Annual report 2006

afssa

AGENCE FRANÇAISE
DE SÉCURITÉ SANITAIRE
DES ALIMENTS

EDITORIAL

For the first time, transversality (inherent to the Agency) appears in the structure of our annual report. Underpinned by an objective of enhanced efficiency, this transverse approach is an integral part of our drive to modernise our management methods, as promoted by the plan signed on 4 April 2007 with our governing bodies.

The targets and means plan: a concise and ambitious project

Throughout 2006, the Agency worked closely with its governing ministries and the Ministry of Economy and Finance, with the aim of forming a shared vision of the strategic directions that will guide our actions over the next four years. The targets and means plan provides for reciprocal commitments between the State and Afssa in terms of means. Its concise, balanced and ambitious content is the outcome of a great deal of hard work on its substance and form. The valuable assistance of our teams was required to specify the Agency's missions, to diagnose our strengths and weaknesses, to define operational objectives, to determine the means required to fulfil our missions, and to define indicators aimed at assessing the fulfilment of our commitments.
The signing of this contract also testifies to the high level of trust placed in Afssa, which is recognised as a major player in public health policy.

Integration of plant health: an exemplary move

The creation of a Plant and Environment Department was the other main focus of our work in 2006. Its creation represented a crucial challenge in the Agency's development process.
Its design and organisation, the recruitment of its staff, the search for and kitting out of its premises in Maisons-Alfort, were all completed in record time: the department was up and running by 24 September 2006, i.e. just a day after the publication of the implementation decree creating it.
We put our experience of assessment in the fields of nutritional and health risks and veterinary medicinal products to good effect when conceiving the operating structure of our new department, at the same time taking into account the specific features of its scope of action.

Creation of the Plant and Environment Department

In 2006, the scope of Afssa's expertise was extended to include plant health, with the scientific assessment of plant protection products before they are marketed. Stipulated by the Framework Law on Agriculture of 5 January 2006, the incorporation of plant additives within the scope of Afssa's evaluation work puts the initial intentions of the legislator into concrete form. This work requires not only the assessment of the risks that these products might present to human health and the environment, but also that of their benefits, particularly their agronomic ones. It is in line with a global approach to food safety, from the farm to the fork. It backs up the Agency's activities in terms of environmental health and more effectively takes into account the weight of plants in food. These new tasks are performed by the Plant and Environment Department.

Bird flu: vigilance maintained

In 2006, the Agency issued 22 opinions relative to *bird flu*. An emergency collective expert group worked with the scientific panel on Animal Health to respond to these multiple referrals. As the National Reference Laboratory (NRL) for *bird flu*, the Ploufragan-Brest laboratory dealt with an influx of samples and confirmation diagnoses. It answered numerous requests by the Ministries of Agriculture and Health and was very actively involved in drawing up the opinions issued by Afssa. It also worked on the epidemiology aspect of the disease, leading field surveys and providing scientific and technical support to the Directorate General for Food and the Veterinary Services Department of the Ain region. As for the ANMV (French National Agency for Veterinary Medicines), its assistance was sought to assess, with the help of the NRL, the principal H5N1 vaccines that could be used in the event of an epidemic of the epizootic disease or for the purposes of prevention. The Agency also worked hard to respond to the numerous questions posed by the media in this area.

All our teams – Directorate-General, Department for the Evaluation of Nutritional and Health Risks, French National Agency for Veterinary Medicinal Products, support functions, Information and Communications Department, laboratories... – rallied together to provide their expertise.
Coordination with the Ministry of Agriculture and interaction with the Scientific Committee also helped oil the wheels of this process.
Finally, the funding mechanism for this new activity – based on a tax allocated according to the principle already applied to veterinary medicinal products – balances objectives and means.

Emergency situations: responsiveness and solidity

Several topical events of acute importance were naturally added to the basic activities of the laboratories and assessment entities.
When the first cases of highly pathogenic avian influenza *were detected in mainland France in 2006, Afssa was quick to respond, as it had done the previous year.*
It was very closely involved in monitoring the virus and its expert opinion was sought, leading it to propose a "risk/management measures" correspondence grid to the risk manager back in September, which is proving to be extremely useful today.
The Agency also demonstrated its responsiveness when bluetongue first emerged in France, following imports of contaminated cattle. The teams were called upon to produce expert reports, detect and characterise the virus and perform epidemiological surveys, in collaboration with their partners.
Finally, in response to the oyster crisis in the Arcachon Basin, Afssa also set up an emergency collective expert report procedure.
Both the clarity of its positions and the speed with which it returned its scientific opinions bear testimony to its capacity to adapt to the requirements of the health authorities and to public expectations.

