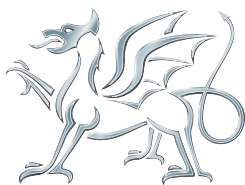


# The Report of the Chief Veterinary Officer

## Animal health 2003

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Department for Environment  
Food and Rural Affairs

The Report of the Chief Veterinary Officer

# Animal health 2003

Department for Environment, Food and Rural Affairs  
Scottish Executive Environment and Rural Affairs Department  
Welsh Assembly Government  
June 2004

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### Introduction



JM Scudamore CB, BSc, BVSc, MRCVS  
Chief Veterinary Officer and Director  
General Animal Health and Welfare

I am delighted to present this Annual Report on animal health for 2003 which is my last as Chief Veterinary Officer (UK). As always, there were a number of new challenges to face alongside the ongoing animal health and welfare issues in Great Britain, and the key issues are covered in the Summary on the next page.

To reflect the importance of our more strategic approach we have included a Strategic Overview section in this report, setting out the main aims of both the Animal Health and Welfare Strategy and the Veterinary Surveillance Strategy. Recognising the important role of veterinary research in providing evidence to support our policies, we have brought the Veterinary Research Division within the Animal Health and Welfare Directorate General to harmonise Defra's approach to Commissioning Research in the animal health and welfare arena. This rationale is reflected in the inclusion of their work within the same section of this report.

The number of bovine spongiform encephalopathy (BSE) cases continued to decline during 2003. As a result in June the UK was able to submit a paper to the Commission showing that the incidence of BSE was expected to fall below the world animal health organisation (OIE) threshold for transition from high to moderate risk status towards the end of 2003. This is important to enable the UK to be subject to the same export controls as member states that have similar levels of disease in animals born after July 1996. The European Food Safety Authority (EFSA) has assessed the data and has confirmed that the UK's BSE risk status should be the same as most other European countries later this year. Changes to EU legislation will be needed to amend EU controls on UK beef exports but these developments take us closer to that goal.

Bovine tuberculosis (TB) and the Government's control measures had a high profile during 2003, notably the decision in November to suspend the reactive culling element of the randomised badger culling trial, though the proactive and survey only elements of the trial continue as before. Efforts are being made to understand why TB increased in these areas and we continue to review our controls and strategy.

In conclusion, I would like to offer my thanks to all my staff who have continued to show great commitment and a high level of expertise in developing and implementing national policies, and in consistently meeting the challenges presented to them, not just over the last year, but for the duration of my time as Chief Veterinary Officer. Finally, I would like to welcome Dr Debby Reynolds as my successor, and I wish her well for the future.



**JM Scudamore CB, BSc, BVSc, MRCVS**

Chief Veterinary Officer and Director General Animal Health and Welfare  
Department for Environment, Food and Rural Affairs

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## Summary

During 2003 great strides were made towards developing an Animal Health and Welfare Strategy (AHWS) for Great Britain, which is due for launch in early summer 2004. This strategy, borne out of a recommendation from the Policy Commission on the Future of Farming and Food in January 2002, and by the foot and mouth disease (FMD) inquiries, seeks to establish a 10 year national strategy and delivery plan for animal health and welfare.

The strategy has been developed in partnership with the Scottish Executive and the Welsh Assembly Government. It gathers together information on priorities and long-term aims through a productive consultation exercise and regular meetings with interested parties including vets, livestock farming groups, educational establishments and representatives from the animal health and food retailing sectors. Separate implementation plans, setting out how the 16 new initiatives will be taken forward, were published for England, Scotland and Wales in December and will be updated later in the year. The Veterinary Surveillance Strategy (VSS), which aims to improve the systematic collection and collation of information on disease, infection, intoxication and welfare in farmed, wild and companion animals, was also launched in 2003.

Both the AHWS and the VSS are explained elsewhere in this report along with the role our veterinary research division undertakes, in order to present a Strategic Overview of animal health and welfare. Many thanks to all those involved in developing these key policies for their invaluable input, and it is hoped that the close working relationship

with the industry is maintained beyond the launch and throughout the implementation process.

Bovine spongiform encephalopathy (BSE) cases continued to decline as the number of animals tested through the targeted surveillance programme increased. On this basis the European Union (EU) has been lobbied for a reduction of the UK's BSE status to 'moderate', which would facilitate the abolition of the beef export ban. The European Food Safety Authority (EFSA) has assessed the data and confirmed that our BSE risk status should be the same as most other European countries later this year, subsequent to EU legislation changes. Proposals by the Food Standards Agency (FSA) to replace the over thirty month rule have been considered by Rural Affairs Ministers and are currently under further consideration by Health Ministers.

Research continued into the experimental transmission of BSE in sheep, and a draft contingency plan is being developed in partnership with the Department of Health, the FSA and the Devolved Administrations in the event BSE is identified in sheep or goats. The number of reported scrapie cases also declined and an increasing number of sheep have now been tested under the National Scrapie Plan (NSP). Work also began in partnership with interested parties on developing a long-term strategy for the NSP. A livestock identification and tracing programme was established in 2003, which through new IT systems and policy developments will improve the gathering and use of data on livestock, while EU legislation requiring all horses to have a passport was

implemented. This will in due course be supported by a national database containing breeding and performance information.

In November Ministers announced the suspension of one element of the bovine tuberculosis (TB) randomised badger culling trial, following advice from the Independent Scientific Group on Cattle TB that the incidence of bovine TB in reactive culling trial areas had increased over that in areas where no culling had taken place. The reason for this is under investigation, but it has been agreed that the proactive and survey only elements of the trial will continue. The ISG estimates that the full set of trial data will be available during 2006. Following the re-start of the TB control programme, disrupted by the foot and mouth disease (FMD) epidemic in 2001, the backlog of tests was gradually reduced and is now at its pre-FMD level.

Post-FMD policies continued to be developed and implemented and saw a reduction in the 20 day standstill period for cattle, sheep and goats down to six days in England and Wales and 13 days in Scotland. Future arrangements will focus more on biosecurity than movement rules. This Department played a pivotal role in shaping the new EU FMD Directive during negotiations, and this Directive was adopted in September. The Directive seeks to update existing legislation to account for the progress and experience gained during 2001, and this legislation now addresses many of the issues identified during the FMD inquiries. The EU-wide ban on routine vaccination remains, but in the event of an outbreak there is now greater scope for adopting emergency vaccination in addition to slaughter as a basic control policy.

Four cases of brucellosis in imported cattle were recorded in Scotland during 2003, the first outbreak of this disease recorded in Great Britain since 1993. The brucellosis surveillance programme ensured that the infected animals and all dangerous contacts were quickly traced, and resulted in the slaughter of nearly 400 cattle to ensure that GB remained an EU recognised brucellosis-free region. Although brucellosis has not been discovered in the national pig herd, the infection is common amongst wild boar and feral pigs in mainland Europe so the brucellosis surveillance programme has now been extended to cover pig herds.

Following an outbreak of avian influenza in The Netherlands, Belgium and Germany during 2003 Defra began to look further, in consultation with industry, into control measures, and decisions on these deliberations are expected in 2004. The discovery of two incidents of European Bat Lyssavirus (EBLV) in bats in 2002, one tragically leading to the death of a bat worker, has led to increased surveillance of EBLV in bats.

From January 2003 the EU strengthened its rules against the risk of disease by restricting the import into the EU of products of animal origin from Third Countries. A few months later in April, Her Majesty's Customs & Excise (HMCE) took over responsibility for all anti-smuggling activity. Both these measures were welcomed as improvements to prevent the import of exotic diseases into Great Britain. On the other side of the trading line a new EU web based Trade and Control Expert System (TRACES), to issue and monitor export health certificates for intra-Community trade in live animals, their products and germplasm, has been developed and is due to go live from May 2004.

## Summary

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The UK's compliance with a Council Directive setting minimum standards for the welfare of farmed animals was challenged during 2003. The Department, working in conjunction with the poultry industry, contested the claim of incorrect implementation, and at a judicial review in October was vindicated of all charges and judged to have the appropriate legal provisions in place to protect the welfare of chickens. As well as consolidating over 20 existing pieces of legislation, the proposed Animal Welfare Bill will also create a new offence covering the failure to ensure the welfare of owned or kept animals. Wider powers to develop regulations will allow Britain to meet EU obligations, and will promote and enshrine good practice in relation to licensing, registration and inspection to ensure animal welfare standards.

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## Section A: Strategic overview

### Chapter A1: Animal health and welfare strategy

*Following the commitment by all three administrations in their responses to the FMD Inquiries and taking forward the strategies to support a sustainable agricultural sector<sup>1</sup>, a comprehensive Animal Health and Welfare Strategy (AHWS) for Great Britain is being developed by Defra, the Scottish Executive and the Welsh Assembly Government. A separate but complementary strategy for animal health and welfare is being produced in Northern Ireland, which retains important links with the Republic of Ireland for disease control purposes.*

#### Consultation exercise

Following a round of informal discussions with some stakeholders, a formal GB wide consultation document was issued in January 2003. The consultation aimed to gather views about what the strategy should cover, the roles and responsibilities of key players, and what the long-term vision for a sustainable future for animal health and welfare in Britain should look like. The consultation attracted 188 responses and ended on 3 April 2003.

As well as the written consultation Defra, the Scottish Executive and Welsh Assembly Government (WAG), held sector-based meetings (e.g. dairy, poultry, beef, wildlife, welfare etc) and a series of regional workshops attended by around 400 stakeholders and customers. The purpose of these was to gather information on sector priorities and long term aims, and to identify regional issues to ensure that the strategy is flexible enough to address such concerns.

#### Outline of an Animal Health and Welfare Strategy

The feedback from this scoping exercise led to the publication for consultation of an *Outline of an Animal Health and Welfare Strategy* on 15 July 2003. The outline strategy set out a vision for the future of animal health and welfare in 10 years time, with the aim of improving, where appropriate, the health and welfare of kept animals and protecting public health from animal disease.

The strategy is not just for Government but establishes a framework which draws all stakeholders into achieving a shared vision over the next 10 years. It establishes the roles and responsibilities of all parties and a process for agreeing priorities and monitoring progress. Five strategic outcomes were identified which the strategy hopes to achieve:

- a clear understanding of roles and responsibilities;

<sup>1</sup> Strategy for Sustainable Farming and Food (Defra), Forward Strategy for Scottish Agriculture, Farming for the Future (Wales).

- a new partnership approach;
- promotion of animal health and welfare: prevention better than cure;
- a clearer understanding of costs and benefits of animal health and welfare; and
- effective delivery and enforcement.

The strategy is underpinned by the principle of partnership between the Government and all those involved in and affected by animal health and welfare. It sets out the rationale for Government intervention and the factors that will help inform Government decisions on animal health and welfare alongside the principles for sharing risks and costs.

### New initiatives

As part of the outline strategy 16 new initiatives were identified which seek to fulfil the strategy's vision and strategic outcomes. A number of the new initiatives work towards an integrated approach to disease prevention, for example, through enhanced veterinary surveillance and farm health planning.

### Farm Health Planning

In July 2003 a consultation was conducted on a draft *Action Plan for Positive Animal Health*. This set out how Defra intends to work in partnership with the livestock industry, the veterinary profession and other key stakeholders to encourage the wider use of farm health planning and to raise standards in disease prevention and welfare. The draft action plan described how Defra, working with the Welsh Assembly Government (WAG), intends to implement five of the initiatives introduced by the outline Animal Health Welfare Strategy.

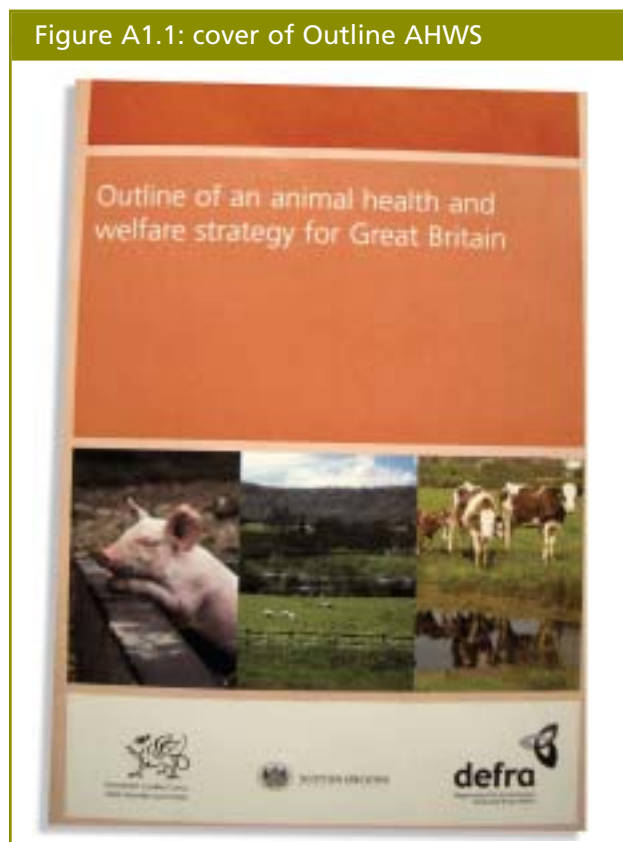
These initiatives include:

- a review of best practice in disease prevention in GB;
- a study of the costs and benefits of disease prevention and control practices for selected diseases;
- review of training and advice in animal husbandry and disease prevention; and
- dissemination of research knowledge.

In taking forward these initiatives, the Department will also be working closely with the Scottish Executive Environment and Rural Affairs Department (SEERAD).

In developing this draft action plan there were a number of meetings with key interested parties, vets, livestock farming

Figure A1.1: cover of Outline AHWS



groups, farm assurance schemes, colleges, animal health distributors and food retailers. After listening carefully to the views of those at different stages of the food chain, and those who play a vital supporting role in animal health, the draft action plan has received broad support from those consulted.

Farm health planning is considered the best way forward in reducing the burden of disease that commonly affect herds and flocks on an everyday basis, as well as helping prevent the establishment of exotic diseases. A number of livestock and veterinary organisations have done much to promote this approach.

Studies are currently being set up and key organisations have been invited to participate in the stakeholder working group. It is important that these initiatives are implemented in partnership and encourage joint ownership of disease control issues.

### **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 about whether there are enough large farm animal practitioners. The Committee noted that the economics of farming is leading to less use of veterinary services, reducing the attractiveness of large animal practice both to established veterinary practitioners and those entering the profession. These concerns are driven, in part, by the risk that a reduced level of veterinary influence in livestock farming will make any future outbreak of an exotic disease harder to detect.

The Committee conclusions and recommendations overlap with many of the issues under consideration as part of the development of the Animal Health and Welfare Strategy. In one of its new initiatives the outline strategy proposed the creation of a working group, in partnership with the veterinary profession and their customers, to consider the report's conclusions and recommendations. The EFRA Committee supported this proposal and identified areas for consideration in its report. The working group will consider a wider range of issues than the EFRA Committee's conclusions – eg the role of paraprofessionals – and will report by Summer 2004. The group's findings will inform Defra's response to the EFRA Committee.

### **Stakeholder Sectoral Sub-strategies**

On 2 December 2003 the pig industry launched *the Pig Health and Welfare Strategy*. This strategy is being developed by the pig sector with support from Defra allowing industry to recognise their own priorities for animal health and welfare. Work is being carried out to encourage other sectors to develop their own strategies as the pig sector has done. This is in keeping with the *Outline Animal Health and Welfare Strategy* which encouraged sectors to consider producing their own strategies.

### **Implementation plans**

In order to demonstrate how the whole strategy is progressing separate Implementation Plans for England, Scotland and Wales were published for consultation on 12 December 2003. These set out how the new initiatives are being taken forward. They also show how all current work carried

out by government in animal health and welfare can be brigaded under the strategy. Following the consultation the implementation plan for England will be developed and updated for publication in light of the final strategy in 2004. It is hoped that the implementation plans will be a useful and accessible source of information for all those involved in animal health and welfare. It is envisaged that they will be an important part of the strategy updated annually, to report on progress as the strategy evolves.

### Next steps

Following analyses of the responses to the Outline Strategy, an Interim Strategy Steering Board, which includes representatives of the livestock industry, veterinary profession and animal welfare interests, was formed to oversee the development of the Animal Health and Welfare Strategy for Great Britain. Arrangements are now well advanced for a formal launch of the strategy in June 2004.

Beyond the publication date the Department will continue to work in partnership with all those involved in animal health and welfare. Further information is available at: <http://www.defra.gov.uk/animalh/ahws/default.htm>, or by contacting:

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Figure A1.2: Covers of implementation plans for England, Scotland and Wales



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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, 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 changes can be recognised.

### Strategic goals

The strategy entitled *Partnership, Priorities and Professionalism* was launched on 22 October 2003 by the Chief Veterinary Officer (UK) and Chairman of the UK Surveillance Group on Diseases and Infections of Animals. It is one of the key cross-cutting new initiatives identified within the draft 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 analysis. 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, will be 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 RADAR becoming an increasingly important tool.
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 warning and more rapid 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.

### Public Consultation

The consolidated report containing the responses to the public consultation on the proposed strategy for enhancing veterinary surveillance was published in October 2003 and can be accessed from the Defra website at: <http://www.defra.gov.uk/animalh/diseases/veterinary/response.pdf>

### Delivery Plan

An outline of the delivery plan for the next 10 years in the Appendices shows the expected milestones for each strategic goal at this time. These milestones become more tentative in later years and are dependent on the availability of necessary resources and obtaining any necessary legislative changes. A review of progress is given below.

### Progress to date

#### Business Assurance Groups

Four groups, comprising of key stakeholders with an interest in each of the five strategic goals, all met for the first time in September 2003. Their role is to work in partnership with Government as the 10 year programme of work for the strategy is delivered. In particular, they will help review current thinking, contribute ideas and develop and review the programme of work. A full report of the first four workshops held in September is available at: <http://www.defra.gov.uk/animalh/diseases/veterinary/bagsreport.pdf>

### Disease Profiles

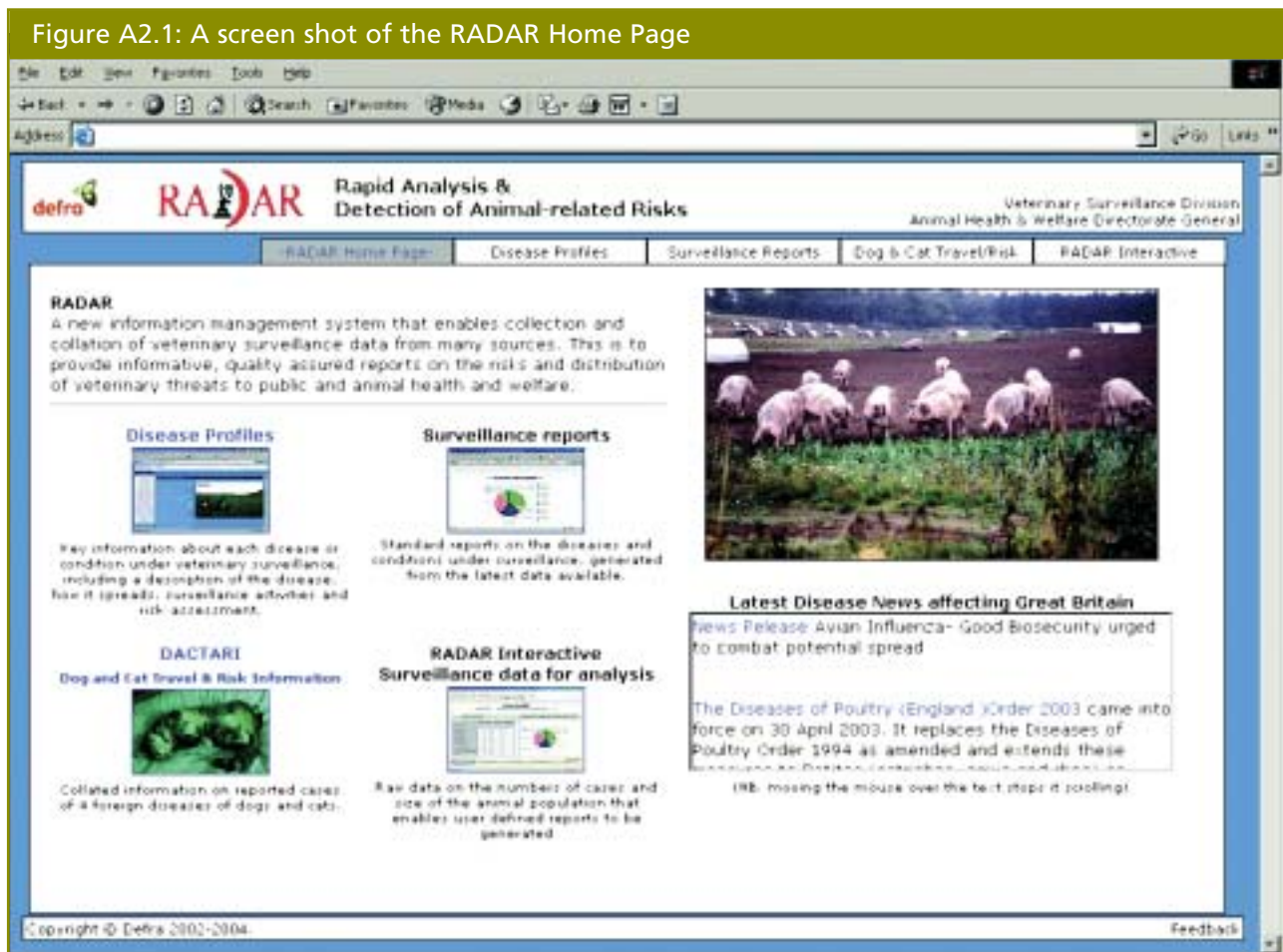
Response to the prototype template for the production of disease profiles has been very favourable and will be further reviewed and validated by the Business Assurance Groups. These profiles are central to the strategy and capture information on diseases or other conditions considered for surveillance, enabling surveillance activities to be prioritised in a transparent and risk-based way.

### RADAR Prototype

The new RADAR integrated information management system, designed to support veterinary surveillance activities, has been demonstrated as a prototype to over thirty

groups during 2003. These groups covered a range of interested parties such as the Scottish Agricultural College (SAC) Biennial Conference, the Association of Veterinary Teachers and Research Workers, various specialist veterinary societies and the South West Chamber of Rural Enterprise, among many others. The prototype was developed to provide 'proof of technical concept' and to help show the potential of the 'full' system. The development work on phase one of the full RADAR system is now underway.

Figure A2.1: A screen shot of the RADAR 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. This has been discussed and will be finalised with the Business Assurance Groups.

### Pig Infertility

In late 2002 there were reports of unexplained infertility in pig breeding herds which was felt to be more severe than the seasonal infertility often recognised in autumn. In response to concerns that this might represent a new syndrome, a questionnaire survey of practising veterinary surgeons was conducted throughout the UK in February and March 2003. This involved co-operation between the Veterinary Laboratories Agency (VLA), SAC, SEERAD, the Department of Agriculture and Rural Development for Northern Ireland (DARDNI), and Defra, and was the first time that such a co-ordinated UK-wide investigation had been attempted.

Unexplained infertility was reported in 163 of 937 herds represented in the responses, and most of these herds (152) were located in England. The condition was characterised by increased returns to service, reduced farrowing rates and reduced numbers of pigs born, with no clear parity pattern. A project began in October 2003 to carry out a detailed investigation in 20 pig herds with unexplained infertility and this is ongoing.

### Further Information

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

## Chapter A3 Animal Health and Welfare Research

*The Department commissions research to provide scientific evidence in support of policy making. Results from on-going and completed scientific research are also used to provide strategic advice and support to regulatory measures. In the field of animal health and welfare, research projects have become progressively more closely aligned with Defra and the EU's policy objectives of sustainable agriculture and environmental diversity.*

Supporting the animal health and welfare programmes over the year there was a wide range of research projects covering a diversity of areas from antimicrobial resistance to sustainable welfare practices for livestock. A list of current research in these programmes is available at [www.defra.gov.uk/science](http://www.defra.gov.uk/science). The broad categories and distribution of research funding within programmes are outlined in Table A3.1.

### Prioritisation

The allocation of research funding is prioritised in line with key Departmental aims and over the year has focused increasingly on public health, exotic animal diseases and sustainable environment issues. Research commissioning has also been aligned with the main policy programmes to help implement the new Animal Health and Welfare Strategy. Risk assessments and cost benefit analyses are being used increasingly to guide policies and strategies. Scientific data is usually a critical input in this process, where appropriate research funding has therefore been directed to generating the required information and data in a number of areas for both current and future risk assessment needs.

During 2003/04 the Defra Science Directorate built programmes of work through consultation to address both forward look and horizon scanning issues that might affect the Department in future. The Animal Health and Welfare Directorate General has been actively engaged in this process to identify future needs and increase pro-active research as an aid to management of animal health issues.

### Impact on EU decision making

Defra research made a significant impact on EU decision making through Standing Scientific Committees and other advisory bodies. Particularly important was research on Foot and Mouth Disease (FMD) and transmissible spongiform encephalopathies (TSEs) both to the EU Commission and the World Organisation for Animal Health. The Directorate also encourages scientists to participate in EU funded Framework Programmes to obtain maximum benefit from this research. The current EU programme encompassing all areas of research is Framework Six which runs from 2003 to 2006. Information on this and other

## Section A – Chapter A3

**Table A3.1: Main animal health and welfare research activities and associated budget allocations for the financial year 2003/2004 (in £,000's)**

<b>Veterinary Science Programme</b>	<b>Includes Research on</b>	<b>Allocation for 2003/04 (£,000s)</b>
Statutory and exotic diseases	Bovine tuberculosis	3,350
	FMD	1,644
	Swine fever	552
	Rabies (and related viruses)	500
	Brucella	230
	Others (including VTRI) <sup>1</sup>	2,907
	Influenza and NDV <sup>2</sup>	436
	New and Emerging diseases	180
Zoonoses	E.coli 0157	645
	Salmonella	883
	Campylobacter	529
	Other Zoonoses	640
Transmissible spongiform encephalopathies (TSEs)	BSE in cattle	5,150
	TSEs in sheep	10,986
	Others	543
Endemic diseases and alternatives to pharmaceutical control	Bovine mastitis	283
	Non-statutory viral disease	438
	Non-statutory parasitic disease	701
	Antimicrobial resistance	808
	Others	470
Veterinary medicine	Veterinary medicine	2,160
Animal welfare	On-farm	2,070
	Slaughter	690
	Transport	690

<sup>1</sup> Veterinary Training Research Initiative

<sup>2</sup> Newcastle Disease Virus

agriculture and animal health programmes can be found at [www.cordis.lu/fp6](http://www.cordis.lu/fp6). The EU Framework Seven programme will follow on from 2007 to 2010. The Department made representations to ensure that the topics in this programme included subjects that are relevant to animal health and welfare in Britain.

### **Independent advisory bodies**

Over the year the Department has made further progress with taking up recommendations to Government from a number of independent advisory bodies including the Committee of Enquiry into Veterinary Research, chaired by Lord Selborne, the Royal Society Inquiry On Infectious Diseases in Livestock, and Spongiform Encephalopathy Advisory Committee (SEAC) Reports.

Following last year's announcement of Defra's joint funding of the Veterinary Training Research Initiative with the Higher Education Funding Council for England (HEFCE) and Scottish Higher Education Funding Council (SHEFC), the funders have made a commitment to spend £4.3m for the next five years on supporting programmes that develop further veterinary training and research in GB. The funders, guided by an independent selection panel, have completed the selection process and hope to begin funding five new initiatives from April 2004. The grants are aimed at improving defined areas of animal health research and developing expertise which will be available to advise the Government. They were due to be awarded to veterinary schools across Great Britain.



### **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 continues. Reports of clinical suspects are decreasing as is the proportion of slaughtered suspects in which disease is confirmed. The targeted surveillance programme also provides valuable additional information on the prevalence of disease and results also indicate a similar decline in the number of cases identified. The number of animals tested under the targeted surveillance programme increased during the last year.*

*Scrapie has been present in this country for over 200 years with no indication of any risk to human health. However, in light of the link between BSE and variant Creutzfeldt-Jakob disease (vCJD), scrapie has assumed a much greater significance. Sheep are likely to have been exposed to the same infected feed that resulted in BSE in cattle. There is therefore a theoretical possibility that BSE is present in sheep. In scrapie, infection can be found in a wide variety of tissues and there is evidence of horizontal transmission. If BSE were present in sheep and if it behaved as scrapie, it would present a potential threat to human health. Much of the current international interest in scrapie is a result of this possibility. Cases of natural scrapie in GB are examined for any evidence of BSE using the latest laboratory techniques.*

### **The BSE epidemic**

The decline in the epidemic continues. In 2003, disease was confirmed in 175 animals presented as clinical suspects (scanning surveillance). A further 374 cases were confirmed from 394,685 animals tested in the targeted surveillance programme. This compares with the 2002 figures of 445 clinical cases and 594 cases from testing 332,471 animals in the targeted surveillance programme.

Among the animals slaughtered as suspects, the proportion in which disease is confirmed has been declining since the 1990s. In 2003 it had fallen to around 41%.

### **BSE cases born after the reinforced feed ban of 1996**

BSE was confirmed in 41 animals born after 1 August 1996, the date from which the reinforced feed ban was thought to be

effective. Of these, 11 were animals presented as clinical suspects and 30 were detected in the targeted surveillance programme.

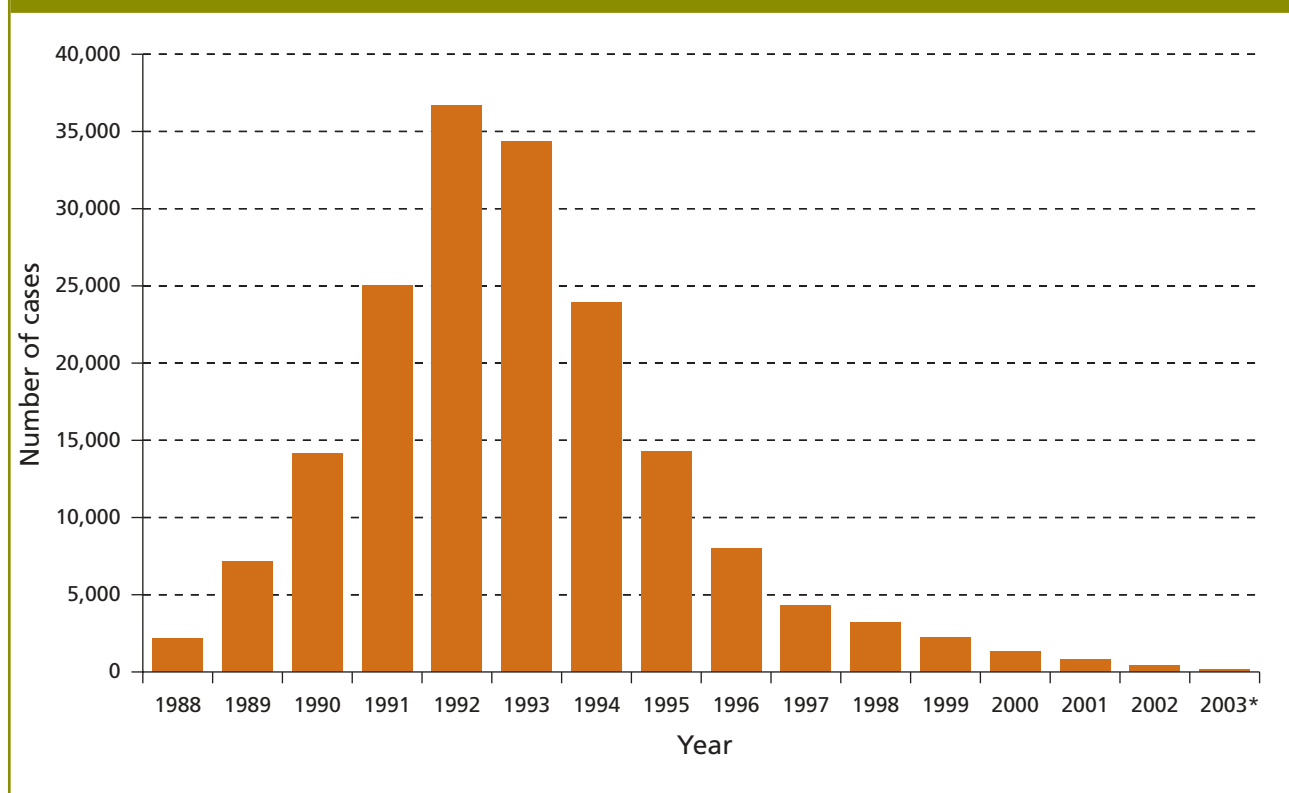
The origin of infection for these animals is not yet clear. Maternal transmission is one possibility but would not account for more than a few cases. The geographical distribution is different to that of confirmed cases born before August 1996 and suggests a more random exposure to infection. The most likely possibility is considered to be exposure through contaminated imported feed ingredients prior to the introduction of tighter regulation, which came into force in the other EU countries in 2001.

A case control study is to be carried out to identify risk factors associated with infection. A pilot for the study was set up in 2003, to be run in the early part of 2004.

### Recognition of moderate risk status

Although there has not yet been any formal EU classification of the BSE status of countries under the EU TSE Regulations, the UK is considered as falling into the 'high risk' category as defined by the Office International des Epizooties (OIE). This was originally defined as an incidence of clinically presented BSE cases in excess of 100 cases per million cattle over two years old per year.

Figure B1.1: Scanning surveillance – confirmed cases of BSE in animals slaughtered as suspects in GB 1988-2003



\*The result on one case from 2003 is pending



The OIE have since amended this level to include additional cases identified by targeted surveillance programmes and it is now 200 cases per million cattle (where targeted surveillance is carried out).

