



National Audit Office

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS

The health of livestock and honeybees in England

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL | HC 288 Session 2008-2009 | 4 March 2009

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SUMMARY

1 The 2001 Foot and Mouth epidemic cost an estimated £8 billion and demonstrated the impact animal disease can have if it is not brought quickly under control. The most serious diseases affecting farm animals can threaten human health, harm animal welfare, disrupt international trade, and lead to adverse economic, social and environmental impacts. There are currently 34 notifiable exotic diseases, listed in Appendix 1, which, together with the risk of new diseases arising, threaten kept animals. In 2007 there were two separate outbreaks of Avian Influenza which affected poultry, an outbreak of Foot and Mouth Disease which affected cattle, sheep, goats and pigs, and an incursion of Bluetongue that infected cattle and sheep.

2 This report focuses on dealing with those notifiable endemic and exotic diseases that affect farm animals. There are some 119,000 livestock farms in England, with around five million cattle, 16 million sheep, four million pigs and 128 million poultry. Endemic diseases are those always present amongst domestic animals or wildlife and include, for example, Bovine Tuberculosis and Scrapie; exotic diseases such as Avian Influenza or Foot and Mouth Disease are not always present.

3 There are also an estimated 250,000 colonies of honeybees in England and Wales, and beekeepers have reported unusually high losses in recent years. Honeybees are affected by diseases, such as Foulbrood, and parasites, such as Varroa. Varroa is now endemic in the United Kingdom, and can make bee colonies more vulnerable to disease. There are reports that a new threat, Colony Collapse Disorder, is affecting honeybees in the United States of America, although there is currently no clear evidence to suggest that it is occurring in the United Kingdom. Large-scale honeybee losses could adversely affect the pollination of strawberries, apples, pears and other crops, which is estimated to be worth around £200 million a year. Our examination therefore includes the health of kept honeybees.

4 The Department for Environment, Food and Rural Affairs (the Department) has overall government responsibility for the development and implementation of Government policies for protecting farm animals and bees in England from notifiable diseases. It works in partnership with central and local government bodies and with farmers, beekeepers and livestock keepers. The lead delivery body for farm animals is Animal Health, an executive agency of the Department, which operates across Great Britain in conjunction with the Department, the Scottish Government and the Welsh Assembly Government. Local authorities have a statutory role and share responsibility for enforcing animal health and welfare legislation with the Department and Animal Health. The Department spent £381 million on animal health and welfare in 2007-08, of which £107 million was grant in aid to Animal Health for its work in England, Scotland and Wales. Local authorities, as a whole, spend a limited amount of money on animal health and welfare, supplemented by some £8.5 million direct funding from the Department. The National Bee Unit, which is part of the Central Science Laboratory, oversees the health of honeybees in England and Wales. It received £1.3 million funding in 2007-08 from the Department and a further £0.3 million from the Welsh Assembly Government under a separate Memorandum of Understanding.

Managing exotic diseases

5 The outbreaks of Foot and Mouth Disease and Avian Influenza in 2007 were controlled effectively in that the diseases were contained to a limited number of farms. Dr Iain Anderson carried out an independent review of the 2007 Foot and Mouth Disease outbreak, following his earlier report on the 2001 outbreak, and concluded that 'the overall response in handling the outbreak was good. Many of the lessons identified in the 2002 Report had been acted upon and performance, taken as a whole, was much improved'. The Department and Animal

Health successfully managed three concurrent disease outbreaks at the end of 2007. Nevertheless, veterinarians and industry representatives expressed concern that larger or more frequent incidents of notifiable exotic diseases would prove a more severe challenge to the Department's and Animal Health's ability to respond so effectively. The Department has not explicitly modelled the likely threat of different diseases occurring at the same time. Larger outbreaks would also divert substantial resources from work to deal with other diseases. As it was, in 2007-08, Animal Health reallocated £17 million of resources from controlling endemic diseases and preventive work in response to the demands of managing exotic disease outbreaks, such as Foot and Mouth Disease, Avian Influenza and Bluetongue. The Department is considering the extent of contingency it will need to build in to its resourcing plans in future.

Endemic pests and diseases

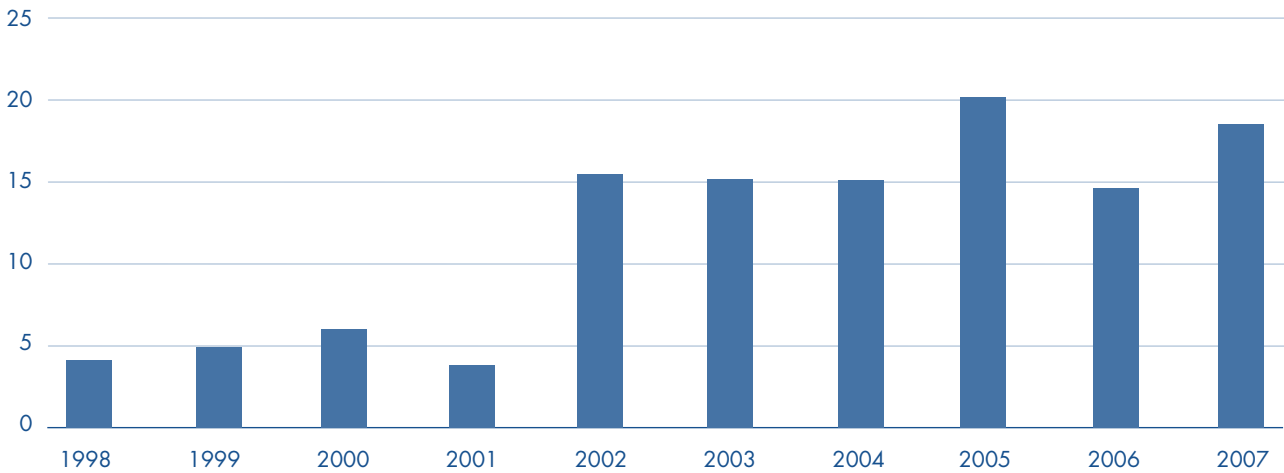
6 Salmonella in poultry, which could otherwise pose a severe threat to human health, has been successfully controlled through initiatives by the Department and industry alike. Likewise, Scrapie in sheep has been managed down through a comprehensive control programme, and confirmed cases of Bovine Spongiform Encephalopathy (BSE) in cattle in Great Britain have fallen from 36,682 in 1992 to just 33 cases in 2008.

7 There was a temporary reduction in testing for Bovine Tuberculosis during 2001, while resources were diverted to dealing with the Foot and Mouth Disease epidemic. When testing resumed there was a sharp increase in the number of cattle slaughtered because they tested positive for Bovine Tuberculosis in England (see [Figure 1 overleaf](#)). Since then Bovine Tuberculosis has continued to persist at a high level, with at least 2,500 new incidents each year rising to 3,183 in 2007. In 2007-08, controlling Bovine Tuberculosis across the whole of Great Britain absorbed £39.4 million, or 39 per cent, of Animal Health's total annual expenditure.

8 Bovine Tuberculosis is a challenging disease to control, partly because there is an established reservoir of disease among cattle and among wild animals, particularly badgers, which may come into contact with cattle. In November 2008, the Department established a Bovine Tuberculosis Eradication Group for England, to work with the industry to review existing control measures and develop plans for the eventual eradication of the disease in England. The enhanced involvement of farmers in developing measures to tackle the disease should prove beneficial. Attempts to control the spread of Varroa in honeybees have not prevented it from becoming endemic in England.

1 The number of cattle in England slaughtered after testing positive for Bovine Tuberculosis

Number of cattle slaughtered (000)



Source: National Audit Office analysis of Departmental data

Managing disease risk

9 Lead responsibility for the prevention and control of statutorily notifiable diseases affecting farm animals continues to rest with the Department working with livestock keepers and veterinarians, and there are a large number of delivery bodies involved. The Department is in the process of transferring more delivery responsibilities to Animal Health. The current division of responsibilities blurs the distinction between policy and delivery, such that Animal Health does not yet have a clear responsibility for working proactively with the farming industry to minimise the risk of notifiable disease.

10 The British Egg Industry Council's Lion Code scheme, designed to reduce the incidence of Salmonella in eggs for human consumption, shows that industry-based and government-endorsed solutions can be effective in controlling disease. Salmonella, primarily presents a risk to public health, since it rarely causes disease in poultry. Scheme members must comply with strict bio-security and management standards along with sampling requirements to prevent Salmonella to achieve Lion Code accreditation. The results of annual surveillance for zoonotic diseases (those diseases which can transfer from vertebrates to humans) which are reported to the European Commission, show that the incidence of Salmonella food poisoning is continuing to decline.

11 The National Bee Unit provided around 800 formal training events in 2008 in England, a large proportion in conjunction with local beekeeping associations, to help beekeepers recognise and manage disease. Of those beekeepers we surveyed who attended courses, 97 per cent said the training was valuable and useful. Twenty per cent of the beekeepers we surveyed, however, said they have not looked to the Department for information and advice because they receive information from elsewhere. At a local level, inspectors tend to have contact with local beekeeping associations, such as by contributing to training courses, but there appears to be limited collaboration between the Department and national beekeeping associations.

Bio-security

12 Animal Health conducts regular visits to test animals for statutorily notifiable diseases, ensures diseased animals are removed and culled, and investigates welfare complaints. Concurrently, local authorities undertake risk-based inspections to enforce animal movements and welfare legislation, and the Rural Payments Agency carries out visits to confirm farmers' compliance with statutory management standards required to claim European single farm payments. Apart from Animal Health notifying the Rural Payments Agency when Bovine Tuberculosis tests are due, there are no systematic arrangements – either nationally or locally – to harmonise these interventions and take advantage of the presence and expertise of veterinary and enforcement staff to provide a holistic package of advice and support to farmers and livestock owners.

13 The Department's 'lessons learned' review following the November 2007 outbreak of Avian Influenza in Suffolk found that bio-security risks, including keeping poultry near open water where they were at risk of contact with wild birds, coupled with working practices that increased the risk of transferring the disease between farms, may have contributed to the scale of that outbreak. The most appropriate bio-security measures can vary depending upon the animal species, the disease risk and the nature of the farm, but the Department has no agreed national bio-security standards. The Committee of Public Accounts recommended in its 2005 report that the Department introduce effective deterrents for those farmers who would otherwise fail to meet minimum standards of bio-security, but it has not done so. In the absence of agreed national standards, Animal Health does not carry out bio-security risk assessments.

14 The Committee of Public Accounts previously recommended that targeting inspections on a risk assessment basis would reduce the risks of a future disease outbreak. The frequency of surveillance testing Animal Health carries out is based on the prevalence of disease in the herd's local area. This surveillance targeting does not take into account the Agency's assessment of bio-security risk factors on a farm by farm basis completed by veterinarians in the course of their visits to carry out Bovine Tuberculosis testing. Whilst Animal Health has not shared these more subjective assessments with farmers, local veterinarians we consulted believe it could have helped them to work with farmers to put stronger preventive measures in place by focusing effort more precisely.

15 The Department has spent £2.7 million, half the amount originally allocated, on projects to help the farming industry improve farm health planning, in order to reduce the risk of disease spreading in the first place. One important project promoted the value of a documented farm health plan to underpin the other measures taken. The Department has not yet evaluated this initiative, but in 2007 it commissioned a three year research study of 120 beef herds to quantify the costs and benefits of putting in place improved bio-security measures on farms. Many good farms may have been taking similar measures already, but the farmers we interviewed raised doubts over whether this initiative had changed widespread farming practices. There are no explicit financial incentives, for example in compensation payments for removal of diseased animals, to reward high standards of biosecurity.

Compliance with compulsory inspections and testing

16 Inspections and compulsory testing are both effective in identifying disease in farm animals. Out of 16 confirmed cases of exotic disease that we examined, 12 were cases of Bluetongue that is often identified by veterinarians during compulsory pre-movement checks. When disease is confirmed it is recorded in the computerised disease control system maintained by Animal Health. We found, however, that in the absence of a confirmed outbreak and when the number of ongoing investigations into suspect disease is low, the Department relies heavily on paper-based systems to record exotic disease notifications. The Department is looking into a project to strengthen its capacity to detect emerging threats early, part of which is a review of disease investigations.

17 Animal Health had not rigorously enforced routine testing for Bovine Tuberculosis. Out of a sample of 20 farms that we examined in Gloucestershire, 11 farmers had failed to present their animals for testing on time. In each case Animal Health had not enforced compliance with the testing regime, but had placed the herd under a movement restriction, and had not recommended that the Local Authority take any legal action against the farmer. Overall, in cases where disease was confirmed, Animal Health took on average 15 days to remove infected cattle for slaughter, against its target of 20 days; but took longer than 20 days in nine of the 46 cases that we reviewed.

Honeybee parasites and diseases

18 The Department spent £1.3 million in 2007-08 on addressing risks to honeybee health in England, and £0.33 million on research into honeybee losses and the potential risk presented by new threats such as Colony Collapse Disorder. Managing such disease risks requires regular surveillance to identify the extent of notifiable disease and for evidence of emerging problems. A key risk arises from an absence of comprehensive inspection and treatment of colonies.

19 The Department's understanding of the extent of disease among honeybees is limited by the estimated 20,000 beekeepers who are not known to its bee inspectors. Four in every five identified cases of notifiable disease in 2008 were diagnosed by inspectors during either targeted or random inspections. Beekeepers themselves are less likely to notify suspected disease, and unregistered beekeepers notified only 14 out of the total 446 cases of Foulbrood in 2008.

20 One reason for low levels of notification may be that beekeepers tend to find diagnosing disease difficult. We found that inspectors are particularly valued by registered beekeepers for their ability to recognise disease. Beekeepers who are unknown to the Department are also not included in the National Bee Unit's programme of inspections, with the result that disease in their colonies is unlikely to be diagnosed. The Department is attempting to increase the proportion of beekeepers registered on BeeBase through data cleansing and efforts by inspectors to identify unknown beekeepers.

21 In January 2009 the Secretary of State announced funding of £2.3 million over the next two years to support the work of the National Bee Unit. This money will be used to identify all those who keep bees and provide advice to beekeepers on tackling pests and applying good husbandry. In addition, the Department announced £2 million funding for bee health and pollinator research over five years, as part of a bee health strategy it is developing and which will also be informed by our conclusions and recommendations.

Managing the cost of controlling disease risks

22 The Department is consulting on a scheme to share the responsibility and cost of protecting animal health with farmers. At present its financial information is, however, focused upon reporting within internal management structures and cannot be used readily to calculate accurate figures for the full cost of managing specific farm animal diseases. Establishing costs at this level of detail to inform our examination required substantial manual recalculation.

23 Animal Health recognises that there is scope for it to achieve greater operational efficiencies, and that its supporting information systems and business processes are in need of modernisation. As part of its Business Reform Programme to modernise its systems and processes, the Agency is taking steps to enhance its budgeting and financial management, particularly by apportioning cost more accurately to specific disease risks. Potential slippage within the original delivery timetable means it is unclear when the projected benefits will be achieved, with the risk that the business may not be able to secure all the projected benefits as quickly as originally planned.

Conclusion on Value for Money

24 We have assessed whether the Department, together with its agencies, has contained the spread and impact of diseases among farm animals and honeybees; whether it has used the funds provided by Parliament effectively; and whether it has balanced the costs and benefits of responding to outbreaks of disease against expenditure on preventive measures to minimise the risks of an outbreak.

25 The Department and Animal Health dealt effectively with the outbreaks of Avian Influenza, Foot and Mouth Disease and Bluetongue in 2007. Animal Health responded promptly, the number of premises affected was relatively small, particularly when compared to the Foot and Mouth Disease outbreak in 2001, and the diseases were contained. On that measure, the estimated £33 million expenditure by Animal Health in 2007-08 on dealing with exotic animal disease outbreaks has represented good value for money when compared with the economic costs that could have been incurred from these diseases becoming more widespread.

26 Endemic diseases and other domestic threats to farm animals and honeybees have been managed with less success. Progress has been made with the control of diseases such as BSE, Scrapie and Salmonella. Bovine Tuberculosis has, however, continued to spread to more herds, and is now firmly established across the South West of England. Attempts to control Varroa have not prevented it from becoming endemic in England.

27 The Department has not established specific farm bio-security standards for animal health, and it will take some years to evidence the impact of improved bio-security on disease management. The Department and its delivery bodies have not factored into the existing process for targeting inspections or preventive work the assessments of farm bio-security risks undertaken during site visits for Bovine Tuberculosis testing, or adopted similar assessments for other diseases. Furthermore, the Department does not have sufficiently robust financial or performance information on controlling diseases to assess routinely the costs and benefits of interventions, and to underpin a transparent and equitable cost-sharing scheme.

Recommendations

28 On collaborative working and co-operation between government and stakeholders to tackle disease more effectively:

a **Although there is a national control programme in place to tackle Bovine Tuberculosis, progress in hot spot areas has been hampered by a lack of local collaboration, planning and risk management.**

While recognising that there are substantial challenges in tackling the disease, the Department and the Agency should determine what more could be done with the tools that are available, including prompt testing and removal of infected animals, and action to reduce risk through bio-security and animal husbandry measures. Animal Health, with the Department's support, should pilot local consultative boards in these hot spot areas to involve local authorities, veterinarians and farmers in a more actively collaborative approach to risk assessment, enforcement and preventive action.

b **The Department's effectiveness in safeguarding honeybee health and training beekeepers to diagnose disease has been hampered by incomplete data on the location and health of honeybee colonies and ineffective working relations with some of the relevant industry associations.** The Department will need the active support of beekeepers to implement a strategy for honeybee health, and should build its relationships with beekeeping stakeholders by adopting a more consultative style. The National Bee Unit should pilot local consultation arrangements to encourage beekeepers and inspectors to target resources effectively.

29 On making preventive measures more effective:

c **In the absence of standards and adequate data on farm bio-security, the Department and Animal Health are unable to establish whether poor farm health planning contributes to the likelihood of a disease outbreak.** Animal Health should develop, in consultation with the Department and the farming industry, guidelines and standards appropriate to different livestock sectors to enable Animal Health Officers to assess the risk exposure on each farm.

d **Compensation payments to farmers do not take into account the efforts farmers make to prevent disease and apply good standards of bio-security and husbandry.** The Department should, in consultation with the farming industry, incorporate

within compensation schemes, or within the proposed cost and responsibility sharing initiative, incentives for farmers to follow good standards of bio-security and husbandry, and corresponding penalties if reasonable steps to prevent disease have not been taken. These reforms should be integrated into the Department's proposals for responsibility and cost-sharing.

e **Without a more accurate and comprehensive register of beekeepers, the practical guidance offered by the National Bee Unit is only available to limited numbers.** Before adopting mandatory measures such as compulsory registration, the National Bee Unit should build on beekeepers' receptiveness to bee inspectors' advice, and:

- adopt throughout England the approach taken in the National Bee Unit's Eastern Region, which it has started replicating in some other regions, to cleanse and update the database of registered beekeepers;
- share information with the relevant associations to improve the BeeBase records, and ask associations to encourage their members to sign up to BeeBase; and
- assess what incentives could be offered to encourage more beekeepers to register, such as better training and advice from experienced bee inspectors.

f **The National Bee Unit carries out its own research projects and engages with the wider research community, but it has not given sufficient emphasis to sharing the findings of its research more widely.** The Department has established a Research Funders' Forum with the aim of determining how limited resources can be put to best use and how responsibilities for research could be shared. To help prioritise its research projects, the Department should undertake a gap analysis in collaboration with other potential research partners, and should identify and exploit the potential for collaboration with others, such as Higher Education Institutions and industry. In deciding its research programme, the Department should balance the need for applied research that can offer practical benefits for the bee health programme with the need for strategic research to understand new and emerging risks to honeybee health. This should include projects commissioned from researchers working in fields related to bee health to draw on expertise from other areas.

