

# WHO'S LOOKING AFTER DEFRA SCIENCE?



# WHY SCIENTISTS ARE GOOD FOR US

Work carried out by scientists in the Department for the Environment, Food and Rural Affairs touches many fundamental areas of our daily life: water, food, air, land, people, animals and plants.

Within Defra there are five science-based agencies: three laboratories – the Central Science Laboratory, Centre for Environment, Fisheries and Aquaculture Science and the Veterinary Laboratories Agency – and two regulatory agencies: the Pesticides Safety Directorate and the Veterinary Medicines Directorate.

This briefing provides a snapshot of the work they do, why it is in the public interest and the threats facing them.

## Avian influenza

Avian flu is just the latest issue to demonstrate the importance of public sector science laboratories. Defra and its agencies – principally the Veterinary Laboratories Agency – are at the frontline of the struggle to understand and control the AI virus. In this fight to control the virus, virology is the spearhead.

Prospect members in the VLA analyse samples, track the development of the virus and observe how it mutates.

VLA is the International Reference Laboratory for Avian Influenza, recognised by the European Union, the United Nations and the World Organisation for Animal Health (OIE). VLA provides consultancy on AI around the world.

In its role as the EU Community Reference Laboratory for AI, the laboratory:

- co-ordinates methods for diagnosing AI within the EU
- actively assists in the diagnosis of AI outbreaks in member states
- trains experts to harmonise laboratory techniques throughout the EU
- collates information on virus characterisation
- oversees and develops a programme of surveillance in bird populations in Europe.

VLA is also nominated as the UK National Laboratory for avian influenza. This means it:

- conducts statutory diagnosis of AI
- carries out surveillance
- has an active programme of research on influenza in both birds and mammals.

The viruses preserved in VLA archives represent an important platform for both research and surveillance projects.



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## Collaboration

None of Defra's laboratories work in isolation. During 2005/06, Defra and other UK agencies worked together to reorganise monitoring to bring together information more effectively. The Inter-Laboratory Forum, a group of six agencies, shares resources to meet government's demands more cost-effectively. The group provides more than 9,000 scientists, engineers and technologists.

One example of effective collaboration is the "lab on a chip" – a single test offering the possibility of spotting a disease outbreak in hours rather than days.

The "lab on a chip" project, which is being led by the Central Science Laboratory, will detect more than 600 viruses that affect humans, animals, plants, fish and bees, including avian influenza, rabies and foot and mouth.

Animal and plant researchers will be able to use the same test to identify many viruses, saving time and resources in the event of an outbreak. It will also help to quickly identify when a virus has jumped from one species to another and when new strains of existing disease emerge in the future.

The biochip uses microarray technology to identify the viruses. Pieces of DNA of known viruses are attached to a glass slide and then mixed with pieces of DNA from the unidentified virus. Because matching pieces of DNA will stick together, researchers can identify the unknown virus according to which sections of the chip DNA the new DNA sticks to.

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The whole process takes only from a few hours to a day and a half – much quicker than traditional methods of virus testing which can take as long as 7-10 days.

Dr Ian Barker, who is leading the work to develop the chip at CSL York, said: “We’re working to make the biochip sensitive enough to distinguish between diseases that have similar symptoms, such as Newcastle disease and bird flu. It will also be able to recognise the strains or subtypes of a virus, for example H5NI, so we’ll know what disease we’re dealing with straight away.”

The consortium includes: CSL, Health Protection Agency, Institute of Animal Health, Veterinary Laboratories Agency, Centre for Environment Fisheries and Aquaculture Science, Royal Veterinary College.

## Europe

All of these organisations are highly respected not just in Europe but worldwide. Work in the European Union is an important part of their output. This is vital as this work determines the guidelines and standards by which they and others in Europe increasingly operate. For example, PSD is regularly asked to provide technical training and assistance to organisations within and outside the EU. Participation in EU projects has also enabled PSD to build mutually beneficial links and relationships with a number of countries. One of the benefits is gaining cooperation in negotiations in



Brussels and obtaining wider regulatory collaboration.

The EU-funded twinning programme is designed to help accession states and candidate countries to develop modern and efficient administrations comparable to those of member states. Experts from member states work with the beneficiary states for at least a year to build capacity in clearly defined areas. During 2005 the Central Science Laboratory was successful in winning support to work with partners in twinning projects focusing on phytosanitary controls and food safety in Turkey, Estonia, Malta, Hungary, Lithuania and Serbia.

## Privatisation, relocation and reorganisation

In May 2004 Defra commissioned a consultant to review its three science laboratories – CSL, Cefas and VLA. The review concluded that, based on current funding patterns, and the piecemeal nature of the work commissioned by Defra, the labs were unsustainable in the medium to long term.

Defra says the lab review was necessary because “maintaining the status quo will leave the future of all three labs looking increasingly vulnerable as the services procured by Defra customers continues to decline.”

Yet in the same paragraph, Defra points out that the laboratories “provide Defra with scientific evidence and research on which to base policy development and have a vital role to play in providing front line services in a national emergency scenario.”

In August 2006, the Treasury ordered Defra to cut £200 –£300m from this year’s budget over the next six months. Defra says the cuts have to be made because of “a number of pressures, including funding avian influenza incidents and the introduction of a new payment scheme for farmers.”

The 7 per cent savings are expected to cut deeply into flood defence work, nature conservation and its support for scientific bodies and research groups.

Modern science infrastructure in the form of buildings and equipment is expensive. It is also a long-term commitment – scientific capability cannot suddenly be made available, but must be planned for and supported. This is a responsibility of government and cannot be left to market forces, particularly in the environment and agriculture sectors.

**Cefas** is at risk of losing scientific expertise and knowledge which has been built up over many years. In June, Defra’s Minister for Science, Lord Rooker, announced that Cefas’s current sites at Lowestoft, Suffolk and Burnham-on-Crouch, Essex will be closed and replaced with a new science

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complex in Lowestoft, to be built by 2009. The third Cefas site in Weymouth, Dorset will remain open, but its future is still uncertain. Burnham is around 100 miles and a three to four-hour train journey from Lowestoft. Although Burnham's 90 staff have been offered the option to relocate to Lowestoft, not all of them will be able to go because of their personal circumstances.

The future of the **Central Science Laboratory** is also uncertain. Defra is considering a series of 'alternative ownership models' for the lab, including keeping it as an agency, turning it into a trading fund, creating a government-owned company, a government-owned contractor or a public-private partnership. It is arguable whether the private sector would want or be able to maintain responsibility for the range of work done at CSL. A private owner also would be unlikely to want to carry out key areas of public science research.

At the **Veterinary Medicines Directorate** and the **Pesticides Safety Directorate**, the Hampton review of regulation and enforcement could have far-reaching implications for the future organisation and structure of the agencies.

"Work to implement the Hampton recommendations in particular has raised many questions in the minds of staff and stakeholders. The principles underlying the Hampton recommendations are laudable and the VMD has been applying them for many years. It is important that any

move of the VMD services under the umbrella of another larger organisation does not compromise our service standards and consequently the safety, quality and efficacy of veterinary medicines... However, the uncertainty of how the various recommendations will be implemented is unsettling..."