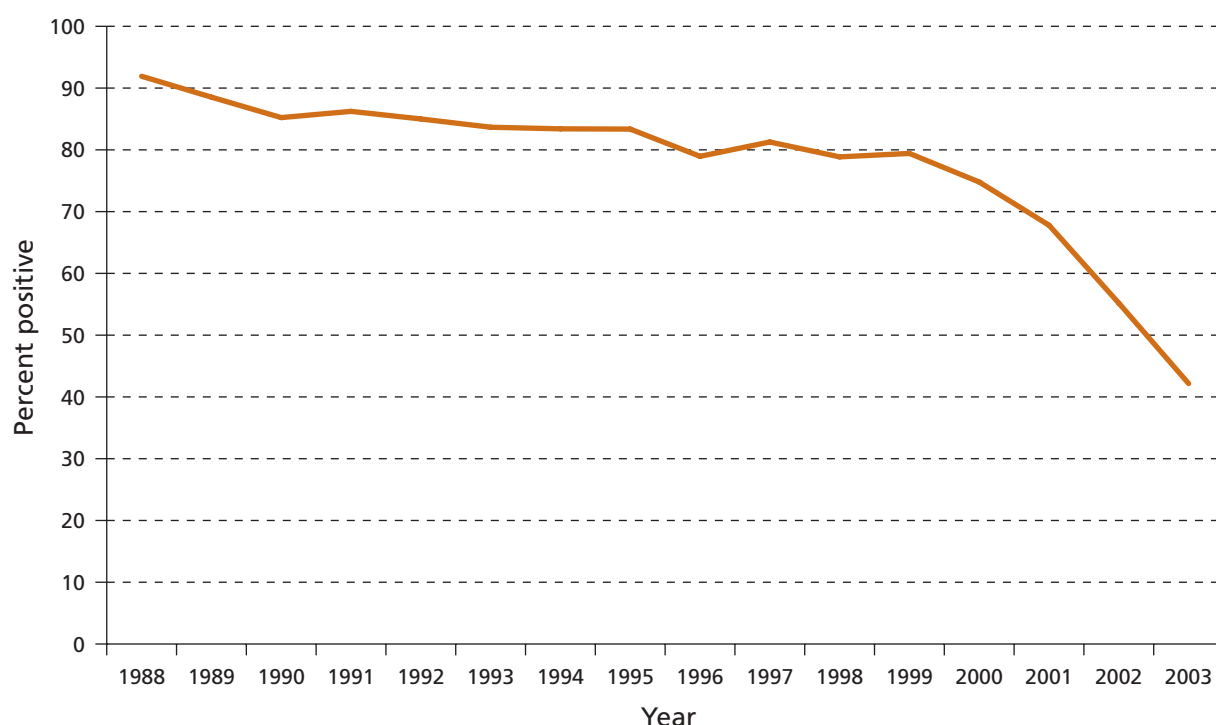
The OIE have not specified how many animals should be tested by targeted surveillance, but the UK figures have been adjusted to give the number of cases that would be expected if all cattle over 30 months of age were tested at slaughter. The methodology for this calculation has been submitted to the European Food Safety Authority (EFSA) for comment. According to this method of calculation the incidence of BSE fell below the 200 cases per million threshold during September 2003.

Subject to a satisfactory assessment of our BSE controls by the European Commission's Food and Veterinary Office (FVO), this should lead to recognition of the UK as a country of 'moderate' BSE risk status. The benefits of a change in status should include the right to trade in bovine products on the same basis as other EU Member States. This should include the abolition of the beef export ban, the Date Based Export Scheme for beef of UK origin and the Export Approved (XAP) Scheme for the export of beef of non-UK origin.

### Scrapie

The number of reported cases of scrapie declined from mid-2003, possibly reflecting awareness of impending compulsory flock

Figure B1.2: Confirmation of BSE in animals slaughtered as clinical suspects 1988-2003



controls under EU Regulation 999/2001 (as amended). The numbers of confirmed field cases are indicated in Table B1.1.

In addition to the confirmed results, 42 samples collected in the abattoir and fallen stock surveys (see the section on Targeted Surveillance for TSEs) gave 'unconfirmed' results. Of these, 35 were abattoir samples, three were from fallen stock and four were from animals dead in transit. These 'unconfirmed' cases are those which tested positive by the Bio-Rad Platelia ELISA but negative by immunohistochemistry (IHC), an OIE approved diagnostic method. Some of the unconfirmed brainstem samples were from sheep with PrP genotypes not normally associated with scrapie. Investigations into these cases are continuing in conjunction with colleagues from other countries.

### Experimental transmission of BSE to sheep

In 2003, the Institute of Animal Health (IAH), Compton reported that BSE had been experimentally reproduced in three out of 19 sheep of the ARR/ARR genotype which had been inoculated intracerebrally with 0.05g BSE-infected cattle brain. They also found that ARR/ARR and ARR/ARQ sheep orally dosed with 5g of BSE-infected bovine brain homogenate had not developed clinical signs of BSE at five years post challenge, whereas ARQ/ARQ (scrapie susceptible) sheep had all succumbed between 1.7 and 3.1 years.

The transmission of BSE to ARR/ARR sheep by the unnatural route of intracerebral inoculation indicates resistance is not absolute.

**Table B1.1: Summary of scrapie cases in Great Britain 1993–2003**

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	97	0

\*The result on one case from 2003 is pending

### UK Contingency Plan

The UK has been preparing a draft contingency plan for action in the event that BSE is identified in sheep or goats. This plan has been developed with the assistance of the Department of Health (DH), the Food Standards Agency (FSA) and the Devolved Administrations, and will be subject to public consultation in 2004.

### Results of postal survey of sheep farmers in 2002

This survey in October 2002 indicated that 1% of respondents considered that they had experienced a case of scrapie in the previous 12 months. This is in comparison to 2.7% similar in a 1998 survey. It is not yet known whether this represents a true change.

### The National Scrapie Plan

The National Scrapie Plan (NSP) is now into its third year of testing, and almost 900,000 animals were genotyped by the end of 2003. The plan combines scrapie gene testing and selective breeding to increase the proportion of scrapie resistant sheep in British flocks. Since the launch of the NSP in 2001 several new initiatives have been introduced. Extensive information on the plan is published on the internet at: [www.defra.gov.uk/nsp](http://www.defra.gov.uk/nsp)

### Ram Genotyping Scheme

The Ram Genotyping Scheme for pure-bred registered and non-registered flocks has received some 10,000 applications since being launched in July 2001, with over 300,000 animals sampled in 2003 and some 10,000 completed visits.

### Rare Breeds Genotype Survey

The NSP has been working in partnership with the Rare Breeds Survival Trust (RBST) to carry out a full analysis of the genotype results obtained so far from rare breed flocks. The outcome of this detailed study will help to inform our future scrapie control strategies for rare breeds under the NSP. Until this research is complete, and as a temporary measure pending the outcome of this research, all appeals against the slaughter requirement for rams with a VRQ genotype, from those RBST members who have joined the scheme, will be automatically accepted.



Soay sheep were one of the rare breeds surveyed

### Ewe Genotyping Service

Between December 2002 and March 2003 some 160,000 ewes were blood tested but not electronic identification (EID) bolused, as part of the Ewe Genotyping Service. The service operated to better inform future breeding decisions of NSP members.

### Scrapie-affected flocks

Sheep producers whose flocks have had a confirmed case of scrapie between July 1998 and October 2003 will be invited to join the NSP Voluntary Scrapie Flocks Scheme (VSFS) for historically scrapie-affected flocks.

Expressions of Interest forms were issued to 461 producers eligible for the Scheme in December 2003 and over 170 positive responses have been received. The intention is to launch the scheme in April 2004. Farmers will be able to engage their flocks in a breeding programme that will increase levels of genetic resistance to scrapie. This will be achieved through the selective use of scrapie resistant breeding rams and by avoiding the use of breeding ewes with the most susceptible genotypes. Scrapie susceptible animals identified on these farms will be culled and replaced with more resistant stock.

A new EU TSE Regulation requires compulsory action on farms with a case of scrapie reported and confirmed after 1 October 2003. The EU measures are similar in many respects to the VSFS but more onerous in terms of movement restrictions and the length of time those restrictions apply. A public consultation has been carried out on how it is proposed to implement the EU measures and it is hoped that the outcome of that consultation will be announced shortly. Legislation to enforce the EU regulation should be in place by July 2004, and this legislation is not retrospective.

Farmers who have a case of scrapie reported and confirmed between 1 October 2003 and July 2004 will be invited to comply with the EU measures on a voluntary basis. If they do not wish to take this course of action they may be invited to join the VSFS.

### Semen testing

The semen testing service, which was launched in July 2002, has so far resulted in the NSP receiving 151 applications. So far 341 animals have been sampled and 328 results have been returned.

### Semen archive

In order to conserve semen from scrapie-susceptible sheep a semen archive has been initiated by Defra. This could be used in the event that harmful traits are observed due to selective breeding for the ARR/ARR genotype.

### Flock registration framework

EU legislation requires the establishment of a voluntary framework to recognise the TSE resistant status of certain sheep flocks. British rural affairs Departments consider that a two-tier system of recognition which complies solely with the EU minimum requirement would not sufficiently represent our stratified sheep industry. A public consultation exercise included proposals to go beyond the EU minimum requirements. We will be publicising the outcomes of that exercise and the benefits of membership of the registration framework in 2004.

### Strategic review

Work began to develop a long-term strategy for the NSP in consultation with stakeholders, not least to ensure that Britain is in a position to meet its EU obligations to have introduced a compulsory genotype based breeding programme by April 2005.

### Field capability

Around 180 State Veterinary Service (SVS) Animal Health officers have been trained and certified for NSP work. In addition, more than 370 local veterinary inspectors and 39 Veterinary Officers have attended the NSP's training sessions.

### Shows & sales

The NSP was present at a total of 30 events during 2003. Twelve were shows and 18 were sales. The aim was to raise awareness of members and potential members of the NSP to the impending introduction of compulsory EU legislation. The Royal Welsh Show continued to be a successful event for the NSP.

### Targeted surveillance for TSEs

EU Member States have been carrying out targeted 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 2003 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;
- all healthy cattle slaughtered under the Over Thirty Months Scheme (OTMS) born

after 31 July 1996 and aged over 42 months; and

- a random sample of 10,000 animals from the OTMS, born before August 1996.

Samples for brain from these animals were tested using an EU approved rapid test. All positive or inconclusive samples were tested again using approved confirmatory tests.

### Sheep and goat testing

The following categories of sheep and goats were tested for scrapie during 2003:

- a random selection of 60,000 sheep aged over 18 months, and slaughtered for human consumption (the sheep abattoir survey);
- a random selection of 240 goats aged over 18 months and slaughtered for human consumption (the goat abattoir survey);
- a random selection of 6,000 fallen sheep aged over 18 months (the sheep fallen stock survey); and
- a random selection of 24 fallen goats aged over 18 months (the goat fallen stock survey).

### Over Thirty Month (OTM) review

The Food Standards Agency recommended to Ministers in July 2003 that it would be acceptable on public health grounds to replace the OTM rule with BSE testing of cattle older than thirty months, in two stages. Cattle born after 1 August 1996 could be allowed into the food chain, after being tested for BSE, at the earliest from January 2004, with complete replacement of the rule from July 2005. Delay to July 2005 was to allow time to cull the cohorts of BSE

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**Table B1.2: Results from targeted surveillance for BSE in cattle in Great Britain during 2003**

Survey category	Number tested	Results pending	Number negative	Number positive
Fallen Stock	69,487	0	69,402	85
Casualties on farm	108,981	0	108,716	265
Casualties at OTMS abattoirs	11,177	0	11,170	7
24-30 month casualty cattle at fresh meat abattoirs	1,421	0	1,421	0
Over Thirty Months Scheme – Random Animals (born before August 1996)	10,839	0	10,830	9
Over Thirty Months Scheme – Animals born after July 1997	141,216	0	141,210	6
Animals sampled as 96/97 Cohort (excluding fallen stock, casualties etc)	51,071	0	51,069	2
BSE offspring	385	0	385	0
Animals slaughtered for human consumption: Over thirty months (Beef Assurance Scheme)	108	0	108	0
Total for animals born in 96/97 cohort (incl fallen stock, casualties etc)	70,537	0	70,527	10
Total for other test categories	324,148	0	323,784	364
Total for all cattle tested between 1 January and 31 December 2003	394,685	0	394,311	374

**Table B1.3: Results from targeted surveillance for scrapie in sheep and goats in Great Britain during 2003**

Survey category	Number tested	Results pending	Number negative	Number positive
Sheep abattoir survey	71,250	35	71,169	46
Sheep fallen stock survey	4,059	7	4,040	12
Goat abattoir survey	191	0	190	1
Goat fallen stock survey	53	0	53	0
Total sheep tested	75,309	42	75,209	58
Total goats tested	244	0	243	1



cases born before August 1996, as required by EU rules. Cohort animals are defined as animals born in the same herd as, and in the 12 months either before or after, a BSE case, or animals reared with and which received the same feed as a BSE case during the first 12 months of life.

Rural Affairs Ministers have judged that it would be impossible to trace cohorts of all BSE cases born before 1 August 1996 and so decided to limit any changes to the OTM rule to animals born after 31 July 1996. As at the end of December 2003, Health Ministers were considering FSA advice.

### Preparations for testing

Preparations for additional testing in fresh meat abattoirs, should the OTM rule be replaced by testing for cattle born after August 1996, are well advanced. Detailed work to resolve practical issues is ongoing through project working groups. Regular meetings are also held with core stakeholders to update them on progress of the OTM review, and any practical issues regarding TSE testing.

If Health Ministers agree to a change to the OTM rule in principle, they will wish to ensure that the testing infrastructure and processes in place are robust and reliable before any legislation to amend the rule can be laid in Parliament. To provide this evidence, a four-stage trial of the testing procedures has been proposed. This would entail first trialling all stages individually; then the whole process in a small number of fresh meat abattoirs; thirdly, trials on at least two days of the whole process in any individual abattoir wishing to process OTM cattle; and finally a post-implementation independent audit as recommended by the FSA with monthly reports for six months.

### National Feed Survey

The current National Feed Audit (NFA) project is a successor to the feed survey set up in 1996. The project monitors and enforces the exclusion of prohibited material from farmed animal feed at all stages of production and distribution, and is regarded as central to the eradication of BSE. The Defra BSE delivery plan notes that moderate risk status will not be achieved unless the Commission is content that the feed controls are operating effectively. For the third successive year, an FVO mission scheduled for 26 April 2004 will check on these controls.

### Animal by-products

Animal by-products are animal carcasses, parts of animal carcasses and products of animal origin which are not intended for human consumption. The new Animal By-Products Regulations 2003 came into force in Great Britain on:

- England – 1 July 2003 (SI No 2003/1482);
- Scotland – 1 October 2003 (SSI 2003/411); and
- Wales – 1 November 2003 (WSI No 2003/2756 (W.267)).

The Regulations administer and enforce the EU Animal By-Products Regulation (EC) No 1774/2002 which came into effect on 3 October 2002, and replaced Council Directive 90/667/EEC. The new Regulation is an animal and public health measure which tightens the rules for the collection, transport, storage, handling, processing, use and disposal of animal by-products across the EU. During the course of the year, the Government negotiated a number of transitional and supplementary measures which allow certain sectors of the industry

sufficient time to adjust to the requirements of the Regulation, and which amend or supplement the Regulation in the light of scientific or other developments.

Under the new Regulation, animal by-products fall into three categories. Categories 1 and 2 are equivalent to specified risk material (SRM) and the previous 'high risk' animal waste, with Category 3 by-products (essentially fit for human consumption) corresponding to 'low risk' waste. The Regulation sets out the permitted outlets and disposal routes for each category of material and the construction, operational and treatment standards with which approved outlets must comply.

### **National Fallen Stock Scheme**

The Regulation bans the burial and burning of animal by-products including fallen stock, except in legally defined 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, and following extensive consultations with the industry, the Government announced in July 2003 that it would set up a company limited by guarantee to run a voluntary National Fallen Stock Scheme. In the longer term the Scheme will be run and financed entirely by industry but there will be initial assistance from Government during the first three years, which will be paid on a digressive basis. It is planned to launch the Scheme in Autumn 2004.

### **Composting and biogas plants**

Recognising the need to provide alternative environmentally sustainable outlets for animal by-products, the regulation permits the treatment of certain animal by-products in approved composting and biogas plants.

The regulation also allows Member States to apply national rules for the treatment of catering waste (kitchen waste from households and restaurants) in composting and biogas plants. Following a risk assessment, the Animal By-Products Regulations 2003 introduced suitable national rules.

Application forms for the permitted outlets were made available towards the end of the year, and the SVS began inspecting premises with a view to re-approving those premises which comply with the regulation. The Meat Hygiene Service (MHS), which enforces the legislation in licensed slaughterhouses and cutting plants, was provided with instructions. Defra also provided training on the Regulation to local authorities (which enforce the legislation elsewhere) and the SVS (which issues approvals). The Environment Agency, the FSA and the MHS also took part in this training in order to raise awareness of their respective roles in respect to animal by-products. Guidance on a range of issues has also been made available on the Defra website <http://www.defra.gov.uk/animalh/by-prods>.

### **Livestock identification**

#### **Livestock Identification and Tracing Programme**

A Livestock Identification and Tracing (LIT) Programme has been established to improve the way in which Government gathers and then uses data on livestock animals. This programme will significantly change the way we trace livestock through new IT systems, alongside new policy developments, much of which is driven by developments within the EU. It is one of the Defra programmes considered to be 'Mission Critical' by the Government.





Tagged calf and cow

The Programme aims to improve the quality, accuracy, availability and timeliness of livestock data, which will in turn deliver increased benefits for Government and the livestock industry in the areas of disease control, subsidy payment checking and Government and livestock industry efficiency. Key targets include 50% (by volume) of cattle information and 20% (by volume) of all livestock information to be transacted electronically by the end of 2005.

The LIT Programme will bring together livestock information held across Government through a series of individual projects, with the main aim being to develop a corporate register of key livestock data that can be accessed and used by Government, livestock industry and other customers. This should be ready for delivery in 2006 and early developments in 2003 include upgrading the Cattle Tracing System (CTS) and the Animal Movements Licensing System (AMLS).

### Sheep and goat identification

On 17 December 2003, the EU agreed a regulation on improved sheep and goat identification, and this comes into force on 9 July 2005. We secured major concessions to the original proposal to ensure that the EU system agreed was practical and workable for the British sheep and goat industry.

The concessions, subject to European Commission approval, included removing the requirement for individual animal recording on paper documents, and a provision to allow Member States to maintain their national systems of identification until 1 January 2008 when electronic identification for sheep becomes mandatory.

### Pig identification

New legislation enhancing the pig identification rules came into force in England from 1 November 2003. The new rules follow a review of the pig identification legislation in light of the presentation of an unidentified suspect FMD pig at a slaughterhouse in July 2002. The new rules require all pigs under 12 months moving direct to slaughter and all pigs over 12 months moving to any destination to be identified with a Defra herdmark.

## Chapter B2: Tuberculosis (TB) in cattle

*Tuberculosis is an infectious disease of humans and animals caused by several species of the Mycobacteriaceae family of bacteria. 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 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 was 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 began a programme of comparative intradermal testing of cattle for TB and slaughtering 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

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 cases 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 TB 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.

Typically, less than 45 human cases of *M. bovis* infection are diagnosed every year in the UK, with only 20 cases reported in 2002. The vast majority of these cases were probably contracted abroad or before the introduction of milk pasteurisation in the 1950s, and their geographical distribution 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 TB

Bovine TB currently affects only a small proportion of the national cattle herd. About 5% of herds in Great Britain were affected by TB restrictions at some point in 2003, though in hotspot areas such as the South West of England, the percentage was much higher. However, the number of new herd incidents of TB is increasing at a rate of 18% per annum, and the number of reactors culled at 20% per annum.

### Five-point strategy

The Government's TB strategy in 2003 continued to revolve around a five-point plan, which stemmed from recommendations made in the Krebs Review (*Bovine Tuberculosis in Cattle and Badgers*) in 1997.

1. **Protect public health** – arrangements with the Department of Health (DH) to investigate potential links with human health and monitor human cases of *M. bovis*.
2. **Develop a vaccine** – a 10-15 year research programme to develop a TB vaccine.

3. **Research into how TB is spread** – further research to increase understanding of how *M. bovis* is transmitted.
4. **Detect and prevent cattle to cattle spread** – continue with, and where possible strengthen, routine testing of cattle herds, slaughter of reactors and movement restrictions in infected herds.
5. **Carrying out a badger culling trial** – carry out a field trial to find out whether culling badgers helps to reduce TB in cattle.

### Proposals for a new TB Strategy

The Five Point Plan has been in place since 1998, and a review of the TB strategy was announced in February 2003.

In implementing the Strategy for Sustainable Farming and Food, Government is working with the industry and consumers to secure a sustainable future for the farming and food industries, as viable industries contributing to a better environment and healthy and prosperous communities. The Animal Health and Welfare Strategy derives from this, and sets a vision for the future which includes consideration of roles and responsibilities and how costs should be shared. A robust, fair and cost-effective approach on bovine TB is required, setting out where Government and stakeholders hope to be in 10 years time and reconciling the contending perspectives of stakeholder groups. Achieving everybody's aspirations is unlikely. Challenging but realistic targets and indicators of success need to be developed which recognise the regional distribution of the disease and scientific uncertainty around the effectiveness of TB control tools.

Reaching an agreement on a new long-term TB Strategy will inevitably take some time. Defra is committed to action in the short term to address some of the immediate problems of bovine TB, in particular to reduce the risk of geographic spread of the disease. A key element is the proposal to introduce a legal requirement for the pre-movement testing of cattle for which farmers will pay; this has been advised as best practice by Government for some time.

### Overview of work on bovine TB in 2003

- Defra spent £89 million on the TB programme in the financial year 2002/03;
- with the co-operation of Local Veterinary Inspectors a reduction in the number of overdue TB herd tests, to pre-Foot and Mouth Disease (2001) levels, was achieved;
- automatic movement restrictions were imposed on herds with TB tests overdue by more than three months, to reduce the risk of spreading bovine TB;
- mycobacterial culture capacity at the Veterinary Laboratories Agency was trebled. By the end of the year the additional culture facilities had resulted in the elimination of the backlog of bovine tissue samples awaiting culture;
- the gamma-interferon blood test was consolidated as an ancillary diagnostic test for TB in GB;
- general movement licences were introduced in October for clear testing cattle destined to slaughter from herds under TB restrictions;

- a review of the Government's TB Strategy was announced in February;
- a scientific panel to review the randomised badger culling trial and associated research was announced in April;
- a consultation took place on a proposal to permit trained and competent non-veterinarians to perform tuberculin testing of cattle;
- a consultation on rationalising compensation payments for animals slaughtered for disease control purposes, was issued in October;
- the reactive culling element of the randomised badger culling trial was suspended in November; and
- the Independent Scientific Group (ISG) on Cattle TB's Vaccine Scoping Study was published in the middle of December.

### Proposal to use lay TB testers

During 2003 there was a consultation on a proposal to introduce an Exemption Order, under the Veterinary Surgeons Act 1966, to permit suitably trained and competent non-veterinarians to administer the tuberculin skin test, read and record the results. Consideration is being given to how best to proceed.

### Field pilot of the gamma-interferon (IFN- $\gamma$ ) blood test

Improved diagnosis of bovine TB is a major objective of Defra's research programme and the potential use of the IFN- $\gamma$  test is being fully explored. The IFN- $\gamma$  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. In July 2002 the European Commission approved its use as an adjunct to the cervical tuberculin tests used in the EU to increase the detection of tuberculous cattle in infected herds. The IFN- $\gamma$  test has not been approved for use on its own as a routine screening test for bovine TB in the EU.

A field pilot, begun in late 2002, continued in 2003. The pilot was set up to determine whether the IFN- $\gamma$  test, used as a parallel test (i.e. in tandem with the skin test), significantly improves the detection of infected cattle and thus shortens the duration of confirmed TB incidents. It also aims to assess whether the use of a more severe interpretation of the skin test could have an effect comparable to that of IFN- $\gamma$  in shortening the duration of confirmed TB incidents.

Once signed up for the pilot, each reactor herd is randomly allocated one of three possible 'treatments':

- **IFN group** – in which the IFN- $\gamma$  is applied 10-28 days after the disclosing skin test and before the short interval test;
- **XS group** – or extra-severe interpretation of the first short-interval test, whereby all standard inconclusive reactors are removed; and
- **SQ group** – control group, where the normal testing protocol (i.e. the status quo) applies.

The rate of recruitment of herds into the pilot has been relatively slow. At the end of 2003 (i.e. 14 months since commencement of the pilot), 79 herd owners had

volunteered to take part. Consideration is being given to ways of encouraging uptake by herd owners.

In addition to the field pilot, since November the State Veterinary Service conducts *ad hoc* IFN- $\gamma$  testing in specific situations, namely:

- as an aid to decision making in relation to whole or partial herd slaughter in severe TB breakdowns;
- as a 'parallel' (i.e. adjunct) test for non-reactor cattle in ongoing, confirmed TB incidents that do not qualify for the field trial, but have a chronic TB problem; and
- as a 'serial' (i.e. confirmatory) test, to resolve skin test reactors or inconclusive reactors in prolonged unconfirmed TB incidents within low TB prevalence areas, where there is a suspicion of non-specific reactivity to the skin test.

In the first two instances, the blood test is used to enhance the overall sensitivity of TB testing. In the third, the blood test complements the skin test results to achieve better specificity. In 2003, almost 1,000 cattle in 12 non-pilot herds in England (6), Wales (5) and Scotland (1) were IFN- $\gamma$  tested by the SVS under one of the three scenarios described above.

### Summary of bovine TB statistics for 2003

The statistics presented in this report are provisional and could be subject to minor revisions. Such revisions may be necessary to take into account post-mortem and culture results that were outstanding when the data were extracted from the SVS animal health database (Vetnet) on 8 March 2004.



Table B2.1: Cumulative TB statistics for 2003 in Great Britain compared with 2002

County/SVS region/country	Total Great Britain (2002)	Total Great Britain (2003)	Total Scotland	Total Wales	Total England	East Region	North Region	West Region	Shropshire	Hereford & Worcestershire	Wiltshire	Avon	Gloucestershire	Dorset	Somerset	Devon	Cornwall
1. Total Number of Cattle Herds registered on Vetnet	100,632	95,708	15,180	16,281	64,247	13,316	26,468	24,463	2,955	3,045	1,530	1,062	1,529	1,773	3,258	5,737	3,574
2. Total Number of which were under TB restrictions due to a TB incident during the year	4,192	5,506	132	1,073	4,301	132	544	3,625	135	563	250	176	475	141	295	909	681
3. Herds under TB restrictions at the end of the year (due to a TB incident, overdue TB test, etc)	2,742	3,147	67	721	2,359	137	301	1,921	58	282	96	66	191	67	140	684	337
<b>TB tests carried out</b>																	
4. Total Number of Herd Tests	44,129	45,133	4,241	7,414	33,478	3,325	10,127	20,026	1,332	2,562	1,342	911	2,038	1,063	1,915	5,278	3,585
5. Total Number of Cattle Tested	4,095,329	4,543,861	302,303	727,510	3,514,048	186,450	890,757	2,436,841	148,305	277,597	186,858	111,128	240,817	128,449	221,557	685,406	436,724
<b>TB incidents (started in 2003)</b>																	
6. Total New Herd TB incidents	3,320	3,209	81	621	2,507	91	343	2,073	86	312	140	103	262	82	179	540	369
7. Number of incidents which are considered Confirmed New	1,905	1,613	22	321	1,270	25	156	1,089	49	210	82	47	156	23	59	286	177
8. Number of which are considered Unconfirmed TB Incidents	1,402	1,492	59	266	1,167	63	181	923	35	92	52	52	99	56	111	246	180

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 (2003)	Total Great Britain (2002)
9. Total number of which are still Unclassified TB Incidents (pending culture results)	12	8	9	3	7	4	6	10	2	61	6	3	70	34	0	104	13
10. Total number of confirmed new incidents in 2002	268	280	78	39	215	57	100	228	42	1,307	202	21	1,530	348	27	NA	1,905
<b>Animals slaughtered under the TB orders</b>																	
11. As Reactors (including unresolved inconclusive Reactors)	2,313	3,440	1,015	399	1,747	473	1,074	2,317	406	13,184	1,731	208	15,123	4,796	198	20,117	19,903
12. As Inconclusive Reactors	78	111	17	8	34	23	42	85	11	409	21	33	463	135	43	641	708
13. As Direct Contacts	101	217	17	0	145	27	64	268	56	895	964	23	1,882	755	293	2,930	3,104
<b>Other animals</b>																	
14. Slaughterhouse cases reported to the SVS (of which confirmed)	79 (57)	6 (0)	67 (31)	2 (2)	9 (6)	39 (24)	14 (12)	10 (2)	38 (5)	264 (139)	5 (3)	14 (3)	283 (145)	13 (6)	7 (3)	303 (154)	392 (167)

**Provisional year end for statistics for 2003: herds**

Table B2.1 compares the cumulative TB statistics for 2002 and 2003 in GB. The figures are broken down by country (England, Wales and Scotland) and, for the West of England, also by county. The table shows that approximately 2% more herd tests were carried out in 2003 (45,133) than in 2002 (44,129), involving just over 4.5 million animal tests (almost 4.1 million in 2002).

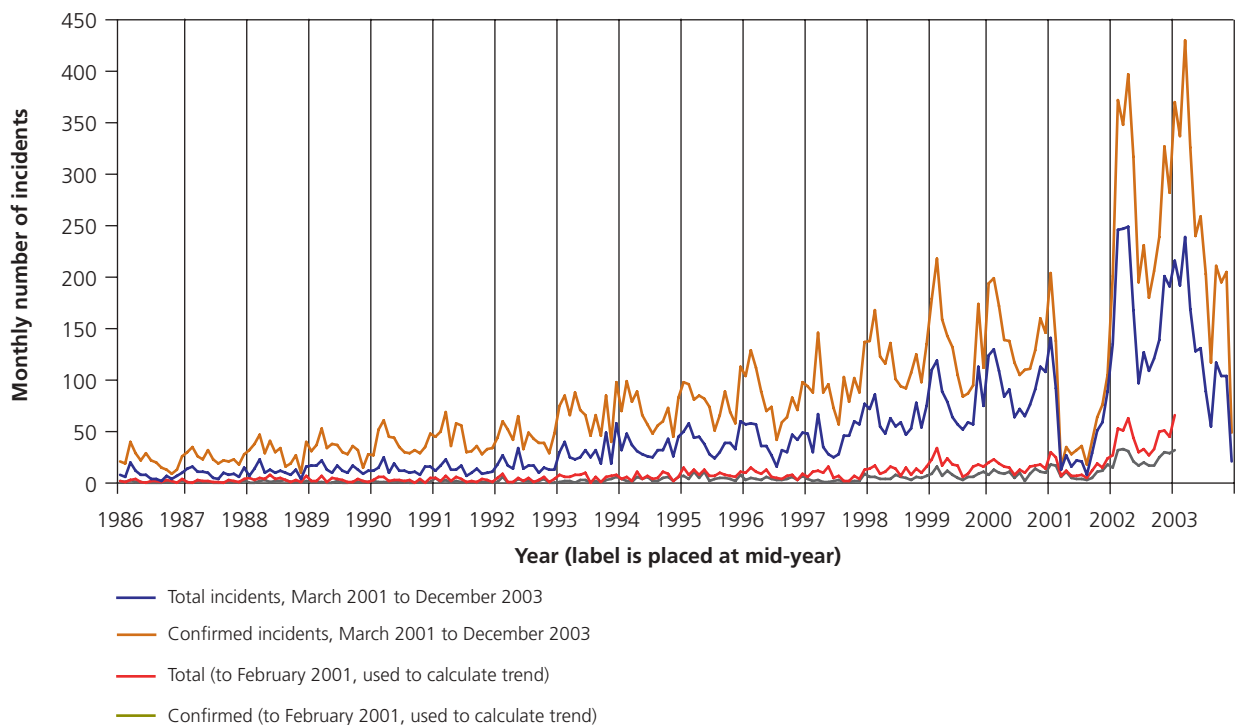
The absolute number of new herd TB incidents (herd breakdowns) disclosed in GB in 2003 was down by 3.5% on 2002 (3,209 against 3,320). The proportion of those incidents confirmed by post-mortem examination and/or bacteriology was also

down by comparison with 2002: 50% against 57%.

A total of 5,506 cattle herds were under TB restrictions because of a TB incident at some time during 2003, compared with 4,192 herds in 2002. The actual number of herds under TB restrictions on 31 December 2003 stood at 3,147, equivalent to 3.3 % of the national cattle herd. This figure includes herds placed under movement restrictions because of an overdue TB test and herds sustaining a TB incident.

Figure B2.1 shows the evolution in the numbers of total and confirmed new TB incidents reported each month in GB since December 1996.

**Figure B2.1: Number of new incidents of bovine TB in Great Britain per month 1996-2003: total and confirmed**





## Section B – Chapter B2

Figure B2.2 shows confirmed TB incidents as a percentage of tests carried out in herds that were not subjected to TB restrictions when the tests were done. In this chart the monthly number of TB incidents is adjusted by the number of TB tests actually carried out each month in order to control for seasonal effects. For every 100 tests carried out in unrestricted cattle herds in 2002, an average of 4.3 new confirmed incidents were found. The equivalent rate for 2003 was 3.5. This herd incidence rate for 2003 is similar to that seen in the six months preceding the FMD outbreak and substantially lower than in 2002, when TB testing resumed fully but the majority of tests were carried out on herds with overdue TB tests.

The distribution of TB herd incidents continues to show a high degree of geographical clustering, as illustrated in Figure B2.3. The traditional 'hotspots' in the South West of England, West Midlands-Powys-Monmouthshire, Stafford-Derbyshire and South West Wales accounted for 95% of confirmed new incidents and 94% of reactors. Cumbria sustained 70 new TB incidents in 2003 compared with 33 in 2002. Only 15 (21%) of those were confirmed by post-mortem examination or bacteriology. The majority (60%) of the Cumbrian TB incidents occurred in cattle herds restocked after FMD. There were 81 new TB incidents in Scotland in 2003 (93 in 2002), but only 22 of these (27%) were confirmed (29% in 2002).