30 On ensuring compulsory testing and inspections are carried out:

- g** **The effectiveness of the routine testing regime for Bovine Tuberculosis is undermined by the weakness of existing enforcement arrangements.** Animal Health should, in collaboration with local authorities, determine the levels of enforcement action available and the circumstances in which such steps should consistently be triggered.
 - h** **There is a risk that Bovine Tuberculosis has spread undetected to new farms from farms where disease is detected because of failure to carry out additional tests on neighbouring farms in good time.** Animal Health should introduce, and monitor its performance against, a target for completing testing of contiguous farms where it has determined that such tests are required.
 - i** **Beekeepers in the National Bee Unit's Northern and Southern regions are less likely to be visited by inspectors than those in the South East.** The work of inspectors is critical to detecting disease and spreading best practice among beekeepers. The Department should evaluate what capacity is needed to enable the National Bee Unit to provide a sufficient level of inspection and advice to beekeepers nationally to prevent disease occurring and reduce the risk of disease spreading.
- 31** On managing and prioritising resources:
- j** **The Department is unable to readily measure the full cost of different interventions to protect animal health.** From the start of 2009-10, the Department should track funding streams and apportion direct and indirect costs to each disease control programme regularly. Understanding the full costs of managing specific disease risks, combined with an assessment of the likelihood and impact of different diseases, would better inform the Department's budgeting.

PART ONE

Reducing the risk and impact of notifiable disease amongst farm animals and honeybees

The impact of disease

1.1 The 2001 Foot and Mouth Disease epidemic demonstrated the severe impact that a large-scale outbreak of disease among farm animals can have. Over a period of eight months, over 2,000 premises in Great Britain were officially declared to have been infected, and approximately six million animals were culled. The Department for Environment, Food and Rural Affairs calculated subsequently that dealing with the outbreak directly cost government £3 billion, while the costs to the farming industry, tourism and the wider rural economy are estimated to have totalled over £5 billion. No emergencies on such a scale have been experienced

since 2001, but outbreaks in 2007 of Avian Influenza, Foot and Mouth Disease and an incursion of Bluetongue show the continued threat that animal diseases present.

1.2 The Government's National Risk Register, published in August 2008, classifies animal disease as a 'high consequence risk' to the United Kingdom. **Box 1** illustrates the potential human, economic and environmental consequences of a major disease outbreak, which may extend much more widely than the farms and bee colonies immediately affected. The impact of a large-scale outbreak is assessed by the Government to be comparable to a severe weather event, such as coastal flooding.

BOX 1

The potential human, economic and environmental consequences of a major disease outbreak

Public health

There are a number of animal diseases, including 11 of the notifiable diseases listed in Appendix 1, which can be transmitted naturally to humans either through direct contact or by consuming infected animal products. These are known as zoonotic diseases. Salmonella is a familiar example of a zoonotic disease affecting many species of livestock, which can be spread to humans sometimes through contact with infected animals or, more often, by eating undercooked meat or eggs.

Animal welfare

Diseases, if left uncontrolled, can cause prolonged distress to animals unless outbreaks are addressed promptly and in compliance with welfare standards enforced by the Department.

Economic, social and environmental impacts

In addition to the stress and direct costs of culling diseased animals and subsequent restocking experienced by farmers immediately affected, measures such as movement restrictions impact on neighbouring farms and agricultural markets. Restrictions can also damage tourism, with wider consequences for the rural economy. Failure to prevent major disease outbreak can lead to pollution through the disposal and clean up measures required. Erosion of consumer confidence also has the potential to adversely impact on the domestic market for meat products.

Fruit, such as apples, some soft fruit and beans, rely on pollinators such as honeybees for pollination and to increase the quality and quantity of yields. Research in 2001 found that 27 per cent of the 321 endangered wild plant species in the United Kingdom were from families pollinated by bees.

International trade

Exports of animals and animal products were valued at £823 million in 2006. Loss of disease free status means that trading partners may impose import restrictions to prevent possible infection.

Source: National Audit Office

1.3 Diseases affecting honeybees have no public health consequences, but honeybees play an important role in pollinating crops, wildflowers and garden plants. At least 39 crops grown in Great Britain rely on insect pollination, including beans and apples. Recent estimates of the value to UK agriculture of pollination by honeybees, based on the methodology employed in a 2001 Department-commissioned report, are in the region of £200 million per year (see Appendix 2). The value of UK honey production fluctuates between £10 million and £35 million a year, as honey yield varies from one year to another.

The risk of disease

1.4 There are 39 different farm animal diseases, detailed in Appendix 1, that are designated by the Animal Health Act 1981 as 'notifiable', usually because of their seriousness. Of these, 12 must also be notified to the European Commission. The local Animal Health Office must be informed immediately of any suspected incidence of a notifiable disease, and if infection is confirmed a range of statutory controls and restrictions come into force.

1.5 Of the 39, some 34 notifiable diseases of farm animals, including Avian Influenza, Foot and Mouth Disease and Bluetongue, are classified as 'exotic', meaning that the disease is not normally present in the United Kingdom in kept or wild animal populations. Incidence of exotic disease is typically caused by infected animals or animal products entering the country, or by wild birds or vectors such as biting midges.

1.6 The remaining five notifiable diseases are considered to be 'endemic', such that the disease is present in kept or wild animal populations within this country. Particularly prevalent in the south west of the country, Bovine Tuberculosis is the most high profile endemic disease affecting farm animals in England. Appendix 3 outlines how policy to tackle Bovine Tuberculosis has developed since 1997. In addition to the notifiable diseases, there is a further category of 'reportable' animal diseases, of which *Salmonella* is an example; isolation of *Salmonella* organisms in the United Kingdom must be reported to the appropriate authorities.

1.7 There are four notifiable honeybee diseases and pests, two endemic and two exotic. These must be notified to the National Bee Unit if infection of a colony is suspected. Each year a proportion of honeybees in each colony die off over the winter for a number of reasons, for example failed queens, starvation or adverse

weather conditions such as prolonged cold periods. In 2007-08, the National Bee Unit's winter loss survey showed losses of 31 per cent of colonies in England and 36 per cent of colonies in Wales. The beekeepers we surveyed reported an average loss of 30 per cent of their colonies, and 17 per cent of respondents had lost more than half their colonies. Around half of respondents to our survey of beekeepers indicated that, compared to previous years, they had lost a higher proportion of their honeybee colonies. The recorded level of annual losses, which includes over-winter losses and colonies found dead during the summer inspection season, has increased between 2001 and 2008. There was a particularly large increase in recorded losses, from 4.81 per cent to 8.24 per cent, between 2005 and 2006. In 2008 inspectors found that 9.22 per cent of inspected colonies in England were dead (Figure 2). A substantially higher proportion of inspected colonies in Wales were found dead compared with England. Growing resistance of Varroa mites to chemical treatment, making Varroa more difficult to control, is likely to have contributed to the increase in losses experienced since 2001, compounded by poor summer weather and other factors. The increase in losses might also be explained by inspectors increasingly focusing inspections on colonies known to be most at risk.

Responsibilities for managing farm animal and bee health

1.8 European Directives and Regulation agreements substantially dictate the disease control measures and requirements for animal health services. The United Kingdom is also one of 172 members of the World Organisation for Animal Health (OIE)¹, which develops common recommended standards for protecting animal health against risks from some of the most serious animal diseases posed by international trade in animals and animal products, incidence of which must be reported by members. There is a complex legal framework through which disease controls are enforced in the United Kingdom, derived from EU Directives which specify methods of monitoring, diagnosis and control. The main legislation governing the health of farm animals in England is the European Communities Act 1972 and the Animal Health Act 1981 (amended in 2002). This legislation is supplemented by some 175 statutory instruments, the majority of which are made under the 1981 Act. The principal legislation governing the health of honeybees in England is the Bee Diseases and Pests Control Order 2006.

¹ Office International des Epizooties (OIE), which is commonly translated as the World Organisation for Animal Health.

1.9 The Department for Environment, Food and Rural Affairs (the Department) has overall government responsibility for implementing the legislation protecting farm animals and honeybees from serious notifiable diseases. Within the Department, policy responsibility for animal health sits with its Food and Farming Group. Several directorates oversee animal health, while bee health is managed by the Department's Plant Health Division.

1.10 Animal health is a devolved issue, but borders do not prevent the spread of infection and Great Britain constitutes a single epidemiological unit for the control of most animal diseases. In 2004, the Department and the Scottish and Welsh Devolved Administrations together published the *Animal Health and Welfare Strategy for Great Britain*. In England the strategy's delivery is led by the England Implementation Group, which includes representatives from the farming community, the veterinary profession and related industries.

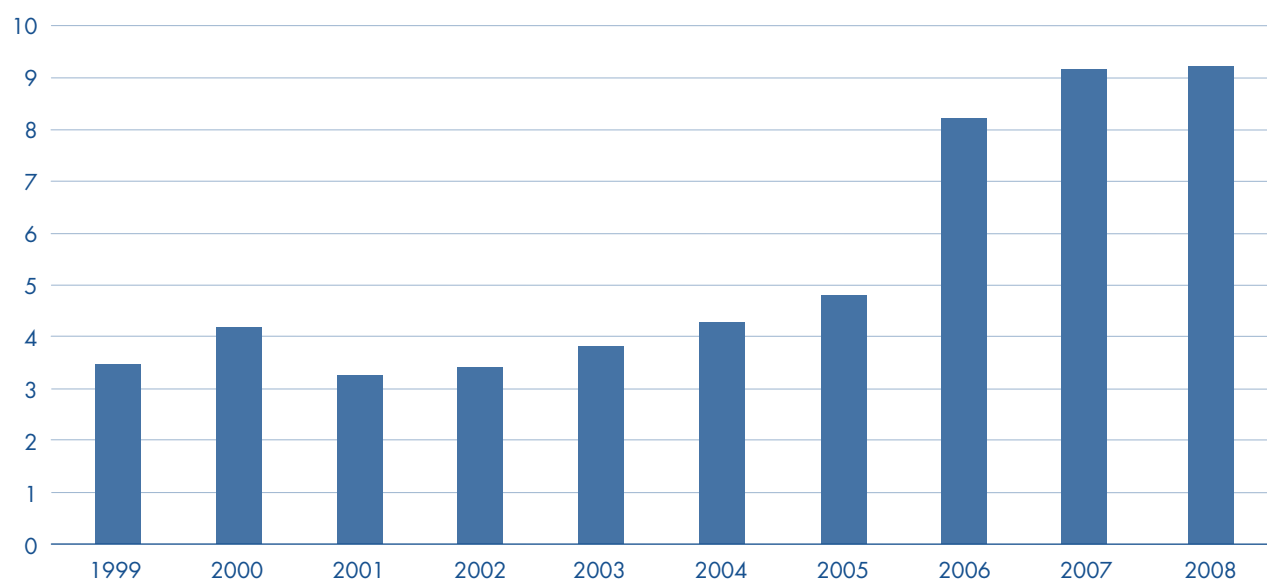
1.11 To achieve the aims and objectives of the Animal Health and Welfare Strategy, the Department is currently consulting on proposals for sharing the responsibility and cost of protecting animal health between government and farmers. Similar proposals were previously recommended by the Committee of Public Accounts in their report following the 2001 Foot and Mouth Disease outbreak and the Department has been slow in taking forward this agenda.

1.12 Animal Health (the Agency) is the Department's lead delivery body for putting policy on animal health and welfare into effect. The State Veterinary Service became an Agency in 2005 and changed its name to Animal Health in 2007 following mergers with the Dairy Hygiene and Egg Marketing Inspectorates and the Wildlife Licensing and Registration Service. Animal Health's core functions include preparing for and responding to outbreaks of exotic notifiable disease in farm animals; managing programmes to control and eradicate endemic notifiable diseases in farm animals; licensing markets, shows and animal exports; investigating welfare complaints; and advising farmers on disease prevention and animal welfare.

1.13 The Department relies on a large number of other delivery bodies to minimise the threat to animal health, which are outlined in **Figure 3 overleaf**. An Animal Health and Welfare Delivery Board brings together senior officials from the Department, the Chief Veterinary Officer and the chief executives of the main delivery bodies to consider strategic priorities, resourcing and the coordination of activity.

2 The percentage of honeybee colonies inspected in England and found to be dead

Inspected honeybee colonies found dead (Percentage)



Source: National Bee Unit

NOTE

An average of 25,000 colonies were inspected each year across England and Wales.

1.14 Animal Health operates across Great Britain through a network of 23 local divisional offices, with its headquarters in Worcester. It employs some 1,600 full time equivalent staff, of whom 290 are veterinary surgeons and a further 285 are animal health officers and inspectors. In addition, around 470 veterinary practices in England undertake work on the Agency’s behalf, mostly testing for Bovine Tuberculosis but also other work such as investigating cases of Anthrax. In total, there are some 9,000 veterinarians, known as Official Veterinarians, whom Animal Health can ask to do work on its behalf.

1.15 The lead delivery body with responsibility for protecting the health of honeybees is the Central Science Laboratory, an executive agency of the Department that provides research and other scientific services on a range of issues, with a particular focus on the environment and food chain. The Central Science Laboratory runs the National Bee Unit, which administers the Department’s bee health programme. It employs 37 inspectors in England, most of whom work seasonally for around five months each year. Through a Memorandum of Understanding with the Welsh Assembly Government, the National Bee Unit also carries out bee inspections in Wales, with nine inspectors.

3 The organisations the Department relies on to address risks to farm animals and honeybees

	Core Delivery Functions							
	Prevention Advice and Guidance	Movement Controls	Routine Inspection and Enforcement	Surveillance	Testing and Investigation	Contingency Planning	Emergency Response	Research
Department for Environment, Food and Rural Affairs	◆			◆		◆	◆	
Executive Agencies								
→ Animal Health	◆	◆	◆		◆	◆	◆	
→ Central Science Laboratory	×	×	×	×	×	×	×	◆ ×
→ Rural Payments Agency		◆						
→ Veterinary Laboratories Agency	◆			◆	◆		◆	◆
→ Veterinary Medicines Directorate						×		◆
Non-Departmental Public Bodies								
→ Natural England							◆	
Other Public Agencies								
→ Institute for Animal Health				◆	◆		◆	◆
→ Food Standards Agency (Meat Hygiene Service)					◆		◆	
Local Government								
→ Higher-Tier Local Authorities		◆	◆		◆	◆	◆	

→ Sponsored and accountable to the Department --→ Funded by the Department ◆ Responsibilities relating to farm animals × Responsibilities relating to honeybees

Source: National Audit Office

NOTE

In addition, the Environment Agency, the Health Protection Agency and the Police are involved in the response to contain an outbreak of exotic disease.

1.16 One hundred and fifty county councils, unitary authorities and metropolitan boroughs have statutory responsibility for the enforcement of animal health and welfare legislation in England. The Department and the Welsh Assembly Government, led by Animal Health, have a national framework agreement to guide how councils should conduct their enforcement activity and work with the Department and Animal Health. This agreement was produced in close consultation with the Local Authority Coordinators of Regulatory Services (LACORS) and local authorities. The Department is providing approximately £8.5 million to local authorities each year to fund extra, agreed enforcement activities.

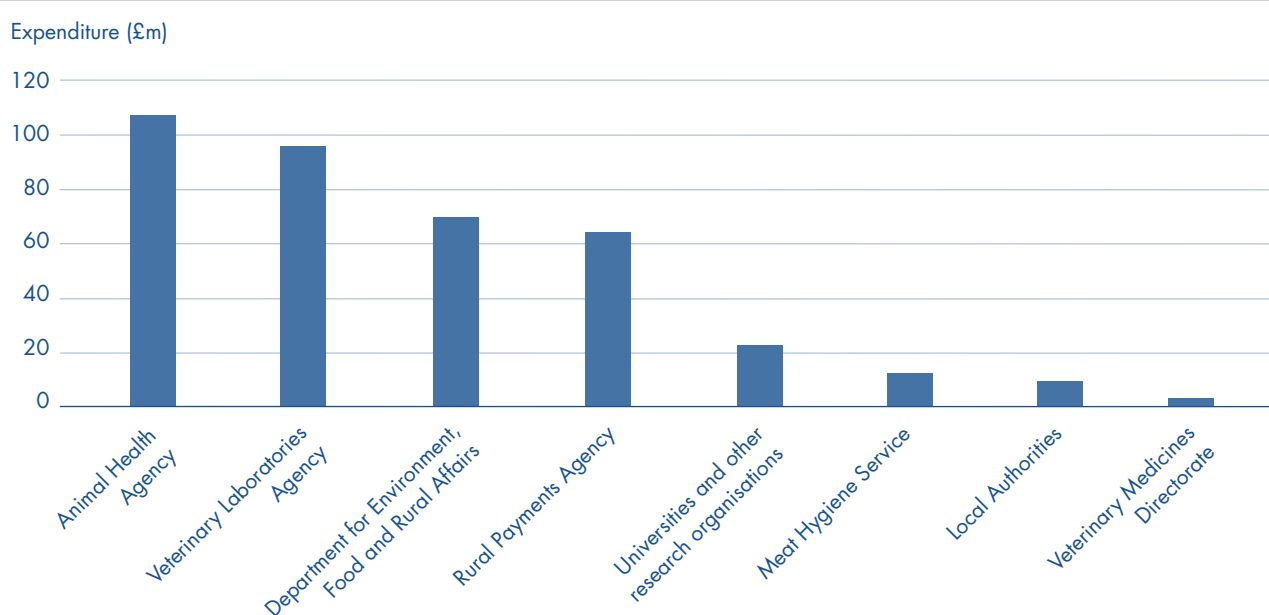
1.17 During 2009 further responsibilities covering the administration of disease control programmes, the development of codes of practice for bio-security and animal husbandry, and the maintenance of exotic disease information systems will transfer to the Agency. The Department's evolutionary approach to building up the Agency's responsibilities has mitigated the risk of overload, but it has also caused uncertainty amongst delivery bodies and stakeholders as to who has lead responsibility for particular functions. The delivery bodies we consulted during this study considered that the Agency now needs to establish its authority in overseeing and coordinating the work of different bodies to protect and improve animal health.

The cost of protecting the health of farm animals and honeybees

1.18 The Department spent £381 million on animal health and welfare in 2007-08, excluding £26 million spent on capital projects and £25 million of expenditure reimbursed by the European Union. This expenditure included £106.8 million grant in aid to the Animal Health Agency for its work in Scotland, Wales and England.² As well as the Department's own costs, paying for programme management, veterinary science core teams and compensation payments to farmers, the Department supports agencies such as Animal Health and the Veterinary Laboratories Agency, and the work undertaken by other partners including local authorities (**Figure 4**).

1.19 The expenditure in 2007-08 represents an eight per cent decrease compared to 2005-06, when stated at 2007-08 prices. This masks some wider variations in overall costs, as priorities move. For example, funding for the Older Cattle Disposal Scheme, administered by the Rural Payments Agency, increased by £16 million (80 per cent) in the last three years but, as this scheme is now closing, expenditure will fall once again.

4 The Department's expenditure on Animal Health and Welfare (excluding capital) in 2007-08



Source: National Audit Office analysis of Departmental data

² Total expenditure reported in the Agency's published annual accounts for 2007-08 is £11.7 million higher, mainly because of inclusion of non-cash items and notional charges.