The uncertain future is having an impact on staff. According to the minutes of a regulatory agencies strategy board meeting in April 2006, "uncertainty regarding Hampton implementation is the key risk for maintaining staff resources in 2006/7."

At the **Veterinary Laboratories Agency**, consultants from KPMG are looking at options for the future relationship between the VLA and the Institute for Animal Health and also their future status. The options are:

- retaining two separate organisations but rationalising and sharing some facilities
- creating a new organisation that would combine all or part of VLA together with statutory, surveillance and appropriate related research at IAH Pirbright
- creating a new organisation that would embrace additional elements of VLA and IAH
- creating a new organisation that would embrace the totality of VLA and IAH.

The 'ownership model' for any resulting organisation is unclear. The timescale for the project is just 12 weeks, at a time when many staff will be taking annual leave. Prospect has told the consultants:

- the science done by VLA and IAH is complementary, there is no significant overlap
- IAH does basic and strategic science
- VLA does applied science, but through a variety of work from routine diagnostic laboratory testing through to fundamental basic research
- neither organisation has the capacity/expertise to cover for the other
- the critical mass of scientists at both organisations must be protected
- closer working between IAH and VLA is seen as the way forward, with the example of the new joint virology unit at Pirbright as a good model
- both IAH and VLA essentially rely on Defra funding – they don't have other significant income streams.

## Hampton

In his 2004 Budget, Chancellor Gordon Brown asked Philip Hampton to lead a review into regulatory inspection and

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enforcement “with a view to reducing the administrative cost of regulation to the minimum consistent with maintaining the UK’s excellent regulatory outcomes.” Hampton’s final report was published in March 2005.

Hampton recommended a number of regulatory mergers, which will reduce 31 regulators to seven by April 2009. The Better Regulation Executive, part of the Cabinet Office, is overseeing the work and will produce a document containing detailed plans for all mergers by September 2006.

The Better Regulation Executive has set a target for Defra as a whole to reduce the administrative burden of regulation by 25 per cent, ie the cost of going through the process. This will impact on both PSD and VMD.

## Pay and careers

In 1995, all the agency and core-Defra staff worked for the same employer (MAFF) and had the same rates of pay. But since then the pay gap between staff at CSL, Cefas and VLA has widened. By treating its agency staff as second-class citizens Defra is destroying teamwork and damaging morale.

These staff provide vital government services yet they can receive up to £7,000 less than colleagues working in Whitehall on work graded as equivalent. For example, in June 2004, Defra launched the Animal Health and Welfare Strategy for Great Britain. This strategy set the scene for VLA’s future as a ‘key delivery agent’, yet VLA’s funding and hence pay has continued to lag behind core-Defra. It raises questions about what happens when the next emergency occurs. How can the government expect agency staff to work alongside departmental colleagues in the same office, fighting the same emergency, for significantly less pay? What does it say about the government’s commitment to science, and how does it encourage talented people into a science career?

These pay differences are not only demoralising for staff but bad for the agencies because they also restrict staff movement between organisations.

For example, although staff in PSD have the same pay and conditions as their colleagues in Defra, one of its longest running problems has been the few opportunities for promotion. In the early years of the agency, staff numbers increased to meet increased workloads, but they have now levelled off or are decreasing. The situation has been exacerbated by PSD’s location in York, where there are few other posts suitable for staff who wish to remain scientists but want promotion or career progression. The CSL, also located in York, could be an alternative. However its low rates of pay and insecurities over its future mean that the

movement of staff is all one-way – from CSL to PSD.

## What more does government want?

Prospect members are entitled to ask the government ‘What more do you want?’ They meet their targets, meet legislative deadlines, respond to unforeseen crises and make the efficiency savings asked of them. Yet their existence is constantly questioned in the form of endless, expensive reviews. This is demotivating, demoralising and a distraction from the work they are paid to do.

# FACTS AND FIGURES ON UK FOOD INDUSTRY 2004

Number of UK consumers: 59 million people

## Food

9,445 food and drink manufacturing sites/factories, includes everything from primary processing (milling, malting, slaughtering) to complex prepared foods.

262,902 restaurants, cafes, etc

104,753 grocery retailers

## Spending

£78 billion: household expenditure on food and drink

£74 billion: consumers' expenditure on catering services

## Households

Overall household expenditure on food and drink in the UK per person per week in 2003-04: £22.67

meat (other than carcass meat) and meat products: £3.82

cereals: £3.68

alcoholic drinks: £2.65

fruit: £1.63

vegetables (excluding potatoes): £1.77

Household expenditure on food & drink			
Average	1994-96	2004	2006
£ million	100,922	147,720	154,174

## Land

18.4 million hectares, 77 per cent of the land area of the United Kingdom, was farmed

304,800 farm holdings

## Animals

17.7 million ewes and shearlings in the sheep breeding flock

17.3 million lambs under one year old

2.1 million cows

691,000 heifers in calf

449,000 sows in pig and other sows for breeding

66,000 gilts in pig

119.9 million table fowls including broilers

29.7 million laying fowls

8.2 million growing pullets



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## Self-sufficiency

UK self-sufficiency in food as a percentage of:

Average	1994-96	2004	2006
All food	72.4	61.9	60.0
Indigenous type food	85.3	74.6	73.3

## Imports and exports

£9.7 billion: value of food, feed and drink exports (4.7 per cent down on 2003)

£22 billion: value of food, feed and drink imports (1.7 per cent higher than 2003)

£12.2 billion: the trade gap in food, feed and drink

Average of food, feed and drink	1994-96	2004
Imports £ million	16,160	21,942
Exports £ million	9,648	9,702

Source: UK agricultural statistics in your pocket

# LAND AND FOOD: CENTRAL SCIENCE LABORATORY

The Central Science Laboratory was founded by the then Ministry of Agriculture, Fisheries and Food in April 1992. CSL moved to a new purpose-built site outside York in 1996. The organisation employs nearly 700 staff.

CSL specialises in the sciences underpinning agriculture for sustainable crop production, environmental management and conservation, and food safety and quality. It carries out a wide range of analytical, diagnostic and consultancy services designed to support the international land-based and food industries.

**Funding:** In 2005/06, 69.8% of CSL's funding came from Defra. This is projected to fall to 60% by 2014/15 based on flat funding. It met the majority of its financial targets for 2005/06.

In addition to providing a range of services on a commercial basis, CSL is in essence an internal service provider to Defra.

## CSL WORK PROFILE

Crop protection	26%
Wildlife aspects of animal disease	24%
Pesticides and veterinary drugs	20%
Food safety	15%
Wildlife and land management	9%
Horticulture	6%

Along with the other Defra agencies, CSL also provides an emergency response or contingency capability for handling national emergencies.

## EXAMPLES OF WORK CARRIED OUT AT CSL

### Strengthening defences against plant diseases

Alien pests and diseases pose an enormous threat to agricultural crops and native flora of European Union member states. Global trade in fresh produce and climate change are adding impetus to attacks on Europe's borders by pests and diseases from around the world. Sudden oak death and pinewood nematode are just two of the latest damaging organisms to enter Europe.