Figure B2.2: Confirmed new incidents of bovine TB in Great Britain expressed as a percentage of unrestricted cattle herds tested during 1996-2003

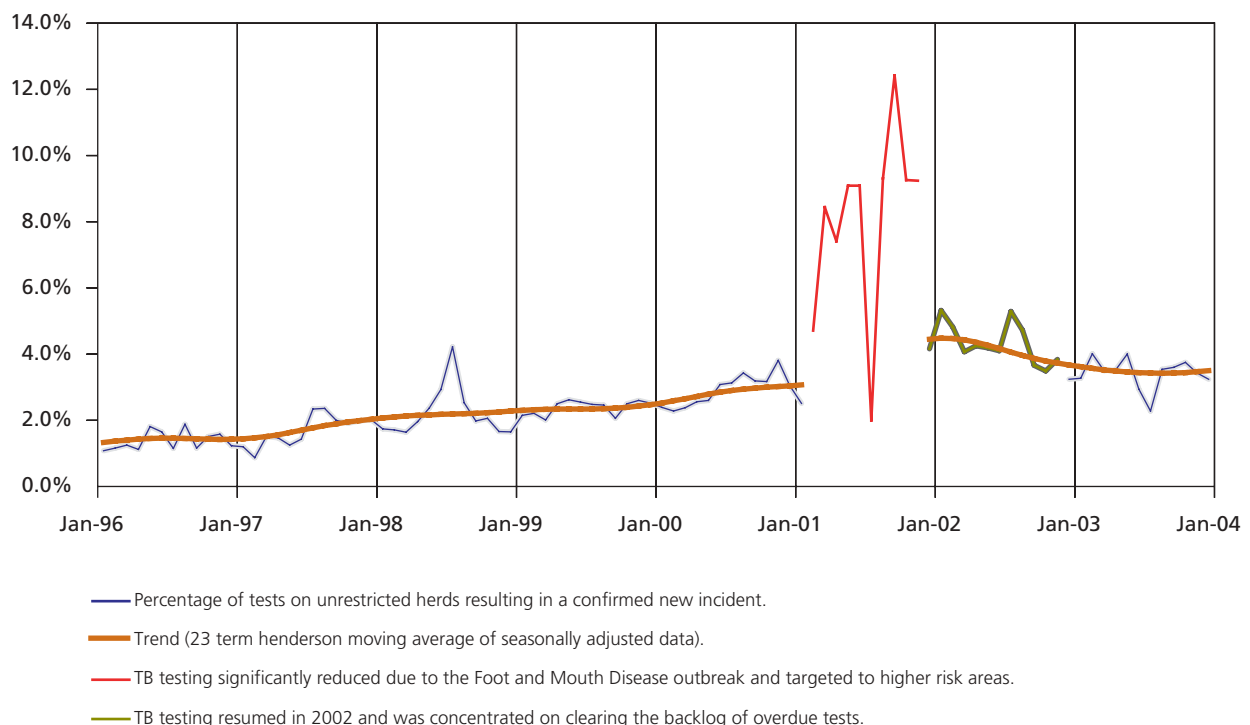
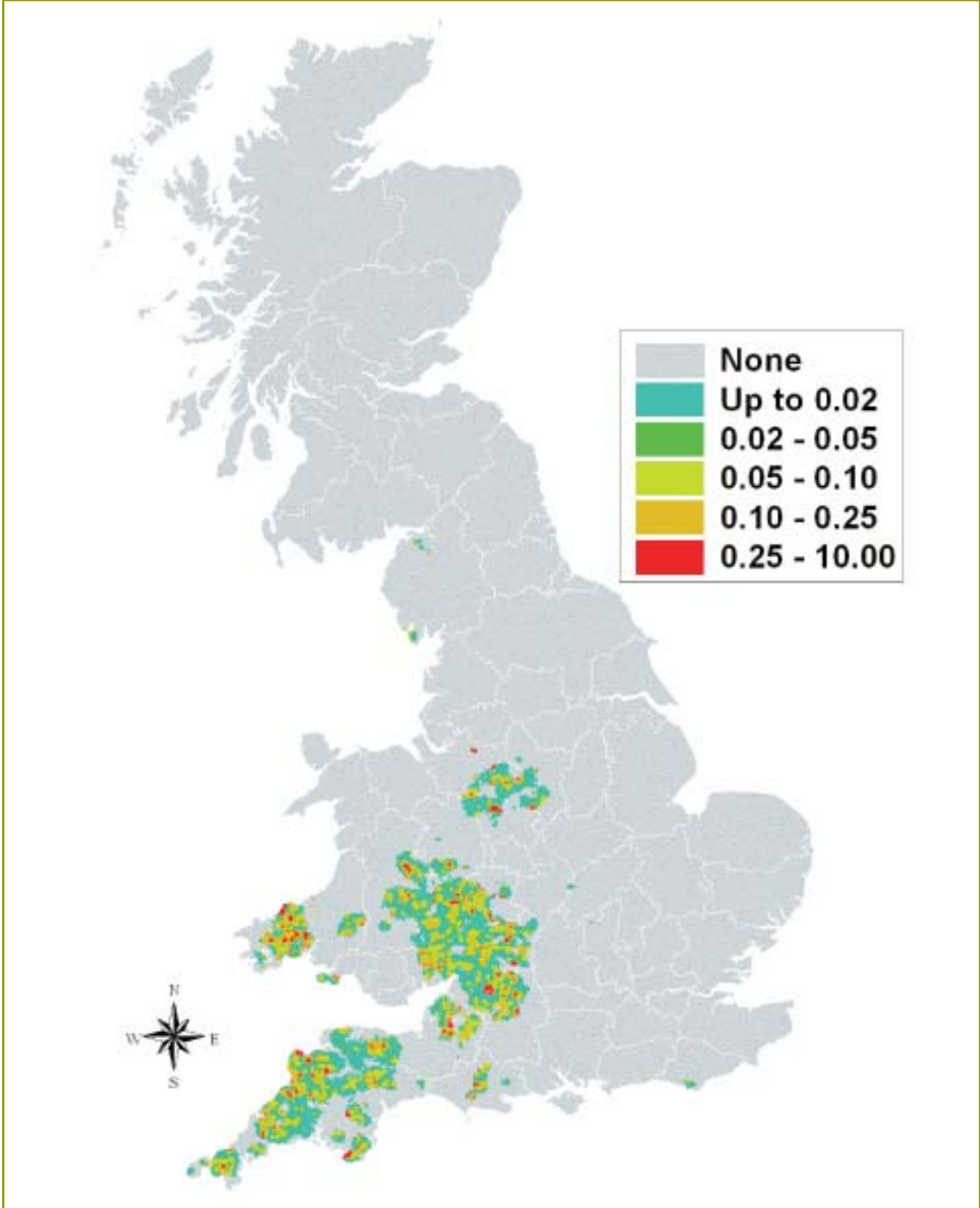


Figure B2.3: Reactors in confirmed TB incidents and *M. bovis* positive slaughterhouse cases disclosed during 2003, per 1,000 cattle



### Provisional year-end statistics for 2003: animals

A provisional total of 20,117 cattle were slaughtered as TB reactors in 2003, up 1% on 2002 when 19,903 reactors were slaughtered. The average total number of reactors per TB incident (including new herd incidents and those carried over from previous years) was 3.6, compared with 4.7 in 2002.

Numbers of cattle slaughtered as inconclusive reactors and direct contacts were slightly below last year's. The number of slaughterhouse cases reported by the Meat Hygiene Service dropped from 392 in 2002 to 303 in 2003, but the proportion confirmed by culture went up from 32% to 46% in 2003.

### TB testing

Overall, 2% more herd tests were carried out in 2003 than in 2002. This was the result of a concerted effort on the part of the SVS, farmers and veterinary practices.

In line with the announcement made as part of the 'Autumn Package' in October 2002, the following movement restrictions were introduced in 2003:

- herds overdue a TB test by more than 12 months, with effect from 1 February;
- herds overdue a TB test by more than six months, with effect from 1 April; and
- herds overdue a TB test by more than three months, with effect from 1 October.

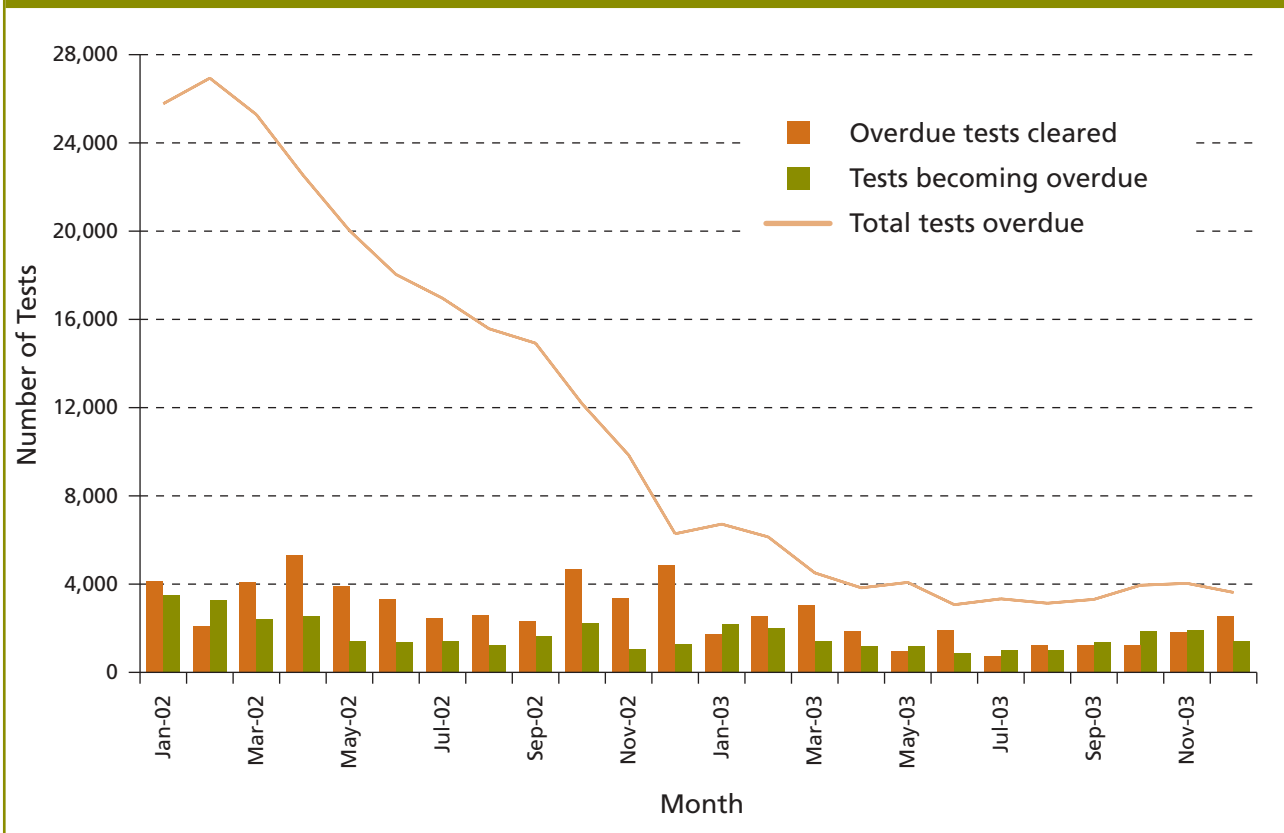
The imposition of movement restrictions acted as a powerful incentive to get tests done quickly. At the beginning of 2003 there were 6,700 overdue herd tests, a substantial improvement on the backlog of 27,000 overdue tests that had built up during the FMD outbreak at the end of 2001. The number of overdue tests continued to decline in the first quarter of the year and then remained more or less stable between April and December, bringing the number of overdue TB tests in line with that prior to FMD. The number of tests overdue on 31 December stood at just over 3,600 (Figure B2.4).



A veterinary surgeon carrying out a TB test assisted by a farmer

Year-end data for 2003 indicates that 1,403 (39%) of the tests shown as overdue had been so for less than one month. The majority of these tests are completed on or shortly after their due date and considered only 'technically' overdue. About 90% of overdue tests had been so for less than six months.

Figure B2.4: Number of herd tests overdue in Great Britain since the resumption of the TB testing programme after the FMD epidemic of 2001



### Changes in parish TB testing frequencies

During 2003 major adjustments of TB testing frequencies took place in the counties of Dyfed and Powys in West and Mid-Wales respectively. In England, the counties of Hereford and Worcestershire, Wiltshire, Devon and Cornwall also underwent substantial revisions. Parishes in Warwickshire and Oxfordshire along the Gloucestershire border were placed under biennial testing. Scotland and most of the North and East of England remain on four-yearly testing. Cumbrian cattle herds depopulated during the 2001 FMD outbreak remain under annual

TB check testing, but should be reverting to four-yearly testing during 2004 if no reactors have been disclosed after restocking. The map in Figure B2.5 shows the distribution of routine parish testing frequencies in England and Wales at the end of December 2003.

As a result of these adjustments, a greater proportion of herds than one year ago are now being tested annually or biennially. This is summarised in Table B2.2. The increase in surveillance and disease control testing will put pressure on veterinary resources.

Figure B2.5: TB testing frequencies in parishes in England and Wales as at 17 December 2003

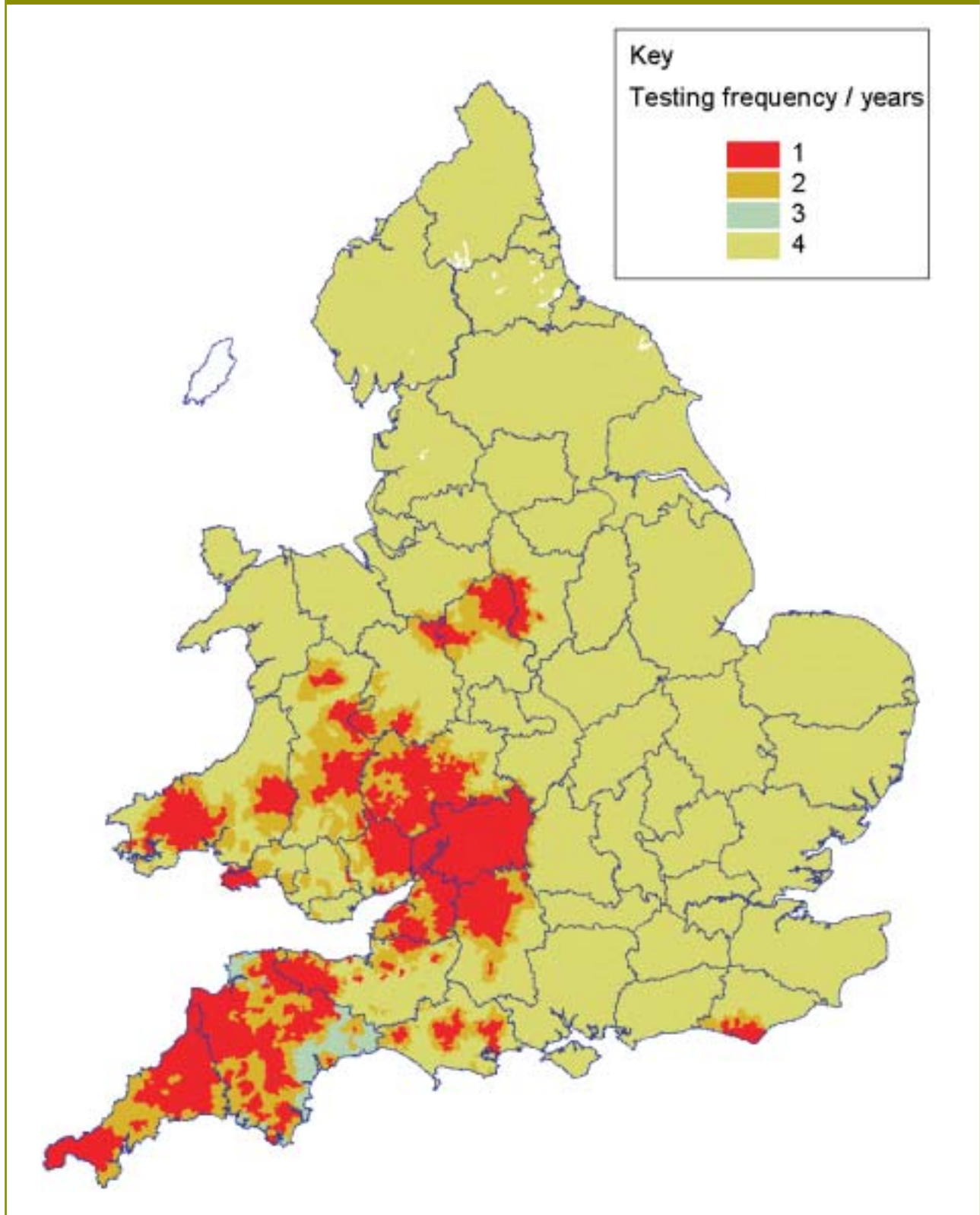




Table B2.2: Distribution of British herds and animal health parishes according to the frequency with which they were being tested as at 17 December 2003

	Default frequency of routine TB tests			
	1-year	2-year	3-year	4-year
By herd	14.2%	10.8%	1.3%	73.7%
By parish	10.2%	7.7%	0.8%	81.3%

### Randomised badger culling trial

The Randomised Badger Culling Trial (RBCT) was set up to establish whether culling badgers is an effective or sustainable bovine TB control mechanism by comparing two different culling treatments – proactive and reactive culling – with a control area. The trial was designed and is overseen by the Independent Scientific Group (ISG) on Cattle TB.

The trial compares 30 areas of 100km<sup>2</sup> grouped into ten triplets where the incidence of TB has been relatively high. One of the following ‘treatments’ was allocated to each trial area:

- **Proactive culling** – where badgers are trapped and culled at the outset of the trial and at intervals afterwards;
- **Reactive culling** – where badgers are trapped and culled from social groups associated with farms which have had a confirmed TB incident during the course of the trial; and
- **Survey only areas** – where no trapping or culling takes place. Setts are surveyed regularly to check for signs of unlawful removal of badgers. These areas act as a scientific control against which the impact of the two culling strategies can be measured.

Fieldwork associated with the trial began in late 1998. Since the outset, the ISG has had a commitment to present any relevant interim findings to Ministers, to enable them to make proportionate decisions based on the latest scientific evidence. In late 2003, the ISG advised Ministers that following its latest interim analysis of data collected from the trial, there had been an increase in the incidence of cattle TB in trial areas subject to reactive culling, over that in the control areas where no culling had taken place. The finding was consistent across all trial areas where reactive culling had taken place. The reason for the increase in herd breakdowns in reactive trial areas is unknown.

In the face of this evidence, the decision was taken by Ministers to suspend culling in the reactive trial areas with effect from 4 November 2003. The proactive and survey only elements of the trial continue as before and the ISG estimates that the full set of trial data should be collected by 2006.

Expenditure on the trial in the financial year 2002/03 amounted to £8.1 million. An independent scientific review of the work of the ISG on the badger culling trial and associated research was announced in April 2003. The Group, led by Professor Charles Godfray, was due to report in early 2004.

### RBCT audits

The RBCT has been subject, in the past, to a number of independent audits which have been published together with a Departmental response. The audits covered the effectiveness of the surveying for badger setts, the statistical validity of the trial and the humaneness of badger dispatch procedures. Further audits have taken place, namely a third humaneness audit and an audit of badger post mortem procedures. The reports received are being studied by Defra. An audit of bacteriological culture procedures is presently under way. All three audit reports, together with Departmental responses, will be published.

### Badger Road Traffic Accident Survey

The survey of badgers found dead by the roadside in the seven counties of Cornwall, Devon, Dorset, Gloucestershire, Herefordshire, Shropshire and Worcestershire, or on farmland inside the 30 trial areas of the RBCT, has continued. Validation of the data from this survey against data obtained from the RBCT will be carried out in 2004, and will be published by the ISG. The number of carcasses, suitable for post mortem, collected during 2003 totalled 1,048.

### General TB research

In addition to the RBCT, Defra has continued to fund a wide-ranging research programme, including vaccine development, improved diagnosis of the disease, risk assessment, transmission routes and economic analysis. The amount spent on research varies from year to year but expenditure in 2002/03 was £7.1 million (excluding research on the RBCT).

### TB vaccine research

Developing a TB vaccine for cattle or wildlife is Defra's ultimate aim and progress so far has been within the timetable laid down in the Krebs Report. A total of £5 million has been committed to research to identify candidate vaccines, experimentally vaccinate cattle and develop a test to differentiate between vaccinated and infected animals. Collaboration with researchers from the Republic of Ireland on the experimental vaccination of badgers with the bacille Calmette-Guerin (BCG) strain of *M. bovis*, and from New Zealand on vaccine development, has continued.

In the middle of December the report of the ISG's Vaccine Scoping Study Sub-Committee (VSSSC) was published. It made a number of recommendations for the potential use of vaccines but recognised that an effective vaccine is still some way off. A new Departmental Vaccine Programme Advisory Group will continue to provide advice on TB vaccine research in 2004.

The interdepartmental Vaccine Steering Group set up in 2000 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.

### Progress of the TB pathogenesis field studies

Two research projects have continued to investigate bovine tuberculosis transmission between cattle. The first of the two projects is a collaboration between the VLA, the Institute for Animal Health and Queens University, Belfast. It is looking at disease dynamics, exploring routes of transmission and investigating the effect of repeated skin



testing on the course of the disease. The project is also designed to include the development of polymerase chain reaction (PCR) assays as a detection system for *M. bovis* shedding. It has already demonstrated that bacterial shedding is markedly affected by challenge route, and that some infected, but skin test negative animals, could be identified that would not be detected by current diagnostic tests.

The second project is being carried out by the VLA with SVS assistance. It involves a detailed pathological examination, including the relevant bacteriology, histopathology and immunology, of 200 tuberculin skin-test positive reactors and a similar number of suspect false negatives that have been in contact with reactor cattle. The results will advance the understanding of the pathogenesis of TB in naturally infected animals.

A third project, started in 2002 at the VLA, aims to appraise the minimal infectious dose of *M. bovis* in cattle and its temporal relationship with disease progression and shedding. It should be able to establish an aerosol challenge model and elucidate primary sites of infection.

### Progress on the TB 99 survey

The epidemiological investigation of incidents of TB in cattle continued, with the Agriculture Development and Advisory Service (ADAS) (Limited) assisting in the completion of case and control reports in RBCT areas. Preliminary analyses, by the ISG, of pre-FMD TB99 data and the 2002 dataset have begun, and some results are likely to be published in the ISG's 4<sup>th</sup> Report in 2004. An analysis of the 2003 dataset is also expected, once data collection is complete. In 2004, TB99 data collection will focus on three RBCT

triplets with the aim of collecting a total of 100 cases with three matched controls per case. Also in 2004, a new epidemiological study is being designed to replace the TB99 questionnaire in 2005.

### Veterinary Laboratories Agency (VLA) research: tuberculosis

Twenty-two papers on various aspects of research into bovine tuberculosis were published by researchers at the VLA in 2003 representing significant scientific advances on a number of fronts.

In *The Report of the Chief Veterinary Officer – Animal health 2002* it was reported that a collaboration between the VLA, the Pasteur Institute and the Sanger Centre had resulted in the sequencing of the *M. bovis* genome, a milestone in *M. bovis* research. A paper describing the major findings was published in 2003 in the *Proceedings of the National Academy of Sciences (USA)*. The information obtained from the genome sequence has been used in a number of ways to advance the development of new tools for TB control.

Characterisation of the *M. bovis* genome has allowed identification of several *M. bovis*-specific antigens for use in the gamma interferon blood test for cattle. These antigens are able to distinguish between cattle vaccinated with BCG and those infected with *M. bovis*. These reagents are at present being evaluated in the UK and New Zealand.

Knowledge of the genome sequence has also underpinned development of molecular fingerprinting tests for *M. bovis*. The application of these typing techniques to over 5,000 *M. bovis* isolates from GB has revealed that the distribution of molecular types in the commonest clone is

incompatible with a process of random mutation and drift. The most plausible explanation for the variability of molecular types observed in GB is a series of 'clonal expansions' caused by the spread of a favourable mutation, together with all other genes present in the ancestral cell in which the mutation occurred. A paper describing these findings was published in 2003 in the *Proceedings of the National Academy of Sciences (USA)*.

The genome of the tuberculin production strain *M. bovis* AN5 was compared to the genome-sequenced *M. bovis* strain by using DNA microarrays. Results revealed that AN5 has not suffered extensive gene deletions during *in vitro* passage. This suggests that bovine tuberculin made from *M. bovis* AN5 is still suitable for detecting infection with presently prevalent *M. bovis* strains. The genome sequence has been used to develop PCR assays that are now used routinely for confirmation of *M. bovis* isolation.

In collaboration with researchers at AgResearch in New Zealand and the National Institute of Medical Research (NIMR), London, the VLA identified a cocktail of DNA vaccines that improve the protective efficacy of BCG in cattle.

A trap-side test was developed for the rapid diagnosis of TB in badgers in collaboration with Chembio Diagnostic Systems, Inc., USA. Although the sensitivity of the test is similar to that of the current live TB test for badgers, results from the new test may be obtained within 10 minutes allowing the test to be performed alongside the captive animal.

Two papers describing both the protein and carbohydrate structure of the antigen used in the live TB test for badgers were published in the *Journal of Biological Chemistry*.

### Central Science Laboratory (CSL) Research: Tuberculosis

Research on a wide range of issues relating to the biology of TB in wildlife continued at CSL in 2003.

#### Badgers

The results of studies investigating aspects of badger behaviour that may pose a risk to cattle were published in peer reviewed literature. These included the use by badgers of farm resources such as buildings and cattle troughs. A study was initiated in 2003 to build on these findings, to quantify the extent of badger visits to farm premises, and to identify on farms the primary areas of TB transmission risk.

Monitoring badger numbers is an important aspect of any management programme. Successful methods of estimating badgers numbers were identified. Papers reporting the development and use of genetic technology for non-invasive sampling, and modifications of distance sampling to estimate badger numbers, were published in the *Journal of Applied Ecology and Molecular Ecology*. The techniques have potential as research tools for monitoring the effectiveness of any future badger management programmes.

A review of the ecological implications of a vaccination strategy for badgers was carried out and published in the *Veterinary Journal*. If vaccination of badgers is to be considered as a potential strategy for the future, it is extremely important to consider in detail the animal's ecology, so that an appropriate delivery strategy can be developed. The review discussed the various aspects that must be considered in order to do this.

Analyses carried out by CSL's collaborators at Sheffield Molecular Genetics Facility indicated emerging changes in the genetic structure of the badger population in proactive RBCT areas after culling, reflecting disruption of the population. A genetic analysis of maternity and paternity of the badgers at Woodchester advanced the understanding of badger mating systems, and a paper reporting the results was submitted to *Molecular Ecology*.

### Other wildlife

A large survey to establish the extent of TB in wildlife other than badgers, continued during 2003. Over 4,500 carcasses of a variety of terrestrial mammal species were examined. *M. bovis* was identified in fallow deer, roe deer, field voles and foxes, and for the first time in the UK in muntjac, and a range of other species.

The impact on populations of selected mammal and ground nesting bird species of the removal of badgers from the ecosystem continued to be monitored in areas within the RBCT. Analyses of a large survey indicated that fox numbers increased in proactive cull areas relative to control areas. There were indications that hare numbers decreased while hedgehog numbers increased in proactive areas relative to control areas. These trends will be confirmed or otherwise by further monitoring.

### Economic research

A project at Reading University estimated the farm-level effects of bovine TB and its control, and the wider economic impacts of TB in the agricultural sector. Also, the regional impact of TB was studied, particularly in those areas with a high level of incidents. Various control policies were

identified for economic assessment, including the current cattle testing strategy, the current cattle testing strategy plus badger culling, zoning (i.e. an individual policy for cattle in 'high risk' zones) and vaccination. Defra followed on from this work with a project on the valuation of wildlife and associated costs.

### TB in animals other than cattle and badgers

Although there is no statutory TB testing programme of farmed deer herds in GB, suspect cases of TB in all deer species are notifiable to the Divisional Veterinary Managers of the SVS. Because numbers of tuberculin tested deer are quite small, surveillance for TB in deer relies heavily on post-mortem examination of captive or wild deer culled for venison production or any other reason. During 2003, *M. bovis* infection was confirmed in deer samples from 22 of 64 suspect cases reported (Table B2.3). Fourteen of the positive samples involved wild deer (red, fallow and roe), making it the largest number of positive wild deer submissions in a single year for the last 20 years. All of these, except one positive roe deer carcass from the New Forest, originated in south west England and the Welsh Borders. The remaining eight samples yielding *M. bovis* were all from farmed red deer in a heavily infected herd in Cumbria that was re-formed after the FMD epidemic.



A fallow deer

Under the current animal health legislation TB is not notifiable in species other than cattle and deer, although it is good practice to do so. A new TB Order due to replace the 1984 Order by the end of 2004 is expected to make notifiable the identification of *M. bovis* infection in any mammal other than humans. During 2003, Defra continued to facilitate and fund the laboratory examination at the VLA of samples from any companion animals, farmed animals and wildlife (excluding badgers) suspected of being affected with TB.

Movement restrictions under Article 15 of the TB (England and Wales) Order 1984 were imposed by the SVS on one llama and two alpaca premises on which bovine TB was identified. Two of these had the restrictions lifted by the end of the year following two consecutive comparative herd tests with negative results. Bovine TB was also disclosed in eight domestic pigs during meat inspection. Three of these had been reared on a small outdoor unit in Herefordshire and the remainder came from two related small outdoor pig farms in Devon. All these pig

premises were in annual cattle testing areas and it is suspected that the tuberculous pigs may have acted as sentinels of cattle or wildlife infection.

*M. bovis* was isolated from two domestic cats kept in the same household in a residential area of Bristol. Both cases (mother and offspring) presented with tuberculous lesions in superficial lymph nodes and were diagnosed within nine months of each other. The *M. bovis* strain isolated from both cases was identical. Neither cat had any apparent contact with cattle herds. Both animals apparently made a full clinical recovery after a lengthy combination course of antibiotics.

In addition to the samples submitted to the VLA by the SVS, in 2003 Defra continued to sponsor two surveys of TB in wildlife, by the CSL and the Wildlife Conservation Research Unit at Oxford University respectively. The aim of these projects is to establish the prevalence of *M. bovis* infection of wildlife species other than badgers.

Table B2.3 gives the numbers and geographical distribution of cases of bovine TB confirmed in species other than cattle and badgers in 2003. The results reported in this table exclude the findings of the CSL survey and the Oxford University study mentioned above.

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Table B2.3: TB surveillance in animals other than cattle and badgers: number of samples investigated 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
<b>Deer</b>				
Farmed red deer	21	19	8	Cumbria (all 8 from the same farm)
Wild red deer	7	7	6	Exmoor (5) and Devon (1)
Fallow deer	3	3	3	Somerset, Hereford-Shropshire border and Forest of Dean (Glos.)
Roe deer	32	27	5	Somerset (3), Gloucester and New Forest (Hampshire)
Muntjac deer	1	1	0	–
<b>Farmed animals (excluding deer)</b>				
Domestic pig	16	15	8	Three small outdoor pig units in Herefordshire (1) and Devon (2)
Sheep	3	3	0	–
Alpaca	6	5	2	Gloucestershire, Somerset
Llama	3	3	1	Herefordshire

## Section B – Chapter B2

Table B2.3: TB surveillance in animals other than cattle and badgers: number of samples investigated 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
<b>Zoo animals</b>				
Wallaby	1	1	0	–
Kangaroo	1	1	0	–
Beaver	1	0	–	–
Gerbil	1	1	0	–
Oryx	1	1	0	–
Elephant	16	16	0	–
Kudu	1	0	–	–
Nyala	1	0	–	–
Zebra	1	0	–	–
Gazelle	2	1	0	–
Sitatunga	1	1	0	–
Zebu	1	0	–	–
<b>Chicken</b>	2	0	–	–
<b>Quail</b>	1	1	0	–
<b>Duck</b>	1	0	–	–
<b>Fox</b>	1	1	1	New Forest (Hampshire)
<b>Domestic cat</b>	8	8	2	Avon (both from the same household in Bristol)
<b>Total</b>	<b>133</b>	<b>115</b>	<b>36</b>	



### Wildlife survey in Cumbria

Unlike the rest of the county, the Furness Peninsula of south west Cumbria was unaffected by FMD in 2001, but it had suffered sporadic TB incidents between 1990 and 2001. During 2002 and 2003 there was an increased frequency of bovine TB incidents, some of which could not be explained by purchase of infected cattle or contact with cattle from contiguous reactor herds. At the end of December a limited wildlife survey was announced, to cover badgers killed in road traffic accidents and wild deer carcasses found with suspect lesions, over an area of 180 km<sup>2</sup> in the Furness Peninsula.

The objective of the survey is to determine whether or not there are badgers (and deer) infected with TB in this part of Cumbria. The results of the survey will be used along with the results of two cycles of cattle testing at 6- to 12-month intervals, to determine the future herd testing frequency in the area.

### TB compensation/valuation

Full market value was paid for all animals slaughtered under TB control measures. For the financial year 2002/03 the bill for this was £34.4 million.

A National Audit Office report on TB compensation in Wales, published in 2003, noted that compensation payments in 2002 were on average 50% higher, and in some cases over 100% above the underlying market price. An internal Defra audit in summer 2003 similarly found that TB valuations appeared to be significantly higher than market prices.

Since then a number of changes have been introduced to help ensure valuations are a fair reflection of market price. These include improved data handling procedures and provision of market price information to valuers to act as a benchmark for valuations, and a letter to valuers reminding them of the conditions under which valuations should be carried out. In addition, Defra is in contact with valuers' organisations about revisions to the valuations procedures.

In October 2003 Defra launched a consultation on proposals to rationalise compensation for animals slaughtered for all notifiable disease including TB. The aim is to strike a balance between practical disease control and responsiveness to individual circumstances. Next steps are being considered.



### Chapter B3: Rabies prevention and control

*Rabies is a fatal viral disease of the nervous system which can affect all mammals including man. The disease is usually spread by saliva from the bite of an infected animal. Clinical signs include paralysis and aggression leading to a painful death. Rabies-like viruses also affect bats as well as terrestrial animals. There have been two bat-associated rabies cases in England, both involving Daubenton's bats (*Myotis daubentonii*): one in Sussex during 1996 and another in Lancashire in 2002.*

*The British Isles have been free of classical rabies for many decades, but because of the existence of the disease elsewhere there is concern about rabies being reintroduced by imported animals. All rabies susceptible animals entering the UK are required to spend six months in quarantine, unless arriving under and complying with all the conditions of the Pet Travel Scheme (PETS).*

#### Quarantine

Under national legislation, all rabies susceptible animals entering GB are required to be licensed into six months quarantine, to prevent rabies being reintroduced by imported animals. Since February 2000, dogs and cats can be exempted from the six month quarantine requirement, but only if they comply fully with all the conditions of PETS. Those found not to comply fully must undergo quarantine until such time as they comply fully with PETS or for six months.

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 40 premises for dogs, cats and pet mammals, 30 zoos and 138 research establishments.

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 40. The number of illegally landed<sup>1</sup> animals has increased from 45 in 2002 to 116 in 2003. This large increase is mainly due to an increased number of cats and dogs from the USA and Canada failing their PETS check at Heathrow/Gatwick and having to enter quarantine.

<sup>1</sup> Some of the total number of illegally landed animals represent non-compliance with some of the rules of the Pet Travel Scheme

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Table B3.1: Number of dogs and cats entering quarantine 1999-2003

	1999*	2000	2001	2002	2003
Number of cats and dogs entering quarantine	6,989	5,296	5,304	3,555	4,405

\* Last full year where all animals were required to go into quarantine i.e. before the Pet Travel Scheme was introduced

### Pet Travel Scheme

#### Countries covered by the scheme

The Scheme was launched on 28 February 2000 and initially covered pets travelling from 22 countries in Western Europe. It was extended on 31 January 2001 to 28 more countries and territories around the world including Cyprus, Malta, Australia, New Zealand, Japan and Singapore. On 1 May 2002 the Scheme was extended to Bahrain, and on 11 December 2002 to mainland USA and Canada.

Table B3.2: List of PETS qualifying countries

Andorra	Cyprus	Hawaii	Mayotte	St Helena
Antigua & Barbuda	Denmark	Iceland	Monaco	St Kitts & Nevis
Ascension Island	Falkland Islands	Italy	Montserrat	St Vincent
Australia	Fiji	Jamaica	Netherlands	Sweden
Austria	Finland	Japan	New Caledonia	Switzerland
Bahrain	France	La Réunion	New Zealand	United States of America
Barbados	French Polynesia	Liechtenstein	Norway	Vanuatu
Belgium	Germany	Luxembourg	Portugal	Vatican
Bermuda	Gibraltar	Malta	San Marino	Wallis and Futuna
Canada	Greece	Martinique	Singapore	
Cayman Islands	Guadeloupe	Mauritius	Spain	

### Qualification

To meet the PETS rules, animals must first be microchipped, then vaccinated against rabies and blood tested at a laboratory recognised by Defra. The owner is then required to obtain an official PETS certificate. They will also need an official certificate to show that the pet has been treated against ticks and tapeworms between 24 and 48 hours before being checked in for travel to England. The owner must also sign a form to declare that the pet has not been outside any of the qualifying countries for the scheme within the six months prior to entering England. An animal may not enter England until six months have elapsed from the date the blood sample (giving a successful test result) was taken.