2007: consolidation, facilitation, cohesion

We are determined to turn the business plan into a concrete reality, ensuring that a results-based culture becomes firmly entrenched on a day-to-day basis. Our institutional strategic plan must therefore organise our actions around a few priorities, notably in terms of the production of new knowledge. Support functions – general administration, quality delegation, scientific department – will be committed to adapting management instruments to the needs of teams and entities, in order to facilitate their actions. The cohesion of all the Agency's personnel is reinforced by the fact that the various actions are incorporated into clear and shared objectives. The institutional strategic plan will specify how these will be implemented.

Towards a new type of governance

I am particularly keen that each and every one of our staff, on whatever level and in whatever capacity, should play a full role in the Agency's policies, with an enhanced degree of autonomy and responsibility. Only a clear visibility of what motivates us and drives us forward will make this new type of governance possible. The implementation of our steering and monitoring tools, along with broader internal circulation of information, are decisive steps forward, allowing everyone to participate in a shared dynamism.

I know the capacity for commitment and enthusiasm of the 1,100 men and women – both scientists and administrative personnel – that give meaning and life to Afssa's activities. 2006 provided powerful proof of their dedication.

Pascale Briand
Director General

Bluetongue: fast reactions and international cooperation

In August 2006, the first outbreaks of bluetongue associated with serotype 8 of the virus were identified in sheep in the Maastricht region. The viral infection quickly spread to the Netherlands, Belgium, Germany and then to France and Luxembourg. In France, bluetongue was contained to 6 outbreaks, with a very low prevalence within the flocks. In order to respond to mandates as quickly as possible, Afssa once again formed an emergency collective expert group, which issued 7 opinions between September and December 2006. As the National Reference Laboratory for bluetongue, the laboratory for studies and research in animal diseases and zoonoses in Maisons-Alfort worked hard on the PCR detection of the virus and its characterisation, working closely with the *Centre de coopération internationale en recherche agronomique pour le développement* (CIRAD or French Agricultural Research Centre for International Development). It also provided the Directorate General for Food with scientific and technical expertise.
The cooperation agreement on foot-and-mouth disease and bluetongue signed in June 2006 between Afssa and the Belgian *Centre de recherches vétérinaires et alimentaires* (Centre for veterinary and food research) yielded immediate results: numerous viral strains isolated in Belgium were characterised by Afssa; whenever the virus emerged in France, the Maisons-Alfort laboratory carried out an epidemiological survey in the Belgian farms affected.

Enhanced reliability of the shellfish food safety system

The repeated episodes of atypical toxicity in oysters in the Arcachon Basin gave rise to two requests during the summer of 2006. One concerned assessment of the marine biotoxin diagnosis test, and the second overall assessment of the French shellfish safety system. An emergency collective expert group was set up and the Agency notably issued recommendations aimed at improving the reliability of the food safety system. As the National Reference Laboratory for marine biotoxins, the Laboratory for studies and research on food quality and food processing worked, in particular, to assess the "mouse" diagnostic test and lead the scientific steering committee created at this time.

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SUMM

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Image from the animated film "Eau et végétal"* ("Water and Plant life"), shown at the Afssa stand at the Paris Agricultural Show in 2007
*Photographer: Stéphane Querbes

PORT 2006
MARY

This annual report is available in its entirety on the www.afssa.fr website, section “Discover Afssa” and the information marked with the symbol ⓘ is explained in more detail.

Through its work in the field of intelligence, alerts, assessment, reference and research, Afssa (the French Food Safety Agency) helps to protect and improve public health, as well as animal health and welfare, plant health and environmental health.

Its work primarily focuses on the entire food chain: it concerns all foodstuffs, intended for both human and animal consumption, and deals with animal husbandry, cultivation, production, processing, distribution and consumption conditions. Its scope of expertise also covers animal diseases that can be transmitted to humans via routes other than food (around half of all zoonotic diseases).

A public administrative body, the Agency operates under the authority of the Ministries for Agriculture, Health and Consumer Affairs. Created by the law of July 1, 1988, following some major health alerts, with the objective of more effectively organising scientific expertise and restoring public confidence, it carries out missions independently of economic and political interests. Its actions can be broken down into 8 operational missions.

MISSIONS

1. ASSESSMENT OF HEALTH AND NUTRITIONAL BENEFITS AND RISKS

The Agency assesses:
- the health and nutritional risks that foodstuffs intended for human or animal consumption may present: products of animal and plant origin and water;
- risks related to animal diseases, along with animal welfare;
- the impact of the use of crop treatment products on human health, plants and ecosystems;
- the benefits and risks related to the use of veterinary medicines for animal health, human health and the environment.