Defra and European research funding is supporting the use of DNA-based diagnostics to protect Europe from invasive pests and diseases. The new project called "PORTCHECK" is led by CSL scientists and focuses on the use of sensitive molecular diagnostics at the sites of entry for fresh produce and plant materials.

### Pioneering accreditation for analysing food contaminants

In a first for the UK, analytical chemistry experts at CSL have succeeded in achieving formal accreditation for the analysis of polybrominated dioxins and furans (PBDD/Fs) – toxic environmental pollutants that can contaminate foods. PBDD/Fs can be formed when organic material containing

## DEFRA – CENTRAL SCIENCE LABORATORY

Year	Defra Commissioned R & D	Defra Commissioned Policy support	Defra Other Contracts	Defra NDGBs	Defra Facilities Charge	Other Gov't Bodies	EU	Commercial
2002-2003	6,349	10,394	3,186	470	7,770	1,197	1,054	8,991
2003-2004	5,919	10,045	3,658	789	7,227	3,606	909	9,270
2004-2005	6,251	10,295	4,738	808	7,677	2,757	1,279	9,007

Latest published figures for 2004/2005. Figures in £000s

# LAND AND FOOD: CENTRAL SCIENCE LABORATORY

bromides is incinerated as can occur in waste incineration. An important new source of these compounds is from the incineration of materials that incorporate brominated flame retardants (BFRs). Once released into the atmosphere PBDD/Fs can find their way into the food chain following similar environmental pathways to chlorinated dioxins and PCBs. Recent research has shown PBDD/Fs to be present in blood and fat tissue, confirming human exposure.

CSL is internationally renowned for analysis of an extensive range of contaminants and residues in food and in the authentication of high premium goods.

## Mobile Geographic Information System

CSL scientists have recently developed a novel way to help field workers improve the efficiency of data collection in remote locations. The Mobile Geographic Information System (GIS) Delivery System has streamlined the process of field working, making information available on-line in real time. The innovation in this technology lies in the novel use of existing corporate infrastructure. By linking together computers in the field with internet facilities and CSL's Laboratory Information Management System (LIMS), they have produced a truly unique use of technology.

The Mobile GIS Delivery System is a piece of portable computer equipment which has eliminated the need to transcribe data from field notebooks. For example, an inspector arrives in a field, clicks a button, enters his coordinates and data, and a dot appears on his computerized map. At the press of another button the computer sends data over the air back to the central servers, where the dot appears on a map back at headquarters.

Recent field-testing by CSL's bird management and plant pathology teams has been very successful. Scientists found the hand-held devices increased positional accuracy and gave a higher quality and speed of data capture. Developed under Defra's Challenge Fund, further potential applications of this new system are diverse: the technology can be used in routine fieldwork; sample collecting; scheduled and ad-hoc inspections; and surveying and mapping. These cutting edge procedures have the potential to benefit Defra as a whole, enabling close co-ordination on a national scale.

## Exploiting UK science

CSL is heading a consortium of six public sector research labs in the commercialisation of a wide range of exciting scientific innovations. Between them, the laboratories have already identified over 100 novel development projects to bring to market in areas such as animal vaccines, disease

identification and food safety.

Since April 2005, analytical chemists at CSL have worked with the food industry and the Food Standards Agency to eliminate the use of illegal dyes in foods.

In July 2005, CSL's wildlife management group assisted Defra in controlling an outbreak of Newcastle Disease in pheasant chicks imported from France.

## Pesticide usage survey and the Central Science Laboratory

Official surveys of pesticide usage on a variety of agricultural and horticultural crops started in 1965, following concerns over the use of organochlorine insecticides. With the introduction of the Food and Environment Protection Act in 1985, the post-registration monitoring of pesticides became a legal requirement, and in 1990 the government's independent Advisory Committee on Pesticides fixed the programme of surveys such that arable surveys are conducted every other year, with all other crop groups surveyed on a four-yearly cycle in England and Wales. Data is collected by the Pesticide Usage Survey teams at the Central Science Laboratory and the Scottish Agricultural Science Agency.

Data are collected by a team of four experienced surveyors who make personal visits to holdings across England and Wales. Similar data for Scotland are also collated in York to provide information for Great Britain as a whole. All holdings are selected from a random sample, stratified by holding size and region. The information is collected on a field-by-field basis for each crop and is then extracted using data from the annual agricultural census returns to give national estimates of usage.

As a result of these surveys, the team holds 40 years' worth of pesticide usage data that can be attributed to both time and place. This is a valuable asset that supports many strands of work and provides independent information on pesticide usage. The EU is now considering bringing in a requirement for Member States to produce this data - the UK already has 40 years worth of data.



# AQUACULTURE: CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE

Cefas is an internationally renowned scientific research and advisory centre working in fisheries management, environmental protection and aquaculture.

Its origins date from 1902 when a research station was established to investigate declining fish stocks as part of the UK contribution to the newly created International Council for the Exploration of the Sea.

Cefas has over 500 staff based at three specialist laboratories in Lowestoft, Weymouth and Burnham-on-Crouch, with bases for sampling officers in Whitehaven, Newlyn, Whitby and Scarborough. It also has its own ocean-going research vessel.

Many Cefas scientists are leaders in their fields and advisors on international bodies such as the International Council for the Exploration of the Sea. Cefas provides the secretariat for the Marine Climate Change Impacts Partnership – an inter-agency body that co-ordinates the transfer of evidence on the impacts of marine climate change and provides advice to policy advisers and decision-makers.

Cefas has a key role nationally and internationally in determining the impact of contaminants and pathogens on aquatic systems. Its Weymouth laboratory is the European Community Reference Laboratory for Shellfish Hygiene and the National Reference Laboratory for Fish and Shellfish Diseases.

## Funding

“Maintaining excellent science will be challenging given pressures on government budgets against an increasing need for marine sciences.”<sup>(1)</sup>

Income from Defra: £32.2m accounted for 80% of turnover (81% in 2004–05).

Another 11% of income came from other UK government departments and agencies, particularly in services to the Food Standards Agency.

9% of income came from EC, foreign government and commercial sources.

## Examples of Cefas' work

The profile of interest in a sustainable marine environment has never been higher. A UK Marine Bill was launched in May 2006 and the European Commission is also proposing a Marine Strategy Directive. Cefas's ability to integrate diverse information about the marine environment into single, cohesive assessments will see a continued demand for its services as ecosystem management and monitoring activity become more testing.

1) Cefas annual report 2005/06

## Mussels

New work has revealed that populations of mixed species of mussels can occur in locations that were historically thought to contain one species. Using traditional molecular biology techniques, an estuary originally designated as containing only *Mytilus edulis* was found to be populated by *M. edulis* and *M. galloprovincialis*. Interestingly, hybrids of the two species were also discovered. Mussels are a frequently used indicator for environmental pollution. Consequently the precise species composition of a population is critical to interpreting any such monitoring data.

Incorrect identification may have serious implications for the interpretation of data on biological effects. Statistics are being used to investigate whether mussel speciation has an effect on a range of biological effect markers commonly used in mussel monitoring programmes.

## International work

Cefas recently completed two important projects supported by the Department for International Development. In the first piece of work, scientists compared the global vulnerability of fisheries to climate change for 133 countries.