To enter England under the scheme, pets must travel with an approved transport company on an authorised route. At the end

of 2003 there were 55 different transport companies authorised to bring pets into England under the scheme on 214 different routes. This is an increase of 29 companies and 114 routes over the figures for the end of 2002. New routes and companies are regularly added to the list.

Pets must enter England, as the devolved administrations for Wales and Northern Ireland have not made legislation implementing similar pet travel schemes. Scotland has such legislation but at the end of 2003 had no authorised routes. After an animal has entered England under PETS, it is free to move to any other part of the UK as well as the Channel Islands, the Isle of Man and the Republic of Ireland.

A total of 120,975 dogs and 15,978 cats have successfully entered England under the scheme since it began.

**Table B3.3: Year on year increase of pets entering England since 2000**

1998	1999	2000	2001	Total
14,584	26,722	40,742	54,905	136,953

### PETS checks

Of the animals presented under the scheme 7% have failed their PETS check. The main reason for failure has been under the requirement for tick and tapeworm treatment. Other reasons included incorrect rabies certification. The majority of pets that failed their check were able to continue their journey after visiting a veterinary surgeon or having waited a short time for the required 24 hours to elapse following the tick and tapeworm treatment.

### PETS information

More information and fact sheets are available on the Defra website at [www.defra.gov.uk/animalh/quarantine](http://www.defra.gov.uk/animalh/quarantine) or from the PETS Helpline (telephone 0870 241 1710 – Monday to Friday 8.30am to 5.00pm; fax 020 7904 6206).

### EU Regulation

The EU Regulation on animal health requirements for the non-commercial movement of pet animals was published on

13 June 2003 as EC Regulation 998/2003. It came into force on 3 July 2003 and, subject to ratification awaited at time of going to print, will apply from 3 July 2004. This Regulation sets out the requirements for the movement of pet animals (dogs, cats and ferrets) travelling within the EU, and into the EU from Third Countries.

For dogs and cats, the Regulation will allow the rules of the Pet Travel Scheme to continue largely unchanged for five years. Dogs, cats and ferrets entering from high-risk Third Countries will still be required to enter quarantine for six months on arrival. The Regulation also refers to importation requirements applying to rodents, rabbits, birds (except certain poultry), ornamental tropical fish, invertebrates (except bees and crustaceans), amphibians and reptiles. Details of these requirements, and other issues yet to be settled, such as requirements for diseases other than rabies and a list of low-risk Third Countries, will be finalised at EU Working Groups.

Defra's website includes information on this Regulation, and will be updated with further details of any significant decisions that will change PETS rules.

### Rabies in bats

Since 1986, the Veterinary Laboratories Agency has undertaken scanning surveillance on up to 200 bats each year for bat rabies. Over the past 18 years all surveillance cases (apart from the ones found in Sussex and Lancashire) have returned negative results.

Four human deaths from European Bat Lyssaviruses (EBLVs) in Europe have been reported since 1977. None of them had a record of prophylactic rabies immunisation.

In Great Britain, an incident of European Bat Lyssavirus type-2 (EBLV-2) was identified in 2002, tragically leading to a human fatality. Following this incident, Defra has worked closely with the Department of Health, the Health Protection Agency and other bodies to ensure that appropriate public health advice is available to people involved in handling bats. This incident also led to surveillance on EBLV-2 in Daubenton's bats in Britain throughout 2003 being enhanced through a programme of targeted surveillance.

Preliminary data resulting from the pilot studies to assess the presence of EBLV has confirmed a low level of antibodies to EBLV type-2 in one species of British bat, the Daubenton's bat.



A Daubenton's bat

Future surveillance studies to examine the longevity of antibody response and the appearance of excreted EBLV-2 from Daubenton's bats at sites previously sampled will increase the statistical confidence in the pilot data obtained.

### Chapter B4: Consumer protection

*Zoonoses are diseases and infections which can spread naturally between animals and people. 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.*

*In addition to reducing zoonotic infections Defra, in collaboration with other authorities, is involved in protecting the food chain when chemical food safety incidents occur. Surveillance is also carried out to ensure that veterinary medicines are used responsibly in livestock and, since 2003, in horses. The introduction of mandatory horse passports across the EU is designed to ensure that medicines not authorised for use in food-producing animals do not enter the food chain.*

#### UK Zoonoses Group

The UK Zoonoses Group (UKZG) met twice during 2003, in April and October. Amongst the issues considered was the action taken in response to the death in 2002 of a man in Scotland due to a European Bat Lyssavirus type 2 infection, and the finding of EBLV in a bat in Lancashire. Surveillance for West Nile Virus and contingency plans were also discussed.

The Group received one report indicating that investigations into a possible zoonotic link between Henoch Schonlein Purpura in humans and Porcine Deramatitis Nephropathy Syndrome (PDNS) had not been established; and another setting out the action in response to a report, in the autumn of 2002, of an increase in pig infertility where current evidence did not indicate that this condition was zoonotic. The UKZG

considered the response to the avian influenza outbreak in The Netherlands in February/March 2003. This included the health and safety advice issued to all SVS staff following the report of a number of cases of conjunctivitis in people working with the infected poultry in the Netherlands, and the death of one veterinary surgeon where avian influenza was implicated.

Additionally, an interim report on the implementation of the recommendations of the Scottish Executive and the Food Standards Agency (FSA) was discussed by the UKZG in its role as a monitor of the response of the Scottish Executive and FSA Scotland to the recommendations. The UKZG also received presentations on the Animal Health and Welfare Strategy and the Veterinary Surveillance Strategy.

Further details of the activities of the UKZG are available at:  
<http://www.defra.gov.uk/animalh/diseases/zoonoses/ukzg/minutes/five.pdf>

### Zoonoses

No new zoonotic agents were identified in 2003. Defra supported the VTEC 2003 fifth international symposium on Shiga toxin producing *Escherichia coli* infections which took place in Edinburgh in June. This symposium brought together a number of disciplines to discuss the latest research and developments in the food chain, epidemiology, biology, and clinical aspects.

The proposals from the European Commission to intensify monitoring and control of zoonoses reached final agreement with the Agriculture Council and the European Parliament, and were published in the Official Journal of the European Union as Directive 2003/99/EC on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117 and Regulation (EC) No. 2160/2003 on the control of salmonella and other specified food-borne zoonotic agents.

Defra continued to assist the FSA to achieve its target to reduce foodborne illness and to reduce the levels of salmonella and campylobacter in the food chain. Defra was actively involved in a number of groups set up by the FSA to consider ways of reducing these organisms at the farm level. Results of research were shared and farmer educational material developed.

The *Zoonoses Report UK 2001*, giving an overview of Zoonoses in the United Kingdom, was published early in 2003 and is available at:

[http://defraweb/animalh/diseases/zoonoses/zoonoses\\_reports/zoonoses2001.pdf](http://defraweb/animalh/diseases/zoonoses/zoonoses_reports/zoonoses2001.pdf). This was the fourth annual report and was produced in collaboration with a large number of organisations involved in the control and monitoring of zoonoses. The same group of organisations met during 2003, and the *Zoonoses Report UK 2002* is due to be published early in 2004. These reports aim to be useful both to the professionals who deal with zoonotic diseases and to the non-specialists who wish to have an insight into zoonoses, their prevalence and importance.

At the beginning of 2003 a survey of cattle, sheep and pigs arriving at GB slaughterhouses was started. The survey is to determine the national prevalence in these animals of a number of zoonotic organisms including salmonella, campylobacter, Verocytotoxigenic *E. coli* O157 (VTEC O157), yersinia and cryptosporidia, along with the susceptibility to antimicrobials of isolated organisms. The study will be completed early in 2004 with the aim of analysing and reporting the results in autumn 2004, which should give a comparison with the situation at the last similar survey in 1999/2000.

### Salmonella

All laboratories are required to report details of the isolation of salmonella from samples taken from animals, their environment and feed, as defined in the Zoonoses Order 1989. These data are collated, analysed and published annually in *Salmonella in Livestock Production GB*. The 2002 publication is available on the internet at:  
<http://defraweb/corporate/vla/science/science-salm-rep.htm>. A similar analysis of the data collected in 2003 will be published in summer 2004. Additionally, 144 advisory visits were made in 2003 to farms to provide advice on the control of salmonella in livestock.



### Multiple antimicrobial resistant salmonella serotypes

Towards the end of the year multiple antimicrobial resistant strains of *Salmonella* Java were isolated on a cattle premises in England. These strains, which were resistant to ampicillin, chloramphenicol, streptomycin, sulphonamides, tetracyclines, trimethoprim, cefoperazone (ACSSuTTmCfp), had not been seen in GB before. Further investigations were put in place to better understand these strains and assess the risk they pose to the animal and human population. Similar but not identical strains have been found in human infections.

In 2002, following reports of multiple antimicrobial resistant strains of *S. Newport* causing concern in the United States, surveillance was enhanced. The USA strains were resistant to ampicillin, chloramphenicol, streptomycin, sulphonamides and tetracyclines, and in addition often had intermediate or full resistance to third generation cephalosporins (ceftriaxone). No similar strains were reported in livestock in Britain in 2003.

### Salmonella in poultry

The statutory monitoring of breeding flocks of domestic fowl for *S. Enteritidis* and *S. Typhimurium* continued during 2003, in line with the requirements of EC Directive 92/117. Two hatches of day-old layer breeder chicks originating from eggs from another Member State were found to be positive for *S. Enteritidis* during routine hatchery monitoring. These chicks were destroyed.

At the hatchery day-old chicks from GB sourced hatching eggs were also positive at the same time and five GB source layer breeding flocks were implicated. These were investigated and negative results indicated cross-contamination at the hatchery. The hatchery received advice and assistance to help ensure the infection was eliminated and that further day-old chicks would not be cross contaminated in the hatchery. The authority in the Member State from which the eggs originated was informed of the findings.

Routine monitoring did not find any *S. Enteritidis* or *S. Typhimurium* in breeding flocks producing chickens for meat. One parent breeding flock producing layers was suspected of being infected with *S. Typhimurium*, but extensive investigation of the flock did not confirm infection. *S. Enteritidis* was isolated from another breeding flock during the rearing phase. The owner destroyed these birds voluntarily. Although this was a flock of breeder birds the eggs were used for pharmaceutical purposes, and not to produce layer chicks.

The success of the government control programme for *S. Enteritidis* and *S. Typhimurium*, supported by the industry, is illustrated in the breeding sector (broiler breeders) producing chickens for meat (Figure B4.1), and in the layer breeder sector producing chickens to lay eggs for human consumption (Figure B4.2).



Figure B4.1: Reported incidents of suspected *S. Enteritidis* and *S. Typhimurium* infection in breeders producing chickens for meat 1989–2003.

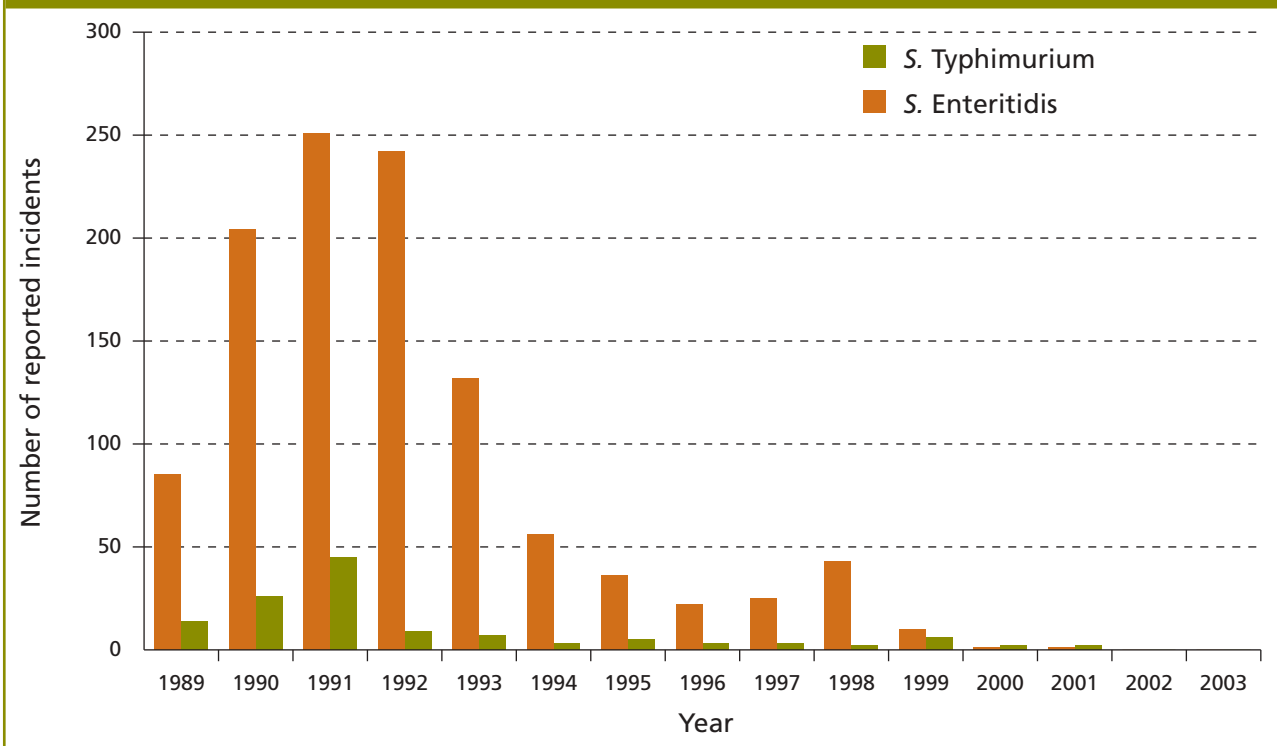
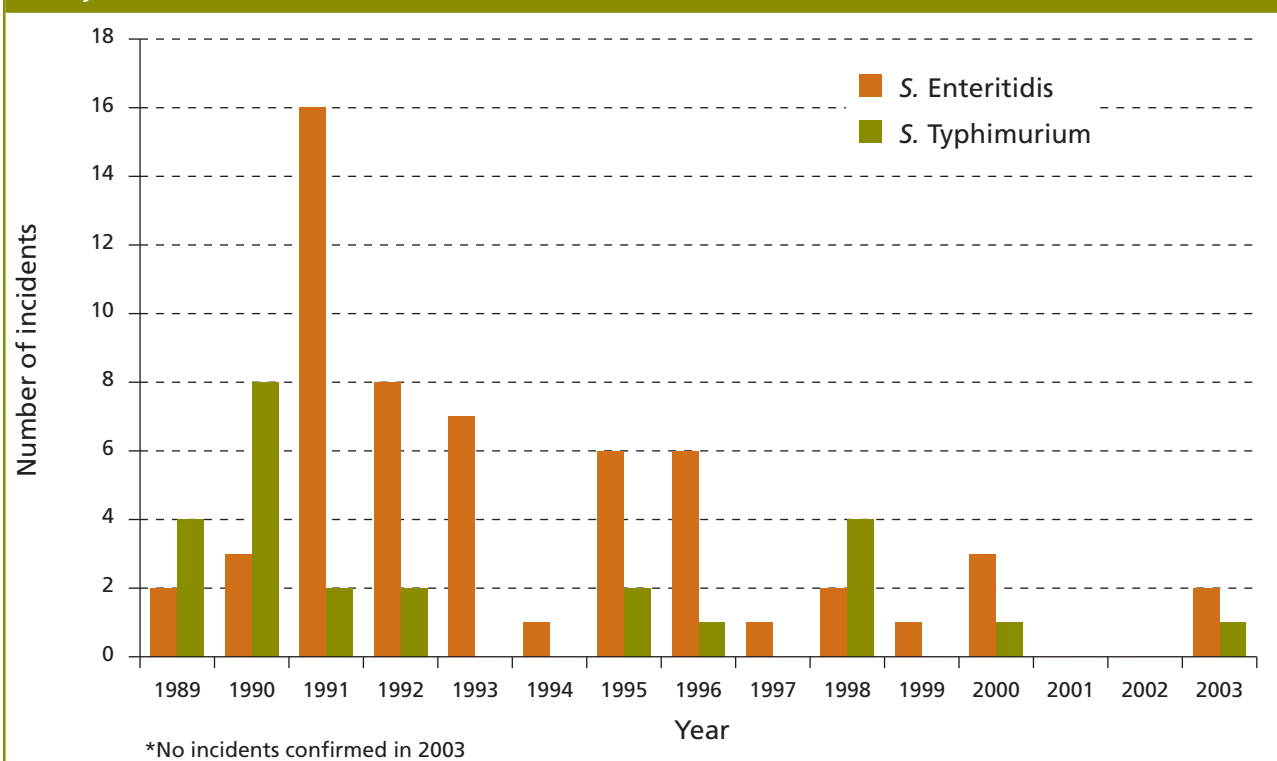


Figure B4.2: Reported incidents of suspected *S. Enteritidis* and *S. Typhimurium* in layer breeders 1989–2003\*



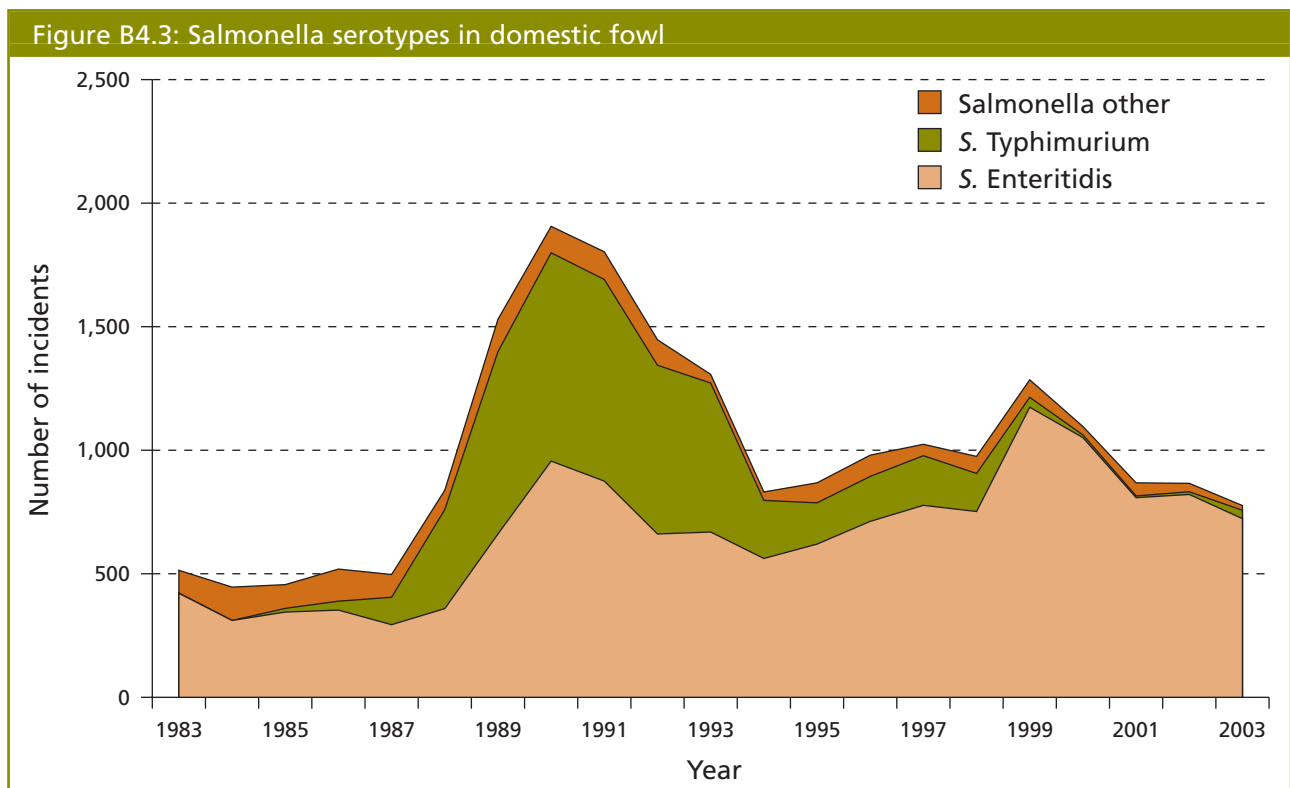
## Section B – Chapter B4

As a result of industry monitoring of chickens reared for meat, usually from samples taken at 3-4 weeks of age, four *S. Enteritidis* incidents were recorded (the same as in 2002), and one *S. Typhimurium* report (30 reports in 2002). The most common serotype isolated from chickens reared for meat or their environment was *S. Livingstone*.

In the commercial layer flocks producing eggs for human consumption 22 reports of *S. Enteritidis* were received and two of *S. Typhimurium*. Where possible, follow up visits were made to the farms and advice

given on the control of salmonella on the farms. The reason for the increase in the number of reports of *S. Enteritidis* in commercial layer flocks (six in 2002) is not known but may be due to increased or more sensitive monitoring.

Excluding *S. Enteritidis* and *S. Typhimurium* reports of other serotypes in poultry were similar to 2002 (794 compared with 869). Figure B4.3 illustrates the continued low level of *S. Enteritidis* and *S. Typhimurium* in domestic fowl in recent years.



### Salmonella in cattle

*S. Typhimurium* used to be the most common serotype reported in cattle but in 2003 it had declined to 126 reported incidents compared with a peak of over 1,000 reported incidents each year during the 1994 to 1996 period. During 2003 the number of reports of *S. Dublin* was at a 10 year high, and *S. Dublin* has been the most common serotype reported in cattle since 1999, although a reduction in the number of reports was noted in Scotland.

The clinical manifestations of *S. Dublin* were principally neo-natal scours with or without nervous symptoms, pneumoenteritis in older calves, and post calving dysentery in adults. There has been no concomitant increase in reports of *S. Dublin* foetopathy.

### Salmonella in pigs

*S. Typhimurium* (33% were Definitive Type U288, 16% were Definitive Type 104) continued to be the most common serotype reported in incidents in pigs. Defra continued to support the Meat and Livestock Commission (MLC) Zoonoses Action Plan, which is aimed at reducing the prevalence of salmonella in finishing pigs. Herds identified with poor salmonella status are required to institute planned control strategies. Defra supported the plan through further research and advice to those farmers who have a high prevalence level of salmonella in their pig herds.

### Salmonella in sheep

During 2003 *S. Enterica* subspecies *diarizonae* (serovar 61:k:1,5,7), most often associated with ovine abortion, continued to be the most common salmonella isolated in sheep (56% of all reported incidents).

### Salmonella in feedingstuffs

In September 2003 the Advisory Committee on Animal Feedingstuffs (ACAF) published a review of on-farm feeding practices, following consultation with interested parties within the feed and farming industries including the National Farmers Union (NFU) and the MLC. The aim of this review is to promote best practice by livestock producers in all aspects of feed sourcing, transport, storage, feeding on-farm, and handling home grown feeds. It is hoped that the recommendations made in the review will help producers to ensure that zoonotic pathogens (such as salmonella) are prevented from entering the food chain via the feeding of livestock.

The ACAF is a UK-wide advisory Non Departmental Public Body (NDPB) made up of independent experts appointed by UK Ministers and the 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. 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 and information for purchasers of animal feed.

## Section B – Chapter B4

Table B4.1: The levels of salmonella in feedingstuffs in Great Britain during 2003

Product	Number of Tests			Number of positive tests			% of positive tests		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
Processed animal protein at GB protein premises	4,482	3,318	3,752	106	41	21	2.4	1.2	0.6
GB and imported processed animal protein arriving for feedingstuffs use	953	967	878	27	33	23	2.8	3.4	2.6
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	10,361	6,035	12,475	245	258	376	2.4	4.3	3.0
Non-oilseed meal vegetable products	10,310	4,308	9,954	209	26	97	2.0	0.6	1.0
Pig and poultry meals	3,968	4,034	4,171	44	54	33	1.1	1.3	0.8
Poultry extrusions	4,832	5,183	4,346	19	24	21	0.4	0.5	0.5
Pig extrusions	1,599	2,057	1,411	8	12	13	0.5	0.6	0.9
Ruminant concentrates	1,985	2,336	1,859	21	23	6	1.1	1.0	0.3
Protein concentrates	593	726	724	6	12	6	1.0	1.6	0.8
Minerals/others	1,548	641	643	11	0	1	0.7	0.0	0.2

Table B4.2: Isolations of *S. Enteritidis* (SE) & *S. Typhimurium* (ST) from all feedingstuffs and feed materials being monitored under Defra Codes of Practice (1995 – 2003\*) (*provisional*)\*

Type of material	1995		1996		1997		1998		1999		2000		2001		2002		2003	
	SE	ST	SE	ST	SE	ST	SE	ST	SE	ST	SE	ST	SE	ST	SE	ST	SE	ST
Finished feeds	2	20	0	18	2	7	0	8	0	7	0	9	2	4	0	1	1	2
Animal Protein	0	1	0	10	0	2	0	0	0	1	0	2	1	0	0	0	0	0
Vegetable Material	4	10	5	6	0	9	0	9	1	9	1	3	0	3	0	5	0	4
Minerals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	1	5	1	2	1	6	2	3	1	1	1	3	0	2	0	0	2	8
<b>TOTALS</b>	<b>7</b>	<b>36</b>	<b>6</b>	<b>36</b>	<b>3</b>	<b>24</b>	<b>2</b>	<b>20</b>	<b>2</b>	<b>18</b>	<b>2</b>	<b>17</b>	<b>3</b>	<b>9</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>14</b>

### VLA surveillance: *Streptococcus suis*

*Streptococcus suis* surveillance identified the continuation of a range of serotypes involved in pig disease. No significant departures from expected disease patterns and serotypes were detected, and no human cases were reported, although links with the Health Protection Agency (HPA) were strengthened with a view to improving surveillance of human *S. suis* infections.

### Assistance to Health Authorities

Defra continued to provide assistance when requested to health authorities investigating outbreaks of zoonotic pathogens in humans. Normally this is when a food source has been linked to a particular farm, or illness in people who have all visited the same farm. Investigation and sampling of animals on the farm may be of value in confirming that the source of the outbreak has been identified.

During the year assistance was given on four occasions to try to establish the origin of outbreaks of VTEC O157 in people. Sampling was carried out on one beef, and one dairy farm, an open farm receiving visits from the general public, and one nature reserve which included a wildlife animal hospital. No VTEC O157 was isolated from the nature reserve which had been associated with an outbreak involving 18 people. VTEC O157 was isolated from the beef, dairy and the open farm. Isolates from the cattle on the dairy farm, and from cattle, sheep, goats, llamas, and horses on the open farm were indistinguishable from the isolates from the outbreaks relating to two people associated with the dairy farm, and four people associated with the open farm. These incidents emphasise the importance of following good personal hygiene practices when handling animals or when in close contact with their environment.

### Research on zoonoses

In order to reduce the risk of transmission of infection from live animals to people and to other animals, Defra funds a research programme to increase knowledge of the zoonotic organisms to help identify means by which a reduction of zoonotic agents in farm animals might be achieved. The VLA plays an important part in a number of these, either as the main contractor or in collaboration with other research bodies.

The projects in which the VLA are currently involved include work on VTEC O157 in cattle to determine epidemiological patterns and risk factors and work on the pathogenesis in ovine and other animal model studies. Work continued to gain an understanding of the epidemiology of VTEC O157 likely to be pathogenic to man in farm wastes. The role of goats and pigs in the maintenance and transmission of VTEC O157 was part of continuing studies.

Genotypic and phenotypic stability of campylobacter has been studied, as have protective immunity and competitive exclusion for the development of effective intervention products for poultry. Work continued into the investigation of the distinguishing features of *Campylobacter jejuni* strains and the role they play in colonisation of hosts and producing disease. A second meeting was held with collaborators and advisers to discuss the progress made with the campylobacter project which is conducting epidemiological studies to develop practical measures for reducing campylobacter in chickens reared for meat.

Epidemiological studies of salmonella in pigs continued with the aim of developing control methods to reduce the infection on farms.

The VLA is also involved in research into the genotypic and phenotypic comparison of virulent *Yersinia enterocolitica* from humans with those from animals, and research continues to evaluate zoonotic transmission of *Cryptosporidia* spp. and *C. parvum* genotypes between humans and animals. Further details of these and other research projects are available on the Defra website.



Microarray technology at the VLA

### Chemical Food Safety

The VLA is contracted to the FSA to provide advice and assistance in dealing with on-farm chemical food safety incidents to protect the food chain in England and Wales. Seventy-four chemical food safety incidents were investigated. The majority of these were cases of lead poisoning; also recorded were a number of cases of botulism, usually associated with poultry litter where cattle had direct or indirect access to it.

### Residue surveillance

The Veterinary Medicines Directorate (VMD), a Defra agency, operates 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 2003 were published quarterly in the VMD Medicines Act Veterinary Information Service (MAVIS) newsletter, which is available on line at [www.vmd.gov.uk](http://www.vmd.gov.uk). Officers from the SVS collected samples on farms for the 2003 statutory programme. They also 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 for 2001 and 2002 can be viewed on the VRC's website at: <http://www.vet-residues-committee.gov.uk>.

### Horse passports

In 2003 the Government implemented European legislation requiring all horse owners to obtain a passport for each animal they own by 30 June 2004. All EU Member States must implement this requirement. Its main objective is to provide certainty across Europe that those horses treated with medicines not authorised for use in food-producing animals are not slaughtered for human consumption. The horse industry in GB will be able to continue to use such medicines on horses that are not intended for the food chain.

In their responses to a consultation exercise, the majority of the equine industry supported the introduction of the legislation. In addition to the above, they also view passports as a way of improving the breeding and welfare of horses.

### National Equine Database

The Government has agreed to fund the set up and initial running costs of a new National Equine Database (NED). This is a unique development being taken forward in close partnership with the GB equine industry – represented by the British Equestrian Federation (BEF). The industry has proposed that better access to breeding and performance information will result in an increase in the quality of GB sports horses which, in future years, may raise the overall standard of horses used for recreation and leisure.

NED will consist of a 'core' horse passport based element and a commercial arm providing valuable breeding and performance information that will be accessible via a website. There will be a requirement for all Passport Issuing Organisations to submit horse passport based information to NED. Providing information for inclusion on the Breeding and Performance element will be on an entirely voluntary basis. The database should be operational in 2005.



### **SECTION C: Exotic, endemic and new & emerging disease surveillance**

#### **Chapter C1: Exotic diseases**

*The Chief Veterinary Officer for the UK has overall responsibility for co-ordinating veterinary surveillance within Great Britain. The ability to detect the emergence of a new or exotic disease condition rests upon a good awareness of the usual disease status of the animal population provided by high quality veterinary surveillance. Surveillance is also required in order to manage risks associated with disease and to help protect public health, animal health and animal welfare.*

#### **Anthrax**

Veterinary Officers and private veterinary surgeons investigated 7,595 suspected cases of anthrax during 2003. 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 7,534 cattle, nine deer, four horses, 23 pigs and 25 sheep. Anthrax was not confirmed in any of these investigations in 2003. Table C1:1 shows the number of investigations carried out in cattle and the number of investigations in which anthrax was confirmed.

**Table C1.1: Anthrax investigations and confirmed cases (cattle only) in Great Britain 1992 – 2003**

Year	Number of investigations	Number of cases	Number of animals	County
1992	8,516	2	1/1	Derbyshire/Clwyd
1993	8,662	2	1/4	Derbyshire/Highlands
1994	8,301	3	3/1/1	Gloucestershire/Isle of Wight/Wiltshire
1995	7,902	1	1	Northamptonshire
1996	7,845	2	2/1	Wiltshire/Gloucestershire
1997	7,424	1	1	Lanarkshire
1998	7,405	0	–	–
1999	5,855	0	–	–
2000	5,328	0	–	–
2001	10,553*	0	–	–
2002	10,085*	1	1	Wrexham
2003	7,534	0	–	–

\* The reason for this sudden increase was due to Defra writing to Local Veterinary Inspectors substantially heightening the awareness of anthrax as a potential bioterrorism agent.

### Aujesky's disease

The National Slaughterhouse Serum Survey for Aujesky's disease has been operating since 1991 under the Ministry of Agriculture, Fisheries and Food (MAFF), and now Defra, to demonstrate the continuing freedom from Aujesky's disease in Great Britain (Table C1.2). There were no reports of Aujesky's disease in 2003.

Table C1.2: Summary of serum sampling at abattoirs in Great Britain 1987-2003

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

### Bluetongue

There were no reports of suspected bluetongue (BT) in Great Britain. During 2003, outbreaks of bluetongue in Europe were reported on the Spanish Balearic island of Menorca, the French island of Corsica and the Italian islands of Sardinia and Sicily. Despite vaccination and other control measures, which have been in force for up to five years in some areas, bluetongue continues to be active in southern Europe.

### Research: identification and molecular epidemiology

Controlling bluetongue relies on accurate and early detection and identification of the virus. Extensive databases of nucleotide sequence data from bluetongue virus (BTV) isolates made around the world are now being accumulated. Recent findings using these data strongly suggest that the European strains of BTV-2 originated in sub-Saharan Africa, while BTV-1, 4, 9 and 16 came from the East probably from or via Turkey.

These sequence data have also supported the design of RT-PCR based primers and assays to detect and distinguish between vaccine and field strains of the European BTV types. Primers designed to be specific for each of the 24 BTV serotypes are also currently being developed.

### Overwintering mechanism for BTV

BTV was again reported in eastern Europe (Albania in December 2002), suggesting that it continues to survive in the Balkans in locations where adult vector insects are absent for much of the winter. Further work has now begun to explain, in detail, the mechanism by which this is achieved.

### Vector insects

The traditional vector of BTV in Africa and southern Europe, *Culicoides imicola*, continued its northward spread in Europe during 2003. The latest findings report its presence for the first time in north-east Spain (northern Catalan), south-east mainland France (Alpes-Maritimes and Var) and southern Switzerland (Ticino). The report from Switzerland is, at 46°N, the most northerly yet recorded for this species.

Surveys of the potential European BTV vectors, *C. obsoletus* and *C. pulicaris* in Britain, suggest that the vast majority of British populations of these species have a very low level of vector competence (0-2% of individuals are able to be infected). However, worryingly a few populations record much higher susceptibility levels (up to 13%) which suggests that should BTV gain entry to these areas transmission would be likely.



*Culicoides imicola* is the traditional vector of BTV in Europe

### Risk assessment for Europe and outbreaks

Remotely sensed proxy climatic data from several countries in southern Europe have been correlated with field data on known and potential vector species of *Culicoides* to identify the climatic requirements of each. Using these data Mediterranean-wide risk maps are being generated for all potential BTV vector species. Seasonal and annual changes in BTV transmission rates in relation to the remotely sensed data are also being modelled using existing data sets from the Mediterranean area, with the aim of being able to predict when (i.e. in which years) BT outbreaks are most likely to occur in Europe.

### Brucellosis

#### Brucellosis in Scotland

During 2003 *Brucella abortus* was isolated in four cattle herds in Scotland and the origin of infection identified as cattle imported from the Republic of Ireland. As a result two entire herds with evidence of active infection were slaughtered, and in two other herds seropositive infected cattle which had not yet calved were identified and slaughtered. These were the first isolates of *B. abortus* from cattle in Great Britain since 1993. Great Britain has remained an Officially Brucellosis Free Region of the EU since 1991.

