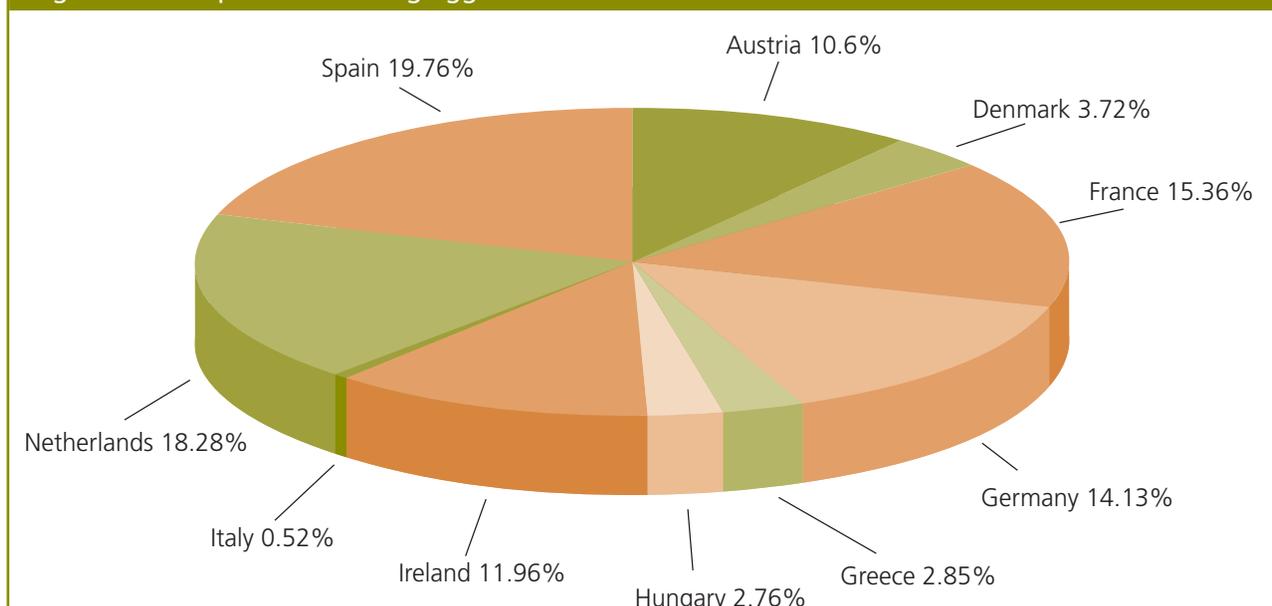


Figure D3.4: Export of hatching eggs to other EC Member States 2004



Exports to third countries

There were important successes during 2004 in negotiating export health certification which included opening a number of valuable export markets to UK exporters. This was helped by the constructive partnership we have forged with UK industry, in particular the two Export Certification User Groups (ECUGs) (one covering breeding livestock, livestock genetics, pigmeat, and one covering milk and dairy products) comprising officials from Defra and key industry representatives. The groups identified priority export markets and enabled the Department to target resources where they were most needed.

Some markets continued to prove difficult to open and in particular the most important one identified by UK industry was pigs and pig meat exports to China. During 2004, it was encouraging that export health certification was agreed for exports of greasy wool, sheepskins, and milk and milk products to China. However, China had still not recognised the UK as free from Classical Swine Fever to allow pig and pig meat exports to this important market. The British Embassy in Beijing and this Department continually made efforts to persuade the Chinese authorities to lift restrictions, including completion by Defra of a detailed questionnaire in June 2004 and further information in November 2004.

Cattle germplasm

Several new bovine semen export markets were opened including Brazil, Mexico, Colombia, Paraguay, Saudi Arabia, and Malaysia. New bovine embryos markets include the USA and Canada.

Pigs and Porcine semen

Export health certification for breeding pigs were agreed with Brazil, USA, Japan, Malaysia, Republic of Korea, Croatia, Russia and Romania. Porcine semen certification were agreed with the Philippines, Romania, the USA and Croatia.

Milk and dairy products

New dairy product export health certificates included those agreed with China, Egypt and India.

Horses and equine semen

New horse export certificates included temporary horses to Hong Kong and competition horses to Japan.

Poultry

New export health certificates for day old chicks and hatching eggs included those agreed with the Republic of Korea, Argentina, Turkey and Botswana.

Sheep and goats and their germplasm

Several new export health certificates for ovine and caprine semen were agreed including with Cyprus, Chile and Romania.

Chapter D4: Safeguard measures

As a result of disease outbreaks in other EU Member States or Third Countries liable to present a risk to animal or public health, restrictions were put in place on the importation of live animals, their germplasm and, where appropriate, their products.

Where necessary as a result of disease outbreaks in other EU Member States or Third Countries which are liable to present a risk to animal or public health, restrictions were put in place on the importation of live animals, their germplasm and, as appropriate, their products.

For animals and genetic material from EU countries, these restrictions were applied by Declarations made under Regulation 27 of the Animals and Animal Products (Import and Export) (England and Wales) Regulations 2000, the Animals and Animal Products (Import and Export) Regulations 2004 (AAP) and AAP (No 2) 2004. For animal products the equivalent legal base is Regulation 35 of the Products of Animal Origin (Import and Export) Regulations 1996 (EU countries) and Regulation 59 of the Products of Animal Origin (Third Country Imports) (England) Regulations 2003, 2004, No. 2 of 2004 and No. 3 of 2004.

During 2004, there were outbreaks of HPAI in certain Asian countries, South Africa, Canada and the United States of America. Swift action was taken to ban or restrict imports of animals or products of susceptible species, and in most cases, measures were put in place prior to formal European Community action being taken.

Restrictions on Canada and the USA were lifted during the year after they confirmed freedom of the disease. Restrictions in the other countries remained in place as they were still experiencing outbreaks at the end of 2004.

During 2004, 30 Declarations were issued by Defra and the Food Standards Agency for animals, genetic material and animal products to prohibit imports from specified regions, areas or territories or to revoke any previous prohibitions. Of those, 13 were in respect of HPAI. Similar Declarations were issued by Scotland and Wales under their equivalent legislation.

Chapter D5: Livestock protections

The purpose of animal breeding controls is to protect animal welfare and to reduce the risk of breeding practices being involved in the introduction or spread of diseases in livestock populations.

Bovine artificial insemination

Intra-community trade in bovine semen is governed by Council Directive 88/407/EEC, amended by EU Directive 2003/43/EC of 26 May 2003. The 2003 amendments introduced additional testing for Bovine Viral Diarrhea (BVD) and possible extra tests for campylobacter and trichomonas for animals aged six months and older. In the UK we made use of a derogation and did not impose new requirements until 1 January 2005.

Controls on the collection, processing, storage and movement of semen for the domestic only market is governed by the Artificial Insemination of Cattle (Animal Health) (England and Wales) Regulations 1985 as amended (and by corresponding legislation in Scotland). These regulations have been reviewed, by working in close partnership with industry, to look at ways of improving the control regime for bovine semen for the domestic market. A public consultation on new proposals took place between 12 July and 8 October 2004. As at the end of 2004, draft regulations were being considered taking account of responses received.

Porcine artificial insemination

Intra-community trade in porcine semen is governed by Council Directive 90/429/EEC (as amended). Domestic control regulations, as with the cattle regulations, have been recognized as being out of date with current industry practices. The review exercise commenced in 2004 looking at both the domestic legislative and non-legislative control aspects of porcine semen production.