To perform its assessments, the Agency favours collective expert work, even in emergency situations, insofar as the questions to be dealt with require multidisciplinary and global consideration in order to be able to issue a reliable opinion or scientific support.

Expert reports: a year rich in transversality and external collaboration

Some of the main features of 2006 – a year rich in expert work of different types - were the development of operational transversality within Afssa and the number of partnerships with national and Community bodies. This is particularly borne out by the following:
- the publication of an opinion on the reliability of the safety system regulating consumption of shellfish, with respect to **marine biotoxins**;
- assessment of the risks related to **cyanobacteria** and their toxins, conducted with AFSSET (French Agency for Environmental and Occupational Health Safety);
- assessment of the potential risks related to the **administration of antibiotics** in animals and the possible consequences in humans, following a UFC-Que Choisir request, which mobilised a multidisciplinary collective expert committee and the network of Afssa laboratories involved in this topic;
- the launch of the second national consumer survey in 1,700 children and 3,500 adults (**INCA 2**). In addition to prevalence data, this survey will provide information on obesity typologies, particularly in childhood, the use of food supplements and reading of labels by the population;
- publication of the **CALIPSO** report on the benefits and risks linked to seafood consumption. For the first time, omega 3 and physicochemical contaminant intakes, along with dietary exposure and biological tissue impregnation of the biggest consumers of these products were measured on a national scale.

2. RECOMMENDATION OR PROPOSAL OF HEALTH PROTECTION MEASURES

Afssa issues opinions and draws up reports which, in its various areas of expertise, provide the health authorities with a scientific basis upon which they can found their decisions, with a satisfactory level of safety – whether this involves drawing up texts or taking measures concerning practices, products or companies. It thereby contributes to the scientific relevance and efficiency of national and Community regulatory measures and international food safety standards.
The Agency deals with matters submitted to it by ministries or accredited consumer associations. It can also self-refer questions after having demonstrated their importance with respect to public health, animal health or welfare, plant health and the environment.
All its opinions are made public.

3. REFERENCE LABORATORY ACTIVITIES

The Agency helps to guarantee the reliability and uniformity of analyses for which the results are taken into consideration for risk assessment and health inspection. To this end, it develops and validates analysis methods and techniques, is the technical leader of accredited laboratory networks for health inspection (circulation of official methods, training, organisation of suitability tests, etc.), validates test results, produces and monitors reagents and vaccines, manages strain banks, etc.
The number of Community reference laboratory mandates attributed to Afssa rose from 3 to 6 in 2006. Those attributed to rabies serology, milk and antibiotic residues, colourings, carbadox and olaquindox were joined by laboratories for *Listeria monocytogenes*, *staphylococcus aureus* and *brucella*.
For the laboratory for studies and research on animal diseases and zoonoses, recognition as the Community reference laboratory for brucellosis completes renewal of its mandate as the National Reference Centre in 2006 and sanctions its first success: the eradication of brucellosis among ruminants in France, to which it contributed.

It has also seen its mandate as associated national reference centre for anthrax renewed this year.

National reference activities have also been reinforced.

Nomination of the Nancy laboratory as the national reference laboratory for echinococcosis

Alveolar echinococcosis is a zoonosis transmitted to humans via the ingestion of the eggs of a tapeworm, *Echinococcus multilocularis*. This parasite has a complex cycle involving the fox (*Vulpes vulpes*) as the definitive host, and field mice and voles (*Microtus arvalis* and *Avicola terrestris*) as intermediate hosts.
As part of its activity as a national reference laboratory, the Laboratory for studies and research on rabies and wild animal diseases consulted regional veterinary laboratories in order to obtain isolated *Echinococcus multilocularis*, to establish the precise distribution of,cases on a national level and have a source of parasite material for the purposes of research and development.
The Nancy laboratory also continued to organise training courses for regional veterinary laboratory technicians focusing on diagnosing and testing for the parasite in the intestines using the reference technique in foxes.
It also assessed the specificity and sensitivity of the Coproantigen test by Elisa, and of different PCR techniques. The results obtained having been disappointing, it has undertaken research and development programmes to optimise the CoproElisa test for epidemiological studies of fox populations and to establish a reliable individual diagnosis by PCR for domestic animals.