1.20 Spending to detect and contain exotic diseases has fluctuated over the past three years as major outbreaks are not readily predictable. The costs of dealing with these outbreaks across Great Britain continue to be met by the Treasury's Contingency Reserve. Following the 2004 Comprehensive Spending Review it was agreed that the Department would fund the first £10 million of any outbreak and, in practice, since 2005 the Department has funded the costs of outbreaks from its own resources.

1.21 The Department's annual expenditure on tackling endemic diseases has decreased by some £68 million since 2005-06 (at 2007-08 prices). In 2007-08 spending on Bovine Tuberculosis was £77 million, or 34 per cent of the Department's total spending on endemic diseases. Other major areas of expenditure on endemic disease were £54 million spent on Transmissible Spongiform Encephalopathy (including BSE and Scrapie), and the Older Cattle Disposal Scheme, costing £36 million.

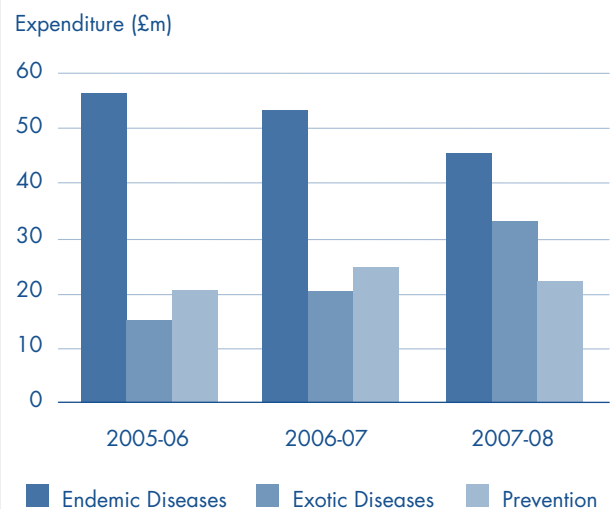
1.22 Although disease prevention is central to the Animal Health and Welfare Strategy, spending dedicated to this work has remained relatively static, falling by £1 million to £81 million in the last three years. For the purpose of our examination, we have defined preventive work as covering measures to promote on-farm bio-security and welfare, research and development and general surveillance costs. There are also control measures specific to particular disease risks which are applied through legislation, for example controls over animal imports and statutory movement restrictions, or through other means such as international disease monitoring. We have attributed these costs to either exotic or endemic diseases as appropriate, in line with our analysis of the Animal Health Agency's costs.

1.23 In 2007-08 the Department spent a further £1.3 million on its bee inspection programme in England. It also spent around £0.2 million on research into honeybee health at the Central Science Laboratory, and £0.13 million on other research in the Department relating to honeybees. In 2008-09 it provided the Central Science Laboratory with an additional £90,000 to research unexplained colony losses. The National Bee Unit also carries out inspections in Wales, and the Welsh Assembly Government provided the Unit with £0.3 million for this work in 2007-08, and in 2008-09 provided an additional £30,000 for research into unexplained colony losses. Honeybee health is the separate responsibility in Scotland of the Scottish Government, and in Northern Ireland of the Department for Agriculture and Rural Development of the Northern Ireland Executive.

1.24 The Department classifies expenditure on animal health and welfare by staff costs, overheads, and programme/capital costs and analyses programme costs by initiative. Much of the reporting structure is designed to mirror the Department's management structure. The Department does not routinely analyse its costs on a different objective basis, such as the cost of different diseases or disease types, to pull out and monitor patterns and trends. Such analysis currently requires considerable manual recalculation.

1.25 The proportion of the Animal Health Agency's budget spent on exotic diseases increased markedly between 2005-06 and 2007-08, whereas expenditure on endemic diseases fell by 19 per cent (**Figure 5**). This pattern was driven by the ending of the national Brucellosis testing programme in April 2007, and by the demands of responding to the series of exotic disease outbreaks that were experienced in 2007.

5 Animal Health expenditure on endemic disease, exotic disease and preventive work between 2005-06 and 2007-08



Source: National Audit Office analysis of Animal Health data

NOTES

1 Figures are based on outturn expenditure recorded in the Agency's year end management accounts. We have used these figures because they allow analysis by disease risk on a similar basis for the Agency and for the Department. Total expenditure reported in the Agency's published annual accounts is higher (a difference of £11.7 million in 2007-08, for example) mainly because of inclusion of non-cash items and notional charges.

2 Figures for 2007-08 exclude new functions incorporated as part of the merger to create Animal Health, such as egg marketing inspection, so as to make figures comparable with earlier years.

3 Figures quoted are at 2007-08 prices.

1.26 In 2005, Animal Health (then the State Veterinary Service) initiated a Business Reform Programme to modernise its information systems and business processes. The Agency regards the programme as critical to its future capabilities, and expects it to generate efficiency savings of 15 per cent per annum by 2010. Since its launch, part of the Business Reform Programme has experienced a six month slippage against its original timetable and, although overall spending has remained within the total budget, the likely outturn is currently unclear pending production of a revised business case. The programme is being developed in a series of modules with the aim of reducing risk and to deliver incremental benefits. Taking account of learning from the implementation of the programme's first operational module in 2008, the Agency is revising its approach to subsequent modules. It is bringing forward work to support Bovine Tuberculosis and is designing systems to enable processes and supporting data requirements to be streamlined and subject to continuous improvement. The Agency expects to have completed a revised business case covering the remaining modules, and will provide an updated assessment of projected benefits by the end of the 2008-09 financial year.

1.27 Concurrently, the Agency has restructured some of its corporate functions, and introduced measures to coordinate more strongly its network of 23 divisional offices. The Business Reform Programme has enabled the Agency to centralise some specialist work in transaction centres with appropriate veterinary and administrative resource. The Carlisle divisional office, for example, has become the dedicated centre for processing all export certifications for the whole of Great Britain.

The scope of this report

1.28 Previous examinations by the National Audit Office and the Committee of Public Accounts have considered the Department's response to the 2001 Foot and Mouth Disease outbreak (see Appendix 4). The Committee of Public Accounts' report in 2005 into the lessons learnt from the 2001 Foot and Mouth Disease outbreak concluded that good progress has been made, but that further work was needed to clarify the roles and responsibilities of central and local government, improve information technology, reflect cost benefit analysis in disease control strategies, and share the cost of controlling disease outbreaks more equitably between the taxpayer and industry.

1.29 This report focuses on how the Department and Animal Health respond to exotic notifiable disease outbreaks in farm animals (Part 2), and programmes to control and eradicate endemic notifiable diseases in farm animals (Part 3). We also investigated the effectiveness of measures to safeguard the health of honeybees (Part 4), and considered the steps that have been taken to prevent and minimise the risk of disease in honeybees and farm animals (Part 5). As far as is possible, the report focuses on the Department's expenditure on animal and bee health in England, but the Animal Health Agency delivers animal health policy across Great Britain, and some data on incidence of disease is only collected on a Great Britain basis. The principal methods we used are described in detail at Appendix 5.

PART TWO

Responding to outbreaks of notifiable exotic disease in farm animals

2.1 Exotic diseases are those which are not normally present on farm or in wild animal populations in Great Britain. There are 34 exotic animal diseases that must be notified to the authorities if infection is suspected, including:

- **Foot and Mouth Disease** – an extremely infectious disease that affects all cloven-footed animals, such as cattle, sheep, pigs and deer. It rarely causes death, but causes considerable suffering to animals and substantial loss of production over many weeks.
- **Bluetongue** – a potentially fatal disease of ruminants, which is spread between animals by a biting midge. Whereas cattle act as carriers, sometimes showing no clinical signs of disease, sheep may be severely affected.
- **Avian Influenza** – a highly infectious disease affecting many species of birds, causing lost egg production or even sudden death, and which may also pose a threat to people and other animals.

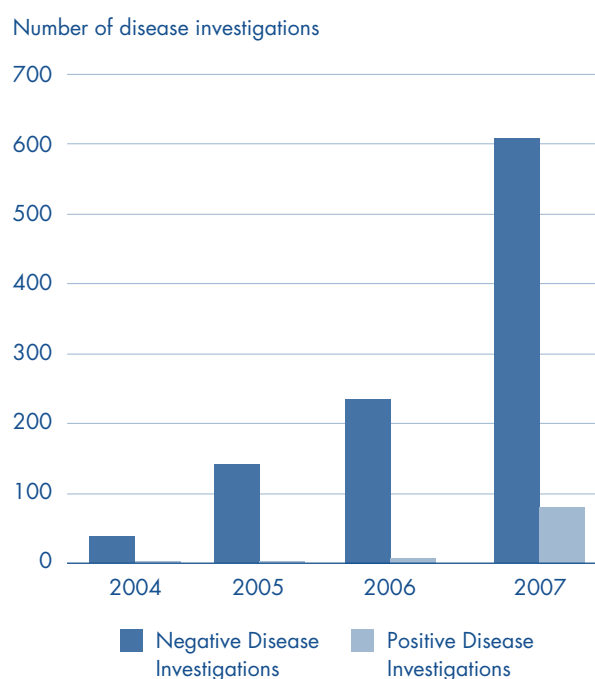
Further details of the 34 exotic notifiable diseases are found in Appendix 1.

Surveillance and detection

2.2 Anyone suspecting incidence of a notifiable animal disease has a statutory responsibility to report their suspicions to the police or to Animal Health for further investigation. There were 689 notifications of suspected exotic disease in 2007, from which disease was confirmed in 81, or 12 per cent of cases (**Figure 6**). Much of the increase in suspected and confirmed cases between 2006 and 2007 was due to Bluetongue (299 notifications in 2007, compared to only nine in 2006), and Foot and Mouth Disease (231 notifications in 2007 compared to only ten in 2006).

2.3 We found good awareness of the urgency and procedures for reporting suspicions amongst the livestock owners, commercial producers and private veterinarians we interviewed during our case study visits. The majority of disease notifications come from general suspicions raised by farmers and private veterinarians. Our review of a sample of 100 reported suspicions investigated between July 2007 and May 2008 confirmed that the original

6 The number of exotic disease investigations undertaken by Animal Health leading to confirmation of disease, and those found to be negative, in Great Britain between 2004 and 2007



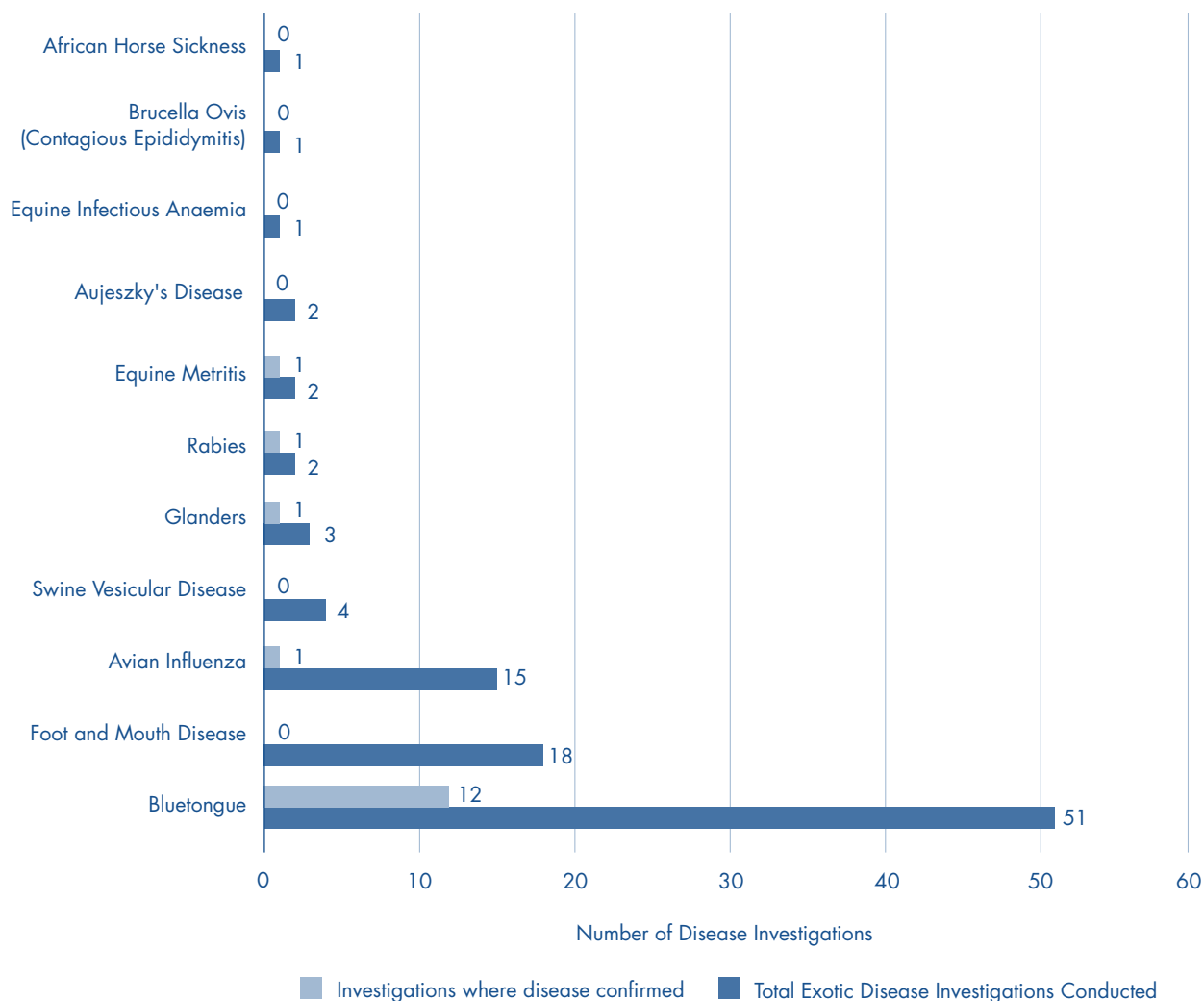
Source: National Audit Office analysis of Departmental data

concern was raised by farmers or their private veterinarian in 79 cases. In this sample, with a high prevalence of Bluetongue cases, confirmed cases were more likely to be identified by scheduled veterinary testing, for example as part of compulsory pre-movement checks. As **Figure 7** shows, 16 out of the 100 cases we examined were confirmed; of these 12 confirmed cases were identified by either interval or pre-movement testing of cattle.

2.4 For the highest risk diseases which can spread quickly, such as Foot and Mouth Disease, Swine Fever and Avian Influenza, or where there is a risk of transmission to people, such as Rabies, Animal Health aims to conduct an initial assessment, and where feasible an initial inspection, as quickly as possible (typically

within two hours of notification). Animal Health does not have formal targets for response times, but the aim to investigate within two hours is a good rule of thumb that reflects the degree of risk posed by different diseases. For diseases where the risk of transmission or the human health consequences are lower, the need for urgency is less. Animal Health aims to investigate suspected Bluetongue, for example, within 24 hours and Equine Viral Arteritis within 48 hours. On the basis of our review of 100 cases, 34 were notifications of suspected high risk diseases and, of those, 19 cases were investigated within two hours. For Foot and Mouth Disease and Swine Fever the maximum response time was two and a half hours (median one hour 35 minutes) and one hour 40 minutes (median one hour 15 minutes), respectively.

7 Exotic disease notifications for a sample of 100 investigations between July 2007 and May 2008



Source: National Audit Office

2.5 The system for processing reported disease notifications relies on the Veterinarian faxing or e-mailing the veterinary investigation report to the Department in London. The Department manually enters key details of disease notifications on a spreadsheet, but the records of disease notifications kept by the Department are substantially paper-based. It is therefore difficult for the Department to track and analyse the distribution of suspect cases reported to it, particularly in the event of any substantial volume of notifications at once. However, once individual cases of exotic disease are confirmed, Animal Health enters details of these cases on to its Disease Control System database, allowing subsequent analysis and management information reporting of confirmed cases.

2.6 As well as relying on notification of suspected disease, the Department conducts surveillance to detect early evidence of disease that may cause few, if any, clinical signs. For example, Animal Health conducts a survey of approximately 350 poultry premises each year to detect the presence of low pathogenic strains of Avian Influenza that could mutate into more serious strains. The sample, which started in 2003, is selected from the National Poultry Register, which anyone keeping a flock of 50 or more birds in the United Kingdom is required to join. No active infections of exotic disease have been found in the flocks that were sampled as part of the National Poultry Survey over the last five years. The Department carries out similar surveillance to detect the presence, and prevalence, of other diseases including Enzootic Bovine Leukosis, Aujeszky's Disease and Brucellosis.

Responding to disease outbreaks

2.7 The Department's National Contingency Plan for Exotic Animal Diseases details how the Department, Animal Health and operational partners should respond in the event of a confirmed outbreak or incident in England. The plan details the national alert system; the roles and responsibilities of Ministers, senior officials and operational partners; and the specific response procedures that are followed. The Contingency Plan is reviewed and laid before Parliament annually. There are similar plans in Scotland, Wales and Northern Ireland.

2.8 Prompt reporting and initial action when a disease has been confirmed can significantly reduce the risk of it spreading. Where disease is suspected, an investigating Animal Health Veterinary Officer imposes immediate temporary movement restrictions on the premises and

sends samples for laboratory analysis. On confirmation of disease, the Agency establishes a Local Disease Control Centre to coordinate local measures for control and eradication. In parallel, a National Disease Control Centre, headed by the Chief Veterinary Officer will be established to oversee the management of the response at a national level.

2.9 As part of our case study of Avian Influenza, we examined the timeliness and effectiveness of the response by the Agency and its local operational partners to the outbreak of Highly Pathogenic H5N1 Avian Influenza at a commercial poultry farm in Suffolk. As **Box 2** shows, a duty Veterinary Officer and Senior Animal Health Officer arrived on site within an hour and a quarter of the reports of a suspected outbreak. Samples were sent to the Veterinary Laboratories Agency within six hours and test results were available by the afternoon of the following day. Testing of all captive birds within the Protection Zone established around the infected premises began within 48 hours of confirmation of the disease. The commercial poultry producers, farmers, livestock owners and industry representatives we interviewed reported that they thought the local response to the outbreak was prompt and thorough. In particular, the rapid imposition of movement restrictions and active surveillance reassured neighbouring premises and farms that the risk of the disease spreading was being mitigated effectively.

2.10 Animal Health effectively contained the outbreak to the local area, and by 19 December the disease had been eradicated and movement restrictions lifted. The outbreak did raise questions, however, about the capacity of the Department and the Agency to deal with larger outbreaks. For this outbreak, the Agency assessed that it would need only ten of its 50 mobile gassing facilities to handle the volume of birds satisfactorily; but the equipment might not have coped with the number of birds involved in larger scale outbreaks. The Agency has since agreed contracts enabling it to carry out large scale whole shed gassing. Local Divisional Veterinary Managers and field staff also expressed concern that securing sufficient staff to deal with more than three exotic disease outbreaks simultaneously would severely challenge Animal Health. We found that this operational threat to the Agency is no longer explicitly assessed within Animal Health's risk management and contingency plans, though it has been noted in the Agency's Annual Report and the Agency has been working to improve the scalability of its plans and response capabilities.