The first three incidents arose in 36 imported heifers from a single herd in the Republic of Ireland in May and June 2002. The imported cattle had been treated strictly in accordance with veterinary protocols, having been blood tested prior to export from the Republic of Ireland and again on the importing farm: all tested negative for brucellosis before being allowed to move on. In February 2003 the Republic of Ireland veterinary authority warned that brucellosis had been confirmed in the herd of origin.

Subsequent testing in February 2003 showed seropositive imported cattle – four reactors and one inconclusive reactor. All 26 heifers were slaughtered and *B. abortus* was isolated from six of them. When the remainder of the herd was tested four more cattle were identified as reactors, and the entire herd of 131 was slaughtered. In addition, a further 24 cattle which had been moved out of the herd were traced and slaughtered as contacts.

In the second herd, four of the imported cattle had been mixed with 15 resident heifers. A blood test revealed the four imports and nine of the contact heifers were reactors. Three seropositive heifers had

aborted between tracing and slaughter and *B. abortus* was isolated from all nine seropositive heifers. All the remaining 179 cattle in the herd were slaughtered as contacts.

In the third herd there were three imported cattle all of which were seronegative. However *B. abortus* was cultured from post-mortem samples from two of them and both were still in calf at the time of slaughter. The remainder of the herd was negative throughout a subsequent testing programme which included post calving checks.

The fourth isolation from a herd in Scotland followed the import of a consignment of 31 heifers from the Republic of Ireland in October 2003. One heifer was seropositive at the post-import test and *B. abortus* was subsequently cultured from post-mortem samples. Shortly after the positive post-import test, the Republic of Ireland veterinary authority warned that this animal and one other in the same consignment had originated from a farm where brucellosis had since been confirmed. A second animal from the same farm of origin, slaughtered as a dangerous contact, was seronegative with the post-mortem culture for brucellosis also negative. The remainder of the consignment and all other cattle on the premises were negative throughout a subsequent testing programme.

The brucellosis incidents in Scotland resulted in the compulsory slaughter of 21 reactor cattle and 363 contacts. The total compensation for slaughtered cattle amounted to over £370,000, and the overall cost of dealing with these incidents is estimated at close to £500,000. The control measures carried out were successful in preventing further spread of infection. However these incidents have again shown that infected cattle may remain seronegative until after they have calved or aborted.

### Surveillance in cattle

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 50% of eligible beef breeding herds are blood tested each year. Reporting all abortions and premature calvings is required, with abortion investigations carried out on a risk assessment basis in dairy cattle and in all reported cases in beef cattle.

Post calving blood testing of all imported cattle is carried out. 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 required for imported heifers which reach 30 months of age without a recorded calving or adult females which do not have a recorded calving within 12 months of import.

During 2003 20,000 (100%) dairy herds were bulk milk tested and 25,000 (30%) beef breeding herds were blood tested. The proportion of herds blood tested was less than 50% as more than 50% were tested in 2002 when a high proportion of tests were overdue following suspension of testing during the FMD in 2001. In England and Wales 38 serologically positive cattle were identified and slaughtered and all were culture negative for *B. abortus*. There were 7,787 bovine abortion investigations, all of which tested negative for *B. abortus*, and there were clear post-calving test results on 7,465 imported cattle.

### Surveillance in pigs and sheep

Surveillance to confirm freedom from brucellosis in the national pig herd was introduced. The aim is to provide evidence that pig herds remain free of *B. suis* thereby supporting the national trade position and providing early warning if the disease enters the national herd. *B. suis* has never been isolated from pigs in GB. However, the infection is widespread in wild boar and feral pigs in mainland Europe where it is often transmitted to domestic pigs reared outdoors.

The total number of pigs blood tested for brucellosis was 3,480 with 41 seropositive results. However brucellosis was ruled out on further investigation. *B. suis* has never been reported in Great Britain.



A VLA brucella containment level 3 facility

The total number of sheep blood tested for brucellosis was 1,503 with 12 seropositive results. However brucellosis was ruled out on further investigation. *B. ovis* has never been reported in Great Britain.



### VLA research: *Brucella* species

The VLA carried out research aimed at improving the detection of infection and the typing of *Brucella* isolates. Two projects on molecular typing will assist in more accurate strain typing and epidemiological investigation of *Brucella* isolates. This work has already helped to confirm the origin of *B. abortus* in the recent incidents in Scotland. A third project has started to develop PCR assays to assist in the detection of latent infection with *Brucella* species in cattle, sheep and goats and to differentiate serological cross-reaction to other organisms such as *Yersinia enterocolitica*.

### Classical swine fever and African swine fever

Great Britain has continued to remain free of classical swine fever during 2003, despite outbreaks occurring in continental European countries during the year. African swine fever has never been recorded in Great Britain.

There were 14 investigations of suspected swine fever in 2003. Investigation of three of these suspect cases involved submitting diagnostic samples to National Reference laboratories: VLA Weybridge for classical swine fever and the Institute of Animal Health at Pirbright for African swine fever. The results of each veterinary field and laboratory investigation provided the basis for ruling out suspicion of classical and African swine fever.

### VLA research: classical swine fever

Collaborative studies, with IAH Pirbright, of the effects of the classical swine fever virus on cells have revealed its ability to manipulate elements of the proinflammatory

response consequent with replication, giving clues as to the mechanism by which infection becomes established and sustained. The VLA is collaborating in a further project, studying the cellular events associated with virus entry and replication, in an attempt to understand something of the differing virulence exhibited by different strains of the virus. A separate collaboration is also underway with the University of Cambridge in this regard, using array technology. Future work includes vaccination studies, to develop and inform strategies for their use in the event of any future outbreak in Britain.

### Enzootic Bovine Leukosis

Britain had no cases of enzootic bovine leukosis (EBL) during 2003 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 continued to bulk milk ELISA test approximately 20% of dairy herds each year. Each selected herd is tested twice a year. Blood testing of beef breeding herds takes place every four years, meaning that approximately 25% of eligible herds are blood tested each year. Post-mortem inspections of all slaughtered cattle continue.

In 2003 3,000 (15%) dairy herds were bulk milk tested and 12,500 (15%) beef breeding herds were blood tested. There were no serologically positive cattle. Bovine tumour samples were submitted for examination on 61 occasions, and all tested negative for EBL.

### Foot and Mouth Disease

#### Standing Movement Arrangements

On 2 July 2003, as a result of the final findings from the risk assessment and cost-benefit analysis of the 20-day standstill rule, the Government announced that the six day animal movements standstill regime would become permanent. The Standing Movements Arrangements came into force on 1 August 2003. An additional exemption to the standstill was granted for breeding rams and bulls for the peak sale season. A 20-day standstill remained in place for pigs.

The initial decision to reduce the length of the standstill was taken in March 2003 in view of the emerging findings from the risk assessments commissioned by Defra, as recommended in July 2002 by the Lessons Learned and Royal Society Inquiries. The new arrangements also included a readiness to increase the length of the standstill back to 20 days if the threat of disease increased, as recommended in the Royal Society report.

Ministers have decided that it would not be necessary to impose distance limits on livestock movements. Future improvements to our arrangements for preventing the spread of disease will be primarily focused on biosecurity improvements rather than further changes to movement rules.

#### New EU FMD Directive

The EU published a proposal in December 2002 for a new Directive on measures for the control of FMD. The Directive was adopted in September 2003 and will be transposed into domestic legislation during the next year.

Defra played a pivotal role in the shaping of the Directive. During negotiations at the Council Working Group, the Department was able to raise stakeholder concerns about the content, which had been highlighted during meetings and a formal written consultation exercise. Many issues were resolved through amendments to the Directive.

This Directive updates the measures contained in previous Directives, taking into account scientific progress and experience gained in eradicating the disease in the EU in 2001. The Government welcomed the proposal, which reflected many issues raised in the FMD Inquiries, notably on the possible use of emergency vaccination.

The new Directive maintains the EU-wide ban on prophylactic (routine) vaccination. This is in line with the recommendation of the Inquiry Reports. The basic control policy required under the new Directive remains the slaughter of all susceptible animals on premises infected with FMD and those identified as 'dangerous contacts'. However, the Directive gives greater prominence to the potential use of emergency vaccination in the event of an outbreak as an addition to this basic slaughter policy.

#### Vaccination

During the year Defra addressed the scientific and practical issues associated with an emergency vaccination programme, including:

- working with stakeholders to gain their agreement to emergency vaccination and developing a strategy to communicate the message about the safety of products from vaccinated animals;

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- continuing to work with the EU and OIE to achieve an internationally validated non-structural protein test which can be used to demonstrate the absence of infection in vaccinated animals;
- commissioning a Cost Benefit Analysis into different disease control strategies to assist the decision making process in the event of a future outbreak of FMD;
- procuring further stocks of vaccines suitable for an emergency vaccinate-to-live strategy; and
- putting in place operational arrangements with an external contractor that would enable an emergency vaccination programme to be implemented five days after confirmation of disease, subject to veterinary and epidemiological advice.

**Table C1.3: Last recorded outbreaks of notifiable disease in Great Britain**

Disease	Animals affected	Last occurred in Great Britain
African Horse Sickness	Horses	Never
African Swine Fever	Pigs	Never
Anthrax	Cattle and other mammals	2002
Aujeszky's Disease	Pigs and other mammals	1989
Avian influenza (fowl plague)	Birds	1992
Bovine Spongiform Encephalopathy	Cattle	2003
Bluetongue	Sheep and Goats	Never
Brucellosis ( <i>brucella abortus</i> )	Cattle	2003
Brucellosis ( <i>brucella melitensis</i> )	Sheep and Goats	1956
Classical Swine Fever	Pigs	2000
Contagious Agalactia	Sheep and Goats	Never
Contagious Bovine Pleuropneumonia	Cattle	1898
Contagious Epididymitis ( <i>brucella ovis</i> )	Sheep and Goats	Never
Contagious Equine Metritis	Horses	2003
Dourine	Horses	Never
Enzootic Bovine Leukosis	Cattle	1996
Epizootic Haemorrhagic Virus Diseases	Deer	Never
Epizootic Lymphangitis	Horses	1906
Equine Viral Arteritis	Horses	2001
Equine Viral Encephalomyelitis	Horses	Never
Equine Infectious Anaemia	Horses	1976
Foot and Mouth Disease	Cattle, sheep, pigs and other cloven hooved animals	2001
Glanders and Farcy	Horses	1928

**Table C1.3: Last recorded outbreaks of notifiable disease in Great Britain (continued)**

Disease	Animals affected	Last occurred in Great Britain
Goat Pox	Goats	Never
Lumpy Skin Disease	Cattle	Never
Newcastle Disease	Birds	1997
Paramyxovirus of Pigeons	Birds	2003
Pest Des Petits Ruminants	Sheep and Goats	Never
Rabies	Dogs and other mammals	1970*
Rift Valley Fever	Cattle, Sheep and Goats	Never
Rinderpest (cattle plague)	Cattle	1877
Scrapie	Sheep and Goats	2003
Sheep Pox	Sheep	1866
Swine Vesicular Disease	Pigs	1982
Teschen Disease	Pigs	Never
Tuberculosis (bovine TB)	Cattle and Goats	2003
Vesicular Stomatitis	Cattle, Pigs and Horses	Never
Warble Fly	Cattle, Deer and Horses	1990

\* European bat lyssavirus is a rabies-related virus – the incidents of this disease in Great Britain in 2002 do not compromise the rabies-free status.

Changes and developments over the last year have been reflected in the Government's revised FMD Contingency Plan due to be laid before Parliament in March 2004.

### FMD research

#### Molecular structure

Work on the family of cellular proteins, 'integrins', that serve as receptors for the FMD virus (FMDV) made progress on several fronts to show how the virus targets particular tissues, such as tongue, in infected cattle. Improved immunohistochemical methods revealed that the most active of these receptors, alpha-v-beta-6, is present in the greatest amount on precisely the tissues where FMDV replicates most abundantly. The

team at IAH Pirbright also identified a third member of the family, alpha-v-beta-8, with a level of receptor activity intermediate between the two previously identified species and which, like alpha-v-beta-6, is expressed on epithelial cells. Studies using peptides as blocking agents (potential forerunners of antivirals) are providing insights into how the virus selects its chosen receptors from among the family of related cellular proteins.

#### Improved diagnosis

A study of approximately 700 samples received from overseas or during the 2001 epidemic confirmed the suitability of RT-PCR for rapid, sensitive and reliable FMD diagnosis. A preliminary assessment of the value of this technique for detecting carriers

has been published. The development of new assays for early, rapid and pen-side FMD diagnosis continues.

Experiments exposing vaccinated cattle to the FMD virus by contact with infected animals provided samples for development and validation of tests to detect infection in vaccinated animals. Such tests are a vital component of a vaccinate-to-live strategy for FMD control. Comparative tests performed with these and previously archived samples have enabled selection of a test from those currently available that most closely matches Defra requirements. A new test under development at IAH Pirbright which measures salivary antibodies shows considerable promise.

### Epidemiology and pathogenesis

Genetic and antigenic characterisation of FMD viruses recovered from 400 samples from around the world has helped to make recommendations about the most appropriate vaccine strains to be incorporated into the Department's vaccine antigen reserves. A number of potency tests have been conducted to verify the effectiveness of vaccines formulated from these reserves.

Pathogenesis studies have been undertaken to examine the kinetics of infection, transmission and viral persistence in different livestock species. This will provide valuable information about the behaviour of the virus in an outbreak. Knowledge and predictive capability of airborne spread have improved. Detailed analyses have been conducted of the pathogenesis of FMD in cattle and pigs together with detailed quantitative analysis of virus excretion. In order to better understand why some animals become

carriers, the special epithelia in the throat of cattle, the site of virus persistence, has been characterised.

## Horse diseases

### Contagious equine metritis organism

The 2002 contagious equine metritis organism (CEMO) outbreak resulted in restrictions being placed on 24 'at risk' stallions and mares under the Infectious Diseases of Horses Order 1987, as a result of tracings from the original infected stallion. Swab samples taken to establish the CEMO status of these restricted horses revealed the presence of the causal organism *Taylorella equigenitalis* in one mare in late 2002, and a further mare in February 2003. Both mares had been served by the original infected stallion. No further cases have been detected in Great Britain as a result of either outbreak tracings or routine industry pre-breeding testing.

The detection of CEMO in these horses:

- emphasised the need for adequate post exposure swabbing regimes to establish the presence of the causal organism;
- confirmed the need for good microbiological standards when taking CEMO screening swabs; and
- confirmed the need for statutory powers to prevent the movement of such 'at risk' horses and prohibit their use for breeding purposes until such swabbing regimes are completed.

Currently only one mare remains under such restrictions, as completing the necessary test will not be possible until she foals in 2004.



The Industry Code of Practice will continue to be the first line of management for CEMO and equine viral arteritis (EVA) within Great Britain. With this in mind the Horserace Betting Levy Board substantially revised and updated this code to incorporate lessons learnt and encourage compliance.



Great Britain continued to remain free of equine viral arteritis

### Equine viral arteritis

Britain remained free of EVA in 2003. The Equine Viral Arteritis Order 1995 and the Horse Betting Levy Board Code of Practice continue to be the means of controlling this disease. Blood samples taken under the Code recommendations are submitted for EVA serology. Seropositives notifiable under the EVA Order 1995 are investigated as to their vaccination status, sex, and recent mating history.

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 by conventional virus isolation and RT-PCR.

Where these tests produce positive results, the stallion remains under restriction until certified gelded.

### Poultry diseases

#### Legislation

The Diseases of Poultry (England) Order 2003 came into force on 30 April 2003. This further implemented EU Council Directives 92/40/EEC for control of avian influenza (AI), and 92/66 for Newcastle disease. The new Order, which replaces the Diseases of Poultry Order 1994, now also applies to ratites. It also extends the provisions relating to surveillance powers and movement restrictions to diseases and species of birds not covered by the Directives. Similar legislation applies in Scotland and Wales.

The Avian Influenza and Newcastle Disease (Contingency Planning) (England) Order 2003 provides for the preparation of national contingency plans to be made under the Animal Health Act 1981 (as amended) for avian influenza and Newcastle disease. The Avian Influenza and Newcastle Disease (England and Wales) (Biosecurity Guidance and Disease Control (Slaughter) (Protocol) (England and Wales) Order 2003 provides powers for the slaughter of vaccinated birds and provides further powers of entry under that Act. It also adds to the categories of poultry that may be slaughtered with a view to preventing the spread of avian influenza and Newcastle disease.



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Table C1.4: Summary of statistics of the principal animal and poultry diseases 1997–2003

	1997	1998	1999	2000	2001	2002	2003
<b>Anthrax</b>							
Counties involved	1	–	–	–	–	1	–
Confirmed cases	1	–	–	–	–	1	–
Cattle deaths	1	0	0	0	0	1	0
<b>Aujeszky's disease</b>							
Counties involved	–	–	–	–	–	–	–
Outbreaks	0	0	0	0	0	0	0
<b>Avian influenza</b>							
Counties involved	–	–	–	–	–	–	–
Outbreaks	–	–	–	–	–	–	–
Birds slaughtered	0	0	0	0	0	0	0
<b>BSE</b>							
<b>(a) Scanning surveillance*</b>							
Counties involved	64	62	60	62	62	56	43
Cattle deaths – Confirmed cases (by histopathology)	5,313 4,847	4,046 3,445	2,857 2,677	1,798 1,541	1,153 1,095	813 445	415 175
<b>(b) Targeted surveillance*</b>							
Counties involved	–	–	–	–	–	61	56
Confirmed cases (by rapid test and confirmatory test)	–	–	–	–	–	594	374
<b>Brucellosis</b>							
Counties involved	–	–	–	–	–	–	2
Outbreak	0	0	0	0	0	0	4
<b>Contagious Equine Metritis Organism</b>							
Counties involved	2	–	–	–	–	2	1
Confirmed cases	2	0	0	0	0	3	1
<b>Enzootic bovine leukosis</b>							
Counties involved	–	–	–	–	–	–	–
Outbreaks	–	–	–	–	–	–	–
Number of reactors	0	0	0	0	0	0	0
<b>Equine viral arteritis</b>							
Counties involved	3	1	–	–	1	–	–
Outbreaks	3	2	0	0	1	0	0

\* There are different reporting boundaries for scanning and targeted surveillance

\*\* There are still 11 scanning surveillance and 1 targeted surveillance cases for 2003 awaiting completion.

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**Table C1.4: Summary of statistics of the principal animal and poultry diseases 1997–2003 (continued)**

	1997	1998	1999	2000	2001	2002	2003
<b>Foot and Mouth</b>							
Counties involved	–	–	–	–	32	–	–
Outbreaks	–	–	–	–	2,030	–	–
Animals slaughtered	0	0	0	0	4,068,000	0	0
<b>Newcastle disease</b>							
Counties involved	6	–	–	–	–	–	–
Outbreaks	11	–	–	–	–	–	–
Birds slaughtered	648,000	0	0	0	0	0	0
<b>Paramyxovirus of pigeons</b>							
Counties involved	12	10	22	12	16	17	21
Outbreaks	17	18	36	27	20	19	39
<b>Scrapie</b>							
<b>(a) Scanning surveillance**</b>							
Counties involved	46	48	43	44	36	38	39
Outbreak	508	500	593	606	302	403	381
<b>(b) Targeted surveillance**</b>							
Counties involved	–	–	–	–	–	15	24
Outbreak	–	–	–	–	–	24	59
<b>Classical swine fever</b>							
Counties involved	–	–	–	3	–	–	–
Outbreaks	–	–	–	16	–	–	–
Animals slaughtered	0	0	0	74,793	0	0	0
<b>Swine vesicular disease</b>							
Counties involved	–	–	–	–	–	–	–
Outbreaks	–	–	–	–	–	–	–
Animal slaughtered	0	0	0	0	0	0	0
<b>Warble fly</b>							
Counties involved	–	–	–	–	–	–	–
Outbreaks	–	–	–	–	–	–	0

\* There are different reporting boundaries for scanning and targeted surveillance

\*\* There are still 11 scanning surveillance and 1 targeted surveillance cases for 2003 awaiting completion

### Control strategy

Great Britain remained free of AI and Newcastle disease in 2003. However, there was a serious outbreak of AI in the Netherlands during the year which spread to Belgium and Germany. Some 250 farms were affected and more than 28 million poultry were slaughtered during this outbreak. As a result of lessons learned from this outbreak, Defra has been considering with industry possible amendments to the Order to expand controls. New control measures under consideration include area movement restrictions where disease is suspected, in addition to confirmed cases, and the option of a 'controlled area', along the lines of an FMD controlled area, if warranted by a future disease outbreak. Decisions on policy amendments will be made in 2004.

### VLA surveillance: avian influenza

A national surveillance programme for AI of H5 and H7 subtypes was completed. The largely serologically based survey of poultry populations was part of a wider 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 of control of low pathogenic viruses of the H5 and H7 subtypes.

For the purposes of the survey there were three regions: England and Wales; Scotland; and Northern Ireland. The following categories of poultry were sampled: broilers, chicken breeders, layers, turkey breeders, turkey fatteners, ducks, geese, gamebirds and ratites. The best coverage of sampling was for broilers and ratites. All returned negative results. The survey did not prove freedom from low pathogenic AI viruses of the H5 or H7 subtypes, but demonstrated

that, if these viruses were present, the prevalence of infected broiler and ratite flocks was probably less than 5% at the time of sampling. It is envisaged that annual monitoring programmes will be put in place by Member States.

Supplementary to the poultry programme was a small survey for influenza A viruses in wild bird populations, which examined 418 specimens from over 50 species. This was mainly focused on waterfowl and shorebirds but also included passerine species. One influenza A virus of H9N9 subtype was isolated from a shorebird species (*Calidris canutus*).



Poultry populations were surveyed to determine the prevalence of low pathogenic viruses

### VLA research: avian influenza

The primary areas of investigation were:

- improved understanding of the molecular basis for pathogenicity of AI;
- correlates for interspecies transmission of influenza A viruses from avian to mammalian hosts; and

- the development of improved rapid diagnostic assays for the detection of AI of H5 and H7 subtypes.

The studies of AI pathogenesis and development of diagnostic assays were supported as a joint initiative by Defra and the EU. Studies funded by the latter involve a consortium of laboratories from six Member States.

A completed study used genetic analysis to identify changes which occur in AI viruses during host adaptation. These changes influence AI strains to become highly pathogenic after crossing the species barrier from wild aquatic birds to domestic poultry. In addition, an *in vitro* model was investigated for the generation of high pathogenicity (HPAI) from low pathogenicity (LPAI) AI strains.

Other studies of AI focused on establishing a relatively new and powerful technology called reverse genetics, which will be applied to study the genetic basis for predisposition to, and acquisition of, virulence. Phase One of this programme nears completion and this will lead to individual mutations in specific genes being tested for relevance in the processes leading to, and associated with, virulence.

Work began on the development of a rapid diagnostic test for the detection of H5 and H7 AI antigens in clinical specimens from infected poultry. Early phase activities focused on the production of appropriate antibodies in both rabbits and mice.

The ability of an influenza virus to cross between species is controlled by the viral genes, where adaptation to the new host is conducive to transmission between individuals of the new host population. These

viral properties are under investigation following the successful adaptation of an avian H1N1 virus from a wild duck (representative of a prevailing virus in the wild waterfowl reservoir) to swine cells. To identify any genetic mutations in the virus genome following adaptation to growth in swine cells, ribonucleic acid (RNA) from the original clinical specimen and the swine cell adapted virus are being determined and compared. Any mutations detected will be tested for relevance to adaptation using reverse genetics. The aim of the research is to gain an insight into the processes involved and how the viruses change at the genetic level following interspecies transmission.

### **VLA research: Newcastle disease**

Research principally focused on the potential of avirulent Newcastle disease viruses (NDV), present in wild birds, to act as progenitor strains and to emerge as virulent viruses together with identifying genetic correlates of virulence. Studies have been carried out using *in vitro* models with genetic analyses of viruses produced. Specifically an avirulent virus from a wild duck was adapted to growth in a number of cell culture types and clonal populations of virus characterized. The results of this work will be used to focus confirmatory studies *in vivo*.

### **VLA research: paramyxovirus type 1**

A study was completed on the molecular epidemiology of pigeon paramyxovirus type 1 (PPMV-1). The main objective was to investigate the virus population responsible for the ongoing panzootic in pigeons and other birds. It used over 200 samples held in the Newcastle disease reference laboratory repository to assess genetic variations. The results indicated that during the course of the panzootic at least two distinct strains of

the virus emerged. They were quite clearly separated by time and group by phylogenetic analysis. Viruses in one grouping have become dominant over the last decade, linked to geographical origins and host restrictions.

The PPMV-1 virus responsible for on-going disease in feral, show and racing pigeons in GB and elsewhere over the last two decades has caused many outbreaks of disease in domestic poultry, pheasants, birds of prey, pet birds and some wild birds. Due to the outbreaks in domestic poultry these variant PPMV-1 viruses represent a significant threat to pigeons and the poultry industry in general. This study confirmed that this is an evolving strain of NDV that was isolated as recently as 2003. Tight biosecurity should minimise contact between domestic poultry and pigeons. The established database of genetic sequences will permit rapid tracing and characterization of these viruses in the future.

Data generated in the PPMV study has been applied to new studies investigating genetic markers for virulence in PPMV-1. To enable such investigations, work began on an infectious clone of PPMV-1. The aim was:

- to understand gene product contributions other than from the well studied fusion protein; and
- to influence virulence in some selected phenotypically avirulent viruses from pigeons which possess fusion gene cleavage site motifs indicative of virulence. The virulence of these viruses was increased using an *in vitro* model, and the genetic basis will be investigated using the infectious clone.

Work also began to achieve semi-automation and complete a full validation using a large panel of NDVs applied to a ligase chain reaction molecular technique. This technique was demonstrated in previous research projects to pathotype NDVs, and potentially detect mixtures of avirulent and virulent viruses in the same specimen. If successful this will reduce the number of *in vivo* tests to necessary pathotype ND viruses.

### Warble fly

Testing for the 2003/2004 survey was completed. Sera from 200,863 cattle originating from 5,858 herds, were tested by ELISA for antibody to warble fly with negative results. There were no reports of suspected warble fly infestation in 2003. The results suggest that warble fly infestation is absent from or extremely rare in GB.

## Chapter C2: Scanning surveillance for 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. This chapter is compiled from the regular surveillance reports provided by the VLA and the summary surveillance reports submitted by the SAC.*

### Cattle

The summer of 2003 was exceptional, with near to record breaking and prolonged high temperatures experienced in many areas. The very hot temperatures may have had an effect on dairy cow milk yields and fertility, linked with heat stress and subsequent suppression of appetite. The large variations in day and night temperature were thought to have affected levels of calf respiratory disease.

Congenital abnormalities, particularly intestinal atresia, were widely reported to the VLA in the middle two quarters of 2003, and enhanced surveillance of this condition has now begun. Hypogammaglobulinaemia still remains a common and widespread problem, and is often found in calf scour investigations. This indicates both a lack of adequate supervision and, more recently, poor colostrum quality, particularly from Holstein cows fed minimal dry cow rations to maintain the desired body condition score. Rotavirus and cryptosporidia remain the predominant causes of neonatal calf scours, with colisepticaemia also widely reported.

### Johne's disease

The rise in numbers of diagnoses of Johne's disease first noted in 2000 continued, suggesting that both awareness and laboratory testing for this condition are now increasing. It is now one of the most commonly diagnosed causes of scouring in adult cattle. During 2003 the number of outbreaks of Johne's disease recorded in Scotland continued the trend of previous years such that for cattle the number of outbreaks per 1,000 head of cattle is 0.34, up 13% from 2002 (up 247% compared to 1993 and 79% compared to 2000).

### Fascioliasis

The VLA reported little apparent change in the occurrence of fascioliasis over the last five years. This is probably the second most common cause of adult scours. The dry weather experienced for most of the summer has provided unfavourable conditions for the fluke life cycle, although grazing animals are still being exposed to infection, possibly by selective grazing of wet areas.



During 2003 SAC conducted a national campaign to promote awareness of fascioliosis due to *Fasciola hepatica*, its treatment and control. This resulted in an almost 50% increase in submissions for fluke diagnosis. Despite the dry summer, the number of outbreaks of fascioliosis in cattle increased from August to December, compared to 2002, as did the number of farms on which the disease was suspected. A feature of cattle fascioliosis was the number of yearling animals affected.

### Respiratory disease

Differences of up to 25°C between day and night temperatures in England and Wales were considered largely responsible for the upsurge in calf pneumonia occurring in February, March, April, May and October 2003. The usual range of respiratory pathogens, respiratory syncytial virus, *Pasteurella-Mannheimia* species and *Haemophilus somnus* were involved.



There was an increase in calf pneumonia during 2003

### 'Tyre Wire disease'

'Tyre Wire Disease' (traumatic reticulo peritonitis) was widely reported to the VLA as the cause of respiratory distress and sudden deaths in heifers and cows. The colloquial name for this disease reflects the usual origin of the wire from decomposing tyres used to weight down silage clamp sheeting. There is concern that with used tyres now having to be destroyed, and so unavailable for other purposes, existing silage clamp tyres will continue to deteriorate and the problem will increase.

### Vitamin deficiency

Vitamin and mineral deficiencies were a common and regular feature throughout the year, usually through inadequate supplements in either growing or pregnant animals. Recorded nutrition-related problems included stillbirths due to iodine deficiency, white muscle disease (vitamin E/selenium deficiency) and osteochondrosis.

### Mastitis

The principal pathogens for both clinical and sub clinical mastitis remain (in order) *Streptococcus uberis*, *Staphylococcus aureus* and *Escherichia coli*. Up to half the mastitis milk samples received were investigated for rising or high somatic cell counts as opposed to clinical mastitis cases.

### Abortion

At 42% of diagnoses, *Bacillus licheniformis* emerged as the primary abortifacient agent in Scotland followed by *Araconobacterium pyogenes* (14%), *S. Dublin* (11%) and *Campylobacter foetus* and *Neospora caninum* both at 7%.

The cost of one abortion in 2003 was estimated to be between £700 and £1000 in a dairy herd; and £200 to £400 in a suckler herd – the variation depending on whether the cow was culled or not.

### Neonatal enteritis

Analysis of the Veterinary Investigation Diagnosis Analysis database (VIDA) data entered for Scotland over the period 1999-2003 suggested that the relative importance of bovine coronavirus as a neonatal enteritis pathogen was increasing (19%), but still behind cryptosporidiosis (36%) and rotavirus (33%). The percentage figures are of the total diagnoses made – see Figure C2.1.

### Small ruminants

Sheep prices maintained their strength. Throughout 2003 prices of finished lambs were higher than in 2002, and in December 2003 were around 10p/kg/dw higher than the previous December. Cull ewe values were slightly higher compared with last year and in mid-December had reached around £39 per head, approximately £10 per head higher than last year.

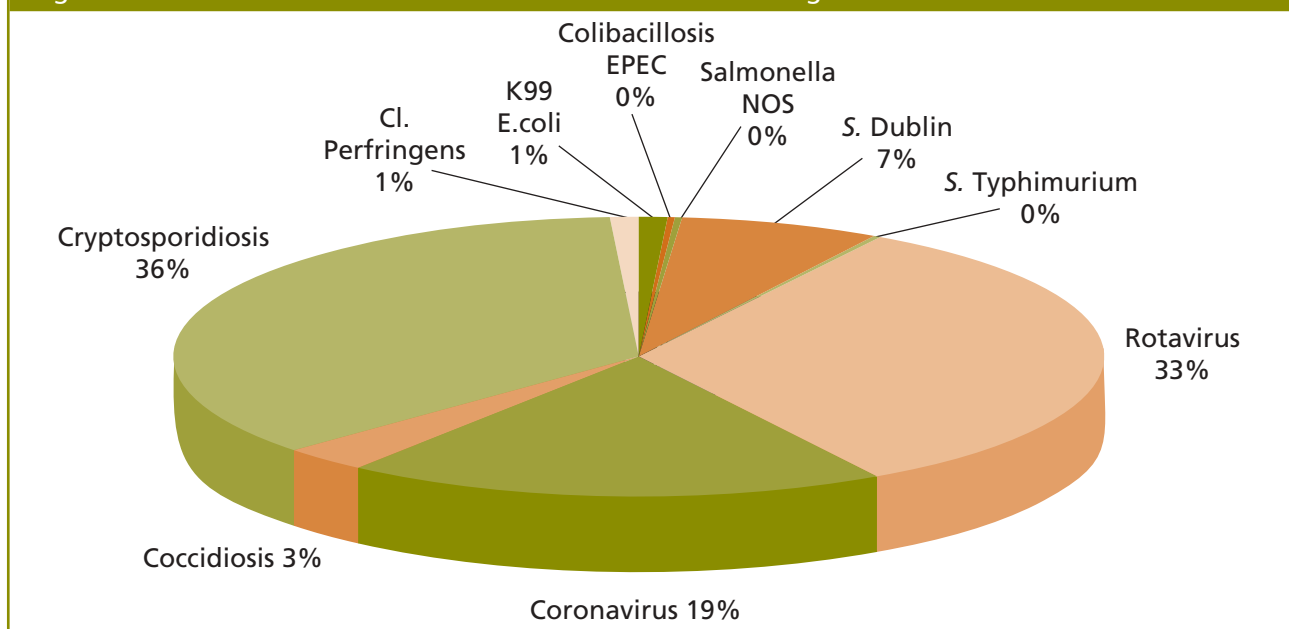
### Clostridial disease

Lamb dysentery and pulpy kidney disease were regularly reported. Most of the lamb dysentery cases were reported in unvaccinated flocks (including organic), or those which had not been vaccinated correctly. Pulpy kidney disease was often seen in growing lambs with fading colostral protection.

### Fascioliasis

The number of incidents of both acute and chronic fascioliasis recorded in the first three

Figure C2.1: Outbreaks of Neonatal Enteritis in Scotland during 2003



months of the year was higher than during the corresponding period in 2002, although fewer incidents were recorded later in the year. The dry weather conditions early on and throughout the summer may have affected the number of infected snails present on the pasture, and could explain the reduction in acute and chronic fascioliasis. Incidents also continue to be reported in the east of the country. Cases of suspected triclabendazole inefficiency were also investigated, but to date there were very few reported cases in England with more reported in Scotland and Wales.

In Scotland, the number of outbreaks of fascioliasis in sheep from August to December was markedly lower than the same period in 2002.

### Louping ill

Several incidents, some involving fatalities, were recorded in Cumbria, and the disease was recorded elsewhere including Lancashire, Wales and the South West. Affected animals frequently, but not always, carried a heavy tick burden and some were also serologically positive for tick-borne fever. Although some cases were seen in Cumbria in FMD re-stocked farms, this was not always the case.

### Maedi-Visna

Although there were relatively few cases of Maedi-Visna (MV) in the first nine months of the year, there have been two recent cases in which, unusually, the clinical signs present were of Visna. Field evidence suggests that the infection has become more prominent during the last year, particularly after re-stocking following FMD.