A Working Group formed of officials and industry representatives was set up in 2004 and has agreed the actions necessary to bring the regulations up to date. A number of non-legislative measures were also reviewed resulting in the removal of testing for TB at studs and the introduction of an industry agreed Code of Practice to reduce the frequency of veterinary inspection at licensed premises.

Table D5.1: Number of artificial insemination licences granted in Great Britain during 2004

	Licences issued in 2004				Total existing licences at 31 December 2004			
	England	Scotland	Wales	Great Britain	England	Scotland	Wales	Great Britain
EU bovine semen processing centres	0	0	0	0	4	0	1	5
Domestic bovine semen processing centres	0	0	0	0	2	0	1	3
Bovine semen main stores	1	0	1	2	6	2	2	10
Bovine semen supply centres	3	0	0	3	40	8	6	54
Bovine semen shops	1	0	0	1	13	0	2	15
Bovine semen farm storage units	128	30	11	169	6,294	1,090	1,002	8,386
Bovine farm storage servicing licences	0	0	0	0	14	2	5	21
On-Farm processing licences for bovine semen	0	0	0	0	2	5	2	9
EU porcine semen collection centres	2	0	0	2	10	1	0	11
Domestic porcine semen collection centres	0	0	0	0	3	0	0	3
EU bovine embryo collection teams	6	1	0	7	19	5	0	24
EU bovine embryo transfer teams	5	0	0	5	18	3	0	21
EU bovine embryo production teams	0	0	0	0	3	1	0	4

Table D5.1: Number of artificial insemination licences granted in Great Britain during 2004 (continued)

	Licences issued in 2004				Total existing licences at 31 December 2004			
	England	Scotland	Wales	Great Britain	England	Scotland	Wales	Great Britain
Domestic bovine embryo collection team	1	0	0	1	2	0	1	3
Domestic bovine embryo transfer teams	1	0	0	1	4	0	6	10
Domestic bovine embryo production teams	0	0	0	0	0	0	0	0
EU embryo stores	4	0	0	4	16	0	0	16
Domestic embryo stores – on-farm and non-farm	2	0	0	2	38	10	10	58
EU ovine/caprine embryo collection teams	0	0	0	0	1	1	0	2
EU ovine/caprine semen collection teams	0	0	0	0	1	1	0	2
EU bulls approved	366	0	98	464	N/A	N/A	N/A	N/A
EU bulls rejected	10	0	0	10	N/A	N/A	N/A	N/A
Domestic bulls (on-centre collection) approved	11	0	0	11	N/A	N/A	N/A	N/A
Domestic bulls (on-centre collection) rejected	7	0	0	7	N/A	N/A	N/A	N/A
Domestic bulls (on-farm collection) approved	55	60	6	121	N/A	N/A	N/A	N/A
Domestic bulls (on-farm collection) rejected	0	0	0	0	N/A	N/A	N/A	N/A
EU boars approved	621	85	0	706	N/A	N/A	N/A	N/A
EU boars rejected	12	0	0	12	N/A	N/A	N/A	N/A
Domestic boars approved	287	0	0	287	N/A	N/A	N/A	N/A
Domestic boars rejected	1	0	0	1	N/A	N/A	N/A	N/A

Section E: Animal welfare on farm, during transport, at market and at slaughter

Chapter E1: Animal welfare

Defra continued to have an active input into animal welfare issues at both EU and domestic levels. National legislation and welfare codes aim to improve the standard of welfare for farmed animals by educating and encouraging livestock keepers and, where necessary, enforcement powers are used. Premises and farming practices, animals in transit, at market and at slaughter are assessed against legal requirements stemming from Council Directives and national rules concerning the protection of animals kept for farming purposes, and the additional recommendations of the relevant species welfare code. These checks contribute to surveillance for animal welfare, both targeted (by the SVS) and scanning (by the VLA, the MHS and the SVS).

Animal Welfare Bill

The draft Animal Welfare Bill was published in July 2004. The Bill has been described as the most radical overhaul of animal welfare legislation for nearly a century. It will require those responsible for animals to meet their reasonable welfare needs (as is already required for keepers of farm animals). This will for the first time enable action to be taken where a non-farmed animal, although not currently suffering, is being treated in such a way that its welfare is not being properly protected, and should reduce the number of cases which then proceed to actual suffering.

The House of Commons' Environment, Food and Rural Affairs (EFRA) Select Committee conducted a pre-legislative scrutiny of the draft bill between July and October. It considered over 180 memoranda from interested organisations and individuals and took oral evidence from over 50 organisations and individuals. They published their report in December. It gave a broad welcome to the Bill and made a number of recommendations, many of which have been accepted.

The Queen's Speech on 23 November announced the introduction of the Animal Welfare Bill into the new Parliamentary session. Among other things the Bill will extend to companion animals the existing power to make regulations that promote the welfare of farmed animals. This will enable existing laws relating to the welfare of companion animals, which go back to 1925, to be repealed and replaced by ones that are more relevant to present day needs. It will also allow currently unregulated activities to become subject to regulation where there is evidence that this is necessary to protect animal welfare.

Research and development

Animal welfare science is an integral component of the evidence gathered to inform policy on the welfare of domesticated animals. The funding for research and development in 2004–2005 for animal welfare science was £3.38 million used on on-farm welfare, the welfare of farm animals at slaughter, transport of farm animals and methods to improve the assessment of animal welfare.

Much of the programme is aimed at defining the complex interrelationships between an animal's welfare and its environment that need to be understood to inform policy. For example projects on the welfare of broilers and farmed rainbow trout were completed.

The University of Oxford led the project to ascertain how stocking density affected the welfare of broiler chickens. Manipulation of stocking density was carried out in commercial flocks involving 2.7 million chickens and welfare was assessed through a variety of measures including mortality, gait, leg health, physiology and behaviour. The conclusion of the study was that stocking density *per se* was not the major factor for determining the welfare of broiler chickens, rather husbandry and management variables were crucial in maintaining an acceptable level of welfare (Dawkins et al., 2004. *Nature* 427: 342-344).

CEFAS has participated in a joint project with the Institute of Aquaculture, Stirling University investigating the effects of stocking density on the welfare of farmed rainbow trout. The results of commercial trials demonstrated that both high and low densities can infringe on different aspects of trout welfare. For example, at low densities subordinate fish have elevated stress hormone levels whilst an increase in fin erosion was recorded with increasing stocking density.

These two studies demonstrate that welfare is a complex issue that requires detailed scientific studies. Full details of current projects and reports on completed projects are available at www.defra.gov.uk/animalh/welfare/farmed/randd.htm

On-farm

In 2004 the series of Agricultural Development and Advisory Service (ADAS) welfare campaigns covered:

- Heat Stress in Broilers – Reducing the Risk.
- Managing (a) Barn and (b) Cage Egg Layers to minimise Feather Pecking and Cannibalism.
- The Management of Sick and Injured Pigs.
- Milking Management and the Mastitis Management Action Plan.
- Improving Lamb Survival.
- Welfare in the Outdoor Pig Unit.

A three-month public consultation on revised welfare codes for ducks, turkeys and goats was completed on 10 September and preparations are being made for their passage through Parliament.

Meetings of the Beak Trimming Action Group meeting were held where it was agreed to publish a Guide to the Practical Management of Feather Pecking and Cannibalism in Free-Range Layers. Meetings have also been held with the industry and welfare interests, to discuss the review of Council Directive 99/74 – welfare of laying hens.

Preparations were started for the anticipated EC broiler (meat chickens) directive.