BOX 2**A timeline of the response to the November 2007 outbreak of Avian Influenza in Suffolk****Day 1 – Sunday 11 November**

1.30pm	Private veterinarian inspects birds for disease
4.00pm	Private veterinarian notifies Animal Health of suspicions of disease
5.15pm	Animal Health field staff conduct preliminary inspection of premises
5.45pm	Animal Health field staff alert the Department
6.00pm	The premises are placed under restriction
10.00pm	Samples taken from premises arrive at the Veterinary Laboratories Agency for investigation

Day 2 – Monday 12 November

9.00am	Animal Health field staff conduct a follow-up inspection of the premises
11.00pm	Local Disease Control Centre established in Bury St Edmunds
12.30pm	Acting Chief Veterinary Officer confirms preliminary positive result of the presence of Avian Influenza and orders culling
5.30pm	Temporary control zone around the infected premises is declared
10.00pm	Wider control zones and a national ban on bird gatherings are announced

Day 3 – Tuesday 13 November

1.00pm	Culling birds at the infected premises commences
3.30pm	The Secretary of State makes a statement in the House of Commons
4.30pm	Protection, surveillance and restricted zones officially declared
5.15pm	The OIE is notified that there has been an outbreak of Avian Influenza

Day 4 – Wednesday 14 November

12.00pm	Precautionary culling of birds at four connected premises commences
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Day 5 – Thursday 15 November

2.00pm	Culling of birds completed at the infected premises
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Day 8 – Sunday 18 November

5.00pm	Culling of birds completed at all connected premises
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Day 9 – Monday 19 November

2.00pm	Avian Influenza is confirmed at one of the connected premises
2.30pm	Protection and surveillance zones around the second infected premises are declared

Day 11 – Wednesday 21 November

Culling of birds at a fifth connected premises commences

Day 15 – Sunday 25 November

Culling of birds at fifth connected premises completed.

Day 28 – Saturday 8 December

Protection zone around the first infected premises is lifted

Day 30 – Monday 10 December

Protection zone around second infected premises is lifted

Day 39 – Wednesday 19 December

All surveillance and restriction zones lifted

Source: National Audit Office analysis of Animal Health data

2.11 Dealing with the outbreak cost the Agency £2.4 million and the Department a further £1.1 million. The Agency's expenditure included staff costs of £1.5 million (including salaries, overtime, accommodation and subsistence), as approximately 60 additional veterinary, technical and administrative Agency staff joined the 42 divisional staff already based in Bury St Edmunds to deal with the outbreak. Other costs included £0.6 million on-site work such as disease eradication; and £0.3 million for the establishment and operation of the Local Disease Control Centre. The Department paid out approximately £1 million in compensation for culling healthy birds to prevent the spread of disease. The compensation payments were based on existing valuation tables set by the Department, and the valuations were subsequently increased by £122,000 following validation by poultry experts from ADAS UK Ltd.

2.12 The Department spent £75 million on control of exotic diseases in 2007-08 of which £51 million was in response to disease outbreaks. Animal Health spent £33 million, or 33 per cent of its 2007-08 budget on exotic disease, compared to just £15 million (16 per cent) in 2005-06. The Agency's spending on exotic diseases increased by 63 per cent between 2006-07 and 2007-08 as shown in **Figure 8**, reflecting the cost of responses to confirmed outbreaks of disease.

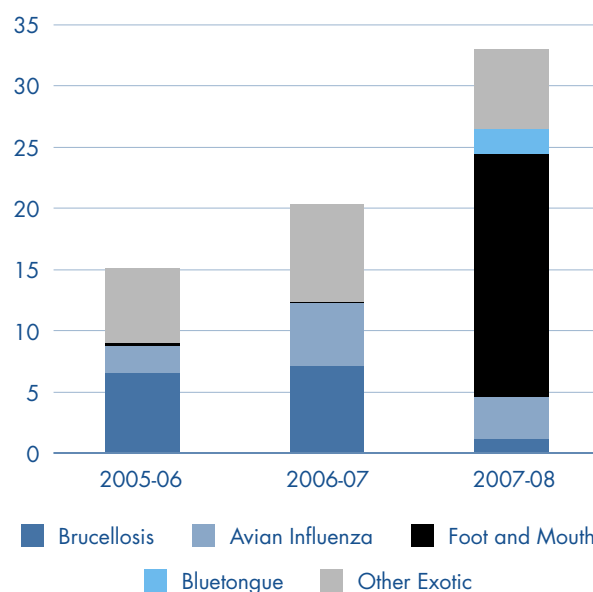
Joint working to deal with disease outbreaks

2.13 Animal Health calls upon local operational partners to help control and eradicate a disease outbreak. Local authorities oversee the enforcement of animal health and welfare legislation; the Environment Agency provides advice on the safe disposal of culled animals and other waste materials and the management of disinfected washwater; and the Health Protection Agency provides antiviral prophylaxis and seasonal vaccine to field staff and others to minimise the risk to public health.

2.14 We reported in 2005 that, whilst the Department's contingency arrangements for Foot and Mouth Disease compared favourably with those of other EU Member States, its planning focused predominately on central government's functions and failed to specify the roles and responsibilities of other regional and local public bodies, such as local authorities. Dr Iain Anderson carried out an independent review of the 2007 Foot and Mouth Disease outbreak³, following his earlier report on the 2001 outbreak⁴, and concluded that 'the overall response in handling the outbreak was good. Many of the lessons identified in the 2002 Report had been acted upon and performance, taken as a whole, was much improved.' Animal Health now has dedicated Readiness and Resilience Managers in each Divisional Office, who are responsible for developing, testing and managing local contingency plans.

8 Animal Health's expenditure on exotic diseases between 2005-06 and 2007-08

Animal Health Expenditure (£m)



Source: National Audit Office analysis of Animal Health data

NOTE

Figures quoted are at 2007-08 prices.

³ *Foot and Mouth Disease 2007: A Review and Lessons Learned*, Dr Iain Anderson CBE, Ordered by the House of Commons and printed 11 March 2008.

⁴ *Foot and Mouth Disease 2001: Lessons to be Learned Inquiry*, Dr Iain Anderson CBE, Ordered by the House of Commons and printed on 22 July 2002.

2.15 EU Directive 2003/85 requires Member States to test their Foot and Mouth Disease contingency plans twice over a five-year period, although a derogation allows one of these real-time exercises to be for another major epidemic disease affecting terrestrial animals or where there has been an actual outbreak of disease. Since 2004, the Department and the Agency, in partnership with the Devolved Administrations for Scotland and Wales, have undertaken three national exercises – to test responses to outbreaks of Foot and Mouth Disease, Avian Influenza and Classical Swine Fever. These simulations found that effective communication between operational partners and stakeholders was critical, and that there remained scope for clarifying roles, responsibilities and procedures. The lessons learnt have fed into the Department's development of the exotic disease contingency plan and the Agency's operational guidance.

2.16 In our case study of the November 2007 outbreak of Avian Influenza, we found that the Local Disease Control Centre successfully coordinated and controlled the activities of operational partners. Regular '*bird table*' meetings kept each organisation informed and helped to delineate roles and responsibilities. Furthermore, the inclusion of representatives from the British Poultry Council, the British Egg Industry Council and the National Farmers Union enabled the Agency and operational partners to draw upon their expert advice and to help secure the support of the local farming community.

2.17 In parallel to the Local and National Disease Control Centres, the Chair of the Local Resilience Forum established a Strategic Coordination Group (SCG) to manage the wider consequences of the disease outbreak under the Civil Contingencies Act 2004. This Group brought together 'Category 1 responders', such as Suffolk Police, Suffolk County Council and the Government Office for the East of England. The three Centres managed the wider consequences of the outbreak, but we found that there had been some confusion over their respective roles and responsibilities. In particular, neither the Department nor Animal Health are classified as Category 1 responders and therefore did not attend the Strategic Coordination Group. Animal Health has since worked with the Government Office, Suffolk Police and Cabinet Office to review working arrangements and the Department's contingency plan has been revised to reflect and recognise the role of other delivery organisations.

PART THREE

Managing endemic notifiable disease in farm animals

3.1 Endemic diseases are always present among native farm animals or in wildlife populations. Any suspicion that a farm animal is affected by an endemic disease that is classified as notifiable must be reported to Animal Health for investigation.

3.2 There are currently five such diseases affecting farm animals: Anthrax, Bovine Spongiform Encephalopathy (BSE), Bovine Tuberculosis, Paramyxovirus of pigeons, and Scrapie. There is also one reportable endemic disease, Salmonella, the detection of which in laboratory samples must be reported to the Veterinary Laboratories Agency. We looked at three case study diseases to examine how the Department and Animal Health have responded to three different risk profiles:

- **Bovine Tuberculosis** – The disease is caused by the bacterium *Mycobacterium bovis*, which can also infect badgers, deer, goats and other mammals, including humans. The disease can be transmitted to people through the consumption of untreated infected dairy products or by direct contact with infected animals, although in recent years such transmission has been rare.
- **Scrapie** – This is an incurable brain disease affecting sheep and goats. It is one of a group of Transmissible Spongiform Encephalopathies (TSEs), which also includes BSE. The disease was recorded in sheep as early as 1732, and was made notifiable in 1993.⁵ There is no evidence that Scrapie is transmissible to humans and although this possibility cannot be excluded, it is considered very unlikely.
- **Salmonella** – Salmonella describes a group of intestinal bacteria that can be transmitted by many animal species, including poultry through their eggs. There are approximately 2,500 different strains of Salmonella and some variants, such as *Salmonella*

Typhimurium and *Salmonella Enteritidis* very rarely cause clinical disease in poultry but primarily threaten public health. There are, on average, 15,000 confirmed cases of Salmonella in humans each year, and around 70 deaths.

Surveillance and detection

3.3 The Department's response to endemic diseases is set down in national strategies and control plans specific to each disease.

- The National Scrapie Plan, launched in 2001, comprised controls on flocks of sheep and goat herds that have cases of classical Scrapie, a programme of genotyping sheep to breed out from the national flock those most likely to be genetically susceptible to it, and an archive of sheep semen to maintain possibly valuable genetic traits which might inadvertently be reduced by the breeding programme. Scrapie is monitored by testing of carcasses at abattoirs and of fallen stock, and through investigations of suspected disease notifications.
- In 2005, the Department published its Strategic Framework for the Sustainable Control of Bovine Tuberculosis in Great Britain, which focused on a cattle testing and surveillance programme to curtail the spread of the disease, safeguard animal welfare and protect public health. Depending on the prevalence of the disease in the area, herds are subject to testing every one, two, three or four years: consistent with European legislation (Directive 64/432). Most periodic testing is conducted by private veterinarians on the Agency's behalf. It is supported by a requirement for pre-movement testing from high risk herds, which farmers must arrange and pay for independently.

⁵ Scrapie was made a notifiable disease by the Specified Diseases (Notification and Slaughter) Order 1992 [Statutory Instrument 1992 No. 3159] as required by Council Directive 91/68/EEC on animal health conditions governing intra-Community trade in ovine and caprine animals.

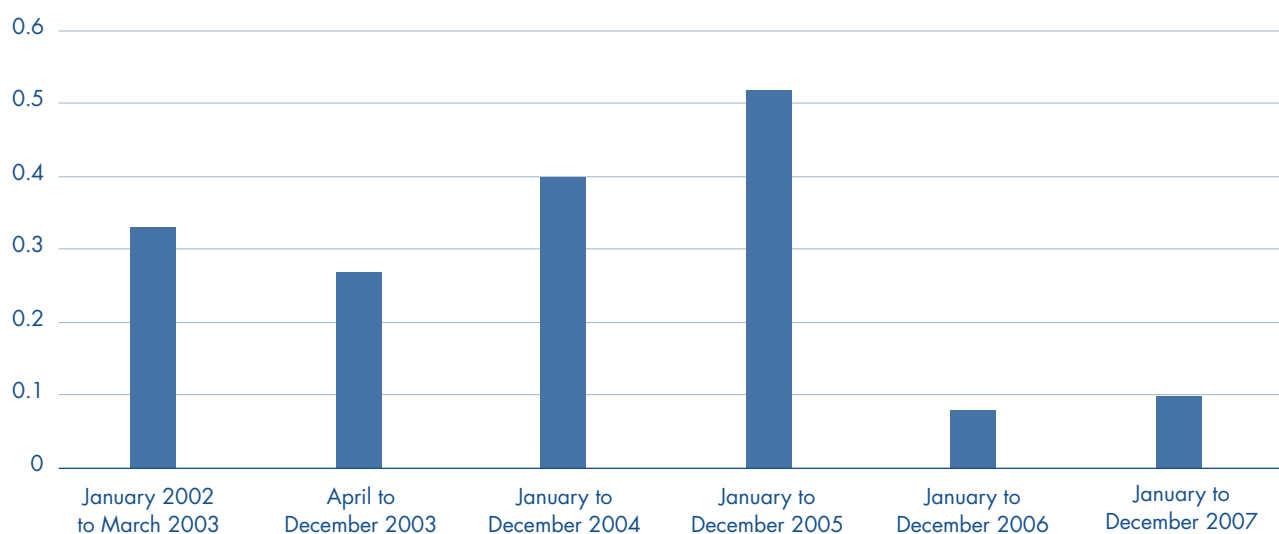
- There are a series of national control plans, developed in partnership with the Food Standards Agency, to combat Salmonella in specified animal species at the primary production level. These programmes, which are at various stages of planning and implementation, have been developed according to EU legislation. According to the requirements of the Salmonella National Control Programme in breeding chickens, each breeding flock must be tested every two weeks at the initiative of the producer and also at least three times during the production cycle under the control of the Competent Authority (i.e. official tests carried out by Agency staff). The Salmonella National Control Programme in laying flocks also requires operator and official testing to be carried out at specified times during the production cycle. Salmonella Control Programmes will also be implemented in the broiler chicken, turkey and pig industry sectors.
- New endemic diseases that become notifiable, such as BSE, are identified by scanning surveillance of livestock populations, as described in the UK Veterinary Surveillance Strategy published in 2003. The strategy has been progressively enhanced. A current major initiative (the RADAR project) is designed to capture and collate data about the size and distribution of livestock populations, and identify key risk factors for disease introduction or spread.

3.4 Action to detect and deal with Salmonella and Scrapie has been more successful than that to control Bovine Tuberculosis. Since the launch of the National Scrapie Plan in 2001, 2.9 million sheep have been tested and genotyped. Sampling peaked between 2004 and 2006 and has since tailed off. The control measures taken through the National Scrapie Plan (including the compulsory Scrapie Flocks Scheme introduced in 2004) have been successful in reducing the prevalence of disease in the national flock as shown in **Figure 9**.

3.5 The volume of tests for Bovine Tuberculosis conducted each year in England has increased steadily between 1997 and 2007, when 4.3 million cattle were tested (**Figure 10 overleaf**). The drop in testing in 2001 was due to resources being diverted to respond to the Foot and Mouth Disease epidemic. There was subsequently a significant increase in the annual average number of cattle found to be infected with the disease and slaughtered as reactors. It rose from an average of 4,720 cases each year between 1998 and 2001, to an average of 16,500 cases between 2002 and 2007. The percentage of cattle testing positive has increased from 0.21 per cent to 0.43 per cent between 1998 and 2007 and, because positive tests lead to follow up tests of herds, escalating volumes of testing are one indicator of increased incidence of disease.

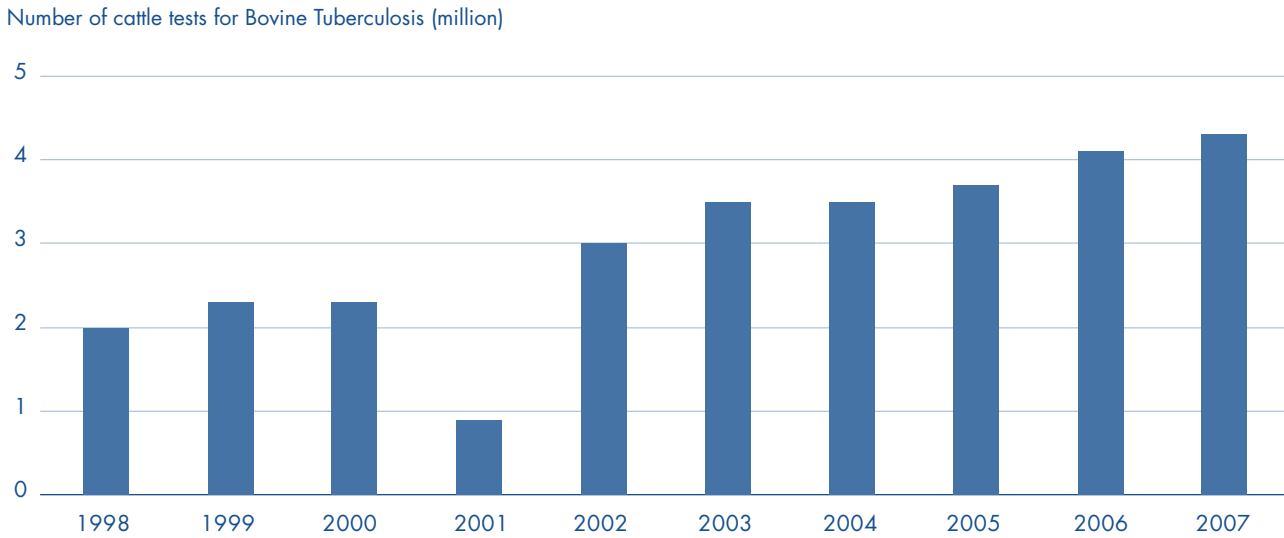
9 The estimated prevalence of infection of classical Scrapie in the British sheep population, 2002-07 based on the abattoir survey

Estimated prevalence (Percentage)



Source: National Audit Office analysis of Departmental data

10 The number of cattle tests conducted each year for Bovine Tuberculosis in England



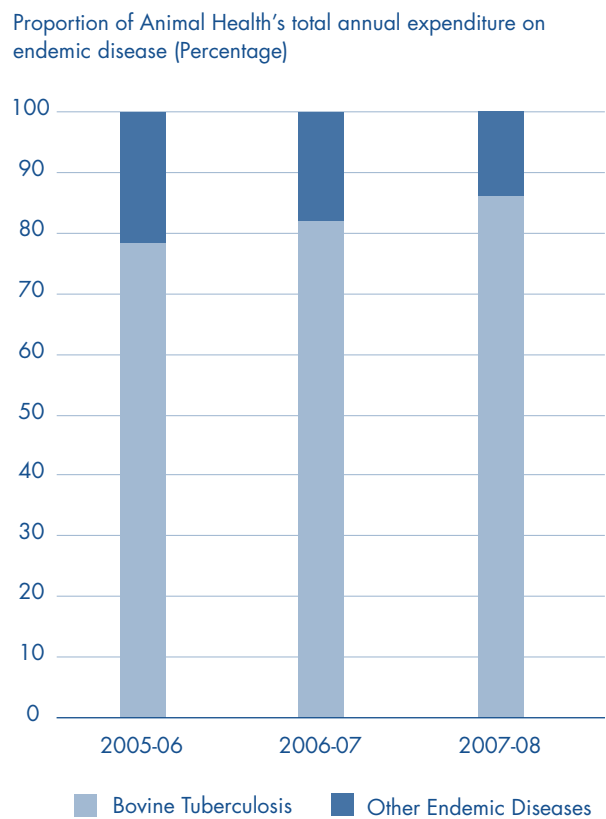
Source: National Audit Office analysis of Departmental data

3.6 The Department spent £225 million in 2007-08 on managing endemic diseases. Of this £77 million related to Bovine Tuberculosis, including £16.9 million to compensate farmers in England for diseased cattle that were culled compulsorily. £18.9 million related to Scrapie and £7.2 million to Salmonella. Animal Health spent £45.7 million on managing endemic diseases across Great Britain: £39.3 million tackling Bovine Tuberculosis, £3.9 million on Scrapie, and a further £0.7 million on Salmonella.