# AQUACULTURE: CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE

Globally, fisheries supply over 2.6 billion people with at least 20 per cent of their average protein intake. The analysis showed that many African and Asian nations are extremely vulnerable because of their high reliance on fish as a protein source and the low capacity of their fisheries to respond to predicted temperature increases. The identified hotspots will allow international development organisations to target adaptive activities on those nations that would most benefit.

In the second project Cefas showed that two-thirds of coral reefs are being exploited unsustainably. Future population growth implies the equivalent of an additional 8.9 Great Barrier Reefs will be needed to support the predicted demand from fisheries by 2050.

## Offshore wind developments

Renewable energy sources have benefits for society but they also have the potential to affect the marine environment negatively. A critical part of the consenting process is therefore the assessment of potential environmental impacts. So far, 12 locations have been granted consent in the UK government's first round of offshore wind developments, of which three are already generating electricity. Environmental surveys at these sites, as part of the licence conditions, will add to our knowledge. In December 2003 the UK government announced a second round of larger developments. Cefas scientists are assessing construction applications for the first four of the 15 proposed locations.

## Cypermethrin sheep dips

Cypermethrin sheep dips are used to treat and prevent sheep scab, ticks and blowfly. In 2005, 52,000 litres of cypermethrin sheep dip were sold for dilution to 26 million litres.

Cypermethrin sheep dips are powerful chemicals based on synthetic pyrethroids. These have a toxic effect on the reproductive systems of certain fish, particularly salmon. Research from several countries also shows that carp and other river life are similarly affected.

Between January 2004 and August 2005 the Environment Agency investigated 32 sheep dip incidents causing major or significant ecosystem damage. The 12 most serious cases involved cypermethrin dips. The majority of incidents were in Wales and most arose from apparent routine use rather than disposal of used dip. All of the cases involved the loss of aquatic life with one involving a substantial loss of crayfish, a protected species. Nine of the cases led to prosecution.

In February 2006, Ben Bradshaw, Parliamentary Secretary

for local environment, marine and animal welfare told MPs: "In the light of the evidence available on the environmental pollution from routine use of cypermethrin sheep dips and the alternative products available for sheep ectoparasite control, it was decided to suspend the marketing authorisations for cypermethrin sheep dips on a precautionary basis until more information was available on how the products can be used without providing an unacceptable risk to the environment."

This ban on the sale of these sheep dips throughout the UK was the direct result of research by CEFAS.

Dr Andy Moore, based at Cefas' Lowestoft laboratory, said: "These chemicals are seriously toxic: one part per billion has a serious effect on fish reproduction. The chemical significantly reduces the sperm produced by the spawning male salmon, and the chances for egg survival. Such harm has serious implications for the survival of salmon, sea trout and wild brown trout populations."

Sheep dips routinely enter watercourses from numerous pathways including disposal on fields, "washing off" the wet fleece of sheep, and waste from fleece processing. The Veterinary Medicines Directorate has acknowledged that the toxicological information showing the serious damage the sheep dips have on the environment was too overwhelming to ignore. Chemical manufacturers were unable to provide adequate information or guidance on the pollution risk so the VMD took the action of banning the sale of cypermethrin sheep dips.

# PERSONAL VIEW: WHAT A WASTE

**Marie Pendle** works at the Burnham-on-Crouch, Essex, laboratory of the Centre for Environment, Fisheries and Aquaculture Science, which faces closure in three years' time.

A review has decided that all staff at the lab will have the option of moving to a new CEFAS laboratory opening at Lowestoft, Suffolk, around 100 miles away and more than two hours' drive.

But, says Marie, that is a difficult decision for many – and came as a surprise to staff. Ironically, not long before the announcement, a new extension to the Burnham lab costing more than £900,000 was opened in March to replace seven Portakabins whose planning permission had expired.

“Some are excited about going but others will be unable to go because of their personal circumstances, meaning years of scientific expertise will be wasted.”

Marie is unsure yet what she will do – her husband is employed locally as a middle manager in manufacturing and she is not confident that he would find an equivalent job in Lowestoft, which is a deprived area.

Marie has worked at the Burnham laboratory since leaving school at 18 after taking A-levels in biology, chemistry and maths. For 15 years she was a benthic ecologist, looking at animals that live in and on the seabed and how they are affected by various human activities.

Training was on the job with day release to study for an HNC in applied biology.

Five years ago Marie transferred and was then promoted to her current post of marine environmental impact assessor. She works in a team of about 10-12, all based at Burnham, though in their jobs they travel around the country continuously.

“Under the Food and Environment Protection Act anyone who deposits anything in the sea has to get a licence from Defra's Marine Conservation and Environment Unit.

“Defra sends us the application to look at to ensure the marine environment is kept as safe as possible. Applications can range from somebody building a jetty at the bottom of their garden to huge constructions of offshore wind farms.

“Also, for any port that is doing dredging works we have to see how contaminated that material is, so that anything disposed of at sea does not have an adverse environmental



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impact. My job involves knowing which relevant experts to consult and making sure this happens.”

For example, with a windfarm application Marie would approach the fisheries experts, the benthic ecologists, and the coastal process experts – all Cefas employees. “I make sure I know the right questions to ask them – for example I might request that samples of sediments are taken in response to the application and arrange for their analysis.”

It is then up to Marie to interpret the data and compile reports for Defra. “You need both scientific skills and communication skills to make the reports accessible.” As well as on the job training, Marie has also attended a science report writing training course.

“These are skills acquired over many years, and not something you would expect new people coming into the job to be able to do from day one.”

Marie also conducts research, such as a current Cefas project looking at sediment sampling patterns and designs.

During her time in the post she has also been studying for an Open University postgraduate diploma in environmental decision-making, which she recently passed. “All this makes it rather sad if we are going to be transferred in three years' time.

“There is a good chance that those who do not move will be lost to government science. There are few such jobs in this area and for many the only other option will be to go to a policy area of Defra, probably in London.

“Usually, once scientists move across to policy they rarely return. Apart from anything else there is a huge differential in wages.

“Also, you need to keep abreast of changes in the environmental area, as well as the social and economic effects of any decisions – adopting an ecosystem approach. It takes years to acquire this knowledge and it would be difficult for anyone who leaves to come back to it.”

Marie reckons that out of 80-90 staff at Burnham, around a third have indicated that they will go to Lowestoft, a third are undecided and the rest think they will not go.

“All this uncertainty means a lot of people are already looking for new jobs. It doesn't help morale, though everyone is trying to behave very professionally.”

# ANIMAL HEALTH: VETERINARY LABORATORIES AGENCY

The Veterinary Laboratories Agency is one of the largest establishments of its kind in the world and is internationally recognised as a centre of excellence in veterinary science.

It provides a wide range of applied research and consultancy on livestock disease and diagnosis of diseases of statutory and public health importance. It provides surveillance of new and emerging diseases throughout the country to the UK government, all sectors of the livestock health industry and the private sector.

VLA has close international links with research institutes, universities and commercial companies and acts as a reference laboratory for a wide range of infectious and non-infectious diseases in farm animals.

The agency employs just over 1,200 staff with an income of around £97m. Around 85-90% of its funding comes from Defra.