### Parasitic gastro-enteritis

Parasitic gastro-enteritis (PGE) continued to feature commonly in monthly reports from the VLA regional laboratories, and continued to be seen well into autumn and early winter. Anthelmintic resistance was of increasing concern with cases confirmed either by Faecal Egg Count Reduction Test or *in vitro* testing. However in the majority of suspected cases the history was suggestive of resistance but no confirmatory tests were carried out.

The number of incidents of nematodiosis was markedly up with most outbreaks in May and June. The disease depends on suitable environmental conditions that allow a mass hatch of *Nematodirus battus* eggs containing infective larvae (L3), and also the presence of lambs of a susceptible age. It is likely that the warm dry April followed by a return to average rainfall later provided the correct environmental conditions for this to occur, although they were not the classic weather conditions associated with nematodiosis.

PGE was also noted in goats. This can be a significant disease in adults as well as young goats as they do not develop immunity to disease. PGE in goats was also seen concurrently with fasciolosis and Johne's disease or exacerbated by poor nutrition.

### Pine/Cobalt deficiency

A common cause of ill-thrift diagnosed by the VLA was cobalt ('pine') deficiency, often on its own but sometimes in conjunction with parasitic gastro-enteritis. A variety of clinical presentations were seen caused by cobalt deficiency in lambs, including secondary photosensitisation and neurological disease.

### Pigs

An overview of the pig sector by Meat and Livestock Commission (MLC) economics team reported that clean pig slaughterings were down by approximately 10% in 2003 compared to the year before. Possible contributory factors might include a further contraction of the national pig herd, deterioration in average sow productivity, continuing losses due to Postweaning Multisystemic Wasting Syndrome (PMWS), last year's infertility problems resulting in fewer pigs slaughtered earlier in the year, and some disruptions due to depopulation and repopulation of some herds.

### PMWS

PMWS remained the major reported pig health problem, causing elevated mortality and morbidity in pigs. It was commonly diagnosed as part of the respiratory disease complex and with many other syndromes and infections. Although as a percentage of diagnostic carcass submissions it declined throughout the year, this possibly reflected the widespread recognition of the clinical disease on farms with less widespread need for laboratory confirmation of the diagnosis. It was also diagnosed for the first time in farmed wild boar.

Over the year PMWS continued to spread through the Scottish pig herd so that at the year end it was estimated that 80% of Scottish units with growing or finishing pigs were affected. Diarrhoea (in addition to wasting) was a common presenting sign and in these cases histopathology revealed a mixed bacterial type colitis but no known enteropathogen was isolated on culture of colon contents. In other units infections with rotavirus, *Haemophilus parasuis*, *Streptococcus suis* and viral type pneumonia were the common concomitant findings.

### Infertility

An increase in unexplained pig infertility reported over autumn and winter 2002-2003 was investigated by a survey of pig practices. Among the farms, the problem was mainly characterised by increased regular and irregular returns to service, reduced farrowing rates and reduced numbers of pigs. On most affected farms there was no clear parity pattern. Provisional information indicates a similar syndrome recurring in late 2003 but in relatively few herds.

### Swine influenza virus

Swine influenza virus (SIV) infections remained at a relatively low incidence without the detection of novel strains. The changing epidemiology of SIV demonstrates the importance of maintaining surveillance, and of maintaining good communication within the EU. The European Surveillance Network for Influenza in Pigs (ESNIP) was established with this in mind.

### Poultry & gamebirds

#### Protozoal infections

There was concern over the appearance of histomoniasis (blackhead) in turkeys and the unavailability of effective licensed medicines to prevent or control the disease and also over the appearance of blackhead in free range layer chickens.

Concern over the withdrawal of dimetrodinazole in gamebirds resulting in a rise in hexamita proved to be unfounded, but this may have been partly or largely attributable to the dry summer weather, which favoured gamebird rearing, as some outbreaks are undoubtedly linked to adverse weather and related stress factors. Also,

improved management standards in gamebird rearing, including the reduction in stocking densities, may have contributed to the reduction in the incidence of protozoal disease.



Pheasants benefited from improved gamebird management standards

### Airsacculitis in rearing turkeys

A number of cases of unexplained airsacculitis and/or neurological signs occurred in rearing/fattening turkeys during September and October in several areas of the country. Most cases were in birds between 12 and 19 weeks old, with mortality rates ranging from 1% to 8%. The clinical signs included lethargy, sneezing, coughing, diarrhoea, ataxia, torticollis and opisthotonus through to sudden death, with not all cases showing all signs. At post mortem airsacculitis was frequently noted varying from frothy white exudate within the airsacs to caseous masses and sometimes early mineralised *foci*.

No consistent bacterial isolates were made from the lesions and no haemagglutinating viruses were isolated from those cases where virology was undertaken. Mycoplasmosis was

also considered with serological evidence in one case. However previous antimicrobial medication of flocks could have interfered with isolation.

Particularly important is distinguishing the condition from notifiable disease as the presenting clinical signs can be easily confused with Newcastle disease and avian influenza.

### 'Vibrionic hepatitis'

The re-emergence of 'vibrionic hepatitis' proved to be a significant problem in some free range layer flocks. The aetiology is still not known although the term 'vibrionic hepatitis' is probably a misnomer.

Shortcomings in biosecurity were identified in some smaller poultry flocks resulting in, for example, outbreaks of infectious laryngotracheitis in flocks which had recently introduced purchased birds.

### Avian influenza

Outbreaks of avian influenza in The Netherlands, Belgium and Germany were a major concern to poultry producers across Europe and led to a heightened awareness of the importance of biosecurity, particularly on large poultry units. Avian influenza is a contagious viral condition that can affect all species of birds. In intensive poultry production systems, layers and young fattening turkeys are usually the most seriously affected. Free living wild birds may asymptotically carry influenza viruses and it is known that wild waterfowl present a natural reservoir for these viruses. Zoonotic infection can occur, with poultry farm workers, slaughter personnel and veterinary surgeons the primary risk group.



### Paramyxovirus type 1

The virus was isolated from several different species of captive birds in post-import quarantine. Sequencing of the paramyxovirus type 1 (PMV-1) isolated from the birds clustered the virus with virulent viruses isolated in the 1990s from South Africa. Disease control measures were adopted before the birds completed their quarantine period.

### Wildlife

#### Nervous disease in young cormorants

The cormorant appears to be particularly susceptible to PMV-1 infection. Both PMV-1 and the West Nile virus (WNV) infection can cause nervous disease in birds, although WNV has not been diagnosed in diseased wild birds in the UK. Where clinical signs were noted in young cormorants, extensive testing for both PMV-1 and WNV both gave negative results and a cause for the condition was not found.

#### Suspected tularaemia in European beaver

Tularaemia (*Francisella tularensis*) is a significant zoonotic disease. The infection is found in rodents and other wildlife in Northern Europe, but it is not believed to occur here. A beaver introduced from Norway to a nature reserve in Kent died, and following a post-mortem lesions suspicious of tularaemia were found. This was followed by a series of laboratory tests on the tissues which confirmed that tularaemia was not involved. This case shows the importance of surveillance for significant disease in wildlife, particularly those diseases considered to be exotic in Britain.

### Salmonella Typhimurium DT40

*S. Typhimurium DT40* was diagnosed as the cause of death in greenfinches, chaffinches and house sparrows in a number of incidents across the country. *E.coli O86* was also responsible for deaths in greenfinches and siskins. The majority of these birds were found dead on or near garden bird feeders.

### West Nile virus

More than 1,000 wild birds from 83 species of casualty wild birds have been examined for WNV since 2001. Evidence of clinical WNV disease has not been found, nor was WNV detected by polymerase chain reaction (PCR) or virus isolation examinations. No evidence of a wild bird epidemic with widespread deaths has occurred in the USA or GB. However, as seasonal migration of birds represents an ongoing risk to Britain, surveillance is conducted on a year-to-year basis. A WNV serological test for wild birds is being developed at VLA Weybridge. This work is part of the Department of Health/Defra co-ordinated initiative for WNV surveillance.

### European bat lyssavirus and rabies

Since 1977, four human deaths from European Bat Lyssavirus (EBLV) in Europe have been reported. None of them had a record of prophylactic rabies immunisation. In Great Britain, two incidents of European Bat Lyssavirus type-2 (EBLV-2) were discovered in 2002, one of them tragically leading to a human fatality. As a result, surveillance on EBLV-2 in bats has been enhanced.



### VLA surveillance: European bat lyssavirus Phocine distemper epizootic

Preliminary data resulting from the pilot studies to assess the presence of EBLV have confirmed a low level of antibodies to EBLV type-2 in one species of British bat, the Daubenton's bat. Samples were taken from several discrete sites in Scotland, northern and southern England. Data generated from the two sites suspected of having a higher proportion of positive Daubenton's bats produced a prevalence estimate of approximately 8% with a 95% Confidence Interval (CI) lying between 3%-16%. In contrast, at all the other sites in England and Scotland, the data suggest that approximately 2% of Daubenton's bats are positive with a 95% CI between 1%-5%.

Oral swabs were subjected to reverse-transcriptase PCR (RT-PCR) testing for the presence of EBLV-2 specific RNA, indicative of the presence of virus. In contrast to the seroprevalence data, none of the Daubenton's bats from the mFAVN-positive pools was found to be RT-PCR positive and hence no evidence of viral RNA was detected.

Future surveillance studies to examine the longevity of antibody responses and the pattern of virus shedding by Daubenton's bats at sites previously sampled. This will increase the statistical confidence in the pilot data obtained. In contrast EBLV-1 has not been detected in GB. However, it is the most prevalent bat lyssavirus in mainland Europe with approximately 95% of the 700 cases occurring in the Serotine bat (*Eptesicus serotinus*). Britain has in the region of 15,000 Serotine bats in the southern parts of England & Wales. A second study, to assess the antibody response and the appearance of excreted virus (EBLV-1) from Serotine bats at sites in southern England is planned.

Phocine distemper is a viral infection that primarily affects common seals (*Phoca vitulina*), although grey seals (*Halichoerus grypus*) may also succumb to the disease. The virus, which is related to the canine distemper virus that affects dogs, first appeared in 1988 when several thousand seals died in British waters.

In August 2002, following the spread of the epizootic into the North Sea and Waddensea, the Government funded a national collaborative research project to investigate the impact of the phocine distemper virus (PDV) epizootic on British seal populations.



Grey seals in Scotland were affected by the phocine distemper epizootic

Based on carcass counts and aerial survey data there was no perceptible increase in common or grey seal mortality in Scotland. PDV was confirmed in 12 out of 27 (44%) common seals, and 9 out of 42 (21%) grey seals in Scotland examined between

September 2002 and January 2003, but only six common seals from Scotland were diagnosed to have died due to phocine distemper. Concerns that PDV could over-winter in British seals and induce subsequent epizootic-type mortality in Scottish common seals in the summer of 2003, during periods of high seal haul-out density, proved unfounded. Reasons for the lower common seal mortality rates in Scotland are not completely understood, although epidemiological factors such as lower seal haul-out densities during periods of viral exposure, lower pollutant levels, and increased genetic resistance due to historical PDV exposure have been suggested.

### UK Cetacean Strandings Programme

During 2003, under the Defra-funded UK Cetacean Strandings Programme, there were a total of 797 cetacean strandings comprising 14 species. As part of this research the Institute of Zoology (IOZ) and the SAC continued to investigate diseases and causes of death in stranded cetaceans. Since 1990, over 2,500 marine mammal carcasses have been examined.

In 2003 177 necropsies of stranded cetaceans (of nine species) were conducted, and a further five necropsies of by-caught harbour porpoises, retrieved from fishing vessels (mainly as part of observer-based research conducted by the Sea Mammal Research Unit). Harbour porpoises and common dolphins were the most common stranded species to be examined. By-catch was identified as the cause of death in 24 of 40 (60%) common dolphins tested, 11 of 114 (10%) harbour porpoises, three of 10 (30%) striped dolphins and one of three (33%) white beaked dolphins. The harbour porpoise by-catches continue to exhibit

injuries consistent with entanglement in monofilament gillnet-type gear, whereas the common dolphin by-catches typically had different external lesions more consistent with smaller-mesh trawl-type gear.

As in previous years, the harbour porpoise and common dolphins diagnosed as by-catches predominantly originated from south west England (mainly Cornwall and Devon) during the winter (December 2002 – March 2003). The annual number of all common dolphin and harbour porpoise strandings (including those examined and diagnosed as by-catch) in SW England during the winter (mainly December 2002–April 2003) has been consistently increasing between 1999 and 2003.

In addition, 23 harbour porpoises were diagnosed as having been fatally attacked by bottlenose dolphins in Scotland (mainly within the Moray Firth – Firth of Forth area) and in west Wales. The number of harbour porpoises killed by bottlenose dolphins in west Wales has increased annually since 1999. Another 22 harbour porpoises died due to heavy parasitic infections and/or pneumonias caused by combinations of parasitic, bacterial and mycotic infections, and five porpoises had fatal generalised bacterial infections.

Starvation caused the death of 17 harbour porpoises and one minke whale, and physical trauma (often of unidentified origin) caused the death of a further eight harbour porpoises and one white beaked dolphin. Finally, eight common dolphins, four Atlantic white-sided dolphins, four harbour porpoises, four striped dolphins, two minke whales, one white beaked dolphin, one sperm whale and one Sowerby's beaked whale that were apparently healthy died after stranding alive.

### Cetacean decompression sickness

The examination of cetacean carcasses between October 1992 and January 2003 revealed eight animals with gas bubbles in their blood vessels and gas-filled cavities in their parenchymatous organs. The liver was the most consistently affected organ with macroscopic gas-filled cavities (diameter 0.2 – 6.0cm) occupying 5 – 90% of the volume and having variable degrees of fibrotic encapsulation. This was a new and unique pathology to marine mammals and pointed to the formation of *in vivo* gas bubbles.

### Miscellaneous

Numbers of South American camelids, especially alpacas, continue to increase and make up a significant proportion of submissions. Common diseases seen in these animals include parasitism, especially liver fluke and skin disease. Work at Bristol University suggests that chorioptes infestation is the major cause of skin disease in alpacas and, along with sarcoptes and psoroptes infestation, were identified by the VLA.

### Louping ill

Louping ill was confirmed by neurohistopathology and serology in a yearling llama from a small group in the Western Isles where two animals had died in the previous nine months having exhibited lethargy, hind limb ataxia, hyperaesthesia, facial tremors and terminal inco-ordination of all legs.

### Tuberculosis

Two cases of *Mycobacterium bovis* infection were diagnosed in alpacas and one case of *M. microti* was diagnosed in a llama. TB is of particular concern in these species as there are many movements of these animals, for sale and breeding purposes. *M. microti* has previously been isolated from llamas in GB. TB due to *M. bovis* was also diagnosed in red deer on two occasions.

### Johne's disease

Johne's disease was diagnosed twice by culture in alpacas and strongly suspected on one other occasion in a llama. The same condition was diagnosed in farm deer on two occasions.

### Deer

Enzootic ataxia was confirmed twice in Red Deer this year. On both occasions the diagnosis was confirmed by demonstration of very low liver copper.

### Water buffalo

In water buffalo, diagnosis included a nutritional myopathy diagnosed in two calves and malignant catarrhal fever in an eight month old water buffalo.

### Zoological specimens

Coccidiosis was confirmed in grey kangaroos. A nutritional myopathy was diagnosed in an antelope.

## Section D: Prevention and control of animal diseases

### Chapter D1: International Trade Imports

*The Chief Veterinary Officer for the 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 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**

Animal 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 document 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 2003, Dover, Scrabster, Wick, Harwich, Great Yarmouth, Teesport, Teignmouth and Milford Haven all decided to stop handling animal products and are no longer approved BIPs. 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 2003, SVS officers made monthly 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**

Post import checks at destination and laboratory tests were reduced from 100% to 25% of consignments for intra-Community trade in biungulate species.

During 2003, the policy of requiring two TB tests for deer and camelids entering Great Britain from other Member States and Third Countries was reviewed, and in future only one TB test will be required. Details are

available on the Defra website at:  
[http://www.defra.gov.uk/animalh/int-trde/misc/cins/cin\\_index.htm](http://www.defra.gov.uk/animalh/int-trde/misc/cins/cin_index.htm)

### Intra-community trade

#### Cattle

Some 9,871 cattle entered Great Britain from other EU Member States, mainly from Denmark, the Republic of Ireland and the Netherlands. In addition 3,049 cattle were imported from Northern Ireland of which over half were for breeding.

Three single cattle imported in separate consignments gave positive reactions to TB blood tests, and three single cattle imported in separate consignments gave positive reactions to brucellosis blood tests. All were slaughtered due to the potential risk to the national herd.

#### Sheep and goats

Some 13,301 sheep and goats entered Great Britain from Member States, mainly from the Republic of Ireland. Additionally 127,218 sheep and goats were imported from Northern Ireland, 121,277 of which were for slaughter.

#### Pigs

A total of 13,084 pigs entered Great Britain from Member States (mainly from the Republic of Ireland), while 25,509 pigs were imported from Northern Ireland, 25,244 of which were for slaughter.



Over 13,000 pigs were imported into GB from EU Member States

#### Equidae

Just under half of the messages received, via the EU electronic system for notification of animal movements (ANIMO), for horses imported into or via Britain from Member States were from the Republic of Ireland and The Netherlands. Around 2,000 horses came in transit from the Republic and roughly 200 from The Netherlands.

#### Poultry

Over 46 million hatching eggs were imported from Member States, 41% of which came from the Republic of Ireland, and 38% from France. In the same period over 12 million birds, mainly day-old chicks, were imported. More than 10 million were from France.

#### Semen, ova and embryos

The Netherlands (153,778 straws) and Italy (98,769 straws) were responsible for more than half of all imported bovine semen from Member States in 2003. Some 16,020 straws



of bovine semen were imported from Northern Ireland in 2003. Denmark (with 1,000 straws) was the main EU country for imports of bovine embryos.

Some 20,769 doses of porcine semen were imported from Member States – 10,207 from Germany; 10,035 from the Republic of Ireland; and 527 from France. A total of 759 doses of ovine semen were imported – 568 from the Republic of Ireland; and 191 from France. There were also 130 doses imported from Northern Ireland.

### Zoo animals

Zoo animals imported from other Member States included reindeer, tapir, hippopotamus, antelope, rhinoceros and giraffe. In addition, antelope, giraffe and reindeer were imported from Northern Ireland.

### Third countries

#### Livestock and other ruminants

A number of consignments of alpacas were imported from Chile, Switzerland and Australia (Tasmania). Additionally, a number of consignments of cattle were imported from Switzerland and sheep from Poland, Canada and New Zealand. No pigs were imported from Third Countries during 2003.

#### Horses

Some 2,757 horses were imported from Third Countries, the majority of which came from the USA (700), Argentina (555) and the United Arab Emirates (456).

#### 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.

#### Captive birds

There was a steady increase in the number of premises approved as import quarantine premises. By the end of 2003 there were 58 approved premises in Great Britain. All imports were tested for Newcastle disease and avian influenza.

On three occasions paramyxovirus (PMV-1) was isolated from imported birds in quarantine and the infection was successfully contained within the quarantine unit. On half a dozen occasions PMV-3 was identified in imported birds but these viruses are not considered pathogenic.

#### Fish

Great Britain imports between 40-60 million live fish and shellfish a year from more than 50 countries. The majority are intended for stocking aquaria and most fish and shellfish arrive direct (or after transshipment at an international airport on the continent). All consignments are delivered to BIPs (Heathrow, Gatwick, Manchester, Glasgow) for veterinary checks before they are released into the EU.

#### Bees

In 2003, 1,938 queen honey bees were imported from two Third Countries – New Zealand (South Island) and Hawaii.

During the year, the EC introduced new legislation to protect the EU bee population from two exotic pests, and in August the Small Hive beetle and the Tropilaelaps mite were added to the list of notifiable animal diseases in the EU.



Commission Decision 2003/881/EC, which came into force on 27 December 2003, introduced new arrangements for the import of honey bees. Under the new measures, honey bees are only allowed into the Community from those Third Countries that are listed in part one of the Annex of Council Decision 79/542. This is conditional that the three notifiable diseases of bees in the EU – American foul brood disease, *Aethina tumida* (Small Hive beetle) and *Tropilaelaps* spp (Tropilaelaps mite) – are also confirmed as notifiable diseases throughout the exporting country. The conditions of the specimen health certificate must also be met. Export to the Community of bee packages (complete colonies of honey bees including the queen), has been prohibited.

### Imports of animal products

The Products of Animal Origin (Third Country Imports) (England) (Amendment) Regulations 2003 came into force on 11 April 2003. These Regulations transferred responsibility for enforcement action on illegal imports of animal products discovered at ports of entry to Her Majesty's Customs and Excise (HMCE).

The Products of Animal Origin (Third Country Imports) Regulations 2003 came into force on 31 December 2003. The Regulations revoked and replaced the Products of Animal Origin (Third Country Imports) Regulations 2002. The new Regulations consolidated previous amendments to the 2002 Regulations for reasons of clarity and introduced amendments to give effect to recent changes to EU import requirements. The main changes are:

- amendment of provisions relating to redispach or disposal of products refused entry into the Community and to disposal

of international catering waste, to require disposal to be carried out in accordance with the EU Animal By-products Regulation;

- implementation of the new EU import requirements including the EU Animal By-products Regulation, together with the transitional measures to implement conditions for the import and transit of animal by-products; and
- the new Regulations also set out new animal health requirements for landfill sites, where international catering waste is disposed of to ensure that the risk of spread of disease is minimised.

### Illegal imports

Much progress was made during 2003 to tackle illegal imports. Although the disease risk posed by illegal imports can never be eliminated, Defra accepts there is still more to do. The Government produced an updated illegal imports action plan for 2003-04 to reduce the risk of exotic disease entering the country and damaging agriculture, horticulture and wildlife. This consolidates and builds upon progress made since March 2002 when the first action plan was produced.

### Border controls

To improve the effectiveness of border controls, all anti-smuggling activity was transferred to HMCE on 11 April 2003. All Customs officers have powers to seize illegal imports. This has resulted in a major change and improvement in the way we detect and deter illegal imports, and is proving to be very successful.

HMCE have four dedicated mobile teams in place to target products of animal origin, and

responsibility for the two detector dog teams was transferred to HMCE. The level of enforcement activity will increase during 2004.

EU rules were strengthened so that from 1 January 2003 bringing meat, milk and their products into Britain from most Third Countries for personal use was prohibited. There are also restrictions on other products of animal origin. Penalties for smuggling prohibited or restricted items include up to seven years imprisonment and/or unlimited fines, under the Customs and Excise Management Act.

Contact was made with a large number of organisations (universities, student groups, volunteer organisations, charities and travel guide companies) who provide information to individuals coming or returning to Britain. 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. A number of positive responses were received.

### **Risk assessment**

A report by the VLA assessing the risks of FMD outbreaks from illegally imported meat was published as a work in progress on 25 March 2003 and has helped inform the subsequent strategy.

The VLA has also revisited this FMD risk assessment to incorporate subsequent and additional data, as well as producing similar risk assessments for African swine fever, classical swine fever and swine vesicular disease. The report will be published in Spring 2004.

### **Partnerships**

Work continued with the Greater London Authority, International Fund for Animal Welfare, Bushmeat Campaign, FSA, Chartered Institute of Environmental Health, Local Authorities Coordinators of Regulatory Services and the Islamic Culture Centre to draw up publicity campaigns to raise awareness of illegal imports amongst a number of community and faith groups. The campaigns will take place in 2004.

### **International disease surveillance**

Defra monitors animal disease outbreaks in Member States, countries bordering the EU and Britain's trading partners. It also notes disease in countries near to trading partners and new epidemiological developments which may give an early warning of emerging threats to GB. For this purpose, we use official information received from the OIE, the European Commission and other official sources.

Where an outbreak in a trading partner could pose a threat, a qualitative risk analysis of the risks to UK livestock is carried out. These are published on the Defra website (<http://www.defra.gov.uk/animalh/diseases/monitoring/index.htm>). In addition, this provides routine summary reports that are regularly distributed within Government and published in the *Veterinary Record*.

The EU and GB take appropriate safeguard measures to mitigate the potential risks of disease being introduced through legal trade. However, it is also important to recognise the continuing threat through illegal imports from countries with endemic disease, and from Newcastle disease and highly pathogenic avian influenza from migrating birds.

Table D1.1: Outbreaks of major diseases in animals in Europe during 2003

Country	FMD	SVD	RINDER PEST	CBPP	BT	CSF	CSF WB	ASF	ND	AI	PEE	VES STOM	PPR	LSD	CAPR	AHS	RVF	IHN	BSE	ISA	VHS	
AUSTRIA	(a)																	2				
	(b)																	11/12/03				
BELGIUM	(a)								8	27/04/03									15			
	(b)																		28/11/03			
BULGARIA	(a)																		4			
	(b)																		19/11/03			
CZECH REPUBLIC	(a)																		2			
	(b)																		08/05/03			
DENMARK	(a)																		131			2
	(b)																		27/11/03			09/07/03
FRANCE	(a)				17		2												54			
	(b)				15/12/03		29/09/03															
GERMANY	(a)								1										182			
	(b)								19/02/03	13/05/03												
IRELAND	(a)																		19/12/03			
	(b)																					
ITALY	(a)																					
	(b)																					
NETHERLANDS	(a)																					
	(b)																					
NORWAY	(a)																					
	(b)																					
PORTUGAL	(a)																					
	(b)																					
SLOVAKIA	(a)																					
	(b)																					
SLOVENIA	(a)																					
	(b)																					
SPAIN	(a)																					
	(b)																					
SWEDEN	(a)																					
	(b)																					
SWITZERLAND	(a)																					
	(b)																					
UNITED KINGDOM	(a)																					
	(b)																					
<b>TOTALS:</b>		<b>28</b>			<b>33</b>	<b>9</b>	<b>3</b>	<b>12</b>	<b>2</b>	<b>250</b>								<b>9</b>	<b>1348</b>	<b>6</b>		<b>2</b>

Date: 1 January 2003 to 31 December 2003. A, Number of outbreaks; B, last date of confirmation;

FMD, Foot and Mouth Disease; SVD, Swine Vesicular Disease; CBPP, Contagious Bovine Pleuropneumonia; BT, Blue Tongue; CSF, Classical Swine Fever; CSF WB, Classical Swine Fever Wild Boar; ASF, African Swine Fever; ND, Newcastle Disease; AI, Avian Influenza; PEE, Porcine Enterovirus Encephalomyelitis; VES STOM, Vesicular Stomatitis; PPR, Peste Des Petits Ruminants; LSD, Lumpy Skin Disease; CPR, Caprine Pox; AHS, African Horse Sickness; RVF, Rift Valley Fever; IHN, Infectious Haematopoietic Necrosis; BSE, Bovine Spongiform Encephalopathy; ISA, Infectious Salmon Anaemia; VHS, Viral Haemorrhagic Septicaemia.

There were no recorded outbreaks of the following diseases during 2003: Foot and Mouth Disease; Rinderpest; Contagious Bovine Pleuropneumonia; Porcine Enterovirus Encephalomyelitis; Vesicular Stomatitis; Peste Des Petits Ruminants; Lumpy Skin Disease; Caprine Pox; African Horse Sickness; Rift Valley Fever.

## Chapter D2 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.*

### Diseases

#### Contagious equine metritis

In October 2002, a stallion was found to be infected with contagious equine metritis (CEM). After tracing the stallion's movements subsequent testing revealed that this stallion had infected two mares. The infected horses were treated and consequently the stallion and one of the mares tested negative for CEM. The other mare is currently pregnant and must foal before screening tests can be completed. Export certification of horses to other EU Member States and most Third Countries has not been affected by the occurrence of the CEM outbreaks as a testing regime is usually accepted instead of country freedom.

### Intra-community trade

#### Introduction of Trade Control and Expert System (TRACES)

In the summer of 2003 the EC announced its plans to introduce TRACES (Trade Control and Expert System) – a web based system allowing electronic applications for export health certificates for intra-community trade and the monitoring of such trade.

The first phase of TRACES, which will include these processes, is due to go live on 1 May 2004. Third Country certification will continue to be available through the methods currently offered by Defra.

Table D2.1: Export of animals to other EU Member States 1998–2003

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

<sup>a</sup> 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.

### Balai

Council Directive 92/65/EEC (also known as the 'Balai Directive') sets out the animal health conditions relating to the movement of animals not specifically covered by other trade Directives. This Directive was amended by a Commission Regulation (EC No. 1282/2002) which came into force in March 2003, and the UK has taken a lead role within the Community in implementing it. The effect of the Regulation was to:

- strengthen the requirements that approved bodies must meet; and
- simplify the certification and movement of animals between approved bodies to benefit conservation and breeding programmes of zoo animals, and research programmes for laboratory animal species.

### Cattle and bovine germplasm

The collection, processing, storage, and movement of bovine semen intended for intra-community trade is governed by Council Directive 88/407/EEC. This was amended by EC Directive 2003/43 of 26 May 2003, and Member States are to bring into force legislative and administrative provisions

necessary to comply with this by 1 July 2004. The EU ban on cattle exports remains.

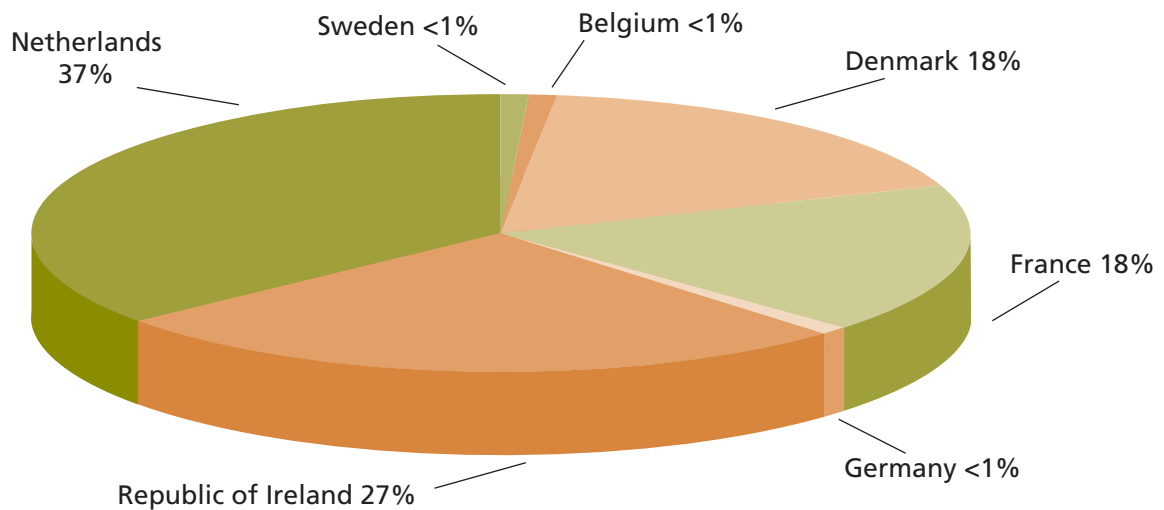
Embryos and semen were traded during 2003. The Netherlands (55,141), the Republic of Ireland (29,495), Belgium (24,588) and Spain (16,404) were the main destinations.

### Sheep and goats

New rules relating to the intra-community trade in sheep and goats came into force in 2003. Amongst other things, these rules required all slaughter sheep to undergo a 21-day residency period on a single holding before being eligible for export to other Member States. The rules were introduced by Commission Decision (2003/483/EC), amending the sheep trade Directive 91/68/EEC. They will be made permanent in July 2004 by means of Council Directive 2003/50/EEC.

In addition, the Commission introduced changes so that sheep that could not previously be exported due to scrapie rules could now be traded if they are of the ARR/ARR prion protein genotype.

Figure D2.1: Export of sheep and goats to other Member States during 2003



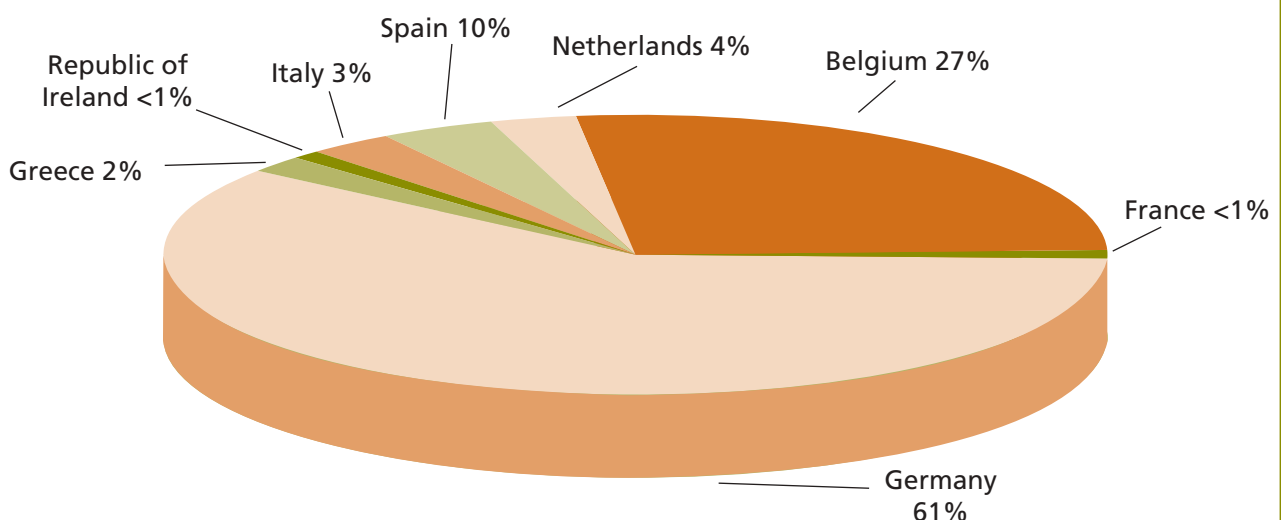
### Pigs and porcine germplasm

Pigs were mainly exported to Germany (15,562), Belgium (6,745) and Spain (2,652). The main countries to which porcine semen was exported were Portugal (798), Spain (375) and Italy (310).

### Horses and equine germplasm

The main countries to which horses were exported to in 2003 were The Netherlands (1,815), Germany (1,800) and Belgium (1,064), while equine semen were mainly exported to France (319), Belgium (206) and The Netherlands (200).

Figure D2.2: Export of pigs to other Member States during 2003





**Poultry**

Hatching eggs were mainly exported to Austria and France, while 89% of poultry exports went to The Netherlands.