3.7 In 2007-08, 86 per cent of Animal Health’s expenditure on managing endemic disease was absorbed by measures to control Bovine Tuberculosis, compared with 78 per cent in 2005-06 (Figure 11). This upward trend has been driven by the increasing number of tests being conducted on live cattle to detect the disease at an early stage and by declining expenditure on BSE and Scrapie as the prevalence of these diseases falls.

3.8 The difficulties in dealing with Bovine Tuberculosis have been compounded by unwillingness amongst some livestock owners to comply fully with the compulsory testing regime. Our case review of incidents at 20 farms in Gloucestershire found that in 11 cases farmers failed to present their cattle for either routine or follow up testing one or more times between August 2006 and July 2008 (Figure 12). Animal Health confirmed that there was a similar pattern across large parts of England. In contrast, all of the 18 poultry premises in Essex that we included in our case review of Salmonella complied fully with the testing regime.

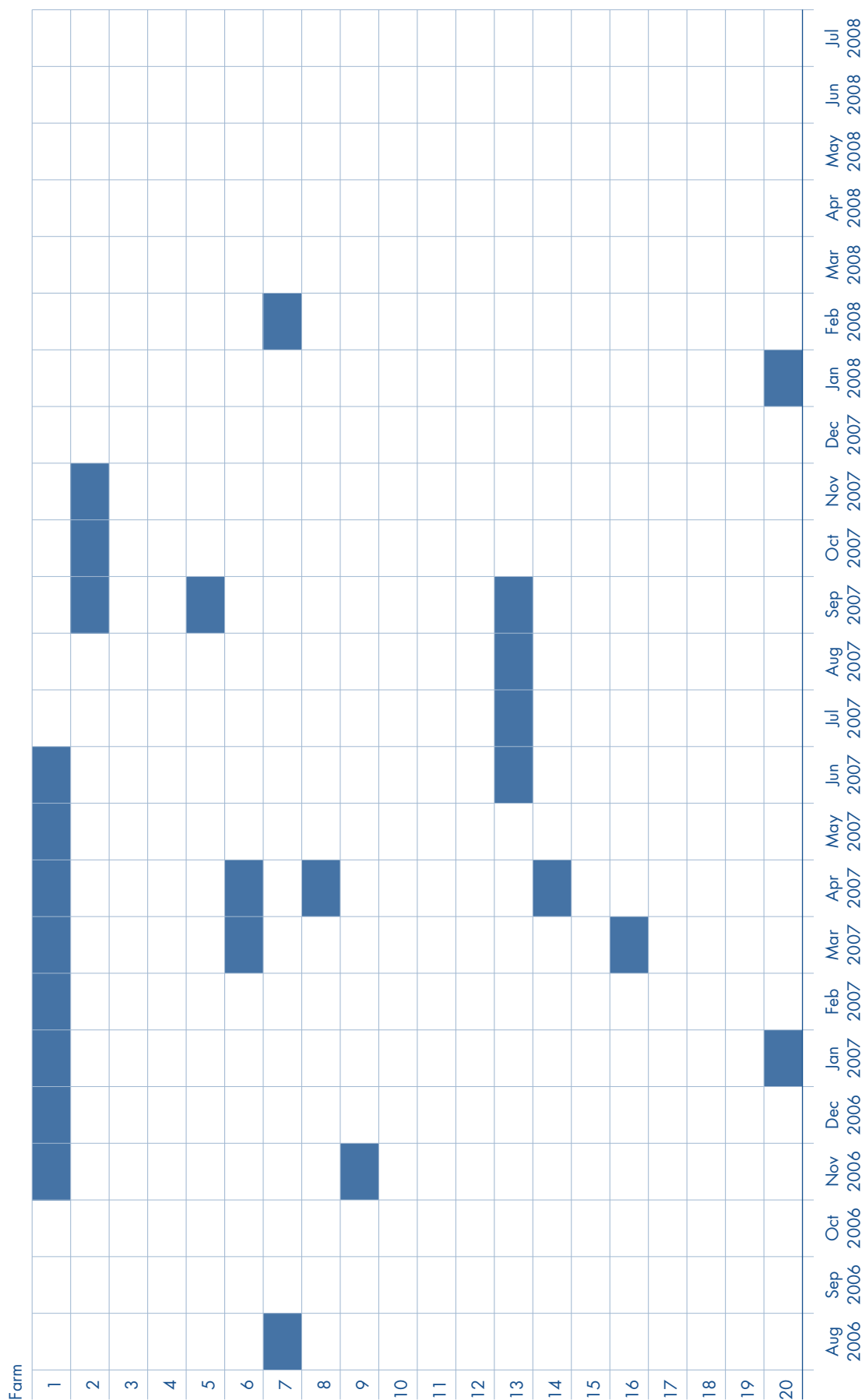
11 The proportion of Animal Health’s spending on endemic disease absorbed by Bovine Tuberculosis



Source: National Audit Office analysis of Animal Health data

NOTE
 Figures quoted are at 2007-08 prices.

12 Sampled farmers not complying with the compulsory testing regime for Bovine Tuberculosis



■ Denotes months when herds were placed under movement restrictions because of non-compliance

Source: National Audit Office

3.9 The reluctance of some farmers to cooperate with the testing regime is due to their concerns that they will be subject to compulsory culling, disrupting trade, dairy production or calving and consequential lost income. In areas such as Gloucestershire, there is also a wider frustration and belief that cattle testing alone, in the absence of badger culling, will not deal with the Bovine Tuberculosis problem. Animal Health has the authority to test cattle without the farmer's consent, and can recommend that the relevant local authority takes legal action against the farmer. Animal Health considers that, in the absence of powers to secure a court order requiring compulsory testing, and given the length of time it can take, legal action is not an effective way to ensure compliance. Animal Health considers that it is better to deal sensitively with farmers who do not comply with the test regime. It chooses not to carry out testing without a farmer's consent given concerns over practicality, cost, and health and safety. For the cases we examined, Animal Health applied compulsory movement restrictions on the herds which had missed tests, and the farmer subsequently consented to testing, although in three cases cattle remained untested for three months or more and in one of these cases for eight months. This delay may increase the risk that disease, if present, could be spread amongst the restricted herd and could potentially be transmitted to neighbouring herds or become established among local wildlife.

3.10 Animal Health field staff we interviewed considered that measures taken to enforce the testing regime were proportionate, and that a more rigorous approach would risk damaging relationships with livestock owners, which would have wider detrimental impacts on the Agency's work. Other stakeholders, however, including local authority officers and private veterinarians we interviewed as part of our case study in Gloucestershire, expressed frustration that the failure to make sure testing was enforced more rigorously, drawing on local authorities' powers in support of Animal Health, was undermining the current strategy for controlling the disease.

3.11 In September 2008, Animal Health launched a national initiative to reduce the number of herds under movement restrictions as a result of overdue tests. A new internal performance indicator is being introduced, and stronger monitoring and reporting arrangements for overdue testing have been established.

Containing endemic diseases

3.12 The Department's performance targets for managing Bovine Tuberculosis and Scrapie were previously part of the Department's 2004 Public Service Agreement and, following the 2007 Comprehensive Spending Review, are now classified as Departmental Outcome Targets:

- to reduce the rate of increase with which Bovine Tuberculosis is spreading to new parishes to below 17.5 confirmed new incidents (CNI) each year by the end of 2008; and
- to reduce by 40 per cent the prevalence of Scrapie in the national flock, from 0.33 per cent to 0.20 per cent by 2010.

3.13 In 2007, *Salmonella* affected only 0.8 per cent of breeding flocks in Great Britain. There was only one breeding flock detected positive for the *Salmonellae* of public health significance during the year (a prevalence of 0.07 per cent). This level is well below the one per cent target set for Member States in the EU legislation.

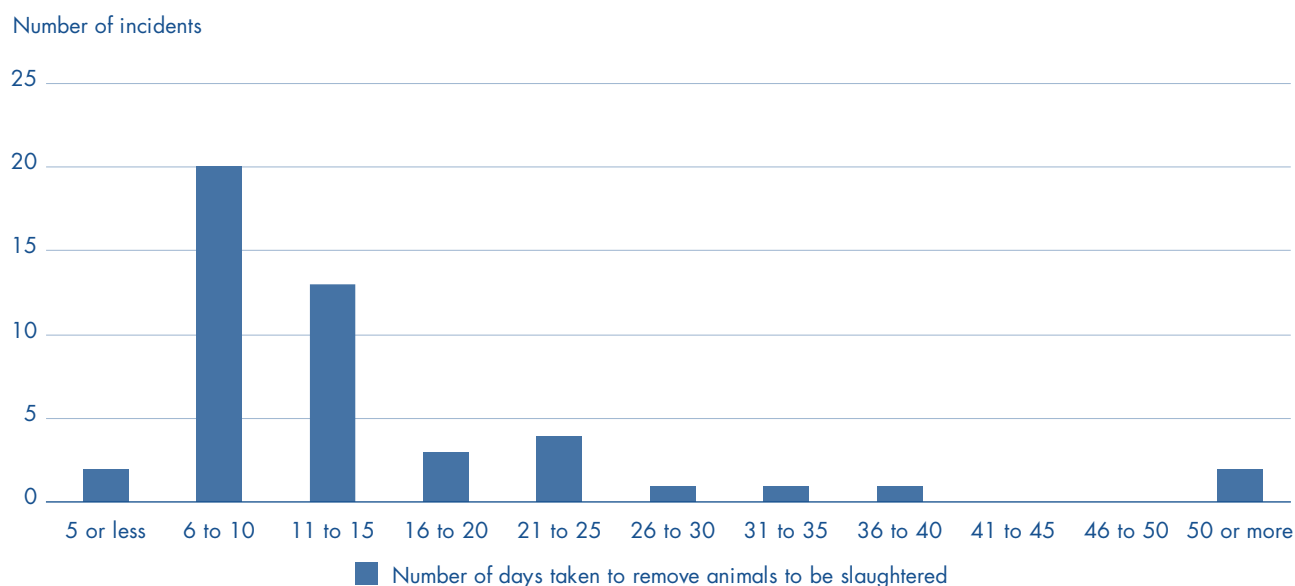
3.14 The Department appears to be on track to achieve its target for 2008 to limit the rate at which Bovine Tuberculosis is spreading to previously unaffected areas. The incidence of Bovine Tuberculosis continues to increase, however, particularly in hot spot areas of South West England. Animal Health has an operating target to remove for slaughter all animals testing positive for Bovine Tuberculosis within 20 days. For the 20 farms that we examined in Gloucestershire, the average time taken was 15 working days, although there were occasions where removal had taken over 50 days to complete (**Figure 13**). In some instances there may be good reasons, recognised in the legislation, for delaying removal, for example when an animal is about to calve. We were unable to establish the specific reasons for the delay from the records we examined.

3.15 Infected animals have to be isolated from the rest of the herd until they are removed for slaughter, and farmers raised concerns that in practice isolation can be difficult to maintain for an extended period and can cause the animals distress. Animal Health reported that from 2008 it had started to monitor whether animals were in practice being properly isolated on farm before removal.

3.16 Animal Health confirmed that in order to mitigate the risk of disease spreading when a case of Bovine Tuberculosis is found on a farm, one of the steps undertaken is to identify contiguous farms and, on the basis of an assessment of the risk of the disease spreading, a testing request is sent to them within 20 days if a test is considered to be required. The timing of this test is based on the veterinarian's assessment of risk and whether the test can be combined with existing planned visits. Animal Health confirmed that movement restrictions would be applied if the tests can not be done on time, but the agency does not monitor the time taken for these tests to be completed. We found that Divisional Offices in the South West had failed to meet the target for identifying contiguous farms.

3.17 The Department ceased to report progress on the Public Service Agreement (PSA) target for Scrapie made after March 2008. That target was predicated on the introduction of compulsory ram genotyping, but in 2006 the EU decided not to proceed with its proposals at Community level. On the basis of scientific advice that the prevalence of BSE in the UK sheep population is most likely to be zero, or very low if present at all, and that there was therefore no significant risk to human health, the Department has now closed the voluntary Ram Genotyping Scheme. Nevertheless, based on modelling carried out in late 2007, the Department expects that achievement of the original PSA target for 2010 will be delayed only until 2011.

13 Number of days taken to remove animals for slaughter after they tested positive for Bovine Tuberculosis



Source: National Audit Office analysis of Animal Health data

PART FOUR

Addressing risks to the health of kept honeybees

4.1 Beekeepers are required by law to notify the National Bee Unit if they suspect their bees might have any of the diseases listed in **Box 3**.

Working with beekeepers to monitor disease

4.2 The Department uses information about the identity of registered beekeepers to plan its inspection regime and communicate with beekeepers. The Department relies on the voluntary co-operation of beekeepers to monitor disease and to register themselves. Of all beekeepers in the United Kingdom, 99 per cent describe themselves as hobbyists, keeping only a few colonies. The Department estimates that there are around 37,000 beekeepers in England and Wales, although the figures are only approximate. It has not made registration compulsory for beekeepers, although other countries such as Belgium, France and New Zealand have done so. There were 17,000 active beekeepers in England and Wales registered on the Department's database in December 2008, managing 93,000 colonies, which represent nearly half of the estimated total number of beekeepers. There are also 14,300 people registered who have kept bees in the past, but currently do not have any.

4.3 The Department's website and online database, BeeBase, gives beekeepers access to statistics on the incidence of disease, and provides best practice guidance. The National Bee Unit is also able to give information about the regular training events it organises to those beekeepers who have registered their contact details. The National Bee Unit supports hobbyist and commercial beekeepers by providing free training on disease management and good husbandry at the National Bee Unit near York and through local associations. The Unit provided around 800 training courses in 2008, of which 300 practical sessions were given on disease

recognition. These practical sessions are well attended as they provide useful, small group, hands-on experience which is unavailable to beekeepers elsewhere. Feedback from beekeepers shows that where they have found these events particularly helpful is in diagnostic training using microscopes, practice in identifying small hive beetle, an exotic pest, and the provision of beekeeping equipment in demonstrating disease control. Of the 52 per cent of respondents to our survey who had attended a training course run by the National Bee Unit, 80 per cent rated the courses very useful for improving their management of honeybees, and a further 17 per cent said they found them quite useful. Many respondents also commented on the value of the inspectors' experience in diagnosing and treating disease.

BOX 3

Notifiable diseases and pests of honeybees in England

Endemic diseases

American Foulbrood (AFB)	A bacterial disease of honeybee larvae (brood) caused by a spore-forming bacterium
European Foulbrood (EFB)	A bacterial disease of honeybee larvae (brood)

Exotic parasites that pose potential threat

Asian honeybee mite (<i>Tropilaelaps</i> mite species)	A serious parasitic mite, causing abnormal brood development, and death of brood and bees
Small hive beetle	A parasite and scavenger of honeybee colonies, the beetle tunnels through combs to honeybee broods and ruins stored honey

Source: National Audit Office

4.4 Increasing the number of beekeepers registered with the Department depends upon inspectors and others, such as local associations, encouraging people to participate and the accessibility and ease of use of the web-based register. The National Bee Unit has no national strategy to encourage beekeepers to register. However, over the past three years the bee inspectors working in the Eastern Region have increased the number of beekeepers registered in BeeBase by around 1,000, using an active campaign of contacting local beekeepers and an exercise to cleanse the data on BeeBase (**Box 4**). This approach is now being adopted elsewhere in England, in particular in the North East and South West regions; in 2008 the National Bee Unit added 2,686 new beekeepers to BeeBase.

BOX 4

Using regional bee inspectors to increase the number of registered beekeepers

Stage 1: Assessment of BeeBase data

- The inspectors went through the list of beekeepers in the region registered on BeeBase who had not had an apiary inspection in the past three to four years.
- The inspectors surveyed all these beekeepers to ask whether they were still keeping bees, the number of colonies they kept, and the location of their colonies, offering a copy of a free National Bee Unit guidance leaflet if surveys were returned.
- Survey responses identified several thousand revisions to BeeBase that needed to be made.

Stage 2: Drawing on local associations

- The inspectors worked with local beekeeping associations to contact new members not registered on BeeBase.

Stage 3: Ongoing work

- It is a policy in the region that when carrying out an inspection, all inspectors ask beekeepers what contacts they have with other beekeepers in the local area.
- The inspectors send a survey to all the new beekeepers consequently identified during the inspection regime.

Source: National Audit Office

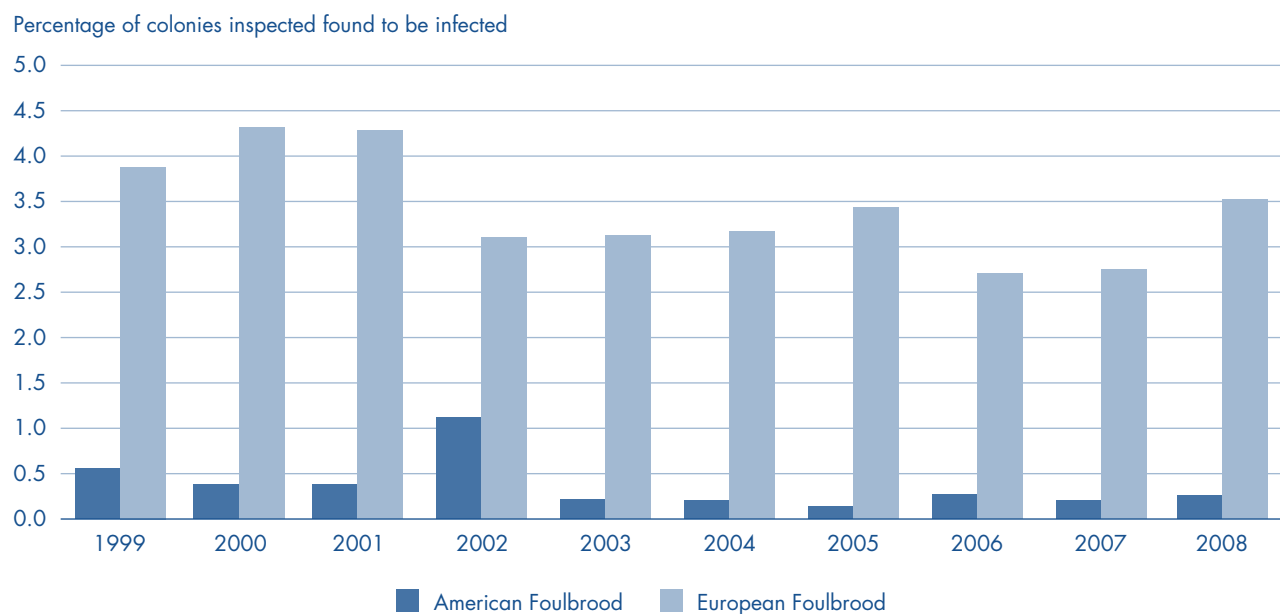
4.5 BeeBase is one of the Department's major communication channels with beekeepers, but the website is not fully compatible with the minimum accessibility standards required for government websites, meaning that not all web-users would be able to view it properly. Typing search terms such as 'bees', 'bee advice' or similar words into an internet search engine did not find BeeBase on the first page of results, making it less likely that beekeepers previously unaware of BeeBase would have found the site. In addition, we found that some of the information on the website was out of date. For example, a leaflet on the management of Varroa, which ceased to be a notifiable disease in 2006, still referred to it as such.