Transport

A new EU Regulation on the welfare of animals in transport was adopted in November (Council Regulation (EC) 1/2005). The EU Council of Ministers had not agreed in April 2004 on new maximum journey times and space allowances and the new regulation maintained the provisions of the current Directive 91/628, subject to review no later than 2012. The new regulation comes into force in January 2007 and contains important changes in respect of:

- training and certification of transporters;
- authorisation for transporters;
- vehicle inspection and approval;
- rules on fitness of animals to travel;
- co-operation between member states to improve enforcement;
- global positioning satellite system to track long journeys; and
- specific protection for horses, including those limiting journeys for “unbroken” horses.

Farm Animal Welfare Council (FAWC)

FAWC is an independent advisory body on farm animal welfare established by Ministers. It is charged with reviewing the welfare of farm animals on agricultural land, at market, in transit and at the place of slaughter, and to advise the Government of any legislative or other changes that may be necessary.

The report on the welfare implications of animal breeding and breeding technologies was launched at the FAWC open meeting on 30 June 2004. Work on the welfare of farm animals at market and on the implications of farm assurance schemes for farm animal welfare has continued during 2004.

Studies on the welfare of white meat animals at the time of slaughter continued in 2004. Two new groups were set up in 2004. One is looking at stockmanship and the other at labelling. Advice was given to Ministers on CAP reform and animal welfare in December. A poultry issues group has been participating with Defra in its beak trimming action plan. Advice was given to Defra on apparatus using a precisely controlled infra-red beam instead of hot blade beak trimming of chicks at the hatchery.

The Chair of FAWC was a member of the Defra Animal Health and Welfare Strategy steering group and took part at the strategy launch with the CVO (UK).

The Director of Science at Silsoe Research Institute, was appointed as the new Chair along with four new members with effect from 1 January 2005.

Further information on FAWC can also be found on the Council's website at www.fawc.org.uk.

Global participation

Council of Europe

The work of the standing committee for the protection of animals kept for farming purposes was again curtailed during the year by the diversion of Council secretariat staff to global issues such as bio-terrorism. One meeting of the committee was held in December and new recommendations concerning the welfare of pigs kept for farming purposes were adopted. In addition the articles of the recommendations for farmed fish were agreed but the detailed appendices were deferred for agreement at a later date.

EU

An inspection team from the EU Food and Veterinary Office (FVO) looked at the welfare of laying hens on farm premises and the activities of two Animal Health Offices during a visit at the end of January. Their report is published on their website.

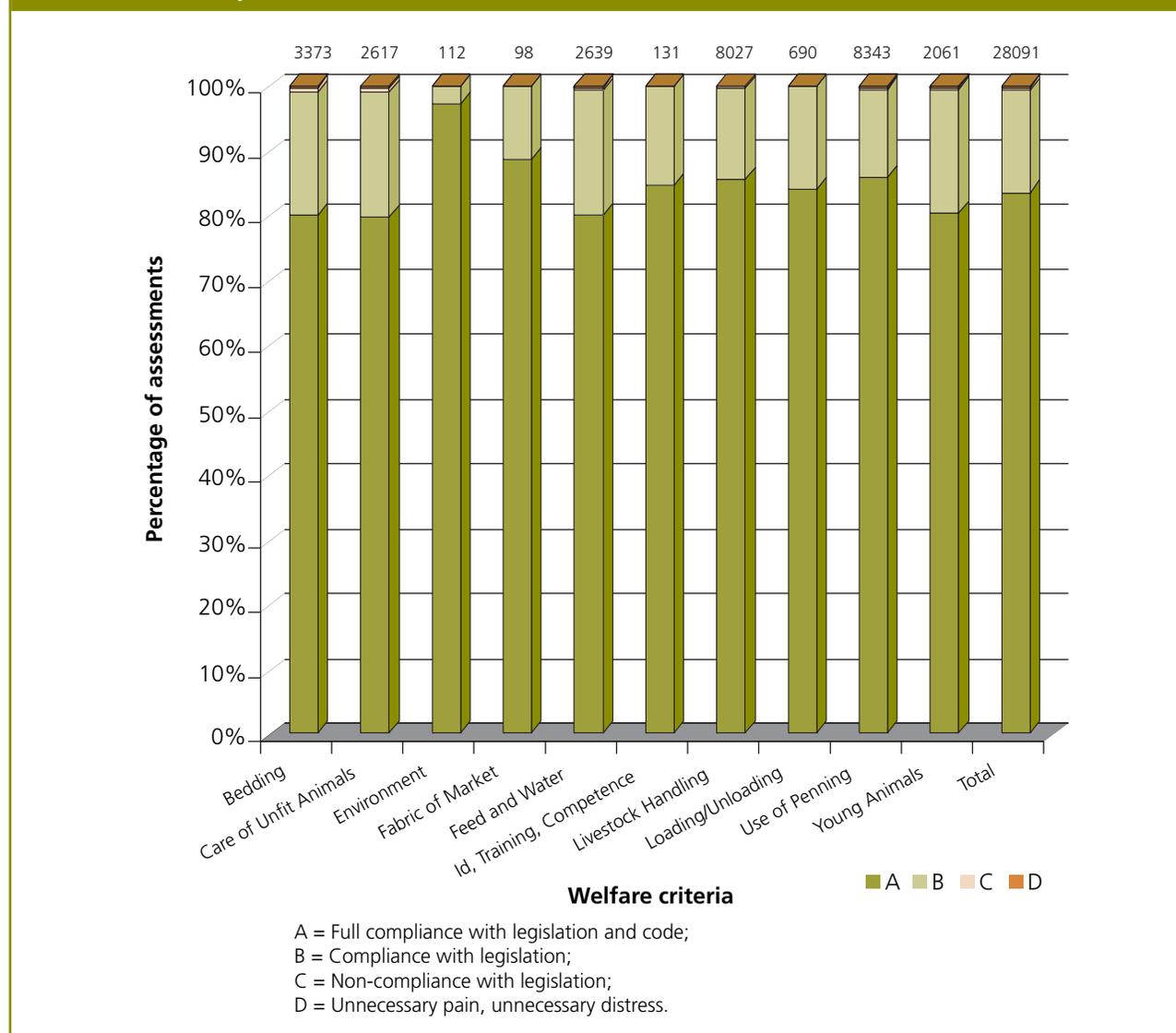
Section E – Chapter E1

A strong representation went to the OIE international conference on animal welfare in Paris during February. Later in the year the head of the veterinary team delivered the prestigious Bill Snowden lecture in Australia entitled *'Animal welfare – how much can you afford?'*

Protection During Transport

The SVS carried out 8,719 welfare inspections at 3,658 visits (2.4 inspections per visit) at markets and a summary of the findings is shown in figure E1.1.