VLA traces its origins back to 1894 when its forerunner, the Central Veterinary Laboratory, was established in London to deal with a swine fever epidemic. The Laboratory moved into its current headquarters at Weybridge in 1917, one of the first purpose-built veterinary laboratories in the world. The Veterinary Investigation Centres, the forerunners to VLA's regional laboratories, trace their origins back to 1922.

VLA is based in Addlestone, Surrey with fifteen regional laboratories covering England, Scotland and Wales. These laboratories provide a local catchment area for submitting and testing diagnostic samples and play a key role in animal disease surveillance (see page 13).

The regional labs are at: Aberystwyth, Bury St Edmunds, Carmarthen, Langford, Lasswade, Luddington, Newcastle, Penrith, Preston, Shrewsbury, Starcross, Sutton Bonington, Thirsk, Truro and Winchester. There are also two surveillance centres at the Liverpool and London veterinary schools.

One of the key aims of the VLA is to provide an emergency response capacity to Government. The VLA is the national diagnostic laboratory for important exotic diseases such as brucellosis, classical swine fever (CSF), Newcastle disease and avian influenza and must provide the lead in dealing with any disease emergency involving these diseases.

Furthermore, the VLA maintains the capability to rapidly mobilise veterinary, technical and administrative support and take on testing for any other new or emerging livestock disease, including those not normally handled by the VLA. This was demonstrated in the recent foot and mouth disease (FMD) epidemic.

VLA divides its work into six science programmes and a commercial programme:



## Statutory and Exotic Viruses

This includes Rabies, West Nile Fever, Classical Swine Fever, Foot and Mouth Disease, Newcastle disease, Avian Influenza and others. Apart from West Nile Fever, there have been incidents or outbreaks of all these notifiable diseases over the last 6 years. Rabies, West Nile Fever and Avian Influenza in particular pose a significant threat of human infection.

### Avian flu

As an International Reference Laboratory for the OIE\* and FAO\*\*, VLA has played a major role in meeting the global challenge posed by avian influenza. The agency has been in the forefront of international efforts to monitor disease patterns, advise on control, develop new technology and carry out diagnostic testing of wild birds across Europe.

### Newcastle disease

The successful control of an outbreak of Newcastle disease in Surrey in July 2005 highlighted VLA's capability for dealing with emergencies.

Newcastle disease is a highly contagious disease of birds caused by a para-myxo virus. Birds affected by this disease are fowls, turkeys, geese, ducks, pheasants, guinea fowl and other wild and captive birds. It remains a problem world-wide. Recent serious outbreaks of Newcastle disease occurred in Denmark in 2002, and in California in 2003.

In the Surrey outbreak, the premises were cleansed and

# ANIMAL HEALTH: VETERINARY LABORATORIES AGENCY



disinfected, VLA made surveillance visits to premises within the infected area and there were no further reports of suspected disease. The infected area restrictions were lifted in August 2005.

## Transmissible spongiform encephalopathies

TSEs (diseases of the neurological system which includes vCJD in humans) remain at the forefront of VLA's research and surveillance, particularly with the emergence of atypical strains of scrapie.

The TSE programme consists of approximately 100 diverse research and surveillance projects. The programme is recognised as unique and unlikely to be delivered anywhere else in the world. Several departments across the agency contribute to the delivery of the programme. Projects have proved challenging to interpret but have produced more lines of investigation for future research.

VLA is the European Community Reference Laboratory on TSEs.

## Food and Environmental Safety

The Food and Environmental Safety Programme, often in collaboration with the Health Protection Agency (HPA) provides consultancy, research and surveillance on food safety issues on farms and their environment, in support of both public and animal health.

For example, VLA is supporting a British Pig Executive control programme to reduce the prevalence of Salmonella infection in slaughter pigs. Meat juice samples from batches of slaughter pigs are tested for antibodies to Salmonella

and, if a high prevalence is found, further support is provided in the form of advisory farm visits and microbiological testing.

## Statutory and Exotic Bacterial Diseases

The SEB programme focuses particularly on surveillance of and research into diseases caused by Mycobacteria, Brucella and Mycoplasma species.

Bovine tuberculosis, caused by *Mycobacterium bovis*, is an endemic disease in GB affecting principally cattle. It is also a zoonosis.

The Independent Scientific Group for TB in Cattle and Badgers (ISG) chaired by Professor Bourne has

strongly supported the expansion of the research effort so that future TB control policies can be based on sound scientific knowledge. At present the ISG is supporting a wide range of research initiatives, with particular interest in re-assessing the importance of cattle-to-cattle spread, improving diagnosis and use of molecular epidemiology, developing a vaccine strategy and understanding the pathogenesis of TB in cattle.

Brucellosis has been detected in mainland Great Britain on three separate occasions in the recent past, despite it having been eradicated following a lengthy and costly campaign. This has highlighted a continuing need for the current statutory requirement to monitor farm livestock for any introduction of Brucella infection into the national cattle herd or into small ruminants. The requirement remains for detection at the earliest opportunity to avoid widespread dissemination.

The serious Mycoplasma diseases, contagious agalactia in small ruminants and contagious bovine pleuropneumonia, are currently absent from GB. Defra require continued monitoring for freedom from disease and early warning of introduction.

## Emerging diseases and welfare

This programme aims to supply high quality information on the disease and animal welfare status of farmed livestock, birds and wildlife in England and Wales. The programme is made up of a collection of projects designed to deliver scanning surveillance information, scientific consultancy and research.

# ANIMAL HEALTH: VETERINARY LABORATORIES AGENCY

The programme provides

- immediate notification to Defra's Animal Health and Welfare Directorate General (AHWDG) of suspect notifiable diseases and suspected cases of exotic non-notifiable diseases.
- identification of potential new and emerging diseases, zoonotic infections and intoxications.
- quarterly reports and annual reports summarising the current national disease status and identifying trends, novel diseases and associated changes in risk.
- ad hoc reports to the State Veterinary Service assessing risks and hazards to the livestock industry after local investigations into new and emerging diseases.

## International Trade

The International Trade Programme helps safeguard the health of the human and animal populations in GB and facilitates trade by providing a comprehensive laboratory testing service and consultancy on a broad range of animal health issues relating to the import and export of animals, animal feedstuffs and genetic material.

## Commercial Programme

VLA is expanding its wide range of commercial activities, with a key aim of filling any funding gap from government.

\* OIE: *An intergovernmental organization with 167 member countries. It collects, analyses and disseminates the latest scientific information on animal disease control.*

\*\* FAO: *The food and agriculture organisation of the United Nations.*

**Nick Coldham** is a biochemist in the department of food and environmental safety at the Veterinary Laboratories Agency in Weybridge. Nick's area of expertise is proteomics.

Proteins are the basic chemicals that make up the structure of cells and direct their activities. Proteomics is the study of the expression, function and interaction of proteins in health and disease.

Proteomics technologies are being used to assess changes in protein expression to identify biomarkers so as to identify differences between normal and diseased tissue.

It can also be used to study the set of proteins produced by an organism, and the changes in protein expression patterns in different environments and conditions.

So, proteomics seeks to correlate directly the involvement of specific proteins, protein complexes and their modification status and a given disease state. Knowledge of such links can provide a fast track to identifying new drug targets for treating diseases or for developing diagnostic tests.