Identification and diagnosis of diseases

4.6 American and European Foulbrood occur each year across England. After a peak in 2002, levels of American Foulbrood fell to the lowest point in 2005 in ten years, with 0.14 per cent of colonies found to be infected. Since then incidence has stayed low, at less than 0.3 per cent (**Figure 14 overleaf**). It is not clear what combination of factors has contributed to declining incidence of American Foulbrood. Incidence of European Foulbrood has fallen from a peak of 4.3 per cent in 2000 and 2001, although most recently it increased between 2007 and 2008 by nearly one percentage point. European Foulbrood is generally more prevalent in the South and East of England.

4.7 The Department's 37 bee inspectors work in seven regional groups in England, each headed by a permanent regional bee inspector who reports to the National Bee Inspector, with between two and five seasonal inspectors who each cover a smaller area within the region. On average, there were 32 inspections per 100 registered beekeepers in England in 2008, with the most (39 inspections) in the South East and the least in the Northern region (26 inspections) (**Figure 15 overleaf**). In Wales, where a higher proportion of colonies inspected were found dead, there were 48 inspections per 100 registered beekeepers during the same period, carried out by a team of nine inspectors. Bee inspectors spend much of their time controlling known disease, visiting areas of known disease outbreaks or those at high risk, and training beekeepers, rather than identifying and checking colonies that have not been registered.

14 Incidence of American Foulbrood and European Foulbrood in England, 1999-2008



Source: National Bee Unit

15 Inspections per 100 registered beekeepers in England, 2008

Region	Number of completed inspections	Number of currently registered beekeepers	Annual number of inspections per 100 registered beekeepers
Northern	375	1,418	26
North East	497	1,815	27
Southern	632	2,176	29
Western	619	1,986	31
Eastern	1,066	3,325	32
South West	750	2,259	33
South East	825	2,139	39
Total	4,764	15,118	32

Source: National Bee Unit

Treating incidences of notifiable bee diseases

4.8 Unless they are contained, diseases have the potential to spread rapidly through the honeybee population, leading to declining colony numbers and resulting in less crop pollination and, potentially, reducing food production. The National Bee Unit has proved effective in treating and eradicating bee diseases detected by inspectors. Inspectors use specific disease controls, for example, to eradicate or treat cases of foulbrood (**Box 5**). Foulbrood is a disease of the bee brood and symptoms may develop at different rates, with the consequence that it may take more than one treatment to clear the colony from disease. In the majority of cases control measures for Foulbrood are effective in controlling the disease in infected colonies successfully on the first follow up inspection (75 per cent effective for American Foulbrood; 62 per cent effective for European Foulbrood). Research by the National Bee Unit has confirmed that European Foulbrood recurred in only four per cent of colonies treated using the shook swarm husbandry method. It is also exploring further alternative non-chemical approaches for the control of European Foulbrood. Where treatment has not been effective, the colonies are destroyed by bee inspectors at subsequent follow up inspections.

4.9 Beekeepers are on the whole very satisfied with the diagnosis and treatment service provided by the National Bee Unit. In response to the National Audit Office survey, 95 per cent of beekeepers reported that the response to their request for an inspection was timely. In 2008 the average time to administer a treatment once a case of notifiable disease was confirmed was five days (four days in 2007) with 94 per cent of treatments administered within ten days. The average time for destruction to be carried out was four days (five days in 2007) with 92 per cent of destructions being carried out within ten days.

4.10 The Department's inspectors carry out a statutory programme of apiary visits and promote good husbandry in their discussions with beekeepers. Nearly 80 per cent of reported cases of notifiable disease in England and Wales arise from inspections, meaning that only around one in five cases are notified by beekeepers themselves. In particular, only 14 cases in 2008 (three per cent) were from beekeepers who had not until then registered with BeeBase (**Figure 16 overleaf**). Of the total cases, 78 (17 per cent) were notified by registered beekeepers. Assuming a similar occurrence of notifiable disease in colonies of all beekeepers, we would expect the same number of notifications from registered (44 per cent) and unregistered (56 per cent) beekeepers. The low number of notifications from unregistered beekeepers suggests that they are either unable to identify notifiable diseases, not aware of their legal requirement to notify the National Bee Unit, or do not comply with this requirement. Our survey indicated that 19 unregistered beekeepers, or 0.66 per cent of respondents, had experienced Foulbrood amongst their colonies but had not notified it to the National Bee Unit. Unregistered beekeepers also do not receive random inspections from the National Bee Unit, which may diagnose unsuspected cases of disease.

BOX 5

Treatments for notifiable diseases

American Foulbrood is spread by spores which are highly resistant to extremes in temperature. The control method is to destroy all infected colonies by burning – adult bees and brood are destroyed first and then hives and any appliances are sterilised by scorching with a blowlamp. There is no compensation offered for colony destruction, although many beekeepers have insurance often via membership of local associations.

There are various treatments for European Foulbrood, depending on the severity of the infection and the time of year. Colonies may be:

- treated with the shook swarm husbandry method, which means literally shaking the bees on to a new foundation and destroying the old combs. This approach can only be taken with strong colonies early in the season (mid-March to mid-July);
- treated with the antibiotic oxytetracycline; or
- destroyed as for American Foulbrood

Source: National Bee Unit

Managing Varroa in honeybee colonies

4.11 Varroa is a parasitic mite that affects most honeybee colonies and is now one of the most severe challenges facing beekeepers. Having become endemic, Varroa ceased to be notifiable in England in March 2006. The National Bee Unit recommends a combination of husbandry methods and chemical controls as part of an integrated pest management programme to treat Varroa. The Department has no strategy to eradicate Varroa, which it does not believe is possible. Instead, it promotes Varroa control as a routine part of honeybee husbandry to keep the level of Varroa at manageable levels.

4.12 There are now only limited treatments available to tackle Varroa infestation. Since the Varroa mite has developed resistance to traditional chemical treatments, some beekeepers have been using medications that are not approved by the Veterinary Medicines Directorate for use in the United Kingdom, by ordering them from other countries over the internet. Oxalic acid, for example, is in widespread use in many EU Member States but is not licensed for use in the United Kingdom. The National Bee Unit has provided guidance on the safe application of unlicensed products, including oxalic acid, despite these products being illegal to import and use, to minimise the risk of such products being used inappropriately

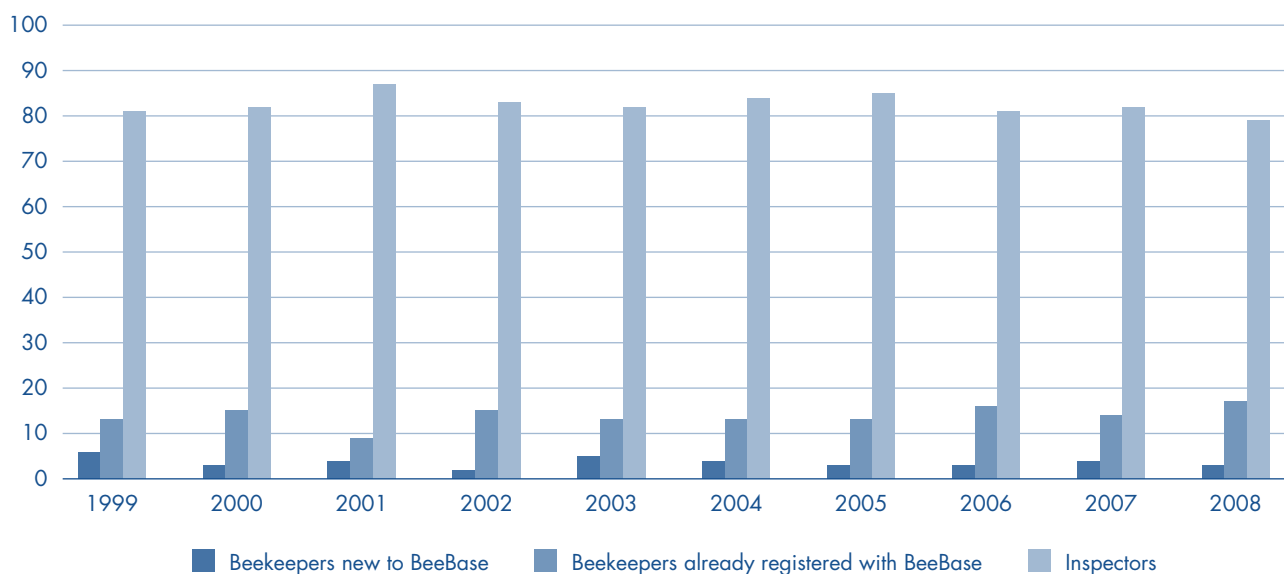
or dangerously. The Veterinary Medicines Directorate has confirmed that it is willing to facilitate applications to license such products in the United Kingdom, and it is in discussion with EU counterparts to relax the requirements on the licensing of honeybee disease treatments. Veterinarians are able to import and administer medicines authorised in other EU member states, and the Veterinary Medicines Directorate is exploring changes to EU Regulations that would allow nationally qualified honeybee experts to decide on the use of medicines in bees, in place of veterinarians.

Protecting honeybees in England and Wales from the risk of imported exotic diseases

4.13 Beekeepers in England and Wales import around 9,000 queen honeybees each year to increase or improve their stock. Approximately 44 per cent of queen honeybees imported in 2008 were from outside the European Union. All importers of honeybees into the United Kingdom from EU Member States and approved third countries outside the EU have to comply with relevant regulations. The United Kingdom does not usually export honeybees.

16 Sources of notification to the National Bee Unit of notifiable disease amongst honeybee colonies in England and Wales

Percentage of notified cases of Foulbrood



Source: National Bee Unit

4.14 In 2008, 103 consignments were sent from EU Member States containing 5,609 queen honeybees. The National Bee Unit carries out, under the EU Veterinary Checks Directive, physical and certification checks on a proportion of imports. The National Bee Unit checked the certificate for 40 per cent of imports from EU countries in 2007-08, and carried out a physical inspection of a further ten per cent. Two cases of notifiable disease were detected in certified imports of nucleus colonies from Spain, and were reported to the Spanish veterinary authorities and to the European Commission. European Foulbrood, however, is not notifiable across all EU Member States. Veterinary authorities in the country of dispatch do not have to confirm that honeybees are free from European Foulbrood, although receiving authorities have the option to demand this additional guarantee on the health certificate. The United Kingdom required this additional guarantee until the 1990s, but no longer does so as European Foulbrood is now also found in the United Kingdom. The physical inspection of ten per cent of honeybees imported from the EU found one case of European Foulbrood in 2008.

4.15 Regulations allow queen bees imported from permitted countries outside the EU to be accompanied by up to 20 attendant worker bees. The EU currently permits import of bees from Argentina, Australia, the US State of

Hawaii and New Zealand only. Once the importer has placed the imported queen honeybee into a hive, the attendant imported worker bees and packaging must be sent to the National Bee Unit, which tests a sample for disease or parasites. In 2008, the National Bee Unit met its target of processing 95 per cent of import samples within four days of receiving them. The number of imports from third countries dropped sharply in 2003 and 2004; the National Bee Unit is unsure why they did so.

4.16 In 2008, beekeepers imported 3,966 queen honeybees from third countries in 63 consignments. The National Bee Unit examined these 63 consignments and found disease or pests present in 24 (38 per cent) (Figure 17). None of the diseases found were notifiable under EU legislation which would have made them subject to regulatory controls, but many had diseases or parasitic infestation such as Nosema, which is widespread in the United Kingdom, and which can weaken bees and make them more susceptible to other diseases. In April 2008, an importer received two additional consignments of honeybees but failed to provide complete samples to the National Bee Unit for testing. The Department is investigating the case.

17 Results of National Bee Unit testing for disease of permitted third country imports of honeybees

Year	Number of consignments	Number of queens imported	Number of consignments found to have disease	Percentage of consignments found diseased (%)
1998	48	3,807	26	54
1999	42	3,387	24	57
2000	34	2,582	24	71
2001	36	2,886	13	36
2002	32	2,026	5	16
2003	33	1,600	10	30
2004	13	743	6	46
2005	46	2,256	5	11
2006	55	2,732	8	15
2007	49	2,808	18	37
2008	63	3,966	24	38

Source: National Audit Office analysis of National Bee Unit data

4.17 Beekeepers intending to import bees are under an obligation to inform the Department in advance. In practice, however, we found that not all beekeepers are fully aware of the regulations for importing honeybees, and some do not know that there are controls relating to imports from within the EU. The package containing a queen honeybee and attendant workers may be very small, and it would not be difficult to bring honeybees through border controls undetected, particularly in respect of imports from EU countries. In 2008 the National Bee Unit found a case of a notifiable disease in a non-notified colony import from France.

4.18 There are no restrictions on moving colonies within Great Britain, except for restrictions imposed on specific colonies when disease is identified and prior to treatment. There are fewer beekeepers in Scotland than England, around 2,200 in total, and the responsibility for bee inspection falls within the remit of inspectors charged with carrying out other agricultural inspection programmes. In the last ten years three detected cases of notifiable disease have been reported in Scotland, compared to 8,071 cases in England and 463 cases in Wales over the same period. This discrepancy may be due to a variety of factors, including fewer inspectors to look for disease, lack of disease due to colder weather or beekeepers' inexperience in recognising disease.

PART FIVE

Preventing incidence of disease in farm animals and honeybees

5.1 The Department's 2004 *Animal Health and Welfare Strategy for Great Britain* stresses the importance of prevention for the protection and improvement of animal health. The Strategy places emphasis on high standards of bio-security and good animal husbandry to reduce the threat posed by exotic and endemic diseases and to minimise the potential impact of outbreaks.

5.2 There are a variety of statutory controls, for example, regulating animal feed, imposing movement restrictions and requiring compulsory cleaning of livestock vehicles, designed to maintain standards of bio-security and animal welfare. Strengthening preventive measures to reduce the risk of disease also relies upon encouraging good practice. This part of the report examines the actions to prevent disease in farm animals and amongst honeybees.

Preventing disease among farm animals

Farm Health Planning

5.3 The Farm Health Planning programme promotes year round, on-farm good practice to reduce the risk of disease in farm livestock and bird flocks. From April 2006 to March 2008 the Department funded a series of projects aiming to share best practice amongst farmers and veterinarians, provide training and advice, and to improve understanding of the financial costs and benefits of good animal health practices across the industry. Government funding for new projects has now ended.

5.4 The Department made available 'pump-priming' funding of £6 million for a range of industry-led initiatives, of which it spent £2.7 million, to promote and encourage the widespread adoption of measures to improve farm health planning. Farming and its related industries were also expected to support the initiative, whether by making a financial contribution, investing time and expertise, or encouraging farmers to adopt best practice. The programme was led by four industry working groups covering the cattle, sheep, poultry and pig sectors, responsible for identifying projects for support.

5.5 One element underpinning a more proactive managed approach to farm health planning is a documented farm health plan. Farmers and livestock owners develop these documents with their own veterinarian, as a tool to help manage the steps needed to better safeguard and improve the health of their herds and flocks, and to demonstrate the actions taken. The Department agreed with the Treasury that 90 per cent of all livestock holdings in England should have an auditable farm health plan by 2014. Many good farms may have been taking similar steps already, although not necessarily with a documented plan, but the farmers we interviewed raised doubts over whether the approach had changed widespread farming practices. The Department did not embed measures into projects able to show their impact as they progressed, but will carry out a post hoc evaluation of the programme in 2009 to assess which initiatives funded by the 'pump priming' worked best to change attitudes and behaviours. The Department also commissioned in 2007 a three-year research study of 120 beef herds, which aims to assess the key elements underpinning successful bio-security schemes, including motivational factors, management practices, financial viability and risk reduction at individual farm level, informed by cost-benefit analysis of existing projects.

5.6 There are regulations in specific areas, such as animal feed controls, animal identification requirements, movement restrictions and animal by products controls, but there are no comprehensive minimum standards for bio-security enforceable on farms. Attitudes of dairy and cattle farmers towards the value of bio-security measures to prevent Bovine Tuberculosis have been influenced by debate over the need for and effectiveness of badger culling to control the disease. Many farmers consider that an absence of an effective partnership approach on this issue, as they see it, threatens to undermine the current testing and surveillance regime for Bovine Tuberculosis. The Department has not authorised any badger culling in England, but announced in July 2008 further research to develop a vaccine effective against Bovine Tuberculosis.

In the meantime, private veterinarians we interviewed believed strongly that there is scope for farmers and livestock owners more rigorously to adopt bio-security measures, such as better securing feed, and called for farm-level risk assessments to be shared between Animal Health, farmers and veterinarians.

Advice and support for farmers

5.7 The Department publishes advice and guidance in conjunction with the farming industry which includes information on bio-security for farmers and their private veterinarians, who must take primary responsibility for securing the health of the animals in their care. Recent high profile examples include a campaign throughout the second half of 2008 encouraging farmers to take up vaccination against Bluetongue for their herds; and a DVD and leaflets sent to farmers illustrating bio-security precautions to be taken against Bovine Tuberculosis. This second initiative was produced and issued by a Working Group which included representatives from industry and other stakeholders. The Department also provides information at livestock market road-shows and on its website. It is too early to know whether these initiatives will prove effective, but during all of our four case study visits farmers and livestock owners, and other industry stakeholders, consistently felt that the information was often simplistic, of poor quality and too often impractical. Farmers preferred, and were more likely to trust, advice from their private veterinarian, industry association or from the trade press.

5.8 During our case study visits we did not find evidence that the Department or Animal Health were routinely promoting bio-security and good animal husbandry to local farmers outside its livestock market road-shows. Senior officials and field staff from the Agency reported that the volume of statutory testing and investigation meant that there were insufficient resources to engage with farmers and livestock owners to discuss preventive measures and provide advice on bio-security and husbandry measures they might adopt. Animal Health did, however, recognise the importance of prevention.

5.9 The November 2007 outbreak of Avian Influenza in Suffolk illustrated how earlier proactive engagement and action to strengthen bio-security might have reduced the threat and impact of the disease. Animal Health noted that it had invited local poultry managers to meetings to discuss preventive action, but some businesses did not attend. After the outbreak a range of preventive measures were implemented on the local premises, including relocating poultry and wildfowl to move them away from open water where they were in potential contact with wild birds, improving the physical security of buildings and bringing records up to date.

5.10 For all confirmed new incidents of Bovine Tuberculosis, an Animal Health veterinary officer is required to conduct an inspection to assess the potential source of the disease and the adequacy of the preventive measures in place on the affected farm. The findings of each assessment should be recorded on a standard Disease Report Form, which also documents any advice and information provided to the farmer.

5.11 We examined the Disease Report Forms relating to our sample of 20 farms in Gloucestershire. Over the period between August 2006 and July 2008, 24 assessments were conducted. We found that 80 per cent had been adequately completed, although in five cases (22 per cent) not until more than a month after confirmation of the disease. Only 33 per cent of the assessments showed evidence that advice and guidance had been provided directly to the farmer, although, as other farmers may have experienced earlier cases of Bovine Tuberculosis, such advice may have been provided previously. The Disease Report Form does not indicate whether advice was previously given. Animal Health inform us, however, that part of its Business Reform Programme will strengthen its ability to monitor contacts with farmers by maintaining a record of all contacts with individuals. **Figure 18** shows the range of the preventive measures that the farmers in our sample had put in place, focusing on reducing the likelihood of cattle coming into contact with badgers and reducing the risk of contact between the rest of the herd and infected cattle.