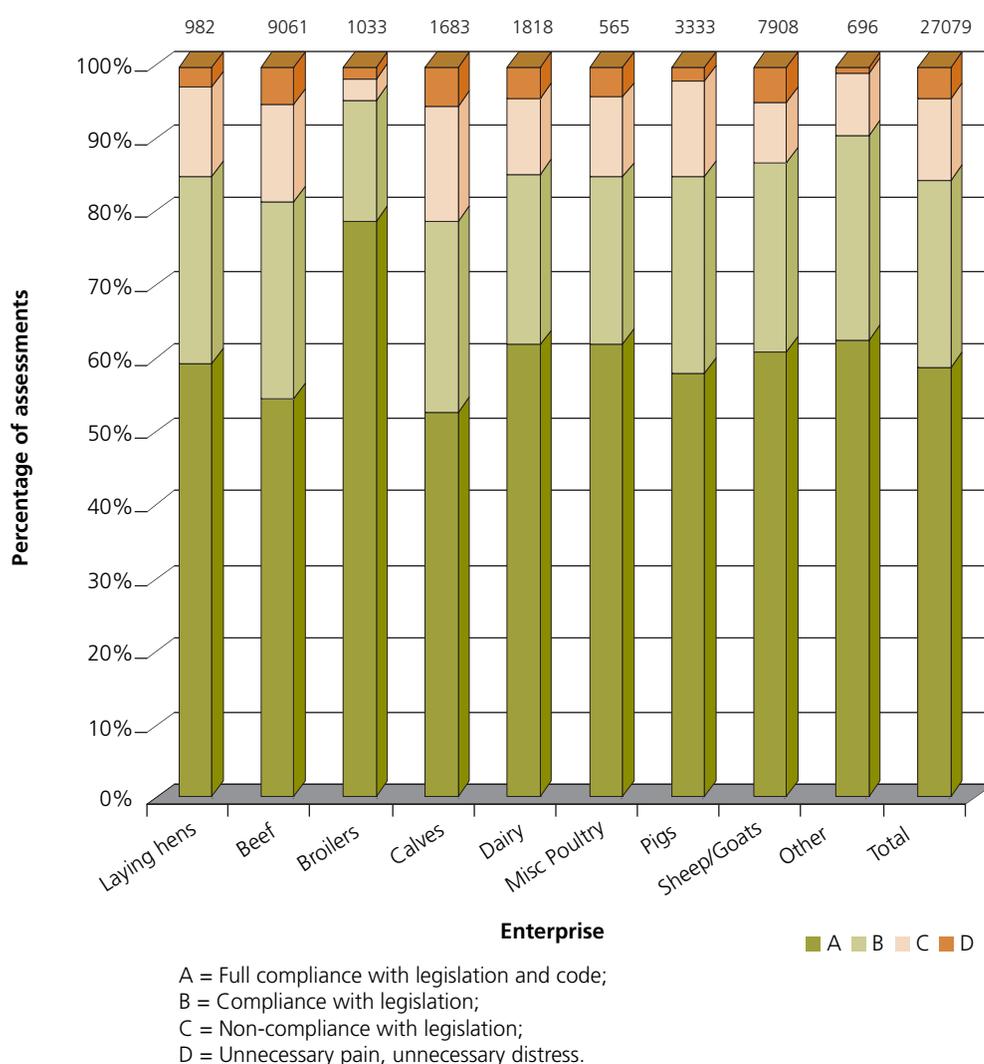
Figure E1.1: Overall results of SVS assessments of the welfare of animals at markets in Great Britain between 1 January and 31 December 2004



On-farm Inspections

The SVS carried out 5,431 welfare inspections at 3,149 visits (1.7 inspections per visit) on farms to check that legislation and the welfare codes are being followed. All complaints and allegations of poor welfare on specific farms are treated as a matter of urgency. Defra also co-operate closely with other organisations such as local authorities and the RSPCA. A summary of the findings during the year is shown at figures E1.2 and E1.3 by enterprise type, and figures E1.4 and E1.5 by welfare criteria.

Figure E1.2: Results of SVS assessments of the welfare of animals on farm in Great Britain between 1 January and 31 December 2004 during complaint and target visits



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Figure E1.3: Results of SVS assessments of the welfare of animals on farm in Great Britain between 1 January and 31 December 2004 during programme and elective visits