Nick's work is a good example of the appliance of science – moving research and development from basic research through to application in VLA surveillance. For example, Nick is looking at how proteins provide resistance to antibiotics eg the beta-lactamases which degrade some penicillins.

Nick is looking to develop a simple test for multiple antibiotic resistance. He already has potential tests lined up which will be introduced into a VLA surveillance operation.

# PERSONAL VIEW: WHY WE NEED REGIONAL LABORATORIES

Phil Watson qualified as a vet 20 years ago. He has been a Veterinary Investigation Officer at VLA Penrith for ten years, and has specialised in sheep diseases.

Defra's Animal Health and Welfare Strategy states that private veterinary practices are fundamentally important to effective surveillance. Phil says: "This has been at the heart of VLA Penrith's approach for many years. Only by providing a good local service with keen investigative and diagnostic support will practitioners use a laboratory."

This proactive 'scanning surveillance' provides the best way of identifying exotic diseases (eg Foot and Mouth Disease, swine fever, avian influenza), new and emerging diseases (eg BSE) and changes in disease trends, which are key roles of a government regional laboratory. Phil says an often forgotten, but equally important role is to assist practitioners in alleviating any animal welfare problems on farm due to disease outbreaks.

He says: "Common endemic diseases continue to present new and emerging problems. For example, sheep scab is now diagnosed frequently throughout the UK. Although the disease is well understood and technical confirmation of a diagnosis is straightforward, it is important for regional labs in cooperation with colleagues at VLA Weybridge to offer diagnostic and investigative support so that emerging resistance problems can be identified."

Cypermethrin (a sheep dip) resistance has been seen in Cumbria for ten years, but one area of current concern and investigation is the potential for mites to develop organophosphorous resistance, particularly through the widespread, ineffective and unlicensed use of sheep showers/jetties.

The increasing diagnosis nationally of fluke from 1995 onwards was of itself important. But the identification of triclabendazole-resistant fluke in Cumbria and a number of other locations across the UK has added a worrying dimension to maintaining effective fluke control on endemic pastures.

Phil gives another example: "Resistance to anthelmintics (medication which kills certain types of intestinal worms) in nematodes is already widespread in Cumbria, particularly to benzimidazoles and, to a slightly lesser extent, levamisole. Surveillance for avermectin resistance is now extremely important."



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Another area of recent interest in parasitic gastroenteritis (PGE) was the identification of PGE as a cause of significant ill thrift (a collection of signs such as slow growth, resulting from lowered nutrition) in adult hill sheep. "Hill ewes often walk a nutritional tightrope in winter, and PGE can be an important barrier to improving ewe condition," Phil adds.

These examples of emerging problems in common endemic diseases demonstrate that the routine, diagnostic work and support of a regional lab provide the basis for further investigations or research. These are conducted under a variety of different programmes, for example:

**(i) Food safety and zoonoses** – where the primary goal is to protect human health by taking appropriate action to protect the food chain or by advising on how to prevent zoonotic infections. Or to reduce further animal health problems on the farm, for example lead poisoning and salmonellosis.

**(ii) Local 5 day projects under the endemic disease programme.** These will be conducted into diseases that may be significant for an individual farm, particularly if there are welfare issues, or that may pose a threat on a local or regional basis. Projects may also investigate new, unusual or emerging diseases that may pose a less significant immediate threat to animal health.

For example, VLA Penrith investigated the increased incidence of louping-ill within Cumbria. Louping-ill is a tick-transmitted, acute viral disease primarily of sheep. Some LI outbreaks in naïve flocks (eg post-FMD restocking) have been very severe, with heavy mortality in ewes and lambs.

However, some LI outbreaks have also been seen in lowland areas or on in-bye land (enclosed farmland or croftland found in hill and upland areas) suggesting the establishment of infected ticks in new areas. Tick-borne fever outbreaks on lowland dairy-type pasture in February also show that ticks can be present within hedgerows or field margins, as well as potentially earlier tick rises due to a warmer climate.

VLA Penrith, Thirsk and Lasswade have reported a novel neurological disease in young Swaledale lambs. The clinical and histological findings are characteristic and distinct from other nervous diseases in sheep, but are very similar to Leigh's disease, a human genetic disease.

An unknown viral encephalomyelitis of cattle reported by Phil and colleagues at VLA Lasswade was the subject of front page headlines in the national press. Further research is required to identify the causal virus(es) involved, but they may prove to be common ruminant viruses, eg enteroviruses, that only very rarely produce clinical

## PERSONAL VIEW: WHY WE NEED REGIONAL LABORATORIES

neurological disease.

Phil says: “The nature of the press reports at the time caused unnecessary public alarm and a lot of wasted time and stress for the vets involved, but this is exactly the type of thing we are constantly on the look-out for.”

He adds that “human health is the paramount consideration in everything we do. Fortunately most animal diseases, even the new ones we discover, do not pose a threat to us”

**(iii) National research projects**, for example investigations into the clinical diagnosis of Foot and Mouth Disease in sheep.

One of the issues which emerged during the FMD epidemic in Cumbria in 2001 was the clinical diagnosis of FMD in sheep.

Phil says: “Oral lesions due to FMD are most likely to develop at sites vulnerable to trauma (eg the dental pad, upper and lower gums, and tongue). However, it became apparent during the 2001 outbreak that the differential diagnosis of FMD was further complicated by the presence of oral lesions of unknown cause (colloquially known as OMAGOD).

“VLA conducted a nationwide project after the epidemic which demonstrated that traumatic oral lesions occur naturally in approximately one per cent of adult sheep. Some lesions may prove very difficult to differentiate from FMD without laboratory tests. The VLA project has provided very useful training material and information for the State Vet Service for any future FMD outbreak.”



# VLA CARMARTHEN: ANIMAL HEALTH IN WALES

From crocodiles and forest antelope to dolphins and seals, Alan Barnham, a scientific officer at the Veterinary Laboratories Agency's office in Carmarthen, Wales has seen many exotic, and not so exotic, animals.

Alan has worked for the VLA for 38 years, which is a pathology and diagnostic centre for animals. VLA has two labs in Wales, at Aberystwyth and Carmarthen. Working with Alan at Carmarthen are 12 scientists, four vets and four or five admin staff.

Part of Alan's job is to look at cultures to identify pathogenic bacteria. The samples can be taken from either dead animals for a post-mortem, or from milk, stools and swabs. They are sent in either directly by farmers or by veterinary surgeons.

Carmarthen is a big dairy area and two common illnesses are mastitis in cattle and diarrhoea (scouring) in calves. There are also 5 million sheep in Wales, so lambing time in the spring is obviously a busy time for Alan and his colleagues.

"Mastitis is a big problem for farmers because the profit margins for milk are so tight. It is important to have top quality counts. Farmers are penalised, ie they get less money for their milk, if the number of white blood cells in the milk is above a certain level," says Alan. Identifying the bacteria involved assists the vets in advising farmers on the specific measures needed to control mastitis on the farm, this then ensures the production of high quality milk for the public.