**Exports to Third Countries**

The Export Certification User Group (ECUG), dealing with livestock, meat and meat products, semen and embryo exports to Third

Figure D2.3: Export of hatching eggs to other Member States during 2003

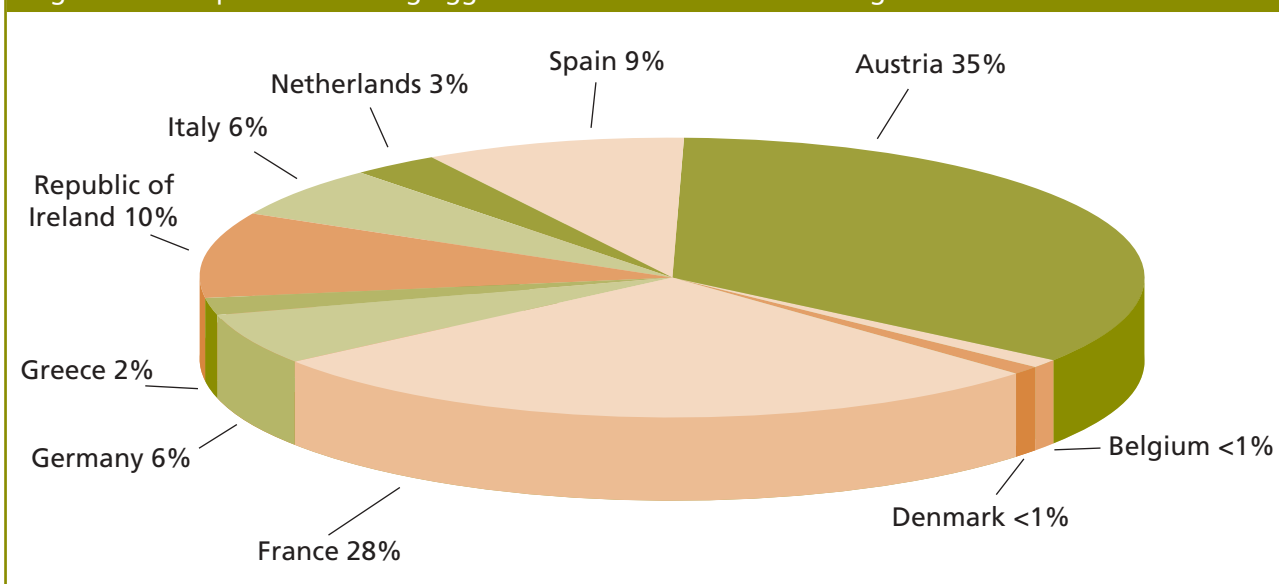
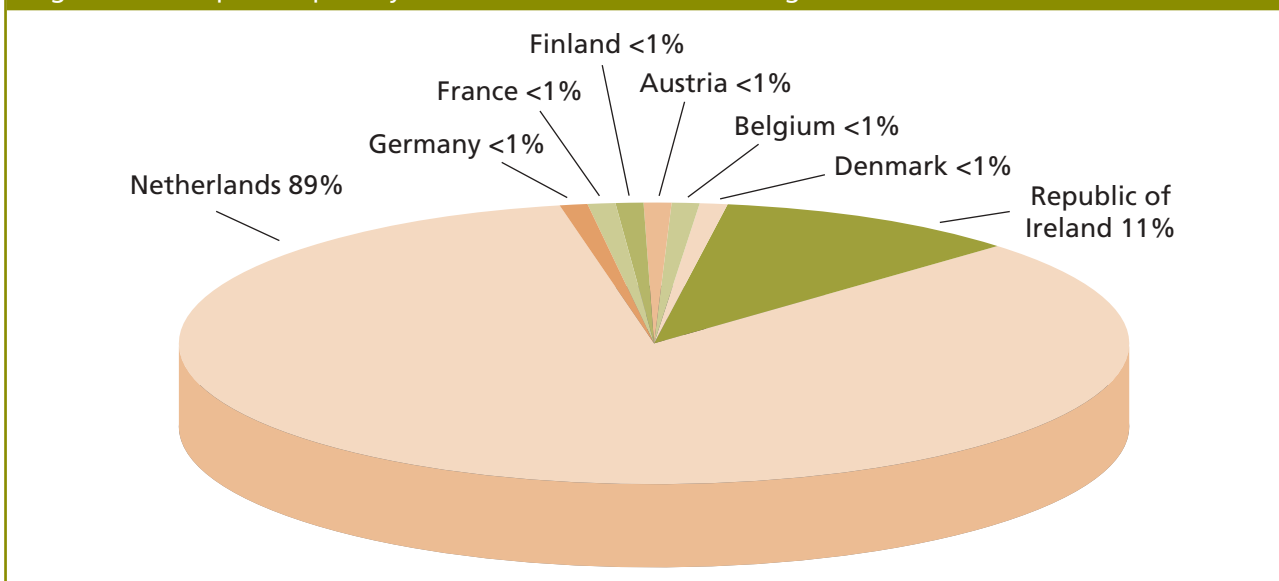


Figure D2.4: Export of poultry to other Member States during 2003



Countries, continued to play a role targeting Defra's resources at opening key markets where there is real interest in, and realistic prospect of trade.

Defra remained active in persuading overseas authorities to accept GB exports with assistance from British Embassies and High Commissions to make representations and to follow up correspondence.

Many important markets were opened including bovine semen to Chile, pigmeat to Japan, pigmeat and breeding pigs to South Korea. Despite considerable efforts, there remain some priority export markets which continue to prove challenging to break into.

### **Pigs and porcine germplasm**

Export certification for exports of breeding pigs were agreed with Thailand, South Korea and Hungary. Export certification for porcine semen was made available for exports to the Ukraine, Malta, Canada, the Philippines, Poland, Switzerland and Thailand.

### **Cattle germplasm**

Following the lifting of the bovine embryo export ban in 2002, several new markets were opened for bovine embryo exports including Australia, Hungary, Poland and South Africa. The USA agreed a certificate for bovine semen collected before the FMD outbreak and new bovine semen markets were opened in Poland, Hungary, Chile and Paraguay.

### **Meat and meat products**

Saudi Arabia lifted its BSE ban, enabling dairy products to once again be traded. The USA lifted its remaining classical swine fever ban allowing for exports of pigmeat and pigmeat products. Certification was also agreed for dairy products to Hungary, milk to the Czech Republic and pigmeat to Japan, amongst others.

### **Horses and equine semen**

A number of export certificates were agreed for the export of horses including to Bulgaria, Colombia, Hong Kong, Hungary and Singapore. Certification for equine semen was agreed for Australia and Saudi Arabia.

### **Poultry**

Due to the outbreaks of avian influenza in Europe, exports of hatching eggs rose as Britain was not affected by bans put in force by the Commission. Certification for day-old chicks, turkey poults and their hatching eggs was also agreed for export to Russia.

### **Sheep and goats and their germplasm**

Export certification for ovine and caprine semen to the USA, ovine semen to Australia, and certification for ovine semen to Canada were agreed.

### Chapter D3: 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.*

#### **General**

For animals and genetic material these restrictions were applied by Declarations made under Regulation 27 of the Animals and Animal Products (Import and Export) (England and Wales) Regulations 2000. For animal products the equivalent legal base is Regulation 35 of the Products of Animal Origin (Import and Export Regulations) 1996 and subsequently Regulation 54 of the Products of Animal Origin (Third Country Imports) (England) Regulations 2003. Similar Declarations were issued by Northern Ireland, Wales and Scotland under their equivalent legislation.

There were 63 Declarations issued in 2003 for animals, genetic material and animal products to prohibit imports from specified regions, areas or territories or to revoke any previous prohibitions.

## Chapter D4 Livestock protection

*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.*

### Animal breeding

#### Bovine artificial insemination

As noted in a previous chapter, the collection, processing, storage, and movement of bovine semen intended for intra-community trade is governed by Council Directive 88/407/EEC, amended by EC Directive 2003/43 of 26 May 2003. All Member States must make the necessary legislative and administrative requirements to comply with this amending Directive by 1 July 2004.

Domestic collection, processing, storage and movement of bovine semen is governed by the Artificial Insemination of Cattle (Animal Health) (England and Wales) Regulations 1985, as amended (and by corresponding legislation in Scotland and Northern Ireland).

The need to revise these regulations is recognised and resources have been made available to ensure EU, Third Country imports and domestic trade requirements are included within the construction of the new set of regulations.

#### Training in artificial insemination

Changes made in 2002 to the Artificial Insemination of Cattle (Animal Health) (England and Wales) Regulations 1985 provided powers to the Secretary of State to approve artificial insemination training courses. This was because the Agricultural Training Board, which previously approved artificial insemination training courses, no longer exists. Three new companies operating courses to teach farmers and farm employees how to artificially inseminate cattle were approved by Defra in 2003. Only courses where practical training is carried out on-farm are approved.

	Licences issued in 2003				Total existing licences at 31 December 2003			
	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	1	0	0	0	2	0	0	2
Bovine semen main stores	0	0	0	0	5	2	1	8
Bovine semen supply centres	1	1	0	0	42	9	15	66
Bovine semen shops	1	0	0	0	14	0	4	18
Bovine semen farm storage units	225	29	17	17	6,523	1,069	991	8,583
Bovine farm storage servicing licences	1	0	0	0	16	3	5	24
On-Farm processing licences for bovine semen	0	0	1	1	2	5	3	10
EU porcine semen collection centres	0	0	0	0	9	1	0	10
Domestic porcine semen collection centres	1	0	0	0	6	0	0	6
EU bovine embryo collection teams	1	0	0	0	14	3	0	17
EU bovine embryo transfer teams	1	0	0	0	14	3	0	17
EU bovine embryo production teams	0	0	0	0	3	0	0	3

	Licences issued in 2003				Total existing licences at 31 December 2003			
	England	Scotland	Wales	Great Britain	England	Scotland	Wales	Great Britain
Domestic bovine embryo collection team	1	0	0	1	5	0	2	7
Domestic bovine embryo transfer teams	1	0	0	1	7	1	6	14
Domestic bovine embryo production teams	0	0	0	0	0	0	0	0
EU embryo stores	2	0	0	2	13	0	0	13
Domestic embryo stores – on-farm and non-farm	0	0	0	0	41	10	10	61
EU ovine/caprine embryo collection teams	1	0	0	1	1	0	0	1
EU ovine/caprine semen collection teams	1	0	0	1	1	0	0	1
EU bulls approved	314	0	96	410	N/A	N/A	N/A	N/A
EU bulls rejected	20	0	0	20	N/A	N/A	N/A	N/A
Domestic bulls (on-centre collection) approved	6	0	0	6	N/A	N/A	N/A	N/A
Domestic bulls (on-centre collection) rejected	0	0	0	0	N/A	N/A	N/A	N/A
Domestic bulls (on-farm collection) approved	54	76	13	143	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	632	0	0	632	N/A	N/A	N/A	N/A
EU boars rejected	8	0	0	8	N/A	N/A	N/A	N/A
Domestic boars approved	321	0	0	321	N/A	N/A	N/A	N/A
Domestic boars rejected	31	0	0	31	N/A	N/A	N/A	N/A



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

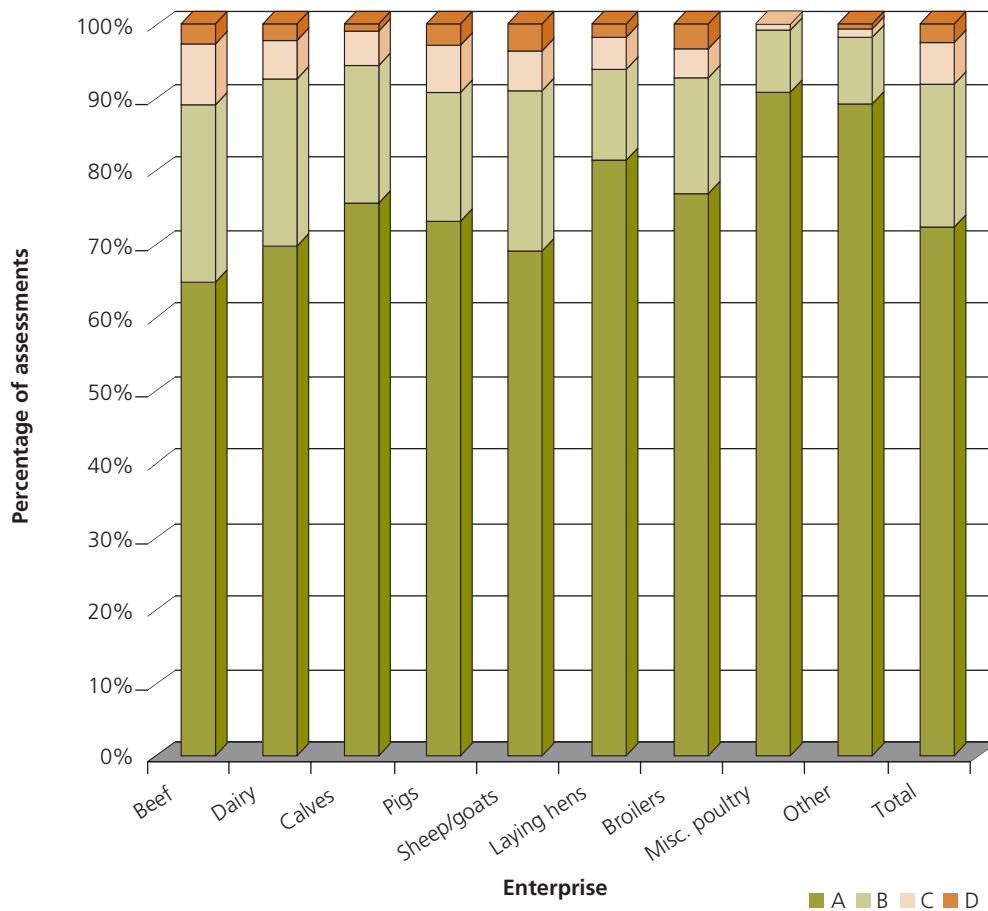
#### **Chapter E1: Animal welfare**

*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).*

#### **On-farm inspections**

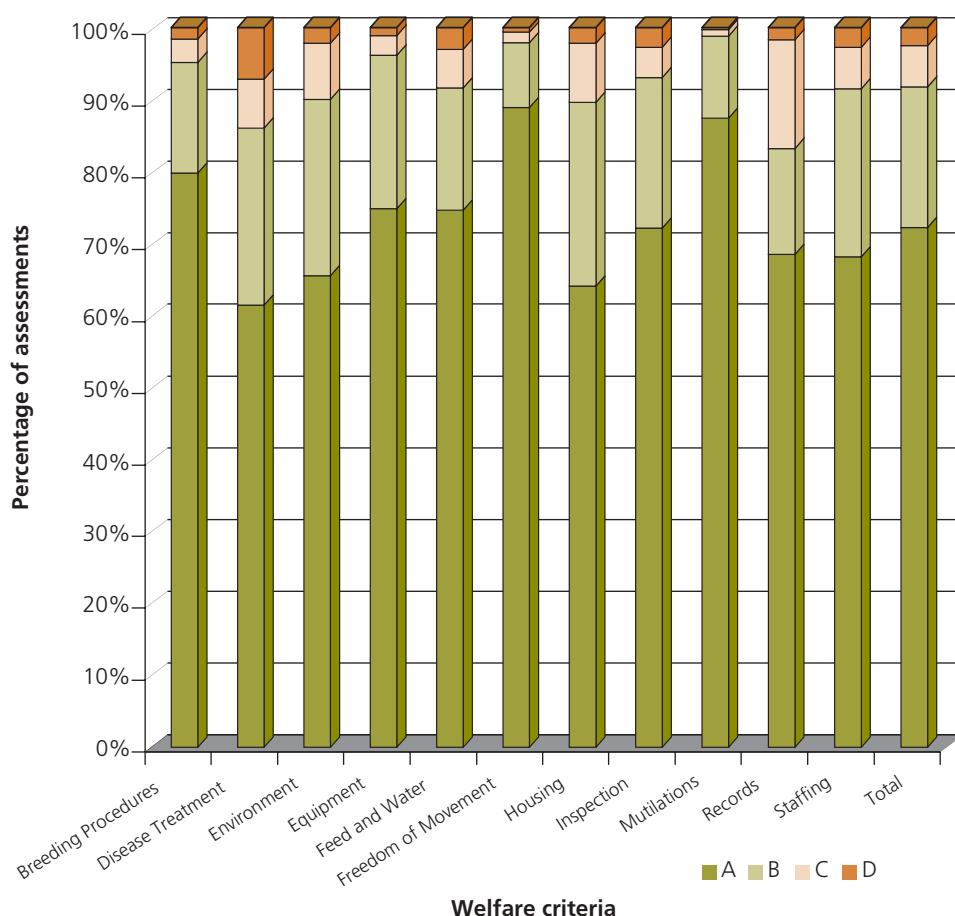
The SVS undertook 4,964 welfare inspections at 2,817 visits (1.8 inspections per visit) on farms to check that legislation and the species specific welfare codes are being followed. All complaints and allegations of poor welfare on specific farms are treated as a matter of urgency. Defra also co-operates closely with other organisations such as local authorities and the Royal Society for the Prevention of Cruelty to Animals (RSPCA). A summary of the findings during the year is shown at Figures E1.1 and E1.2.

Figure E1.1: Overall results of SVS assessments of the welfare of animals on farms in Great Britain between 1 January and 31 December 2003



\*Based on the farm enterprise.  
 A = Full compliance with legislation and code;  
 B = Compliance with legislation;  
 C = Non-compliance with legislation;  
 D = Unnecessary pain, unnecessary distress.

Figure E1.2: Overall results of SVS assessments of the welfare of animals on farms in Great Britain between 1 January and 31 December 2003



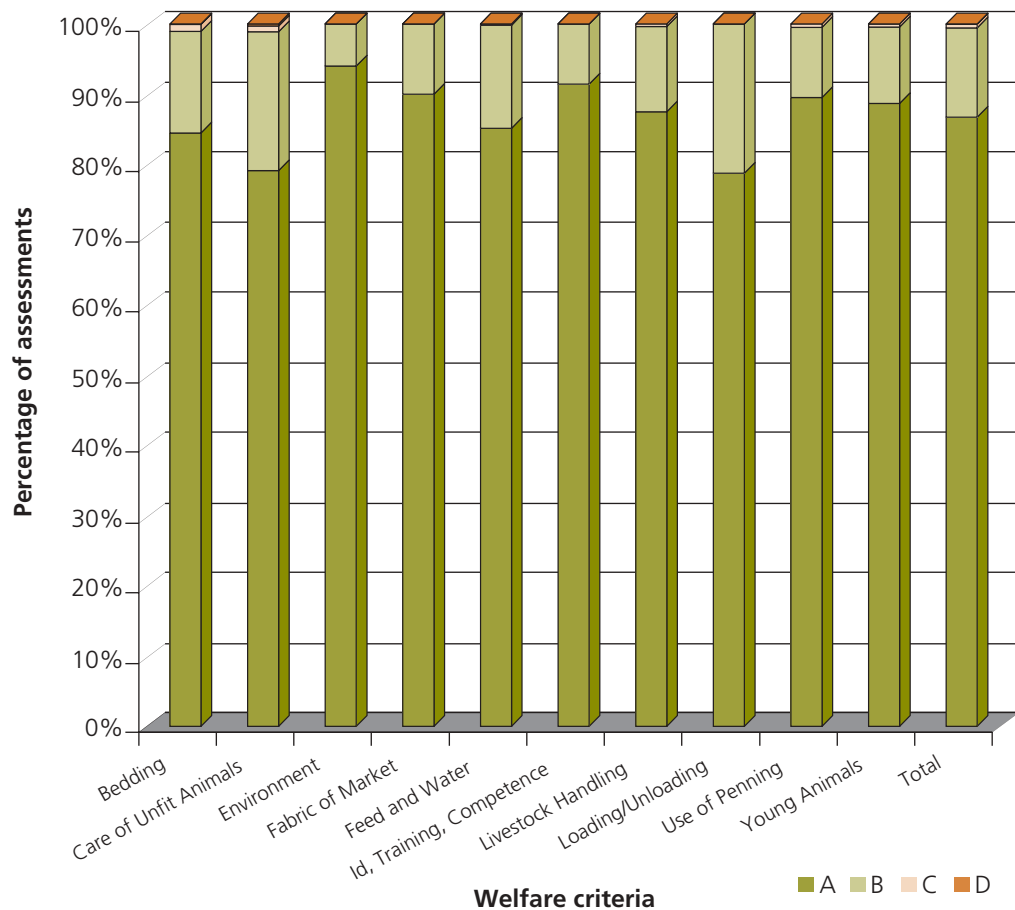
\*Based on the farm enterprise.  
 A = Full compliance with legislation and code;  
 B = Compliance with legislation;  
 C = Non-compliance with legislation;  
 D = Unnecessary pain, unnecessary distress.

SVS veterinary officers continue to record farm assurance scheme membership of each enterprise visited for a welfare inspection. This is to assess whether there is greater compliance with legislation and codes for enterprises which are members of assurance schemes.

### Markets

The SVS carried out 8,735 welfare inspections during 3,647 visits (2.4 inspections per visit) at markets, and a summary of the findings is shown in Figure E1.3.

Figure E1.3: Overall results of SVS assessments of the welfare of animals at markets in Great Britain between 1 January and 31 December 2003



\*Based on the farm enterprise.  
 A = Full compliance with legislation and code;  
 B = Compliance with legislation;  
 C = Non-compliance with legislation;  
 D = Unnecessary pain, unnecessary distress.

## Section E – Chapter E1

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### Pigs and cattle

New pig welfare regulations, the Welfare of Farmed Animals (England) (Amendment) Regulations 2003, came into force on 14 February 2003. Similar legislation has been implemented in Scotland and Wales. Revised cattle and pig welfare codes were also issued in England having been approved by both Houses of Parliament.

### Poultry

The Registration of Establishments (Laying Hens) (England) Regulations 2003 came into force on 31 December 2003.

The welfare organisation, Compassion in World Farming (CIWF), challenged Defra's compliance with the Council Directive

98/58/EC in respect of the welfare of broilers and broiler breeders. A judicial review hearing took place during October 2003. The judgement vindicated Defra's view that the Directive had been implemented correctly and that there were the appropriate legal provisions in place to protect the welfare of chickens in this country.

### Promotion of on-farm welfare

Advisory campaigns were held during the year. A list of all the campaigns in the poultry, ruminant and pig sectors is listed in Table E1.1.

Table E1.1: Advisory campaigns for poultry, ruminant and pig sectors in Great Britain during 2003

<b>Poultry</b>	Best Management Practice to Reduce Feather Pecking and Cannibalism in Laying Hens
	Planning for the Future – Working within the Proposed EU Broiler Directive
<b>Ruminants</b>	Control of Sheep Parasites – including Sheep Scab
	Sheep Lameness/Foot Rot
	Caring for the Dairy Beef Calf
	Reducing Injuries to Dairy Cows
<b>Pigs</b>	New Pig Welfare Code

### Training in on-farm welfare

Defra held two Veterinary Officer training courses: one covering background topics and one on the implementation of the new pig welfare regulations.

### Transport, markets and slaughter

#### Advice and information issued

Guidance on a variety of welfare issues was revised during the year and published on the Defra website at:

<http://www.defra.gov.uk/animalh/welfare/default.htm>. These included updated information on pet travel for owners and transporters; a consultation on new EU transport proposals; advice on the transport of animals in hot weather; and advice to exporters on the transportation of shorn sheep in cold weather. A new regulation to enhance animal welfare at slaughter and killing was laid in Parliament.



The research programme covers aspects of animal welfare on-farm

A training package, *Getting it Right – First Time, Every Time*, on the humane culling of animals was launched in March 2003. The package covered in particular large scale culling as a result of a notifiable disease outbreak.

A paper was produced on veterinary/scientific aspects of tail docking in dogs. The text can be found at:

<http://www.defra.gov.uk/animalh/welfare/domestic/awbillconsulttaildocking.pdf>

### Research and development

The research programme covers aspects of animal welfare including on-farm, during transport, at slaughter and fundamental issues such as pain, stress and subjective assessment of behavioural signs. It is designed to provide an evidence based approach to inform the decision making process when developing policy. The budget for 2003/04 was £3.45 million.

### Global participation

#### Council of Europe

One meeting of the standing committee for the protection of animals kept for farming purposes was held in November 2003. The recommendations on keeping rabbits and fish were discussed, together with plans for future work which will include revision of the cattle proposals. On 11 November the UK signed the Council of Europe Convention on the protection of animals during international transport.



### EU

Proposals for new EU regulations on transport were put forward by the Commission, and these were discussed during 2003. An inspection team from the EU Food and Veterinary Office (FVO) looked at transport and slaughter welfare during their visit from 20–29 October. The report will be published on their website.

### EU accession

Veterinary staff participated in the EU Technical Assistance Information Exchange Office (TAIEX) peer reviews of animal welfare legislation transposition in accession states of Poland and the Czech Republic. This active participation in the EU accession process underlined the Department's commitment towards assisting accession states.

### Other

Defra made presentations at the international inter-governmental conference in Manila sponsored by the World Society for the Protection of Animals (WSPA), and also at conferences at the Universities Federation for Animal Welfare (UFAW) in Edinburgh and the International Society for Animal Ethology (ISAE) in Italy. Defra also took part in the International Whaling Commission conference in Berlin on the welfare of whales at a whale killing methods workshop; the equine industry liaison group, and the review of conditions of employment for Local Veterinary Inspectors.

### Animal Welfare Bill

The proposed Animal Welfare Bill will consolidate and amend more than 20 existing Acts and remedy defects in current law. It will contain substantive offences and in addition will be an enabling Act supported by regulations and codes of practice.

The Bill will create a new offence of failing to promote the welfare of owned or kept animals. The existing offence of cruelty to animals in the Protection of Animals Act 1911 will be modernised and the offence of involvement in organised fighting between animals will attract a higher penalty. Existing enforcement powers relating to these and other offences will be consolidated and in some cases extended.



Horses are one of many animals which will be protected under the Animal Welfare Bill

Powers to make regulations to safeguard the welfare of animals will be widened to allow Great Britain to meet EU obligations, and for ensuring that animal welfare law keeps in step with advances in science and good practice. Licensing or registration, backed up by powers to inspect, will be retained and extended where necessary to ensure animal welfare standards. Certain sellers of non-farmed animals will be obliged to provide purchasers with information on the animal's welfare needs. Further information is available at:  
<http://www.defra.gov.uk/animalh/welfare/>

### Farm Animal Welfare Council

The Farm Animal Welfare Council (FAWC) is an independent advisory body on farm animal welfare established by Ministers. Its role is to review 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.

FAWC published its *Report on the Welfare of Farmed Animals at the Time of Slaughter: Part 1 Red Meat Animals* in June 2003. It also sent detailed advice to Defra about the Animal Health and Welfare and Veterinary Surveillance Strategies, and about the complex issues surrounding animal transport rules, biosecurity arrangements and Common Agriculture Policy (CAP) reform.

Three major studies, on the welfare implications of animal breeding and breeding technologies; the welfare of farm animals at market; and on the implications of farm assurance schemes for farm animal welfare, continued. New studies on the welfare of white meat animals at the time of slaughter and on stockmanship began in 2003.

The annual Open Meeting was held by the Council in June. The event enjoyed a large attendance from a wide spectrum of organisations with an interest in farm animal welfare. Further information on FAWC activities can also be found on their website at: [www.fawc.org.uk](http://www.fawc.org.uk).

### The Veterinary Surgeons Act 1966

Significant developments have occurred within the profession over the past four decades and the publication of the proposals to modernise the Veterinary Surgeons Act 1966 was welcomed. Public expectations have also changed, and are now more demanding in terms of the services provided and the need for the profession to be more transparent. Among a range of issues the consultation invited views on were:

- greater lay representation on the Royal College of Veterinary Surgeons (RCVS) Council and disciplinary committees;
- current disciplinary procedures, the composition of the statutory committees and disciplinary powers; and
- whether veterinary surgeons should be required to undertake 'Continued Professional Development' or whether periodic re-accreditation should be introduced.

Defra also consulted on a proposal to introduce an Exemption Order to permit suitably trained and competent non-veterinarians to administer, read and record the results of the tuberculin test. The proposal formed part of the short-term measures in the Government's TB Strategy and was included in Defra's list of short-term measures outlined to the EFRA Committee and the TB Forum early in the year. At the

time of publication of this report it was being considered how to proceed.

The proposed Exemption Order permitting trained and competent non-veterinarians to carry out artificial insemination of mares is in progress. Progress continues on the Exemption Order allowing trained and competent equine dental technicians to carry out certain advanced procedures. Having met with industry representatives, Defra is considering the possibility of including an apprenticeship scheme within the proposed training requirements.

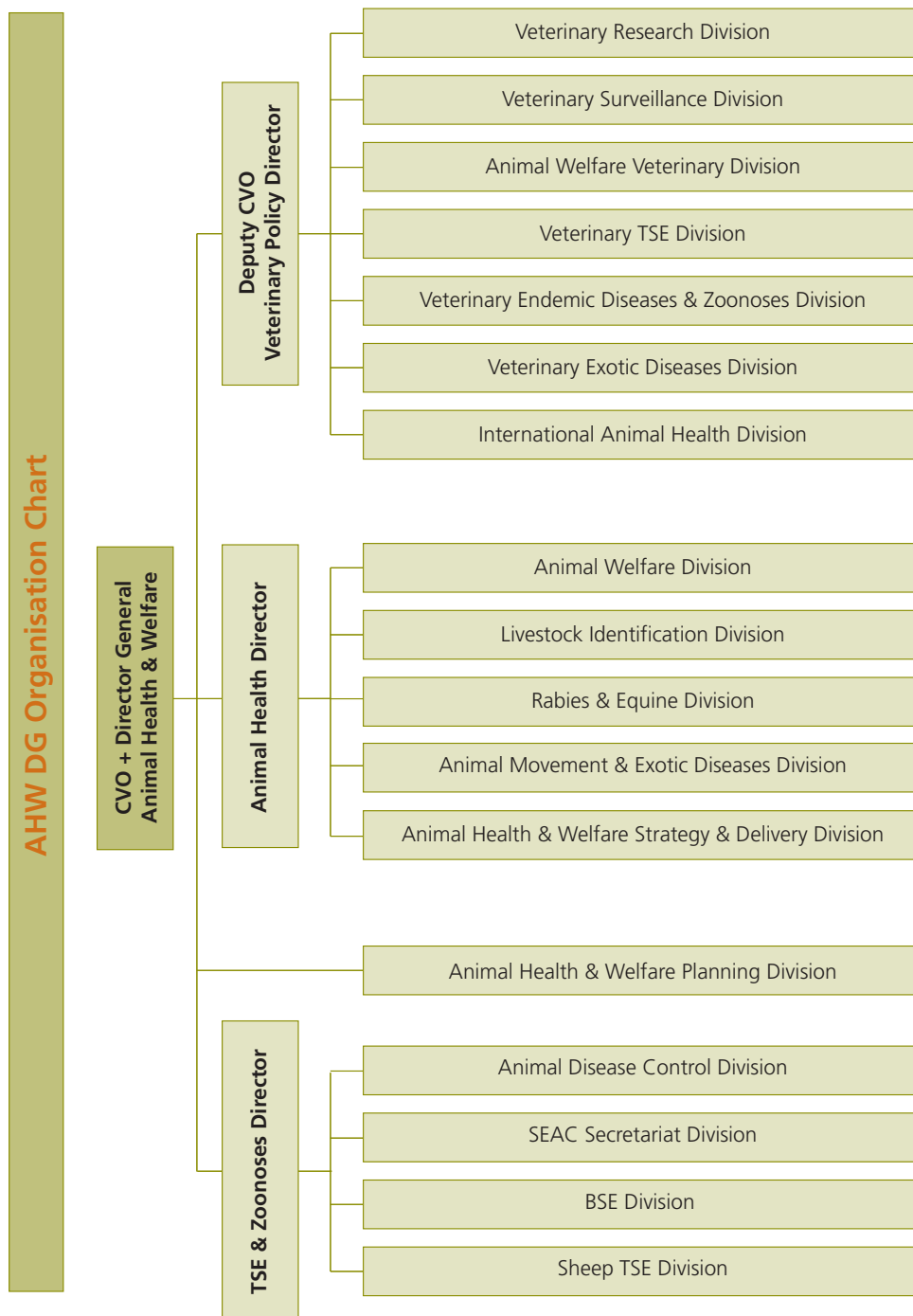
The end of 2003 saw the implementation of the provisions of EU Directive 2001/19/EC. The main effects of the Veterinary Surgeons' Qualifications (European Recognition) Order 2003 are:

- that European Economic Area (EEA) and Swiss nationals with the qualifications set out in the new Schedule 1A to the Veterinary Surgeons Act, are entitled to be registered with the RCVS and become members of the college (i.e. MRCVS);
- that applications from EEA and Swiss nationals with other qualifications, training and professional experience will be considered by the RCVS;
- a new appeals system will be introduced in cases when an application is refused or a decision is not reached within three months;
- a new provision for the setting up of a registration appeals committee by the RCVS.

These requirements ensure the mutual recognition of veterinary qualifications awarded in all states in the EEA and Switzerland.

## Section F: Appendices

### AHW DG Senior management structure



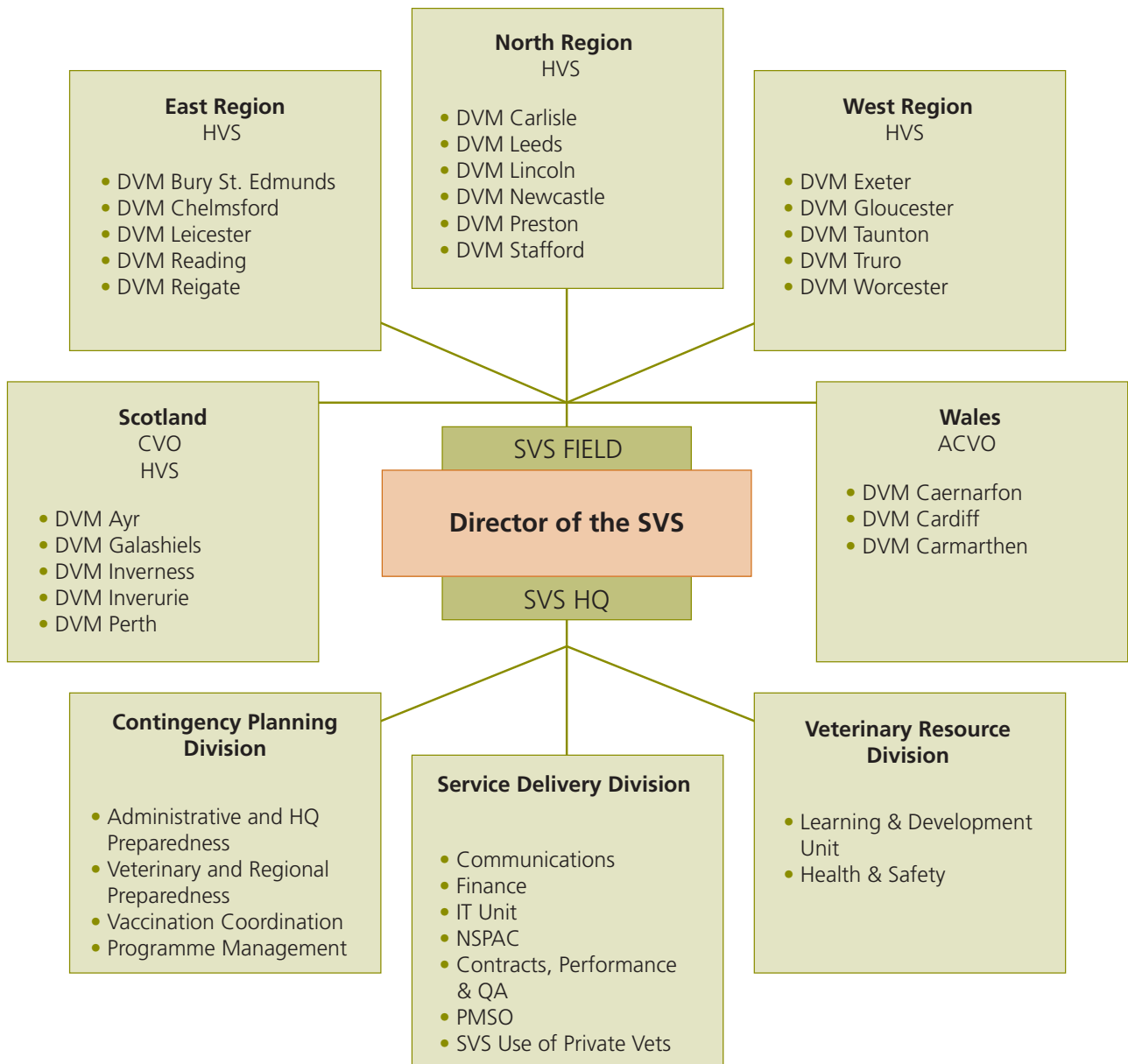
### The role of the State Veterinary Service

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; and
- enforcing legislation in all these areas.