Working with the farming industry to prevent disease

5.12 The Department-led programme to control Salmonella in breeding flocks, that has been in place in various control programmes since the 1990s, demonstrates the success that can be achieved in a government-industry partnership. It has run in parallel with the British Egg Industry Council's Lion Code Scheme, a voluntary initiative by the egg industry to prevent and eradicate Salmonella. Lion Code Scheme members must comply with a detailed code of practice, which includes compulsory vaccination against *Salmonella Enteritidis*, traceability of hens' eggs and feed, strict movement recording and compliance with specific hygiene standards and sampling requirements on all premises. Over 85 per cent of all eggs produced in the United Kingdom are now produced under the scheme. These voluntary measures are in addition to the Agency's own controls and have helped to maintain consumer confidence in domestically produced eggs. The Department noted that it is seeking to encourage similar initiatives in other industry sectors.

5.13 Work on farms to prevent disease is informed by the Department's wider approach to scanning surveillance of farm animal populations. These initiatives, within the Veterinary Surveillance Strategy, are mainly carried out by the Veterinary Laboratories Agency. They aid the understanding of the factors leading to disease at farm level, and help to identify critical control points for interventions that could be included in farm health plans.

5.14 Inspections of and visits to farms and other livestock holdings by government agencies remain poorly coordinated. Animal Health conducts regular visits to test animals for diseases, to remove diseased animals for slaughter and to investigate welfare complaints. Meanwhile, local authorities undertake inspections to enforce animal health and welfare legislation, and the Rural Payments Agency carries out visits to confirm farmers' compliance with statutory management standards required to claim European single farm payments. Whilst there has been some improvement, for example, Animal Health informs the Rural Payments Agency of Bovine Tuberculosis tests so that joint visits can be made, delivery bodies largely continue to arrange their activities in ways which enable them to best meet their individual remits and targets.

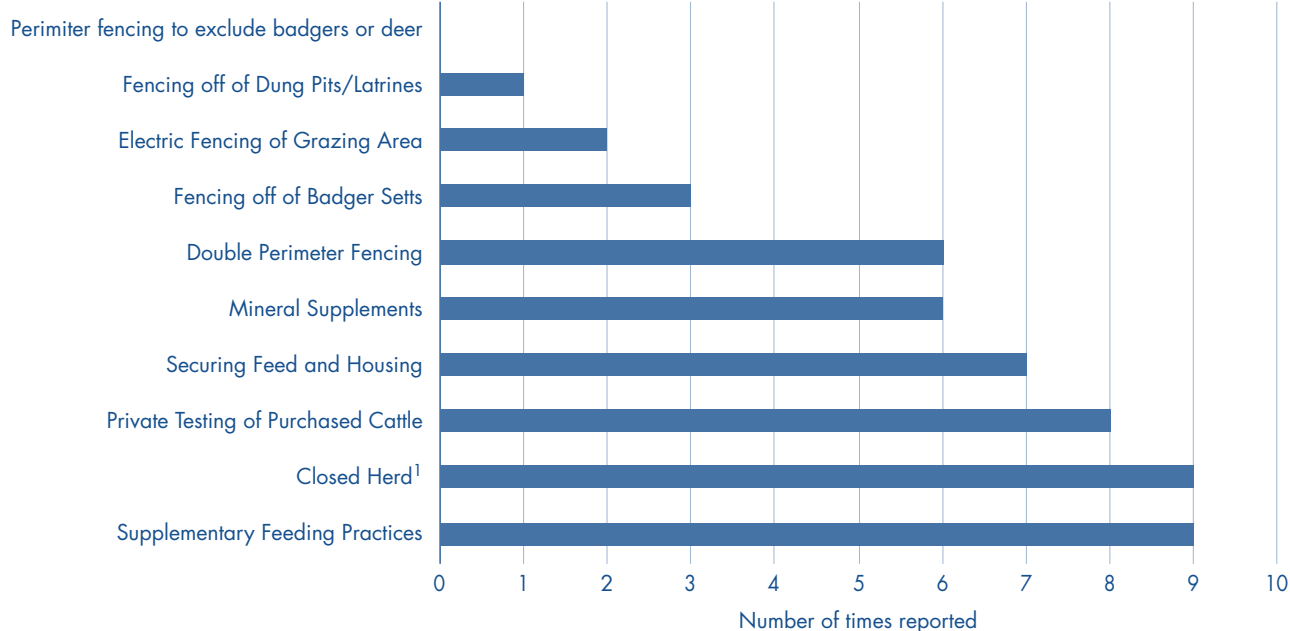
5.15 Sharing and dissemination of information is also poor between Animal Health, operational partners and private veterinarians. We found that IT systems utilised by Animal Health, local authorities and other agencies cannot communicate with each other effectively. Furthermore, the poor functionality of current systems means that information on the adequacy of bio-security on each farm is not captured and stored electronically. Without such coordination and information sharing, the Agency cannot adopt a fully risk-based approach to its work.

Research into preventing animal disease

5.16 The Department spends some £40 million annually on research to better understand the epidemiology of diseases. Between 1998 and 2007 the Department spent some £110 million on research into Bovine Tuberculosis, including £49 million on the Randomised Badger Culling Trial. The Department sponsors the Veterinary Laboratories Agency, the Institute for Animal Health and the Central Science Laboratory to conduct this work.

18 Measures a sample of 20 farmers had taken to combat Bovine Tuberculosis

Preventive Measures



Source: National Audit Office analysis of Animal Health data

NOTE

¹ A 'closed herd' describes a herd that relies on on-farm breeding, rather than buying cattle at market, to maintain its stock.

5.17 In 2007-08, 15 per cent of the Department's animal health and research budget was spent on Bovine Tuberculosis, particularly to develop vaccines for use in badgers and cattle. Funding totalling £7.5 million, some 20 per cent of the Department's annual research budget for animal health and welfare, was spent on work on Transmissible Spongiform Encephalopathy, such as Scrapie, in sheep. A better understanding of the risk of BSE in the national sheep population has led the Department to reassess the extent to which future voluntary government intervention is needed to manage Scrapie (beyond the compulsory controls required by EU law) and consequently to reduce its expenditure on the disease.

Preventing diseases and parasites affecting honeybees

5.18 The Department has developed a national contingency plan against the arrival of small hive beetle and *Tropilaelaps* mite. In the event of either being identified, the plan would trigger restrictions on movements of honeybees or any bee products. To minimise the threat of disease to honeybees, the Department relies on the co-operation of stakeholders, including:

- national associations, such as the British Beekeepers' Association and the Bee Farmers' Association, to help promote good husbandry, provide training and inform beekeepers of developments;
- local beekeeping associations to raise awareness, encourage good practice and train new beekeepers in good husbandry; and
- medicine and equipment suppliers to provide beekeepers with advice to use their products legally and safely.

5.19 The Department is starting to collaborate with other bodies to fund research into honeybees. It has recently established a Research Funders' Forum, with other potential funders including beekeepers' representatives and Research Councils, to explore options for future research funding. Furthermore, the National Bee Unit also collaborates with other international organisations to share knowledge and research. Other research institutions

in the United Kingdom are also undertaking valuable research into honeybees, some of which is supported by non-governmental funding. For example, one such project is investigating hygienic behaviour of honeybees, which is a natural form of disease resistance as bees identify and remove diseased brood themselves. The project is developing a method for selecting and breeding native British honeybees with these characteristics.

5.20 The Department spent £200,000 on research into honeybee health in 2007-08. Its research has concentrated on supporting the Department's bee health inspection programme, such as through developing new diagnostic and control methods to contain disease and pest risks. It also provided £130,000 for other research in the Department which has some application to honeybees. Research is mainly conducted in-house by the Central Science Laboratory and in 2008-09 the Department provided an additional £90,000 to the National Bee Unit to investigate unexplained honeybee colony losses and inspection of increased numbers of imports.

5.21 The Secretary of State announced in January 2009 £2.3 million over the next two years to support the work of the National Bee Unit. This money will be used to identify all those who keep bees and provide advice to beekeepers on tackling pests and applying good husbandry. In addition, the Department announced £2 million funding for bee health and pollinator research over five years, as part of a bee health strategy it is developing and which will also be informed by our conclusions and recommendations.

5.22 Of the two principal exotic threats to English honeybees, the *Tropilaelaps* mite could be tackled using existing treatments used for Varroa and through good husbandry, but there is no treatment known to be fully effective against the small hive beetle. The beetle cannot easily be eradicated once well established. Small hive beetle has only been the subject of intensive study for a short time, and the National Bee Unit acknowledges that there are significant gaps in scientific understanding of this pest. The National Bee Unit is collaborating with agencies responsible for honeybee health in the United States and South Africa to develop effective new techniques for controlling small hive beetle.

GLOSSARY

Avian Influenza	A highly infectious viral disease affecting the respiratory, digestive and/or nervous system of many species of birds.
BeeBase	The National Bee Unit's website and online database. It holds data on inspections as well as laboratory samples submitted by beekeepers. The website also provides information on the functional activities of the National Bee Unit, legislation, pests and diseases including their recognition and control, interactive maps, current research areas, publications, advisory leaflets and key contacts.
Bio-security	Improved security from transmission of infectious diseases, parasites and pests.
Bluetongue	A disease of animals affecting all ruminants, including sheep, cattle, deer, goats and camelids. The disease is caused by a virus spread by certain types of biting midges. Although sheep are most severely affected, cattle are the main mammalian reservoir of the virus.
Bovine Tuberculosis	A serious disease of cattle, which can also affect other mammals such as badgers, deer and goats, and can also be transmitted to humans.
Colony	A group of bees which inhabit a beehive.
Colony Collapse Disorder	A phenomenon recognised in 2006 by beekeepers in the United States of America who experienced higher than average annual colony losses. The main symptom of Colony Collapse Disorder is no or a low number of adult honeybees present but with a live queen and no dead honeybees in the hive.
Cull	In the context of this report, the killing of animals or birds to control the spread of disease.
Endemic disease	A disease which is constantly present in a given population or in a given geographical area.
Exotic disease	A disease which is not usually present in the United Kingdom, but which does occur in other countries.
Farm Health Planning	An initiative organised by the Department that encourages farmers and livestock owners to take action to improve animal health and welfare and improve livestock performance and productivity.
Foot and Mouth Disease	An acute infectious disease which affects cattle, sheep, pigs and goats, amongst other non-farm animals. The symptoms are fever, followed by development of blisters, chiefly in the mouth and on the feet.
Foulbrood	Two of the most serious honeybee diseases which affect the developing brood. They are American Foulbrood and European Foulbrood, both of which occur in the UK. Both diseases are notifiable under the Bee Diseases and Pests Control Order 2006.

Genotyping	The process of determining the genotype (genetic constitution) of an individual.
Movement restriction	Strict rules controlling the identification and movement of livestock or honeybees to try and stop the spread of disease.
Nosema	A disease of honeybees caused by ingesting spore from particular fungi, causing increased mortality in adult bees, poor overwintering capacity and decreased honey yield. <i>Nosema apis</i> is found worldwide. <i>Nosema ceranae</i> was found in Asian honeybees in 1996 and since across Europe and North America.
Notifiable diseases	A disease which must be notified to the veterinary authorities if anyone suspects that an animal has it or that it is present in a carcase or a sample taken from an animal.
Oxalic acid	A treatment used to manage Varroa in honeybee colonies. It is not licensed for use in the United Kingdom.
Reactor cattle	Cattle that have tested positive for Bovine Tuberculosis using a comparative tuberculin 'skin test'.
Reportable organism	An organism the isolation of which in a laboratory must be reported to the veterinary authorities.
Salmonella	A group of intestinal bacteria that can be transmitted by many animal species, including poultry in their eggs. Some variants threaten human health.
Scrapie	An incurable brain disease affecting sheep and goats. It is one of a group of Transmissible Spongiform Encephalopathies (TSEs), which also includes BSE. The disease was recorded in sheep as early as 1732, and was made notifiable in 1993. There is no evidence that Scrapie is transmissible to humans and although this possibility cannot be excluded, it is considered very unlikely.
Small hive beetle	A parasite and scavenger of honeybee colonies which can fly long distances to infect new hives. Small hive beetle is indigenous to Africa but is not present in the United Kingdom or the rest of Europe and is a notifiable disease under EU legislation.
<i>Tropilaelaps</i> mite	A serious parasitic mite affecting brood and adult honeybees. It is not present in the United Kingdom or the rest of Europe and is a notifiable disease under EU legislation.
Varroa	A parasitic mite of Asian honeybees (<i>Apis cerana</i>) which has spread to Western honeybees (<i>Apis mellifera</i>) which has no natural defences to it. Varroa was first found in the United Kingdom in 1992 and is now endemic in England and Wales. Recently, Varroa mites in some areas have developed resistance to pyrethroids, the active ingredients in varroacides which were used to treat them.
Vector	An organism that does not in itself cause disease but transmits infection by carrying pathogens from one host to another.
Zoonoses	Diseases and infections which are naturally transmitted between vertebrate animals and humans.

APPENDIX ONE

Notifiable diseases of farm animals

1 Notifiable diseases are those listed by the Animal Health Act 1981 or an Order made under that Act. BSE and scrapie are notifiable under Regulations made under European Communities Act. Suspicion that an animal is affected by one of these diseases must be notified immediately to Animal Health. The table below lists all currently notifiable diseases, and indicates which are exotic (not circulating in the United Kingdom) and endemic (circulating between kept animals and a reservoir of disease among wild animals).

2 Zoonotic animal diseases are those that can be transmitted between vertebrate animals and humans. Avian Influenza and Rabies, for example, are two relatively well-known diseases that are zoonotic.

3 Isolates of certain bacteria such as Salmonella and Brucellosis are reportable. In England such reports must be made to a Nominated Officer at the Veterinary Laboratories Agency (VLA) for investigation. Two zoonotic diseases, Salmonella and Brucellosis, are classified as reportable.

Exotic notifiable diseases	Species Affected	Last occurred in Great Britain	Zoonotic
African Horse Sickness	Horses	Never	No
African Swine Fever	Pigs	Never	No
Aujeszký's Disease	Pigs and other mammals	1989	No
Avian Influenza	Poultry	Present	Yes
Bluetongue	All ruminants and camelids	Present	No
Brucellosis (<i>Brucella abortus</i>)	Cattle	2004	Yes
Brucellosis (<i>Brucella melitensis</i>)	Sheep and Goats	1956	Yes
Classical Swine Fever	Pigs	2000	No
Contagious agalactia	Sheep and Goats	Never	No
Contagious Bovine Pleuro-pneumonia	Cattle	1898	No
Contagious Epididymitis (<i>Brucella ovis</i>)	Sheep and Goats	Never	No
Contagious Equine Metritis	Horses	2008	No
Dourine	Horses	Never	No
Enzootic Bovine Leukosis	Cattle	1996	No
Epizootic Haemorrhagic Virus Disease	Deer	Never	No
Epizootic Lymphangitis	Horses	1906	No
Equine Viral Arteritis	Horses	2004	No
Equine Viral Encephalomyelitis	Horses	Never	Yes
Equine Infectious Anaemia	Horses	1976	No

Exotic notifiable diseases	Species Affected	Last occurred in Great Britain	Zoonotic
Foot and Mouth Disease	Cattle, sheep, pigs and other cloven hoofed animals	2007	No
Glanders and Farcy	Horses	1928	Yes
Goat Pox	Goats	Never	No
Lumpy Skin Disease	Cattle	Never	No
Newcastle Disease	Poultry	2006	No
Pest des Petits Ruminants	Sheep and Goats	Never	No
Rabies	Dogs and other mammals	2006	Yes
Rift Valley Fever	Cattle, Sheep and Goats	Never	Yes
Rinderpest (Cattle plague)	Cattle	1877	No
Sheep Pox	Sheep	1866	No
Swine Vesicular Disease	Pigs	1982	No
Teschen Disease (<i>Porcine enterovirus encephalomyelitis</i>)	Pigs	Never	No
Vesicular Stomatitis	Cattle, pigs and horses	Never	No
Warble fly	Cattle, (also deer and horses)	1990	No
West Nile Fever	Horses	Never	Yes
Endemic notifiable diseases	Species Affected	Last occurred in Great Britain	Zoonotic
Anthrax	Cattle and other mammals	Present	Yes
Bovine Spongiform Encephalopathy	Cattle	Present	Yes
Bovine Tuberculosis	Cattle and all other mammalian species	Present	Yes
Paramyxovirus of pigeons	Pigeons	Present	No
Scrapie	Sheep and goats	Present	No evidence, but unlikely

APPENDIX TWO

The estimated value of honeybees to the UK economy

Crop	Role of honeybee in pollination (%)	Area Grown ('000 ha.)	Market value (£m)	Value of bee pollination (£m)
Oilseed rape	8	681	404	32.3
Field bean	8	123	65	5.2
Broad bean	8	2	3	0.3
Runner and dwarf beans	40	2	20	7.8
Apple	90		104	93.6
Pear	30	18	8	2.4
Other orchard	15		29	4.4
Raspberry	30		87	26.1
Strawberry	10	9	154	15.4
Other soft fruit	15		29	4.4
Total				191.8

NOTE

Updated by the National Audit Office with 2007 provisional figures from Agriculture in the UK 2007 (except for broad, runner and dwarf beans for which original 2001 values have been used), based on methodology employed by ADAS.

APPENDIX THREE

A timeline of recent Bovine Tuberculosis policy developments

- 1997** ■ Scientific Review into Bovine Tuberculosis and Badgers, led by Professor John Krebs (the Krebs' Report) published
- 1998** ■ The Department publishes its *Five Point Plan* to control Bovine Tuberculosis
 - Randomised Badger Culling Trials commence
- 2005** ■ Movement restrictions applied to herds immediately a test becomes overdue
 - The Department publishes the *Government Strategic Framework for the Sustainable Control of Bovine Tuberculosis in Great Britain*
 - The Department produces its Bovine Tuberculosis *Science Delivery Plan*, detailing the research into the disease it will support
- 2006** ■ Pre-movement testing of cattle aged over 15 months becomes compulsory in England (and extended to cover cattle over 42 days in 2007)
 - A new compensation scheme for slaughtered cattle, based on average tabular valuations, is enacted
 - Use of the gamma-interferon diagnostic blood test for Bovine Tuberculosis is extended, particularly in areas with low incidence of the disease
- 2007** ■ Updated bio-security and husbandry advice is published by the Department
 - Independent Scientific Group on Bovine Tuberculosis produces its final report on the science base for the sustainable control of the disease
 - Report of the Government's Chief Scientific Adviser, Sir David King, into Bovine Tuberculosis and badgers is published by the Department
- 2008** ■ House of Commons Environment, Food and Rural Affairs report into Badgers and Bovine Tuberculosis is published
 - The Welsh Assembly Government announces a comprehensive plan of action to eradicate Bovine Tuberculosis which includes the targeting of disease in wildlife
 - Department announces that it will not issue licences to cull badgers to combat Bovine Tuberculosis, and will provide extra funding to develop a vaccine for cattle and badgers against the disease
 - A Bovine Tuberculosis Eradication Group for England is established, bringing together Department officials, Animal Health staff and industry stakeholder representatives

APPENDIX FOUR

Summary of the conclusions in the Committee of Public Accounts' previous report

1 The National Audit Office reported on the 2001 outbreak of Foot and Mouth Disease (HC 939, 2001-2002) in June 2002 and published a follow up review, *Foot and Mouth Disease: Applying the Lessons* (HC 184, Session 2004-05) in February 2005. In its ninth report of Session 2005-06 the Committee of Public Accounts concluded that the Department had made good progress in implementing most of their predecessors' earlier

recommendations, but that further action was needed in controlling the cost of a future outbreak and in managing future outbreaks of disease.

2 A summary of the Committee's recommendations in their 2005 report, the government's response, and progress to date is below:

Committee of Public Accounts' 9th Report of Session 2005-06

The Government's Response (CM 6728, January 2006)

Progress to Date

On the payment of compensation to farmers for slaughtered livestock

Controls have been tightened through:

- appointing an approved list of valuers remunerated on an hourly basis, rather than a percentage of the valuation; and
- valuations using average price data from the Meat and Livestock Commission.