Another big problem is parasites, especially if like this year, there is a wet spring. Liver fluke is a flatworm that infects the livers of cattle and sheep in wet areas. One stage of the fluke life cycle is in a snail, from which it swims out and gets onto pasture where it can be ingested by the animal and pass into the liver. The cycle is repeated when the adult flukes produce eggs which are passed out in the faeces of the animal.

Fluke burdens can have a significant effect on animal production and hence the profitability of a farm, and in heavy infestations are a major welfare issue. So a rapid diagnosis by the lab often assists in limiting the losses and helps protect animal health and welfare.

The Aberystwyth lab provides a specialist parasitology service to the other VLA labs.

Alan says anthelmintic resistance is a growing problem. The worms are becoming more resistant to substances used to treat the animals. Three basic compounds are used, but there are lots of brands on the market. "Farmers need to alternate the products they use regularly and look at how they manage their pastures so as not overgraze them." Once resistant worms have become established on a farm, then that class of drug cannot be used effectively again, even if it is not used



for 20 years. So the confirmation of resistant worms by the Aberystwyth lab has great importance for a farm.

Bovine tuberculosis is one of the most difficult and growing animal health problems currently facing the farming industry in Great Britain.

VLA conducts a wide range of research and surveillance activities that help the State Vet Service's immediate response to a herd TB breakdown. Confirmation of the disease requires isolation of the organism, which is done at Carmarthen and some other VLA regional labs.

More specialized typing (spoligotyping) of the isolates, which helps narrow down the likely initial geographical source is carried out at VLA Weybridge.

There is still uncertainty and controversy surrounding bovine TB and the way it is transmitted. Continued surveillance and research into disease transmission is vital, but so are other research activities, for example into vaccination and easier diagnostic testing methods and surveillance for TB in badgers. The data obtained from all these activities directs future government policy. In March 2006, Defra started pre-movement testing of cattle in England to help reduce the risk of spreading bovine TB between herds in high risk areas and those in areas free from the disease.

In the past, VLA had different disciplines in all its labs. But now, many of these disciplines are centralised eg virology, biochemistry and histopathology. It is crucial that these labs are located near the people who need to use them. One survey found that 30 miles was the most that people were prepared to travel with a dead animal for a post mortem.

Alan and his colleagues now rely more on having projects to work on, such as TB projects. If the projects go, they have insufficient work. So like many colleagues in publicly funded science labs, staff live on a knife edge.

# PESTICIDES SAFETY DIRECTORATE: CONSUMER SAFETY

The Pesticides Safety Directorate is the UK authority for plant protection products – or pesticides used in agriculture, horticulture, forestry, food storage, home and garden. During 2005, PSD also became the UK competent authority for detergents.

PSD is based in York and employs around 200 staff who are chiefly involved in evaluating applications as part of the approval process and providing policy advice to ministers. 125 science staff are involved in processing applications, 45 staff work on pesticide policy and 30 staff provide corporate support including IT.

To meet regulatory requirements, applicants must submit extensive scientific evidence in the form of data packages which follow PSD's published guidelines. PSD experts evaluate these data and where necessary prepare reports for the independent Advisory Committee on Pesticides, which then advises ministers on whether the pesticides should be authorized for sale and use.

PSD also supports the Scottish, Welsh and Northern Ireland governments in framing their legislation.

PSD recovers all its costs and is funded through a combination of application fees, a levy on approval holders, European Commission contracts and Defra. The approximate split is:

SOURCE	AMOUNT
Levy	£3,928,000
Fees	£3,061,000
European Commission	£625,000
Policy (Defra)	£ 5,840,000
<b>Total</b>	<b>£13,454,000</b>

Source: PSD annual report 2005/06

Money received from Defra funds PSD's general policy work and advice to ministers, including a number of schemes and programmes like residues in food.

PSD has bucked the trend of current thinking that policy and delivery organisations cannot work together. PSD was formed 13 years ago when the science-based approvals group and the policy group were brought together under one organisation. Several organisational reviews since have considered this arrangement, but none have shown that it does not work.

The agency has never missed a key ministerial target, including its targets for application processing and full cost recovery.

In 2005/06, PSD processed approximately 1,799 applications on time, to cost and quality targets. It also completed the 2005 food and drink residues surveillance programme, which involved testing 3,792 samples and analyzing 180,000 pesticide/commodity combinations.

Although PSD's costs have increased, most application fees have not changed in four years. In some cases they have gone down.

PSD's biggest challenge will be a review of the organisation at the end of 2006 to see where it best fits following the recommendations in the Hampton report. None of the proposed 'thematic agencies' offers a good fit and it is possible that the agency could be broken up and/or moved out of Defra altogether.

If PSD is moved from Defra, it would lose its ability to support UK agriculture. Many crop sectors are under threat from the current pesticide review and PSD is an important ally in helping these sectors move forward.

According to the minutes of Defra's Regulatory Agencies Strategy Board meeting in April 2006, other challenges facing PSD include:

- The reduced allocation from Defra for 2006/07, the predicted downturn in pesticide approvals resulting from the European Review Programme and competition from other European regulators. These will make full cost recovery a very high risk.
- The Better Regulation Executive has set a target for Defra as a whole to reduce the administrative burden of regulation by 25 per cent, that is, the cost of going through the process. This will impact on both PSD and VMD.
- Balancing the need to cover costs with the need to keep fees as low as possible.
- Pressures of additional unplanned work in response to the supply of illegal pesticides.
- A moratorium on recruitment.

## Crop spraying divides the experts

One example of a public health issue where more scientific research is needed is crop spraying and the health of residents and bystanders.

Two groups of experts, the Royal Commission on Environmental Pollution and the Advisory Committee on Pesticides, disagree on what action it is appropriate to take in the absence of scientific certainty where human health may be at stake.

In September 2005, the Royal Commission published a

# PESTICIDES SAFETY DIRECTORATE: CONSUMER SAFETY

report on crop spraying and the health of residents and bystanders.

The Advisory Committee on Pesticides, a statutory body set up by ministers to advise on all matters relating to the control of pesticides, responded to the RCEP report in February 2006. Although there is common ground between the two bodies, there are significant differences:

“It is clear that both the RCEP and the ACP agree that there are areas of scientific uncertainty and broadly on what those areas are. Our main difference relates to what action it is appropriate to take in the absence of scientific certainty, where human health may be at stake. This may well reflect an underlying difference in our assessment of the magnitude and significance of the uncertainties.”

If the experts can't agree, who should members of the public believe?

The government published its response to the recommendations in the Royal Commission's report in July 2006 and this took into account advice from the Advisory

Committee on Pesticides. This included commissioning new research into the area.

However, the current budget cuts may affect this research, both directly and indirectly. The general reduction in funding to government and public sector research organisations has a chronic effect on providing high-quality research and independent advice to government.

[www.rcep.org.uk/index.htm](http://www.rcep.org.uk/index.htm)

[www.pesticides.gov.uk/acp\\_home.asp](http://www.pesticides.gov.uk/acp_home.asp)

[www.defra.gov.uk/environment/rcep/pdf/rcepcropspray-response.pdf](http://www.defra.gov.uk/environment/rcep/pdf/rcepcropspray-response.pdf)



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**Chris Rundle** has been a higher scientific officer with PSD for seven years. Chris is an agronomist and the main part of his job is evaluating whether a product works and is safe to crops. He also advises colleagues on how pesticides are used and provides advice to companies and individual growers on the data required to meet the legislation.