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

State Veterinary Service Senior Management Structure





# The role of the Veterinary Laboratories Agency

## Working for public and animal health

The Veterinary Laboratories Agency (VLA) is an Executive Agency of the Department for Environment, Food and Rural Affairs (Defra) and is 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.

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.

The Agency is structured into two science divisions supported by Business and Management Services, and delivers its main services through a series of integrated science programmes:

- transmissible spongiform encephalopathies
- statutory and exotic bacterial and viral diseases
- food and environmental safety
- endemic diseases and animal welfare
- International trade

## Veterinary Surveillance Strategy – outline delivery plan

Strategic Goal	By end of 2004	By end of 2005	By end of 2008	By end of 2013
<b>1. To strengthen collaboration</b>	<ul style="list-style-type: none"> <li>Identify key stakeholders for all veterinary surveillance and review existing input from stakeholders</li> <li>Key prioritisation groups formed</li> <li>Mechanism for collaboration to enable input into profile content and prioritisation designed</li> <li>Mechanism for integration of research and surveillance designed</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholder groups formed for each livestock sector</li> <li>Mechanism for integrating research and surveillance piloted and implemented for list A diseases and scanning surveillance</li> <li>Mechanism for collaboration with stakeholders piloted for draft diseases covered by draft profiles</li> </ul>	<ul style="list-style-type: none"> <li>Key stakeholders directing and prioritising surveillance</li> <li>Collaborative mechanism operational for all stakeholder groups</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive surveillance partner 'contacts list' maintained</li> <li>All relevant research and development projects integrated with surveillance</li> </ul>
<b>2. To develop a Prioritisation process</b>	<ul style="list-style-type: none"> <li>Profiles drafted for all List A diseases and five major zoonoses</li> <li>First draft of a risk impact based quantitative prioritisation method designed</li> </ul>	<ul style="list-style-type: none"> <li>First group of profiles peer reviewed and validated</li> <li>Profiles for notifiable List B diseases and five further zoonoses drafted</li> <li>Profile format for indicators such as antimicrobial resistance designed</li> <li>New prioritisation system piloted</li> </ul>	<ul style="list-style-type: none"> <li>Profiles drafted for all diseases and infections for which targeted surveillance was carried out in 2002</li> <li>Profiles for major non-disease indicators drafted and validated</li> <li>Refined quantitative prioritisation system in regular use</li> </ul>	<ul style="list-style-type: none"> <li>All Defra funded surveillance activities encompassed within profiles and prioritised in a quantitative, open and transparent way</li> <li>Other veterinary surveillance activities also included if key stakeholders wish</li> </ul>

## Veterinary Surveillance Strategy – outline delivery plan (*continued*)

Strategic Goal	By end of 2004	By end of 2005	By end of 2008	By end of 2013
<p><b>3. To derive better value from surveillance information and activities</b></p>	<ul style="list-style-type: none"> <li>• RADAR prototype complete and widely demonstrated</li> <li>• Phase 1 of RADAR complete and implemented (including: data warehouse, reporting tool, GIS, metadata management, data catalogue and web portal)</li> <li>• Mechanism developed to add and remove data sources from RADAR</li> <li>• Analysis and load of phase 1 data sources</li> </ul>	<ul style="list-style-type: none"> <li>• Phase 2 of RADAR complete and implemented (including: profiles database, advanced functionality of content manager, RADAR interactive on website)</li> <li>• Analysis and load of phase 2 data sources</li> <li>• Profiles database functioning and populated with all available profiles, tagged to show whether validated</li> <li>• Further pilots begun to capture information on new and emerging diseases, potential risks and hazards, and access information from veterinary practitioners</li> </ul>	<ul style="list-style-type: none"> <li>• Phase 3 and 4 of RADAR complete and implemented (including: system to support prioritisation, capture data on potential risks and hazards and refinement of profiles database)</li> <li>• Analysis and load of phase 3 &amp; 4 data sources</li> <li>• Data from pilots loaded into RADAR</li> </ul>	<ul style="list-style-type: none"> <li>• RADAR fully functional and populated with all profile information and selected datasets</li> <li>• All veterinary surveillance activities by collaborative stakeholders identified and referenced on Defra database</li> </ul>

## Veterinary Surveillance Strategy – outline delivery plan (*continued*)

Strategic Goal	By end of 2004	By end of 2005	By end of 2008	By end of 2013
<p><b>4. To share information more widely</b></p>	<ul style="list-style-type: none"> <li>• Current legal basis for surveillance and data sharing defined</li> <li>• Veterinary surveillance website set up with information about the strategy &amp; RADAR</li> <li>• First surveillance reports derived from RADAR published</li> <li>• Stakeholders surveyed for preferences as regards information type and format</li> <li>• Stakeholder discussions held on how and what data to share</li> <li>• First data sharing protocol published</li> </ul>	<ul style="list-style-type: none"> <li>• Consult on legislative changes required</li> <li>• Some stakeholders have direct access to data held on RADAR (RADAR interactive)</li> <li>• Stakeholder agreement on what can be shared</li> <li>• Data sharing protocol refined</li> </ul>	<ul style="list-style-type: none"> <li>• Format of surveillance reports refined and revised</li> <li>• Mechanism for 'alerting' target audiences developed</li> <li>• Further publication channels identified</li> <li>• Requirements for new legislation on data sharing identified and agreed</li> </ul>	<ul style="list-style-type: none"> <li>• New legislation permitting further data sharing in place</li> <li>• Fully functional system for sharing surveillance outputs in user friendly, flexible formats</li> </ul>
<p><b>5. To enhance quality assurance of outputs</b></p>	<ul style="list-style-type: none"> <li>• Approach to quality flagging of data defined</li> <li>• Draft 'education programme' defined – to enhance stakeholder (especially farmer) participation</li> <li>• Working links with overseas surveillance established</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of information contributing to draft profiles defined</li> <li>• Data audit schedule developed</li> <li>• Proposals for incorporating ideas from overseas into surveillance management</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of information contributing to draft profiles agreed and standardised</li> <li>• Quality of all data in RADAR flagged</li> <li>• Pilot education programme completed</li> </ul>	<ul style="list-style-type: none"> <li>• All Defra contracted Reference Labs operating to agreed quality standards</li> <li>• Educational programme fully operational</li> </ul>

## Section F – Appendices

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### Citizen's Charter

The Citizen's Charter Statement of Service Standard for the State Veterinary Service describes the standard of service to which Defra aims to achieve and sets out the complaints procedure.

During 2003 a total of 136 complaints were received by 27 Animal Health Divisional Offices; this was 53 more than in 2002 but 177 fewer than in 2001. Of the AHDOs seven received no complaints and only nine received more than three.

The AHDOs were able to deal with 132 satisfactorily at a local level, three in conjunction with HQ and one was dealt with by an independent adjudicator.

Table F2: Complaints received by Animal Health Divisional Offices during 2003

Subject of complaint	Number	Dealt with by
Transmissible spongiform encephalopathies (TSEs)	12	Local office
Tuberculosis	84	Local office and HQ
Veterinary medicine	0	
Brucellosis eradication	1	Local office
Salmonella and other zoonoses	1	Local office
Imports and exports of animals and genetic material	14	Local office and HQ involvement
Control of notifiable diseases other than BSE	8	Local office and HQ
Animal breeding controls	1	Independent adjudicator
Welfare of farm, markets and in transit	15	Local office
Welfare at slaughter	2	Local office

Statistical tables

Table F2: Number of stock slaughtered and compensation paid 1998–2003													
	1998		1999		2000		2001		2002		2003		
	No.	£	No.	£	No.	£	No.	£	No.	£	No.	£	
Bovine Tuberculosis (cattle)													
a) Affected animals	–	–	–	–	–	–	–	–	–	–	–	–	
b) Reactors and dangerous contacts	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	23,047**	38,216,249	
<b>Total Bovine Tuberculosis (cattle)</b>	<b>5,863*</b>	<b>3,605,242</b>	<b>6,772*</b>	<b>5,770,983</b>	<b>8,353*</b>	<b>7,307,797</b>	<b>5,916*</b>	<b>7,074,125</b>	<b>23,007*</b>	<b>28,898,623</b>	<b>23,047**</b>	<b>38,216,249</b>	
Bovine Tuberculosis (deer) <sup>(3)</sup>													
a) Affected animals	37	–	49	–	25	–	2	–	–	–	–	–	
b) Reactors and dangerous contacts	6	0	6	0	6	0	0	0	N/A	1,200	N/A	1,923	
<b>Total Bovine Tuberculosis (Deer)</b>	<b>43</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>N/A</b>	<b>1,200</b>	<b>N/A</b>	<b>1,923</b>	
<b>Bovine Brucellosis</b>	–	–	–	–	–	–	–	–	–	–	422	396,497	
Aujeszky's Disease (pigs) <sup>(1)</sup>	–	–	–	–	–	–	–	–	–	–	–	–	
Bovine Spongiform Encephalopathy <sup>(2)</sup>	4,046	2,095,114	2,857	1,342,214	882	712,025	1,798	576,583	1,153	527,994	419	320,468	
Classical Swine Fever (pigs)	–	–	–	–	74,793	4,392,101	–	–	–	–	–	–	
FMD (5)	–	–	–	–	–	–	4,068,000	1,047,229,250	–	399,750	–	–	
Scrapie (4)	285	5,397	715	14,795	493	56,418	646	15,610	355	9,434	487	16,825	
Avian Influenza	–	–	–	–	–	–	–	–	–	–	–	–	
Newcastle Disease	–	224,809	–	–	–	–	–	–	–	–	–	–	
Swine Vesicular Disease	–	–	–	–	–	–	–	–	–	–	–	–	
<b>Total Compensation</b>	<b>10,237</b>	<b>5,930,562</b>	<b>10,399</b>	<b>7,127,992</b>	<b>84,552</b>	<b>12,468,341</b>	<b>4,076,362</b>	<b>1,054,895,568</b>	<b>24,515</b>	<b>29,837,001</b>	<b>24,375</b>	<b>38,951,962</b>	

(1) The cost of the eradication scheme was met by the pig industry  
(2) Compulsory slaughter with compensation commenced 8 August 1988  
(3) Compulsory slaughter with compensation for deer was introduced on 1 September 1989  
(4) Compulsory slaughter with compensation commenced on 29 July 1998  
(5) Compensation payments pertain to animals slaughtered in the previous year.

\* Revised figures  
\*\* Provisional figures

Statistical tables (continued)

County	Anthrax	Scrapie Scanning <sup>(a)</sup>	Scrapie Targeted <sup>(b)</sup>	CSF	FMD	EBL	PVM in Pigeons	ND	BSE Scanning	BSE Targeted	CEM	EVA	Brucellosis
<b>ENGLAND</b>													
Avon									3	4			
Bedfordshire									0	2			
Berkshire	1								0	2			
Buckinghamshire	5	1							3	4			
Cambridgeshire									3	0			
Cheshire	29								2	15			
Cleveland							2		0	1			
Cornwall	24						1		7	17			
Cumbria	27		1				3		8	6			
Derbyshire	6	4							3	8			
Devon	35	2					2		19	11			
Dorset	1								3	11			
Durham	1	1					3		2	5			
East Sussex	17						2		0	7			
East Yorkshire							1		0	0			
Essex									1	0			
Gloucestershire			3						7	7			
Greater London									1	1			
Hampshire							2		4	10			
Here & Worc	4								5	11			
Hertfordshire									0	1			
Humberside							1		4	7			
Isles of Scilly									0	0			
Isle of Wight									1	1			
Kent	1	2					1		2	3			
Lancashire	1						2		4	12			
Leicestershire	1	1							4	5			
Lincolnshire		3					1		2	6			
Manchester							1		0	1			
Merseyside									0	0			
Norfolk									8	9			
North Yorkshire	40		4				2		7	16			
Northamptonshire									1	4			
Northumberland	18								3	8			
Nottinghamshire							1		3	7			
Oxfordshire	4						2		1	6			
Shropshire							3		2	16			
Somerset	5	2							17	28			
South Yorkshire	1	2							2	2			
Staffordshire	5	1					2		0	8	1		
Suffolk		1							3	1			
Surrey		1							1	2			
Teesside									0	0			
Tyne & Wear									0	0			
Wanwickshire	1								0	0			
West Midlands		9					2		0	0			
West Sussex		1							3	2			
West Yorkshire	2								0	2			
Wiltshire		2							3	10			
Worcestershire*									–	–			
<b>ENGLAND TOTAL</b>	<b>0</b>	<b>229</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>0</b>	<b>142</b>	<b>279</b>	<b>1</b>	<b>0</b>	<b>0</b>

\*See Here & Worc



Statistical tables (continued)

Table F3: Outbreaks of notifiable diseases, excluding TB, in each county of Great Britain during 2003 (continued)													
County	Anthrax	Scrapie Scanning <sup>(a)</sup>	Scrapie Targeted <sup>(b)</sup>	CSF	FMD	EBL	PVM in Pigeons	ND	BSE Scanning	BSE Targeted	CEM	EVA	Brucellosis
<b>WALES</b>													
Anglesey									0	0			
Cardiganshire									0	0			
Clwyd		48	3						7	11			
Dyfed		48	3						12	23			
Gwent			2						0	3			
Gwynedd		2							1	3			
Mid Glamorgan		4	1						0	2			
Monmouthshire		10	4						0	0			
Powys									7	12			
South Glamorgan									1	2			
West Glamorgan		2							0	1			
<b>WALES TOTAL</b>	<b>0</b>	<b>114</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>57</b>	<b>0</b>	<b>0</b>	<b>0</b>
County	Anthrax	Scrapie Scanning <sup>(a)</sup>	Scrapie Targeted <sup>(b)</sup>	CSF	FMD	EBL	PVM in Pigeons	ND	BSE Scanning	BSE Targeted	CEM	EVA	Brucellosis
<b>SCOTLAND</b>													
Borders		1							0	5			
Central									0	1			
Dumfries & Galloway		3	1				1		2	11			
Fife		1							1	0			
Grampian		3	2						1	5			2
Highland		4							0	2			
Lothian							4		0	1			
Orkney & Shetlands		23							0	0			
Strathclyde		1							1	8			2
Tayside									0	3			
Western Isles									0	0			
<b>SCOTLAND TOTAL</b>	<b>0</b>	<b>36</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>36</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>GB TOTAL</b>	<b>0</b>	<b>379</b>	<b>57</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>39</b>	<b>0</b>	<b>175</b>	<b>372</b>	<b>1</b>	<b>0</b>	<b>4</b>

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 full breakdown by county is not available at present.

(a) Please note there are still some 2003 cases awaiting completion.

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

### Legislation

#### Acts passed in 2003

- None

#### Acts revoked in 2003

- None

#### General Orders and Regulations made in 2003

##### Statutory Instruments 2003

- The Products of Animal Origin (Third Country Imports (England) Regulations 2003 (SI 2003/ 3177)
- Channel Tunnel (International Arrangements)(Amendment) Order 2003
- The Welfare of Animals (Slaughtering or Killing) (Amendment) (England) Regulations 2003
- The Animal Gatherings (Interim Measures) (England) (Amendment) Order 2003
- The Animal Gatherings (Interim Measures) (England) Order 2003
- The Transport of Animals (Cleansing and Disinfection) (England) Order 2003
- The Transport of Animals (Cleansing and Disinfection) (England) (No 2) Order 2003
- The Transport of Animals (Cleansing and Disinfection) (England) (No 3) Order 2003
- The Animal Gatherings (England) Order 2003
- The Diseases of Poultry (England) Order 2003
- The Bluetongue Order 2003
- The Avian Influenza and Newcastle Disease (England) & Wales) Order 2003
- The Animal By-Products Regulations
  - England (SI 2003/1482)
  - Scotland (SSI 2003/411)
  - Wales (WSI 2003/2756(W267))
- The Avian Influenza and Newcastle Disease (Biosecurity Guidance and Disease Control (Slaughter) (Protocol) (England and Wales) Order 2003
- The Avian Influenza and Newcastle Disease (Contingency Planning) (England) Order 2003
- The Classical Swine Fever (England) Order 2003
- The African Swine Fever (England) Order 2003
- The Bluetongue (Scotland) Order 2003
- The Products of Animal Origin (Third Country Imports) (Scotland) Amendment Regulations 2003
- The Products of Animal Origin (Third Country Imports) (Scotland) Amendment (No. 2) Regulations 2003
- The Products of Animal Origin (Third Country Imports) (Scotland) Amendment (No. 3) Regulations 2003
- The Sheep Scab (Shetland Islands) Order 2003
- The Disease Control (Interim Measures) (Scotland) Amendment Order 2003
- The Pet Travel Scheme (Scotland) Order 2003

- The Disease of Animals (Approved Disinfectants) Amendment (Scotland) Order 2003
- The Movement of Animals (Restrictions) (Scotland) Order 2003
- The Diseases of Poultry (Scotland) Order 2003
- The Classic Swine Fever (Scotland) Order 2003
- The Protection of Animals (Anaesthetics) (Scotland) Amendment Regulations 2003
- The African Swine Fever (Scotland) Order 2003
- The TSE (Scotland) Amendment Regulations 2003
- The Welfare of Farmed Animals (Scotland) Amendment Regulations 2003
- The Markets Sales and Lairs (Amendment) Order 1927
- The Markets Sales and Lairs (Amendment) Order 1996
- The Transport of Animals (Cleansing and Disinfection) (England) (No 2) Order 2000
- The Transport of Animals (Cleansing and Disinfection) (England) Order 2003
- The Transport of Animals (Cleansing and Disinfection) (England) (No 2) 2003
- The Animal Gatherings (Interim Measures) (England) (Amendment) Order 2003
- The African Swine Fever Order 1980
- The Fresh Meat (Import Conditions) Regulations 1996, S.I. 1996/3125, as amended by S.I. 2002/1227
- The Specified Risk Material Order 1997, S.I. 1997/2964, as amended by S.I. 2000/2726, 2001/2650, and 2002/843
- The Miscellaneous Products of Animal Origin (Import Conditions) Regulations 1999, S.I. 1999/157
- The Specified Risk Material (Amendment) (England) Order 2000, S.I. 2000/2726
- The Specified Risk Material (Amendment) (England) Order 2001, S.I. 2001/2650
- The Products of Animal Origin (Third Country Imports) (England) Regulations 2002, S.I. 2002/1227, as amended by S.I. 2002/3206 and 2003/812
- The Products of Animal Origin (Third Country Imports) (England) (Amendment) (No. 4) Regulations 2002, S.I. 2002/3206.
- The Products of Animal Origin (Third Country Imports) (England) (Amendment) Regulations 2003, S.I. 2003/812

### General Orders and Regulations revoked in 2003

#### Statutory Instruments 2003

- The Animal Gatherings (Interim Measures) (England) Order 2002
- The Animal Gatherings (Interim Measures) (England) (Amendment) Order 2002
- The Animal Gatherings (Interim Measures) (England) (Amendment) (No 2) Order 2002
- The Animal Gatherings (Interim Measures) (England) Order 2003
- The Markets Sales and Lairs Order 1925
- The Markets Sales and Lairs (Amendment) Order 1926
- The Animal Gatherings (Interim Measures) (England) Order 2002
- The Products of Animal Origin (Third Country Imports) (England) Regulations 2002, S.I. 2002/1227, as amended by S.I. 2002/3206 and 2003/812
- The Products of Animal Origin (Third Country Imports) (England) (Amendment) (No. 4) Regulations 2002, S.I. 2002/3206.
- The Products of Animal Origin (Third Country Imports) (England) (Amendment) Regulations 2003, S.I. 2003/812

## Section F – Appendices

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### Partially revoked

- The Diseases of Poultry Order 1994 } In so
- The Diseases of Poultry (Amendment) Order 1997 } far as
- The Swine Fever Order 1963 } they apply
- The Swine Fever (Infected Areas Restrictions) Order 1956 } to
- The Swine Fever (Movement Restrictions Areas) Order 2000 } England
- The Products of Animal Origin (Import and Export) Regulations 1996, S.I. 1996/3124, as amended by S.I. 1997/3023, 1998/994, 2000/656, 2215, 2001/1553, 1640 and 3399. Regulations 19 to 27 dealing with imports from Third Countries

## Selected publications during 2003

### ANIMAL HEALTH AND WELFARE

Howard P 2003

A review of calf health, welfare and rearing practices on UK dairy farms.

*Cattle Practice* 11 (3) 173-180

Livesey CT, Metcalf JA, Laven RA 2003

Effect of concentrate composition and cubicle bedding on the development of hoof haemorrhages in Holstein heifers after calving.

*Veterinary Record* 152 (24) 735-739

Scudamore JM 2003

Humane culling of farm animals (letter).

*Veterinary Record* 152 (12) 374-375

Tollefsen S, Vordermeier M, Olsen I, Storset AK, Reitan LJ, Clifford D, Lowrie DB, Wiker HG, Huygen K, Hewinson G, Mathiesen I, Tjelle TE 2003

DNA injection in combination with electroporation: a novel method for vaccination of farmed ruminants.

*Scandinavian Journal of Immunology* (57) 229-238

### ANTIMICROBIAL RESISTANCE

Teale C 2003

Antimicrobial resistance – a threat to sustainable agriculture.

*State Veterinary Journal* 13 (1) 26-29

### BRUCELLA

Abdullah AI, Commander NJ, Woodward MJ, Spencer S, Hart CA, Winstanley C 2003

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*Current Microbiology* (46) 241-245

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Progress in understanding brucellosis.

*Veterinary Record* 153 (21) 641-642

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Validation of FPA and cELISA for the detection of antibodies to *Brucella abortus* in cattle sera and comparison to SAT, CFT, and ielisa.

*Journal of Immunological Methods* 278 (1-2) 171-178

### BVD

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Use of an internal standard in a TaqMan nested reverse transcription-polymerase chain reaction for the detection of bovine viral diarrhoea virus.

*Veterinary Microbiology* 96 (4) 357-366

### CAMPYLOBACTER

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Role of S-Layer protein antigenic diversity in the immune responses of sheep experimentally challenged with *Campylobacter fetus* subsp. *fetus*.

*Infection and Immunity* 71 (1) 147-154

Harrington CS, Moran L, Ridley AM, Newell DG, Madden RH 2003

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*Journal of Applied Microbiology* 95 (6) 1321-1333

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*Applied and Environmental Microbiology* 69 (11) 6370-6379

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Sources of campylobacter colonization in broiler chickens.  
*Applied and Environmental Microbiology* 69 (8) 4343-4351

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The subtyping of *Campylobacter jejuni* and its practical use in epidemiological investigation of poultry campylobacters.  
*Zootechnica International* (6) 52-55

Randall LP, Ridley AM, Cooles SW, Sharma M, Sayers AR, Pumbwe L, Newell DG, Piddock LJV, Woodward MJ 2003  
Prevalence of multiple antibiotic resistance in 443 *Campylobacter* spp. isolated from humans and animals.  
*Journal of Antimicrobial Chemotherapy* 52 (3) 507-510

### CATTLE DISEASES AND CONDITIONS

Colloff A 2003  
Average milk quality data for Great Britain (letter).  
*Veterinary Record* 153 (1) 32

Davison HC, Smith RP, Sayers AR, Evans SJ 2003  
Dairy farm characteristics, including biosecurity, obtained during a cohort study in England and Wales.  
*Cattle Practice* 11 (4) 299-310

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*Veterinary Immunology and Immunopathology* 95 (1-2) 21-31

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*Veterinary Record* 153 (20) 635

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Suspected chlamydial keratoconjunctivitis in British cattle (letter).  
*Veterinary Record* 152 (25) 787-788

Otter A, Leonard D 2003  
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*Veterinary Record* 153 (18) 580-571

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Subclinical breakdown with infectious bovine rhinotracheitis virus infection in dairy herd of high health status.  
*Veterinary Record* 153 (4) 113-117

Twomey DF, Griffiths PC, McElligott WS 2003  
Identification of *Chlamydophila* spp. in calves with recurrent keratoconjunctivitis.  
*Cattle Practice* 11 (1) 17-18

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Suspected chlamydial polyarthritis in a calf in the UK (letter).  
*Veterinary Record* 152 (11) 340

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Millar M, Barlow A, Gunning R, Cosser J 2003  
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*Veterinary Record* 152 (13) 408

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*Toxicology* 187 (1) 49-65

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*Infection and Immunity* 71 (8) 4674-4683

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*Veterinary Microbiology* 93 (3) 207-222

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*Molecular Microbiology* 48 (2) 507-521

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*Veterinary Record* 153 (12) 347-353

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*Infection and Immunity* 71 (10) 5900-5909

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*Veterinary Record* 152 (12) 365-366

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*International Journal of Medical Microbiology* 293 (4) 299-308

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*Journal of Applied Toxicology* (23) 43-51

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*State Veterinary Journal* 13 (1) 30-32

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*Cattle Practice* 11 (4) 311-312

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*Preventive Veterinary Medicine* 61 (3)  
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*Veterinary Record* 152 (14) 442

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*Veterinary Research* 34 (2) 165-176

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*Avian Diseases* 47 (3) Supplement, 792-797

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*Avian Diseases* 47 (3) Supplement, 942-950

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*Vaccine* 21 (16) 1754-1757

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*Veterinary Record* 153 (5) 146-148

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*Veterinary Record* 152 (4) 112-114

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*International Journal for Parasitology* 33 (8) 773-785

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*In vitro* susceptibilities of field isolates of *Mycoplasma agalactiae* to oxytetracycline, tylosin, enrofloxacin, spiramycin and lincomycin-spectinomycin.  
*Research in Veterinary Science* 75 (1) 3-7

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*Onderstepoort Journal of Veterinary Research* 70 (1) 21-27

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Detection of *Mycoplasma ovipneumoniae* in Pasteurella-vaccinated sheep flocks with respiratory disease in England.  
*Veterinary Record* 153 (22) 687-688

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*Research in Veterinary Science* 74 (2) 105-112

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*Avian Pathology* 32 (3) 239-257

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*Microbiology Today* 30 (4) 167

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*Cattle Practice* 11 (4) 295-297

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*Journal of Comparative Pathology* 129 (2-3) 186-195

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*Veterinary Record* 153 (6) 176-179

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*Veterinary Record* 153 (1) 31

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*Veterinary Parasitology* 116 (4) 305-314

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*Pig Journal* (51) 155-163

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*Pig Journal* (51) 119-130

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*Veterinary Record* 152 (20) 634

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*In Practice* 25 (8) 466-473

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*Veterinary Record* 152 (5) 147

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*Veterinary Record* 153 (13) 400-403

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*Journal of Medical Virology* 71 (2) 281-289

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*Journal of Wildlife Diseases* 39 (2) 262-270

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*Veterinary Record* 152 (2) 56-57

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*Veterinary Record* 153 (24) 760

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*Avian Pathology* 32 (3) 227-237

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*Veterinary Record* 153 (22) 673-677

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*Journal of Veterinary Medicine B* 50 (1) 38-41

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*Microbial Drug Resistance* 9 (2) 183-189

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*Veterinary Record* 153 (17) 539-540

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*Veterinary Record* 153 (22) 691-692

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Comparative analyses of *Pasteurella multocida* strains associated with the ovine respiratory and vaginal tracts.

*Veterinary Record* 152 (1) 7-10

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*Veterinary Record* 152 (22) 696

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*Veterinary Record* 153 (17) 538

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*Veterinary Record* 152 (10) 302-304

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*Veterinary Record* 152 (15) 477-478

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*Veterinary Record* 152 (7) 206-208

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*Veterinary Parasitology* 111 (2-3) 217-230

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*Veterinary Immunology and Immunopathology* 91 (2) 105-117

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*Journal of Virological Methods* 107 (1) 53-61

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*Veterinary Research Communications* 27 (suppl. 1) 15-23

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*Veterinary Record* 152 (24) 754-755

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## Map showing Veterinary Laboratories Agency and Scottish Agricultural College laboratories



## Map showing State Veterinary Service Headquarters and Animal Health Divisional Offices in Great Britain





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### Abbreviations/acronyms

<b>A</b>	ACAF	Advisory Committee on Animal Feedingstuffs
	ADAS	Agricultural Development and Advisory Service
	ADNS	Animal Disease Notification System
	AHDO	Animal Health Divisional Office
	AHWS	Animal Health and Welfare Strategy
	AI	avian influenza
	AMLS	Animal Movements Licensing System
ANIMO	Animal Movements System	
<b>B</b>	BCG	bacille Calmette-Guerin
	BCMS	British Cattle Movement Service
	BEF	British Equestrian Federation
	BIP	Border Inspection Post
	BSE	bovine spongiform encephalopathy
	BSI	British Standards Institute
	BTV	bluetongue virus
	BVD	bovine viral diarrhoea
<b>C</b>	CAP	Common Agriculture Policy
	CEM	contagious equine metritis
	CEMO	contagious equine metritis organism
	CI	Confidence Interval
	CINF	Compassion in World Farming
	CoE	Council of Europe
	CSF	classical swine fever
	CSL	Central Science Laboratory
	CTS	cattle tracing system
<b>D</b>	DARDNI	Department of Agriculture & Rural Development for Northern Ireland
	DBES	Date Based Export Scheme
	DEFRA	Department for Environment, Food and Rural Affairs
	DH	Department of Health
	DNA	Deoxyribonucleic acid
	DVM	Divisional Veterinary Manager
<b>E</b>	EAV	equine arteritis virus
	EEA	European Economic Area
	EBL	enzootic bovine leukosis
	EBLU	European bat lyssavirus
	EC	European Community
	ECUG	Export Certification User Group

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	EFRA	House of Commons, Environment, Food & Rural Affairs Committee
	EFQM	European Federation of Quality Management
	EFSA	European Food Safety Authority
	EID	Electronic Identification
	ELISA	enzyme linked immunosorbent assay
	ESNIP	European Surveillance Network for Influenza in Pigs
	EU	European Union
	EVA	equine viral arteritis
<b>F</b>	FAWC	Farm Animal Welfare Council
	FMD	foot and mouth disease
	FMDV	foot and mouth virus
	FSA	Food Standards Agency
	FVO	Field and Veterinary Office
<b>G</b>	GB	Great Britain (England, Scotland and Wales)
	GMO	genetically modified organism
<b>H</b>	HEFCE	Higher Education Funding Council for England
	HMCE	Her Majesty's Customs & Excise
	HPA	Health Protection Agency
	HVS	Head of Veterinary Service
<b>I</b>	IAH	Institute of Animal Health
	IBR	infectious bovine rhinotracheitis
	IHC	Immunohistochemistry
	IOZ	Institute of Zoology
	ISAE	International Society for Animal Ethology
	ISG	Independent Scientific Group
	ISO	International Organisation for Standardisation
<b>L</b>	LACORS	Local Authority Co-ordinating Offices on Regulatory Services
	LGC	Laboratory of the Government Chemist
	LIT	Livestock Identification Tracing
	LVI	Local Veterinary Inspector
<b>M</b>	MAVIS	Medicines Act Veterinary Information Service
	MHS	Meat Hygiene Service
	MLC	Meat & Livestock Commission
<b>N</b>	NAWAD	National Assembly for Wales Agriculture Department
	NED	National Equine Database
	NDPB	Non Departmental Public Body
	NDV	Newcastle disease virus
	NFA	National Feed Audit

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	NFU	National Farmers Union
	NIMR	National Institute of Medical Research
	NSP	National Scrapie Plan
<b>O</b>	OFT	Official Tuberculosis-free
	OIE	Office Internationale Epizooties
	OTMS	Over Thirty Months Scheme
	OVS	Official Veterinary Surgeons
<b>P</b>	PCR	polymerase chain reaction
	PDNS	porcine dermatitis nephropathy syndrome
	PDV	phocine distemper virus
	PETS	Pet Travel Scheme
	PGE	Parasitic gastro-enteritis
	PMV	paramyxovirus type 1
	PMWS	post-weaning multisystemic wasting syndrome
	PPMV-1	Pigeon paramyxovirus type 1
	PRRS	porcine reproductive and respiratory syndrome
<b>R</b>	RADAR	Rapid Analysis & Detection of Animal Risks
	RBCT	randomised badger culling trial
	RBST	Rare Breeds Survival Trust
	RCVS	Royal College of Veterinary Surgeons
	RNA	ribose nucleic acid
	RSPCA	Royal Society for the Prevention of Cruelty to Animals
	RT-PCR	reverse transcription polymerase chain reaction
<b>S</b>	SAC	Scottish Agricultural College
	SAHO	Senior Animal Health Officers
	SCOFCAH	Standing Committee on the Food Chain and Animal Health
	SEAC	Spongiform Encephalopathy Advisory Council
	SEERAD	Scottish Executive Environment and Rural Affairs Department
	SHEFC	Scottish Higher Education Funding Council
	SIV	swine influenza virus
	SRM	specific risk material
	SVS	State Veterinary Service
<b>T</b>	TAIEX	Technical Assistance Information Exchange Office
	TB	Tuberculosis
	TRACES	Trade and Control Export System
	TSE	transmissible spongiform encephalopathy



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<b>U</b>	UFAW	Universities Federation for Animal Welfare
	UK	United Kingdom (England, Scotland, Wales and Northern Ireland)
	UKZG	United Kingdom Zoonoses Group
<b>V</b>	VCJD	Variant Creutzfeldt-Jakob Disease
	VIDA	Veterinary Investigation Diagnosis Analysis Database
	VIPER	veterinary instructions, procedures and emergency routines
	VLA	Veterinary Laboratories Agency
	VMD	Veterinary Medicines Directorate
	VO	Veterinary Officer
	VRC	Veterinary Residues Committee
	VSS	Veterinary Surveillance Strategy
	VSSSC	Vaccine Scoping Study Sub-Committee
VTEC O157	verocytotoxin-producing <i>Escherichia coli</i> O157	
<b>W</b>	WAG	Welsh Assembly Government
	WEGS	Welsh Ewe Genotyping Scheme
	WNV	West Nile virus
	WSPA	World Society for the Protection of Animals
<b>X</b>	XAP	export approved

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