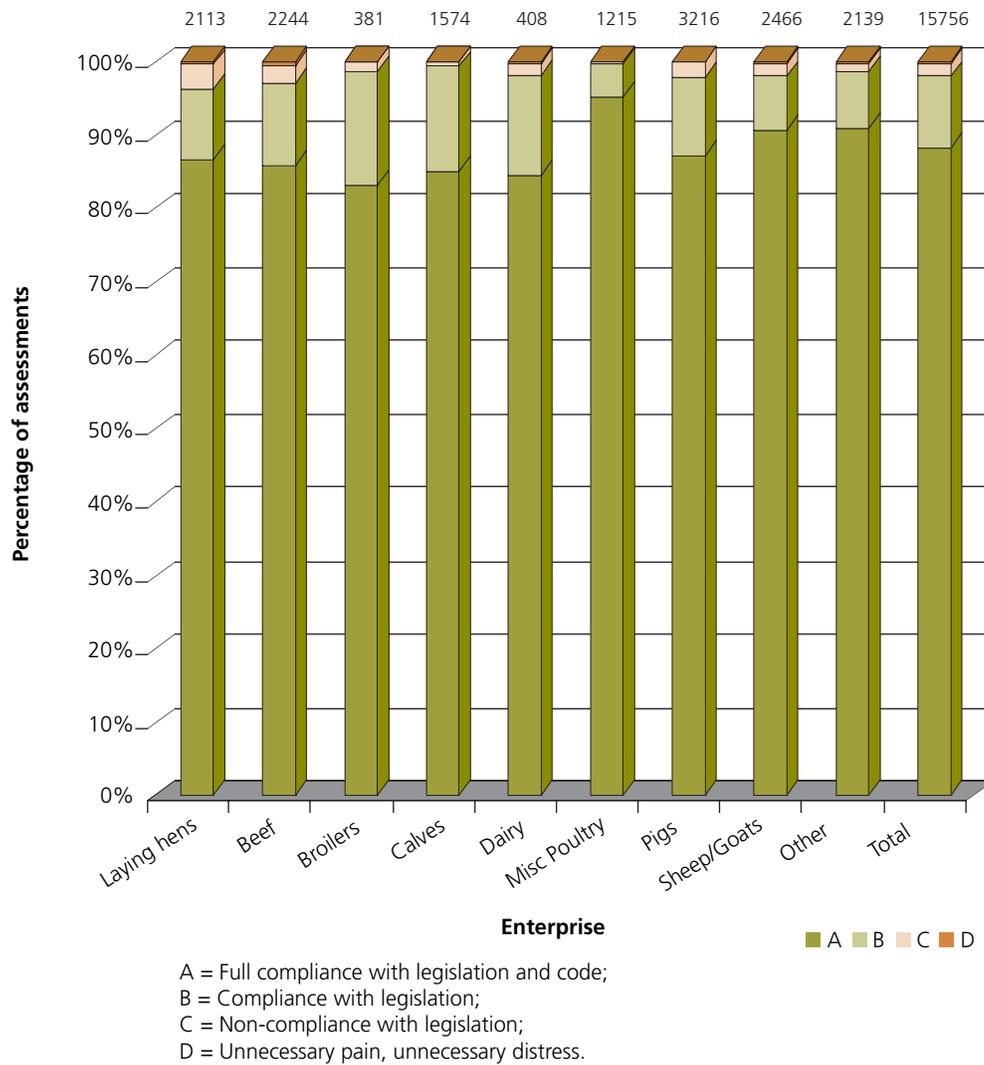
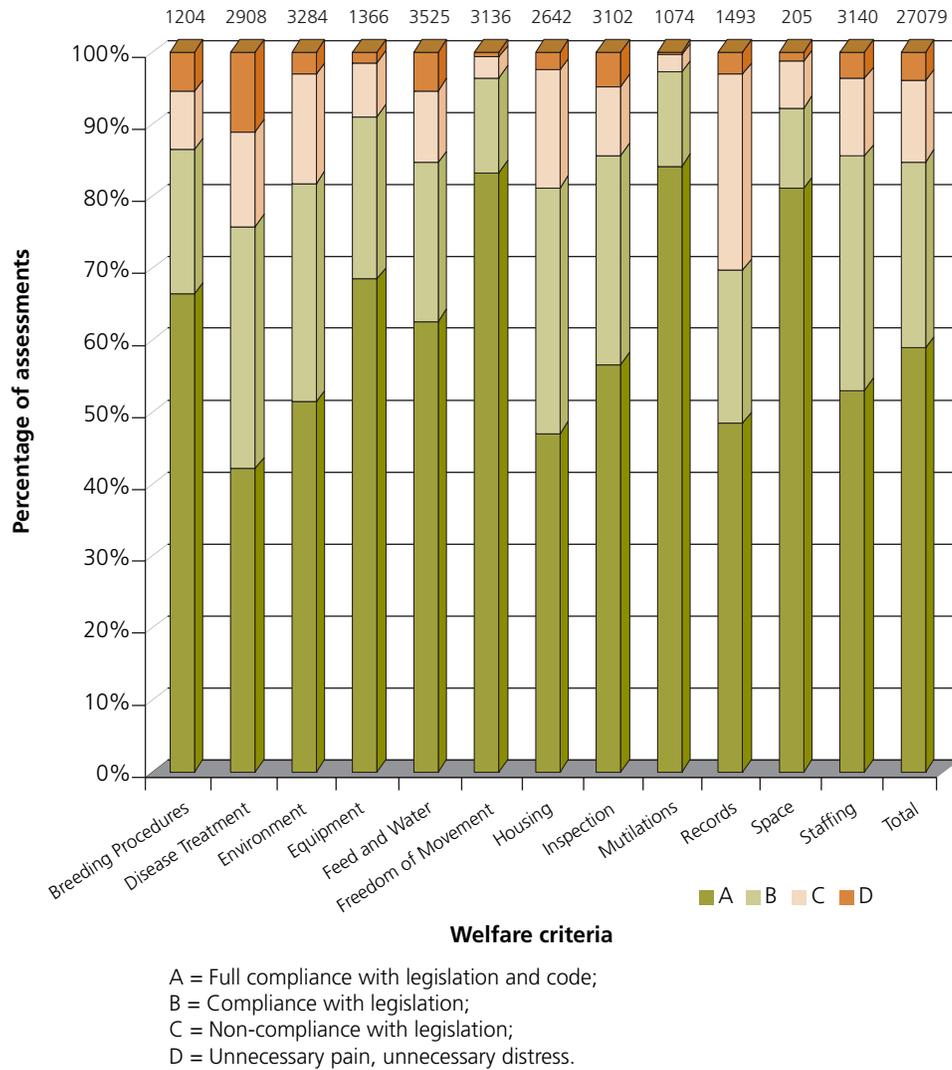
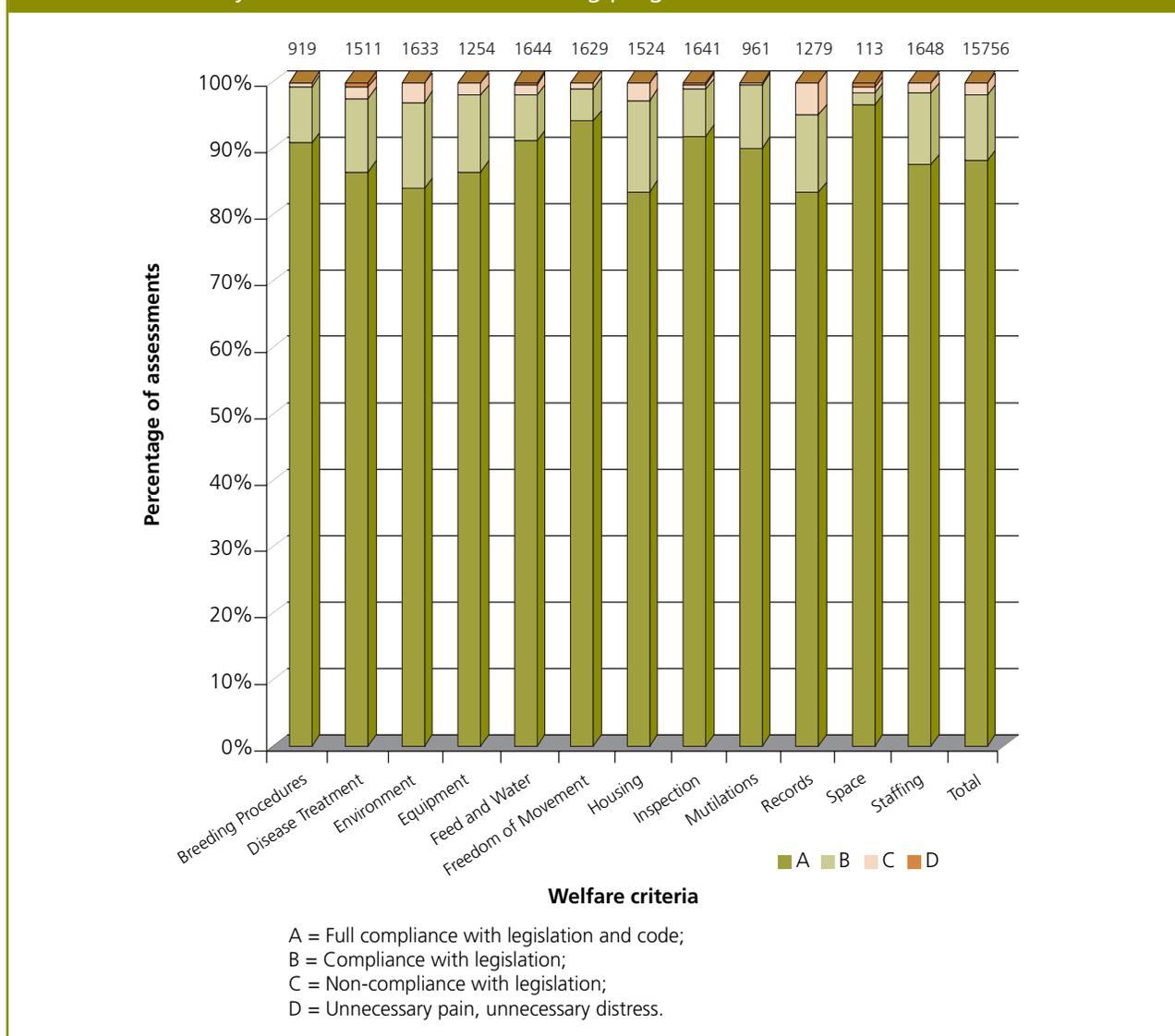


Figure E1.4: Results of SVS assessments of the welfare of animals on farm in Great Britain between 1 January and 31 December 2004 during complaint and target visits



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Figure E1.5: Results of SVS assessments of the welfare of animals on farm in Great Britain between 1 January and 31 December 2004 during program and elective visits



Slaughter

Several amendments were made to the Welfare of Animals (Slaughter or Killing) Regulations 1995. The amendments were to:

- allow for the wider use of the new percussive device (modified captive bolt pistol) for use when culling poultry for disease control purposes;
- end the current ban on the bleeding of animals in the sight of other animals of the same species, bringing England into line with Scotland, although the ban still applies to equines;

- reduce the maximum time poultry may be hung before being stunned or killed from six to three minutes for turkeys and from three to two minutes for other poultry excluding ratites; and
- require the surrender of suspended/revoked slaughter licences to the Meat Hygiene Service to ensure that a slaughterman who has had his or her licence suspended/revoked cannot operate as a slaughterman in another slaughterhouse or knacker's yard.