“One area of my work which is increasing is challenging applicants to demonstrate that the product dose is the minimum necessary to do the job. This has come about by the increasing application of European legislation which is a developing part of our work.

“One of the rewarding aspects of my job is meeting and helping to train our European colleagues in pesticide registration and training them to help meet the challenges of regulatory science and data evaluation.

“One thing we have noticed about reviews of PSD is that they never consider our role in Europe and the increasing importance of EU law over UK law. We are a major pesticide regulator in Europe and are highly respected by the Commission and the European Food Standards Agency. We have won a large number of EU funded projects to help acceding nations meet the relevant EU Directives in our

area. “Sadly this could be put in jeopardy by the forthcoming review and would be a major blow to staff and the UK in terms of our ability to influence opinion and lead in this area.

“Our experience and reputation is based on evolving our systems both scientifically and administratively. This includes a successfully implemented electronic records management system and electronic approval system. Our experience also allows us to support industry's needs by being open and fair minded in our risk assessments, yet firm and evidenced based in our decision making. However, budget cuts in both Defra research and development and in the public sector research establishments will affect us and our ability to improve and refine our risk assessment procedures.

“Ultimately legislation is only as good as the people who draft it and then enforce or regulate with it. A skilled and motivated workforce is essential, but so is a close and joined up organisation. Chris notes that PSD is a successful agency in this area as policy and delivery colleagues work together as part of the same agency. Indeed the French and Austrian authorities are working towards adopting a similar model. The current uncertainty over budget cuts and our future is adversely affecting staff moral and retention. I hope that the forthcoming review will actually look to build upon our successes, perhaps as the basis of a larger plant thematic agency, rather than a group of individual units split up in various departments and agencies.”

# ANIMAL AND PUBLIC HEALTH: VETERINARY MEDICINES DIRECTORATE

The Veterinary Medicines Directorate aims to protect public health, animal health, the environment and promote animal welfare by assuring the safety, quality and efficacy of veterinary medicines. It does this by validating, assessing and interpreting data on veterinary medicines.

VMD is based in Addlestone, Surrey. It employs 128 permanent full and part-time staff (92 admin, 36 scientific), including veterinarians, pharmacists, chemists, toxicologists, biologists, IT specialists, administrative and support staff.

VMD's work is divided into three main areas:

**Licensing** – responsible for assessing applications; issuing and maintaining Marketing Authorisations; pharmacovigilance for veterinary medicines; and licensing and inspecting manufacturers and wholesale veterinary medicines dealers.

**Residues** – responsible for the surveillance of residues of veterinary medicines and banned substances in home-produced livestock and animal products and imported animal products, reporting results and co-ordinating follow-up action.

**Policy** – responsible for servicing, developing and implementing new policy/legislation on all aspects of veterinary medicines.

Under European Union and UK legislation, no veterinary medicinal product can be marketed without a marketing authorisation, which is granted only after a detailed scientific assessment of the data relating to safety, quality and efficacy. Also, manufacturing premises have to be inspected to ensure that the quality of the final product is assured. Once a product has been authorised, post-authorisation surveillance is co-ordinated by VMD.

VMD is also responsible for managing the research and development programme on veterinary medicines on behalf of Defra. The work is commissioned with several providers and amounted to £2m in 2005.

In 2005/06, VMD met all its targets for national applications and the majority of its targets for European applications. It also achieved full cost recovery. Its annual report said:



JOHN POWELL/REX FEATURES

“We have met our objectives against a continuing background of staff shortage in parts of the business and considerable extra work in our preparations for the new legislation which came into force on 30 October 2005.”

## Surveillance

The National Surveillance Scheme for veterinary residues is a statutory scheme under which samples from farms, slaughterhouses and other food processors are analysed for the presence of residues of veterinary medicines.

Once a product has been authorised, VMD co-ordinates the Suspected Adverse Reaction Surveillance Scheme (SARSS), which monitors and responds to reports of suspected adverse reactions to veterinary medicines in both animals and humans.

The non-statutory residues surveillance programme supplements the statutory scheme by analyzing samples of imported and home-produced meat and animal products, whether at ports or purchased from retail and other outlets.

But VMD itself admits that funding for this work is stretched: “The non-statutory residues programme is at risk, in the light of Defra’s reduced allocation in this area. VMD will be investigating funding this work from the private sector but this will take time and will not be in place for 2006/07. This could have a knock-on impact for CSL who currently undertake the non-statutory analytical work.”<sup>(1)</sup>

## Europe

In 2005/06, VMD prepared the switchover from the old Medicines Act 1968 to the new Veterinary Medicines Regulations 2005. Work in the European Union forms an

# ANIMAL AND PUBLIC HEALTH: VETERINARY MEDICINES DIRECTORATE

increasingly large part of VMD's work. This work is vital for the UK because it determines the guidelines and standards by which VMD works.

## Hampton review

The Hampton review (see page 3) could have far-reaching implications for the future organisation and structure of the VMD. As VMD's latest annual report notes:

“Work to implement the Hampton recommendations in particular has raised many questions in the minds of staff and stakeholders. The principles underlying the Hampton recommendations are laudable and the VMD has been applying them for many years. It is important that any move of the VMD services under the umbrella of another larger organization does not compromise our service standards and consequently the safety, quality and efficacy of veterinary medicines...However, the uncertainty of how the various recommendations will be implemented is unsettling..”

This was reinforced at a regulatory agencies strategy board meeting in April 2006 which noted: “Uncertainty regarding Hampton implementation is the key risk for maintaining staff resources in 2006/07.”

The irony is that VMD is already doing what Hampton wants and reducing the regulatory ‘burden’. As part of the introduction of new veterinary medicines regulations in 2005, VMD simplified the legislation, reducing the number of statutory instruments from over 50 to just one.

## Veterinary Residues Committee

The Veterinary Residues Committee was established in January 2001 to ensure that there is independent scrutiny in the surveillance for veterinary residues in the UK. The committee provides a source of advice for the chief executives of the Veterinary Medicines Directorate and Food Standards Agency on the residues surveillance programmes, and the significance of the results for consumer safety.

“The Committee was concerned about the VMD's Non-Statutory Surveillance Scheme in two respects: first that the scheme was seriously under-funded, and second that these funds were spread too thinly across the wide range of products that should be under surveillance. The £750,000 allocated to the Non-Statutory Scheme has remained the same for a number of years and, in the Committee's opinion, falls far short of the sum required to undertake surveillance of imported and processed foods. The Committee, therefore, very much welcomed the £300,000

extra funding the Government made available to support the 2002 programme. The Committee takes the view, however, that even such an increase in funding will not be enough to enable the surveillance of all the products every year. The Committee has, therefore, decided that the programme should be targeted to those substances that could pose the greatest risk to human health. This targeting should take into account, both the toxicological hazard, as well as the potential exposure, based on the types and amounts of foods eaten in the general population and the foods eaten by the most vulnerable groups in the population.”

Source: Annual Report on Surveillance for Veterinary Residues in Food in the UK, 2002

(1) Source: Regulatory agencies strategy board meeting, April 2006



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