The Department still relies on professional valuations, for non standard and pedigree animals and should:

- seek to substantiate such valuations by reference to other relevant data; and
- challenge, and expect the farmer or valuer to justify, any unusual movements.

The Department accepts and welcomes this conclusion.

The Department:

- accepts that the valuations should be informed by reference to the type of data the Committee cites and it will make this explicit in its standard instructions to valuers; and
- will implement a new cattle disease compensation system covering Bovine Tuberculosis, Brucellosis, BSE and Enzootic Bovine Leukosis, based primarily on table valuations, in early 2006.

Valuation of cattle, sheep and pigs to be culled during an outbreak is undertaken by valuers from an approved list. All these valuers have contingency contracts which clearly set out their terms of reference and the basis for valuation. Initial valuation for poultry is made using rate cards published for 36 different poultry production systems. These are updated quarterly and are published on the Department's website.

Table-based compensation arrangements for Bovine Tuberculosis, Brucellosis, Bovine Spongiform Encephalopathy and Enzootic Bovine Leukosis were introduced by the Department in 2006.

Committee of Public Accounts' 9th Report of Session 2005-06

The Government's Response (CM 6728, January 2006)

Progress to Date

On implementation of a levy scheme

A levy scheme could:

- transfer the cost of future disease outbreaks from the taxpayer to farmers; and
- provide incentives to improve farm bio-security, for example by linking the amount of levy contribution to standards of bio-security maintained on a farm.

The Department should:

- make quick progress on consultation on such a scheme; and
- resolve quickly the question of transferring to the industry the costs of secondary disinfection of farms.

On 28 November 2005, the Department announced in its *Partners for success – A farm regulation and charging strategy*, the establishment of a joint working group with industry to develop risk-sharing arrangements. It is taking forward the issues of "transferring part or all of the costs of future disease outbreaks from taxpayers to farmers". Joint responsibility means that the industry will have a direct interest in ensuring that compensation is reasonable. A levy might be one way of achieving this – but it is not the only way. The plan is for the group to come forward with options for the sharing of risks and responsibilities, including costs, during the spring of 2006. Subject to the views of Ministers, this will form the basis of a wider consultation over the summer. The work of the Group forms part of the Animal Health and Welfare Strategy, which was published in June 2004. An important element will be for industry to take ownership of the issue of cost sharing and see it as a means of improving on-farm bio security and health planning. In this context the Group will consider how a new approach can introduce incentives to secure better animal health and welfare.

Between December 2007 and April 2008 the Department consulted on the potential features of responsibility and cost sharing. The Department held national meetings in London and 12 workshops across the regions. There were 75 written responses received to the consultation, expressing a diversity of views as to the next steps that the Department should take. In particular, much debate focused on the structure and status of the body that would oversee responsibility and cost sharing, with, for example, the National Farmers Union strongly supporting a new Non-Ministerial Department being created, similar to the Food Standards Agency, to lead the delivery of animal health and welfare policy.

The Department is planning to conduct a final national consultation on specific proposals for introducing responsibility and cost sharing. It is anticipated that the Department will seek to establish a new arms length body, which would oversee a levy scheme. Primary legislation is required to implement responsibility and cost sharing. A bill or other suitable legislative vehicle is anticipated to be included in the Government's 2010 legislative programme.

On weak financial controls operated by the Department

Weak financial controls operated by the Department during the 2001 outbreak have made it difficult for the Department to substantiate and settle contractors' invoices.

The Department should set a deadline for completion of its detailed forensic audit work and for settling all outstanding claims.

The Department will have finished its reviews of all contractor accounts relevant to the 2001 outbreak by the end of March 2006, but is dependent on judicial timescales and the work of the relevant investigating authorities in concluding all commercial and valuer disputes.

The Department expects to have finished its reviews of all contractor accounts and any judicial reviews relevant to the 2001 outbreak by the end of March 2010. However, this is dependent on judicial timescales and the work of the relevant investigating authorities in concluding all the commercial and valuer disputes. Some contractors have been unwilling to engage in dispute resolution procedures which has led to delays and in some case necessitated legal proceedings.

The State Veterinary Service (now Animal Health) has had responsibility for the financial control of disease eradication since becoming an Executive Agency in 2005. Since 2005 there have been nine disease outbreaks across Great Britain and two incidents involving wild birds. Animal Health has sought with the Department to engage with contractors at the earliest opportunity in each outbreak to ensure contractual commitments are clear. As at December 2008, there were four claims remaining from contractors for the outbreaks in 2007 (none from 2008) with a potential liability of £124,000 and an anticipated liability of £14,000.

Committee of Public Accounts' 9th Report of Session 2005-06

Targeting of inspections

Targeting inspections increasingly on a risk assessment basis would reduce risks of a future disease outbreak. The Department should enhance the effectiveness of its inspection regime by greater coordination, cooperation and information sharing with local authority staff.

Inspectors having and applying a comprehensive and clear understanding of all relevant legislation and regulations is also essential. The Department should encourage the strict application of animal health regulations through use of peer-review, quality checks, and training.

Encouraging good bio-security

Good bio-security should be encouraged through effective deterrents for those farmers who fail to meet minimum standards thereby putting at risk their own and others' livelihoods.

The Department should:

- identify and collect the on the outcome of local authority prosecutions, and size of fines imposed by courts; and
- consider whether it would be appropriate to ask the Sentencing Advisory Council to frame a sentencing guideline on breaches of farm bio-security.

The Government's Response (CM 6728, January 2006)

Local authorities are responsible for the enforcement of animal health and welfare legislation in England and Wales. The use of a risk-based approach is standard in the local authority environment. A Framework Agreement builds on the risk-based approach by encouraging local authorities to develop their risk assessment in partnership with their local State Veterinary Service office.

Data on inspections carried out by most local authorities is shared with the State Veterinary Service and other delivery partners (the AMES system).

Philip Hampton's Report *Reducing administrative burdens: effective inspection and enforcement* recommends the use of risk-based inspection and this is being taken forward and developed.

The Department collects data from local authorities on prosecutions through the AMES database. This records activities where prosecution is initiated, together with the outcome. We have asked local authorities to start recording more information on prosecution activity, including the size of fines imposed by courts.

The Department will review whether it would be appropriate to enter into discussion with the Sentencing Advisory Council on producing guidelines on breaches of farm bio-security.

Progress to Date

Local authorities have introduced successfully risk-based farm inspections into their enforcement practices. A similar risk-based approach to inspection and enforcement is not being employed by Animal Health. The Agency's inspections and farm visits are reactive and demand-led, particular in relation to Bovine Tuberculosis, not fulfilling the Hampton Review's vision for effective inspection and enforcement.

The sharing of information on the condition of farms and the outcomes of inspection visit is poor. Core information systems suffer from poor functionality and are not interoperable with each other. Animal Health's Business Reform Programme and the Livestock Partnership Programme are critical to providing the infrastructure for risk-based interventions; however, progress taking forward these two initiatives has been slower than had been anticipated.

During disease outbreaks, bio-security measures are strictly applied on infected premises and within established restriction and surveillance zones.

At other times high standards of bio-security and husbandry are not being systematically promoted by the Department and Animal Health. Guidance, particularly in regard to Bovine Tuberculosis, is considered to be of a poor quality and impractical by farmers.

Committee of Public Accounts' 9th Report of Session 2005-06

On project management

The Department will need first class project management skills to control a future outbreak effectively, and has put in place an enhanced contingency plan with clear management responsibilities allocated for operations and finance.

The Department should establish a timetable for relevant local bodies to produce contingency plans, and for testing such plans alongside its central plan in scenarios ranging from accidental to deliberate introduction of diseases.

The use of vaccinations

The Department has now clarified its policy and approach to the use of vaccination and/or a contiguous cull to eradicate future disease outbreaks. This approach is being underpinned by a cost benefit analysis of the effectiveness of different disease control options.

The Department should meet its commitment to put the report in the public domain quickly.

The Government's Response (CM 6728, January 2006)

A project management approach to disease control is being taken. Arrangements are now in place for:

- the immediate posting to Local Disease Control Centres of Regional Operations Directors, Divisional Operations Managers and Finance Managers; and
- the State Veterinary Service is appointing readiness and resilience officers at each Animal Health Divisional Office.

Coordination with local authorities, emergency services and stakeholders in developing effective contingency arrangements is being taken forward on a number of fronts.

The Final Report of the cost benefit analysis (CBA) of Foot and Mouth Disease Control Strategies was published on the Department's website in May 2005.

Progress to Date

The *National Contingency Plan for Exotic Diseases* sets out in detail the procedures that the Department, Animal Health and their operational partners follow in the event of outbreak, and the responsibilities of all bodies involved in the response. When tested by local, isolated disease outbreak, these arrangements have been effective.

The roles and responsibilities of the agencies responsible for consequence management during outbreaks need to be better understood. Animal Health has appointed dedicated Readiness and Resilience Officers in each office. More work needs to be undertaken to ensure that the different structures such as Local Disease Control Centre and Strategic Co-ordination Group are better linked. This may be helped if Animal Health were to become a Category 1 or 2 responder under the Civil Contingencies Act 2004.

APPENDIX FIVE

Methodology

Case studies

1 We selected four animal diseases to review in detail in order to illustrate how the Department and Animal Health respond. For each of the four diseases we visited one of Animal Health's Divisional Offices to examine the way in which the Agency is tackling the disease on the ground:

- **Avian Influenza** (Bury St Edmunds, Suffolk) High Risk: an exotic disease affecting poultry requiring immediate emergency response. We focused on the outbreak which occurred in November 2007.
- **Bovine Tuberculosis** (Gloucester, Gloucestershire) High Risk: an endemic disease that affects cattle. It is absorbing a significant proportion of the Agency's resources, and represented a substantial ongoing control challenge.
- **Salmonella** (Chelmsford, Essex) Medium Risk: an endemic disease affecting poultry (and other animals), which can be transmitted to humans particularly through uncooked poultry and raw eggs.
- **Scrapie** (Carlisle, Cumbria) Low Risk: an incurable brain disease affecting sheep and goats. It is one of a group of Transmissible Spongiform Encephalopathies (TSEs), which also includes BSE. There is no evidence that Scrapie is transmissible to humans and although this possibility cannot be excluded, it is considered very unlikely.

2 The key elements of each case study were:

- File review of interventions at 20 premises over the past two years for each disease, selected to illustrate interventions at a variety of premises including, for example, organic and free range farms, different size of farm, farms under movement restrictions, or positive and negative test results. Some farms were subject to multiple testing visits over this period.
- Site visits to between five and eight farms for each case study disease and interviews with the local farmers concerned.
- Group interviews with local operational partners and stakeholders.
- Interviews with Animal Health field staff including the Divisional Veterinary Manager, Veterinary Officers, Animal Health Officers, and administrative staff.
- Process mapping of surveillance, testing, administration and control procedures in place locally, and comparison of these with standard procedures laid down in the Animal Health Operating Manual.

Attendance at apiary inspections

3 We accompanied a regional or seasonal bee inspector in each region of England to observe statutory bee health inspections. We visited a range of apiaries in urban and rural environments, covering both hobbyist and commercial beekeepers, in:

- Peterborough (Eastern Region)
- Northallerton (North East Region)
- Wakefield (North East Region)
- Leeds (North East Region)
- Horsforth (North East Region)
- Bolton (Northern Region)

We also accompanied a bee inspector in Llangollen, Clwyd, to observe the National Bee Unit's work in Wales.

4 In the course of visits we discussed with inspectors and beekeepers their experience of the inspection regime. In total we visited 12 sites, including follow-up inspections to ensure previous application of treatment for European Foulbrood had been successful; inspections carried out because American Foulbrood had been detected in the area the previous season; and inspections forming part of the routine inspection programme.

Consultation with delivery bodies, stakeholders and interest groups

5 We undertook semi-structured interviews with the Department's main delivery bodies, as well as stakeholders and key interest groups. The issues we discussed included:

- whether the Department's objectives and targets for animal health are clear, rational and addressing all major risks;
- whether the delivery chain that the Department has put in place provides effective and responsive animal health services;
- whether Animal Health is well placed to fulfil its role and remit;
- whether the Department and the Agency are working effectively with their key stakeholders to protect and improve animal health;
- whether the services and support that the Department and Animal Health provide to protect and improve animal health are meeting the expectations of key stakeholders; and
- stakeholders' experience of working with the Department to address risks to the health of honeybees, and how current and anticipated threats should best be addressed.

6 The organisations and stakeholders we interviewed were:

- Bee Farmers Association
- Bee Improvement and Bee Breeders' Association
- Bee Diseases Insurance Ltd
- Biotechnology and Biological Sciences Research Council
- British Beekeepers' Association
- Commercial Queen Rearers' Association
- Directorate General for Health and Consumer Affairs (DG – SANCO)
- Food Standards Agency
- Local Authority Co-ordinating Office on Regulatory Service (LACORS)
- Meat Hygiene Service
- National Diploma Board in Beekeeping for the United Kingdom
- National Farmers Union
- National Pig Executive
- Natural England
- Northern Ireland Executive, Department of Agriculture and Rural Development
- Professor Richard Bennett, Reading University School of Agriculture, Policy and Development
- Professor Francis Ratnieks, Professor of Apiculture, University of Sussex
- Rowse Honey Ltd
- Rural Payments Agency
- Scottish Government, Animal Health and Welfare, and Rural Payments and Inspections Directorate
- Veterinary Laboratories Agency
- Veterinary Medicines Directorate
- Vita (Europe) Ltd
- Welsh Assembly Government, Animal Health and Welfare, and Rural Affairs Directorate

7 We also invited written comments from other interested bodies, and received submissions from:

- British Cattle Veterinary Association
- British Poultry Council
- British Veterinary Association
- Environment Agency
- Institute for Animal Health
- Road Haulage Association
- Tenant Farmers' Association
- Trading Standards Institute

Workshops with beekeepers and bee inspectors

8 We conducted two workshops, one in August and one in September 2008. The first of these took place at a meeting of the Cumbria Beekeepers' Association to provide updates on current bee health and provide guidance on treatment of disease. The event was attended by 40 to 50 beekeepers and six members of the National Bee Unit's Northern inspection team. Beekeepers were asked to discuss various aspects of beekeeping: importing bees; challenges facing beekeepers; inspections and training offered by the National Bee Unit; managing pests and diseases; and research into honeybee health issues, including the Department's role. Bee inspectors were asked to consider actions which could be taken to improve their ability to conduct inspections effectively and efficiently.

9 The second workshop took place at a training event run by the National Bee Unit's South West regional inspector at a meeting of the Totnes Beekeepers' Association. This event was attended by 20 to 25 beekeepers with varying degrees of experience. We observed training delivered at a local level by the National Bee Unit and discussed with beekeepers the difficulties they faced in recognising and treating diseases, and the value of inspections and training sessions offered by the National Bee Unit.

Survey of beekeepers

10 We conducted a survey of beekeepers in England and Wales, completed online or on paper, seeking evidence of their experience of interacting with the Department, the Central Science Laboratory's National Bee Unit and bee inspectors. The survey collected background information including the number and location of colonies and previous honeybee losses suffered; beekeepers' experience of National Bee Unit inspections; and views on the sufficiency of advice and guidance available on husbandry techniques and treating disease.

11 We received 2,645 responses; 2,502 electronically and 143 paper-based surveys. This equates to seven per cent of the estimated 37,000 beekeepers in England and Wales.

Academic reviews

12 We commissioned the Newcastle University Centre for Rural Economy to map and critically review the animal health risk and regulatory landscape in England. The review included:

- detailing and describing the regulatory framework governing animal health in England;
- charting the animal health objectives, responsibilities and policies of the Department and its operational partners, highlighting where appropriate gaps, duplication and inefficiencies in the delivery framework;
- identifying the key risks to animal health in England, and mapping these against current regulatory requirements and the Department's and its delivery partners' objectives and responsibilities; and
- outlining how animal health services in England are managed and funded.

13 We commissioned Imperial College Consultants Limited to carry out a systematic literature review of the academic and practitioner literature on honeybee health from public and private sectors, reviewing around 130 papers and statistical surveys. This included papers from the United Kingdom, Belgium, France, Switzerland, Australia, Canada, New Zealand and the United States of America. The review covered:

- a review of the current status of bee diseases and parasites endemic in England and Wales;
- a review of exotic parasites which potentially threaten honeybee health in England and Wales;
- a review of additional risks to apiculture including Colony Collapse Disorder;
- a review of recent activities and research undertaken by the Department and the National Bee Unit on bee health and protection;
- a review of recent activities and research in other countries on bee health and protection; and
- a comparison of the legislation applying to the keeping of honeybees in England and Wales with that applied in other countries.

Analysis of Departmental data

14 We interviewed relevant staff in the Department, Animal Health and the Central Science Laboratory and reviewed internal data including policy documents and submissions, business and operational plans, annual reports and accounts, financial and performance monitoring reports, service level agreements and contracts, and internal assurance reports.

15 We conducted the following analysis:

a Financial Analysis

We used Animal Health's financial data to estimate the respective costs of managing endemic diseases, exotic diseases and preventive work, and to assess the costs of responding to the four diseases covered by our case studies. We drew on the Agency's Work Recording System to calculate the cost of time spent by staff in various activities. We made adjustments to take account of the cost of Official Veterinarians, which we allocated to cost categories according to the work they carried out; and took account of central overheads on a pro rata basis. This served to provide a reasonable estimate of the full cost of addressing disease risks, but should not be treated as an exact calculation. Figures are based on outturn figures in the Agency's year end management accounts so as to allow calculation of costs attributable to specific disease risks on a similar basis to those quoted for the Department as a whole (see below). Total expenditure reported in the Agency's published annual accounts is higher (a difference of £11.7 million in 2007-08, for example) mainly due to inclusion of non cash items and notional charges such as depreciation and cost of capital. Figures for 2007-08 also exclude new functions incorporated as part of the merger to create Animal Health, such as inspections formerly carried out by the Egg Marketing Inspectorate, in order to make these figures comparable with earlier years.

The Department does not use a similar Work Recording System to allocate staff time to specific disease risks, so we were therefore unable to perform an analysis of staff costs in the same way as was possible for Animal Health data. The Department carried out manual recalculations to provide a high level breakdown of its costs between endemic diseases, exotic diseases and preventive work. Some central costs were then reapportioned on the basis of expenditure or full time equivalent staff by grade. The Department also provided an analysis of the cost it had incurred in managing our case study diseases (Avian Influenza, Bovine Tuberculosis, Salmonella and Scrapie) and the funding it provides in support of its agencies and partners. All figures for both the Department and Animal Health are quoted at 2007-08 prices.

In addition, we reviewed the National Bee Unit's 2008-09 budget allocation for its statutory inspection programme and funding provided in support of additional projects.

b Review of performance information

We drew on Animal Health's management information to assess operational performance for 2007-2008 and also reviewed the Department's monitoring against its relevant Departmental and Intermediate strategic objectives.

c Analysis of notifications of exotic disease

We reviewed summary records of notifications of suspected exotic disease outbreaks, and examined in detail 100 case files to assess the speed of response, adequacy of action taken, and identify the source of positive notifications as well as false alarms.

d Analysis of records of bee inspection activity

We undertook analysis of Departmental data to assess the proportion of beekeepers in England that are registered, the scale of bee disease amongst registered beekeepers, the performance of bee inspectors and their success in treating disease and the scale of honeybee imports into the UK.