The amended legislation only applies in England. It became effective from 6 January 2004, except for the provision relating to the hanging times of poultry, which will come into effect on 6 January 2005. Scotland issued a parallel amendment to WASK, with the exception of allowing the slaughter of animals within sight of their conspecifics, which was already allowed. Wales are in the process of reviewing the amendments that need to be made to bring Wales in line with England and Scotland. This modification of domestic legislation followed detailed consultation with farming, animal welfare and slaughtering industry stakeholders and falls within the constraints of the EU Directive.

The revised draft code of practice for the welfare of poultry at slaughter is under preparation using comments received from stakeholders in the last round of consultation. The revised draft code will be sent to key stakeholders for further comment once complete. The draft code of practice includes findings from research published since the production of the last code. We have also introduced photographs and diagrams to help make it more accessible and reader-friendly.

The code of practice for red meat animals is currently being revised in the light of the recommendations made in the FAWC report. Findings from research published since the production of the last code are also being incorporated into the revised draft.

The Government's draft response to the recommendations made in *'Welfare of Farmed Animal at the Time of Slaughter: Part 1 Red Meat Animals'*, was published on 1 April 2004 followed by a period of consultation, which closed on 24 June. Comments received have been considered and the Government is due to issue its response in spring 2005.

The MHS completed the biennial survey conducted on Defra's behalf, of animal welfare in both white meat and red meat slaughterhouses in early September 2003. This report was published in March 2004.

Section F – Appendices

Section F: Appendices

Statistical tables

Table F.1.1: Number of stock slaughtered and compensation paid 1998–2004														
	1998		1999		2000		2001		2002		2003		2004	
	No.	£	No.	£	No.	£	No.	£	No.	£	No.	£	No.	£
Bovine Tuberculosis (cattle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
a) Affected animals	5,863	3,605,242	6,772	5,770,983	8,353	7,307,797	5,916	7,074,125	23,007	28,898,623	23,171*	38,215,285*	22,510	33,785,023**
b) Reactors and dangerous contacts														
Total Bovine Tuberculosis (cattle)	5,863	3,605,242	6,772*	5,770,983	8,353	7,307,797	5,916	7,074,125	23,007	28,898,623	23,171*	38,215,285*	22,510	33,785,023**
Bovine Tuberculosis (deer) ⁽¹⁾	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,923*	N/A	38,089
a) Affected animals	37	0	49	0	25	0	2	0	0	0	N/A	N/A	N/A	N/A
b) Reactors and dangerous contacts	6	0	6	0	6	0	0	0	N/A	1,200	N/A	N/A	N/A	N/A
Total Bovine Tuberculosis (Deer)	43	0	55	0	31	0	2	0	N/A	1,200	N/A	1,923*	N/A	38,089
Bovine Brucellosis	0	0	0	0	0	0	0	0	0	0	422	396,497	167	149,096
Aujeszky's Disease (pigs) ⁽²⁾	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bovine Spongiform Encephalopathy ⁽³⁾	4,046	2,095,114	2,857	1,342,214	882	712,025	1,798	576,583	1,153	527,994	419	320,468	310	137,018
FMD ⁽⁴⁾	0	0	0	0	0	0	4,068,000	1,047,229,250	0	399,750	0	0	0	0
Scrapie ⁽⁵⁾	285	5,397	715	14,795	493	56,418	646	15,610	355	9,434	487	16,825	437***	36,810***
Avian Influenza	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Newcastle Disease	0	224,809	0	0	0	0	0	0	0	0	0	0	0	0
Classical Swine Fever (pigs)	0	0	0	0	74,793	4,392,101	0	0	0	0	0	0	0	0
Swine Vesicular Disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Compensation	10,237	5,930,562	10,399	7,127,992	84,552	12,468,341	4,076,362	1,054,895,568	24,515	29,837,001	24,499*	38,950,998*	136,804	39,530,676**

(1) Compulsory slaughter with compensation for deer was introduced on 1 September 1989
(2) The cost of the eradication scheme was met by the pig industry
(3) Compulsory slaughter with compensation commenced 8 August 1988
(4) Compensation payments pertain to animals slaughtered in previous year
(5) Compulsory slaughter with compensation commenced on 29 July 1998
* Revised figures
** Provisional figures
*** slaughtered as suspects
**** stock slaughtered under Scrapie Flock Schemes

Statistical tables (continued)

County	Anthrax	Scrapie Scanning ^(a)	Scrapie Targeted ^(a)	CSF	FMD	EBL	PVM in Pigeons	ND	BSE Scanning	BSE Targeted	CEM	EVA	Brucellosis
ENGLAND													
Avon		1	1						2	2			
Bedfordshire							1						
Berkshire									1	1			
Buckinghamshire		2					1		1	2			
Cambridgeshire									1	7			
Cheshire									4	7			
Cleveland													1
Cornwall									2	7			
Cumbria		14							4	7			
Derbyshire		4	1						4	4			
Devon		19							7	16			
Dorset		2							3	6			
Durham									3	3			
East Sussex		29					2		3	6			
East Yorkshire													
Essex							1		1	2			
Gloucestershire		6							1	3			
Greater London													
Hampshire		2					1		3	3			
Here & Worc		5	1						4	5			
Hertfordshire							1		1	1			
Humberside		1							2				
Isles of Scilly													
Isle of Wight										1			
Kent							5			1			
Lancashire							1		2	9			
Leicestershire		2							1	1			
Lincolnshire							1		2	4			
Manchester							1			2			
Merseyside							1		1				
Norfolk									2	5			
North Yorkshire		30	1						4	14			
Northamptonshire		1								2			
Northumberland		9	3							3			
Nottinghamshire										3			
Oxfordshire		2							2	3			
Shropshire		9							1	6			
Somerset		1							4	10			
South Yorkshire									2				
Staffordshire		2							3	5			
Surfolk										1		1	
Surrey									1	2			
Teeside													
Tyne & Wear													
Warwickshire										2			
West Midlands													
West Sussex									1	2			
West Yorkshire							1		1	3			
Wiltshire							1		3	5			
Worcestershire*													
ENGLAND TOTAL	0	141	7	0	0	0	18	0	68	159	0	1	1

*see Here & Worc

Statistical tables (continued)

Table F1.2: Outbreak of notifiable diseases, excluding TB, in each county of Great Britain during 2004 (continued)

County	Anthrax	Scrapie Scanning ^(a)	Scrapie Targeted ^(a)	CSF	FMD	EBL	PVM in Pigeons	ND	BSE Scanning	BSE Targeted	CEM	EVA	Brucellosis
WALES													
Anglesey													
Carmarthenshire													
Clwyd		32	1						2	8			
Dyfed		27							3	11			
Gwent		1								1			
Gwynedd		4							1	5			
Mid Glamorgan		10								2			
Monmouthshire													
Powys		28							4	5			
South Glamorgan							1						
West Glamorgan		10					1			1			
WALES TOTAL	0	112	1	0	0	0	2	0	10	32	0	0	0
County	Anthrax	Scrapie Scanning ^(a)	Scrapie Targeted ^(b)	CSF	FMD	EBL	PVM in Pigeons	ND	BSE Scanning	BSE Targeted	CEM	EVA	Brucellosis
SCOTLAND													
Angus & Dundee										1			
Argyll & Stirling		1								1			
Ayrshire & Arran										4			
Borders									1	3			
Central													
Dumfries & Galloway										2			
Fife													
Glasgow and Clyde Valley		2								2			
Grampian		1					2			6			
Highland		8							1	9			
Lothian		5											
Orkney & Shetlands		19					1			2			
Strathclyde													
Tayside										1			
Western Isles													
SCOTLAND TOTAL	0	36	0	0	0	0	3	0	2	31	0	0	0
GB TOTAL	0	289	8	0	0	0	23	0	80	222	0	1	1

NB Several counties and boundaries have changed since some diseases were first diagnosed. The original county names have been kept for continuity of figures.

(a) Please note there are different reporting county boundaries for Scanning and Targeted surveillance.

Legislation

Acts passed in 2004

- none

Acts revoked in 2004

- none

General Orders and Regulations made in 2004

Statutory Instruments 2004

- National Assembly for Wales (Transfer of Functions) Order 2004
- The Salmonella in Laying Flocks (Survey Powers) (England) Regulations 2004 (SI 2004/2885)
- The Salmonella in Laying Flocks (Sampling Powers) (Scotland) Regulations 2004 (SI 2004/536)
- The Welfare of Animals (Slaughter or Killing) Amendment (Scotland) Regulations 2004 (SI 2004/13)
- The TSE (Scotland) Amendment Regulations 2004 (SI 2004/277)
- The Diseases of Animals (Approved Disinfectants) Amendment (Scotland) 2004 2004/537
- The Avian Influenza (Survey Powers) (Scotland) Regulations 2004 2004/453
- The Products of Animal Origin (Third Country Imports) (England) Regulations 2004 (SI 2004/1214)
- The Products of Animal Origin (Third Country Imports) (England) (No. 2) Regulations 2004 (SI 2004/1740)
- The Products of Animal Origin (Third Country Imports) (England) (No. 3) Regulations 2004 (SI 2004/2640)
- The Products of Animal Origin (Third Country Imports) (England) (No. 4) Regulations 2004 (SI 2004/3388)
- The Animals and Animal Products (Import and Export) Regulations 2004 (SI 2004/853)
- The Animals and Animal Products (Import and Export) (No. 2) Regulations 2004 (SI 2004/2886)
- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) Order 2004 (SI 2004 No. 828)

- Non Commercial Movement of Pet Animals (England) Regulations 2004 (SI 2004 No. 2363)
- Rabies (Importation of Dogs, Cats and Other Mammals) (England) (Amendment) Order 2004 (SI 2004 No. 2364)
- The Animal Gatherings (England) Order 2004
- The TSE (England) (Amendment) Regulations 2004 (SI 2004 No. 1518)
- The Pigs (Records, Identification and Movement) (Wales) Order 2004 (SI 2004/996 (W.104))
- The Products of Animal Origin (Third Country Imports) (Wales) Regulations 2004 (SI 2004/1430 (W.144))
- The Registration of Establishments (Laying Hens) (Wales) Regulations 2004 (SI 2004/1432 (W.145))
- The Animal Gatherings (Wales) Order 2004 (SI 2004/1803 (W.191))
- The TSE (Wales) (Amendment) Regulations 2004 (SI 2004/2735 (W.242))

General Orders and Regulations revoked in 2004

Statutory Instruments 2004

- The Products of Animal Origin (Third Country Imports) (England) Regulations 2003 (SI 2003/3177)
- The Products of Animal Origin (Third Country Imports) (England) Regulations 2004 (SI 2004/1214)
- The Products of Animal Origin (Third Country Imports) (England) (No. 2) Regulations 2004 (SI 2004/1740)
- The Products of Animal Origin (Third Country Imports) (England) (No. 3) Regulations 2004 (SI 2004/2640)
- The Animals and Animal Products (Import and Export) Regulations 2004 (SI 2004/853)
- Pet Travel Scheme (Pilot Arrangements) (England) Order 1999 (SI 1999 No. 3443)
- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) Order 2000 (SI 2000 No. 1298)
- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) (No. 3) Order 2000 (SI 2000 No. 1641)
- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) Order 2001 (SI 2001/6)
- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) Order 2002 (SI 2002/1011)

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- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) (No. 2) Order 2002 (SI 2002 No. 2850)
- Pet Travel Scheme (Pilot Arrangements) (England) (Amendment) Order 2004 (SI 2004/828)
- The Animal Gatherings (England) Order 2003
- Pigs (Records, Identification and Movement) (Wales) (No. 2) Order 2002
- The Pigs (Records, Identification and Movement) (Wales) (No. 2) (Amendment) Order 2003
- The Pigs (Records, Identification and Movement) (Wales) (Amendment) (No. 2) Order 2003
- The Pigs (Records, Identification and Movement) (Wales) Order 1995 *[revoked in relation to Wales only]*
- The Fresh Meat (Import Conditions) Regulations 1996
- Specified Risk Material Order 1997
- The Miscellaneous Products of Animal origin (Import Conditions) Regulations 1999
- Specified Risk Material Order (Amendment) Order 2000
- The Products of Animal Origin (Third Country Imports) (Wales) Regulations 2002
- The Products of Animal Origin (Third Country Imports) (Wales) (Amendment) (No. 2) Regulations 2002
- The Products of Animal Origin (Third Country Imports) (Wales) (Amendment) Regulations 2003
- The Animal Gatherings (Wales) Order 2003

Partially revoked

- The Products of Animal Origin (Import and Export) regulations 1996
Regulations 19 to 27 revoked
- Specified Risk Material (Amendment) Wales (No. 2) Regulations 2001
Regulation 3 revoked

Selected publications during 2004

ANIMAL HEALTH AND WELFARE

Howard P 2004

Investigation of calf health and welfare on dairy farms in south-west England.
Veterinary Record 155 (9) 262-265

Laven RA; Livesey CT; May SA 2004

Relationship between acute phase proteins and hoof horn haemorrhages in postpartum first-lactation heifers.
Veterinary Record 154 (13) 389-395

MacArthur Clark J 2004

Slaughter without prestunning (letter).
Veterinary Record 154 (26) 830

Monies B 2004

Alimentary tract perforation in cattle caused by tyre wire.
Veterinary Record 154 (23) 735

Pritchard DG 2004

Defra/ADAS animal welfare promotion (letter).
Veterinary Record 155 (14) 436

Reynolds D 2004

Funding animal health and welfare (letter).
Veterinary Record 154 (26) 829-830

Sharpe R; Livesey C 2004

Discarded lead-acid batteries: a preventable cause of lead poisoning in cattle (letter).
Veterinary Record 154 (16) 512

Van der Burgt GM; Livesey CT 2004

Effect of trace element supplementation on the fertility of dairy herds (letter).
Veterinary Record 155 (21) 683-684

BACTERIOLOGY

Ayling RD; Bashiruddin SE; Nicholas RAJ 2004
Mycoplasma species and related organisms isolated from ruminants in Britain between 1990 and 2000.

Veterinary Record 155 (14) 413-416

Barlow AM; Wales AD; Burch AA; LA Ragione RM; Woodward MJ; Pearson GR 2004

Attaching and effacing lesions in the intestines of an adult goat associated with natural infection with *Escherichia coli* 0145.
Veterinary Record 155 (25) 807-808

Cassar CA; Ottaway M; Paiba GA; Futter R; Newboulds S; Woodward MJ 2004

Absence of enteroaggregative *Escherichia coli* in farmed animals in Great Britain.
Veterinary Record 154 (8) 237-239

Cunningham AF; Ashton PR; Spreadbury CL; Lammas DA; Craddock R; Wharton CW; Wheeler PR 2004

Tubercle bacilli generate a novel cell wall-associated pigment after long-term anaerobic culture.
FEMS Microbiology Letters 235 (1) 191-198

Cunningham AF, Ashton PR, Spreadbury CL, Lammas DA, Craddock R, Wharton CW, Wheeler PR.

Tubercle bacilli generate a novel cell wall-associated pigment after long-term anaerobic culture.

FEMS Microbiol Lett. 2004 Jun 1;235(1): 191-8

Dawson CE; Perrett LL; Davison NJ; Quinney S; Simpson V 2004

Brucella species infection in marine mammals off the Cornish coast (letter).
Veterinary Record 155 (1) 32

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- Dalley DJ, Hogarth PJ, Hughes S, Hewinson RG, Chambers MA
Cloning and sequencing of badger (*Meles meles*) interferon gamma and its detection in badger lymphocytes
Vet Immunol Immunopathol. 2004 Sep; 101(1-2):19-30
- Delahay, R. J., Walker, N., Forrester, G. J., Harmsen, B., Riordan, P., Macdonald, D. W., Newman, C. & Cheeseman, C. L. (submitted)
Demographic correlates of bite wounding in European badgers (*Meles meles* L.) in stable and perturbed populations.
Animal Behaviour
- Garnett, B. T., Delahay, R. J. & Roper, T. J. (in press).
Ranging behaviour of European badgers (*Meles meles*) in relation to bovine tuberculosis (*Mycobacterium bovis*) infection.
Applied Animal Behaviour Science
- Hounscome, T. D. & Delahay, R. J. (in press)
Birds in the diet of the Eurasian badger (*Meles meles*). A review and a meta-analysis.
Mammal Review
- Hounscome, T. D., Young, R. P., Davison, J., Yarnell, R. W., Trewby, I. D., Garnett, B. T., Delahay, R. J. & Wilson, G. J. (in press).
Evaluating the accuracy of distance sampling by comparison with mark-recapture on an intensively studied, high density population of Eurasian badgers (*Meles meles*).
Journal of Zoology
- Hubschle O; Godinho K; Rowan T; Nicholas R 2004
Danofloxacin treatment of cattle affected by CBPP (letter).
Veterinary Record 155 (13) 403
- Jackson R; Pite L; Kennard R; Ward D; Stack J; Domi X; Rami A; Dedushaj I 2004
Survey of the seroprevalence of brucellosis in ruminants in Kosovo.
Veterinary Record 154 (24) 747-751
- Jahans K; Palmer S; Inwald J; Brown J; Abayakoon S 2004
Isolation of *Mycobacterium microti* from a male Charolais-Hereford cross (letter).
Veterinary Record 155 (12) 373-374
- Johnston, W. T.; Gettinby, G.; Cox, D. R.; Donnelly, C. A.; Bourne, J.; Clifton-Hadley, R.; Le Fevre, A. M.; McInerney, J. P.; Mitchell, A.; Morrison, W. I., and Woodroffe, R.
Herd-level risk factors associated with tuberculosis breakdowns among cattle herds in England before the 2001 foot-and-mouth disease epidemic. *Biology Letters, The Royal Society.* 2004
- Kelly L; Smith DL; Snary EL; Johnson JA; Harris AD; Wooldridge M; Morris JG 2004
Animal growth promoters: to ban or not to ban? A risk assessment approach.
International Journal of Antimicrobial Agents 24 (3) 7-14
- LA Ragione RM; Cooley WA; Parmar DDG; Ainsworth HL 2004
Attaching and effacing *Escherichia coli* O103:K+:H- in red-legged partridges.
Veterinary Record 155 (13) 397-398
- Lawson PA; Foster G; Falsen E; Davison N; Collins MD 2004
Streptococcus helichoeri sp. nov., isolated from grey seals (*Halichoerus grypus*).
International Journal of Systematic and Evolutionary Microbiology 54 (5) 1753-1756

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Abbreviations/acronyms

A	AI	artificial insemination
	ADAS	Agricultural Development and Advisory Service
	ADNS	Animal Disease Notification System
	AHDO	Animal Health Divisional Office
	AHWS	Animal Health and Welfare Strategy
B	BARB	Born after the reinforced feed ban
	BBSRC	Biotechnology and Biological Sciences Research Council
	BCG	Bacille Calmette-Guerin
	BCMS	British Cattle Movement Service
	BPEX	British Pig Executive
	BSAVA	British Small Animal Veterinary Association
	BSE	bovine spongiform encephalopathy
	BSI	British Standards Institute
	BT	Bluetongue
	BTv	Bluetongue virus
	BVA	British Veterinary Association
	BVD	bovine viral diarrhoea
	C	CCS2005
CoE		Council of Europe
CSF		classical swine fever
CSFS		Compulsory Scrapie Flocks Scheme
CTS		cattle tracing system
D	DBES	Date Based Export Scheme
	DEFRA	Department for Environment, Food and Rural Affairs
	DH	Department of Health
	DVM	Divisional Veterinary Manager
E	EBL	enzootic bovine leukosis
	EC	European Community
	EFQM	European Federation of Quality Management
	EFSA	European Food Safety Authority
	ELISA	enzyme linked immunosorbent assay
	ECUG	Export Certification User Group
F	EU	European Union
	FAO	Food and Agriculture Organisation
	FMD	foot and mouth disease
	FMQ	Farm Management Questionnaire
	FSA	Food Standards Agency
	FVO	Food and Veterinary Office

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G	GB	Great Britain (England, Scotland and Wales)
I	IBR ISG ISO	infectious bovine rhinotracheitis Independent Scientific Group International Organisation for Standardisation
L	LACORS LGC	Local Authority Co-ordinating Offices on Regulatory Services Laboratory of the Government Chemist
M	MLC MHS MRSA	Meat & Livestock Commission Meat Hygiene Service Methicillin-Resistant Staphylococcus Aureus
N	NAWAD NFA NSP	National Assembly for Wales Agriculture Department National Feed Audit National Scrapie Plan
O	OIE OTF OTMS OVS	Office Internationale Epizooties Officially bTB-free Over Thirty Months Scheme Official Veterinary Surgeons
P	PCR PDNS PDV PETS PMWS PRRS PTFS	polymerase chain reaction porcine dermatitis nephropathy syndrome phocine distemper virus Pet Travel Scheme post-weaning multisystemic wasting syndrome porcine reproductive and respiratory syndrome parish testing frequencies
R	RBCT RBST RT-PCR	Randomised Badger Culling Trial Rare Breeds Survival Trust reverse transcription polymerase chain reaction
S	SAHO SCOFCAH SEERAD SRM	Senior Animal Health Officers Standing Committee on the Food Chain and Animal Health (EU) Scottish Executive Environment and Rural Affairs Department Specified risk material
T	TB TSE	Tuberculosis transmissible spongiform encephalopathy

Section F – Appendices

U	UK	United Kingdom (England, Scotland, Wales and Northern Ireland)
V	VIPER	Veterinary instructions, procedures and emergency routines
	VLA	Veterinary Laboratories Agency
	VMD	Veterinary Medicines Directorate
	VO	Veterinary Officers
	VSFS	Voluntary Scrapie Flocks Scheme
	VTRI	Veterinary Training and Research Initiative
W	WAG	Welsh Assembly Government
	WASK	Welfare at slaughter or killing
	WEGS	Welsh Ewe Genotyping Scheme
	WNV	West Nile virus