Two new national reference laboratories in Ploufragan

Transfer of all reference activities for **Aujeszky's disease** to the Ploufragan – Brest laboratory, for which it was already an associated laboratory, confirms the essential role it plays in the monitoring of regulated swine diseases. Having long been the World Organisation for Animal Health (OIE) reference centre, and in the absence of any Community reference laboratory, it was regularly consulted to provide advice and reagents to foreign laboratories. Since this transfer, it has also been responsible for leading a network of some sixty French laboratories, expert assessments on first-line non-negative sera, the approval of serological diagnostic kits, the organisation of inter-laboratory tests, along with the supply of reference standard sera (European and OIE).
Likewise, the appointment of the laboratory as the national reference laboratory for ***Campylobacter*** rewards its research work in this field over the last 25 years, a work that has led to its international recognition in the fields of epidemiology, bacterial molecular typing, food microbiology and the leadership of epidemiological monitoring networks for antibiotic resistance.

Three associated laboratory to act as a national reference

The Fougères laboratory has been appointed the national reference laboratory (NRL) for resistance to antibiotics in partnership with the Maisons-Alfort (animal diseases and zoonoses) and Ploufragan laboratories, as part of the creation of a European network of NRLs intended to reinforce monitoring of antibiotic resistance in animals and led by a Community reference laboratory. Salmonella and Campylobacter in poultry and swine production are the NRL's first priority.

The Agency's reference activities cover more than 60 themes

For an exhaustive list.

Boulogne-sur-mer

Laboratory for studies and research on fishery products

- National reference laboratory for *Vibrio parahaemolyticus*, *Vibrio alginolyticus* and histamine.

Dozulé

Laboratory for studies and research on equine disease

- National reference laboratory for contagious equine metritis and dourine.

Fougères

Laboratory for studies and research on veterinary medicinal products and disinfectants

- Community reference laboratory for antibiotic residues (Group B1), colourings (B3e), carbadox and olaquindox.
- National reference laboratory for veterinary medicinal product residues, colourings (B3e).
- National reference laboratory for resistance to antibiotics (associated).

ANMV – National Agency for Veterinary Medicinal Products

- OIE collaborating centre for veterinary medicinal products.

Lyon

Laboratory for studies and research on bovine disease and meat hygiene

- National reference laboratory for infectious bovine rhinotracheitis (IBR), transmissible subacute spongiform encephalopathies (TSSE), enzootic bovine leucosis and contagious bovine peripneumonia (CBPP).
- OIE reference laboratory for contagious bovine peripneumonia (CBPP).

Maisons-Alfort

Laboratory for studies and research on animal diseases and zoonoses

- OIE reference laboratory and FAO reference centre for brucellosis, tuberculosis and paratuberculosis.
- Community reference laboratory for brucellosis.
- National reference centre for brucellosis (human).
- Laboratory associated to the NRC for anthrax (human).
- National reference laboratory for brucellosis, tuberculosis, anthrax, glanders, tularaemia and avian chlamydophilosis (bacteriology), foot and mouth disease, swine vesicular disease, vesicular stomatitis, bluetongue, African horse sickness, equine infectious anaemia, equine viral arteritis and West Nile virus, and trichinellosis (parasitology).
- National reference laboratory for resistance to antibiotics (associated).

Laboratory for studies and research on food quality and food processing

- Community reference laboratory for milk and dairy products hygiene, positive-coagulase staphylococci and staphylococci enterotoxins and l*isteria monocytogenes*.
- National reference laboratory for milk analysis and testing, enterotoxin/coagulase-positive staphylococci, *listeria monocytogenes*, milk hygiene, marine biotoxins, pesticides, heavy metals, radionuclides, phycotoxins, mycotoxins.

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Nancy

Laboratory for studies and research on rabies and wild animal diseases

- WHO collaborating centre for research and management of zoonoses.
- Community reference laboratory for rabies.
- OIE reference laboratory, WHO collaborating centre for animal rabies.
- National reference laboratory for animal rabies.
- National reference laboratory for echinococcosis.

Laboratory for studies and research on hydrology

- National reference laboratory for drinking water.

Niort

Laboratory for studies and research on goats

- National reference laboratory for caprine arthritic encephalitis virus (CAEV).
- OIE reference laboratory for caprine arthritic encephalitis virus (CAEV).

Ploufragan – Brest

Laboratory for studies and research on poultry, pigs and fisheries

Poultry and swine activities

- OIE reference laboratory for Gumburo disease, *Mycoplasma gallisepticum* and Aujesky's disease (associated).
- National reference laboratory for Newcastle disease, avian *influenza*, salmonella in poultry, avian mycoplasmosis, classical swine fever, African swine fever, Aujesky's disease and resistance to antibiotics (associated).

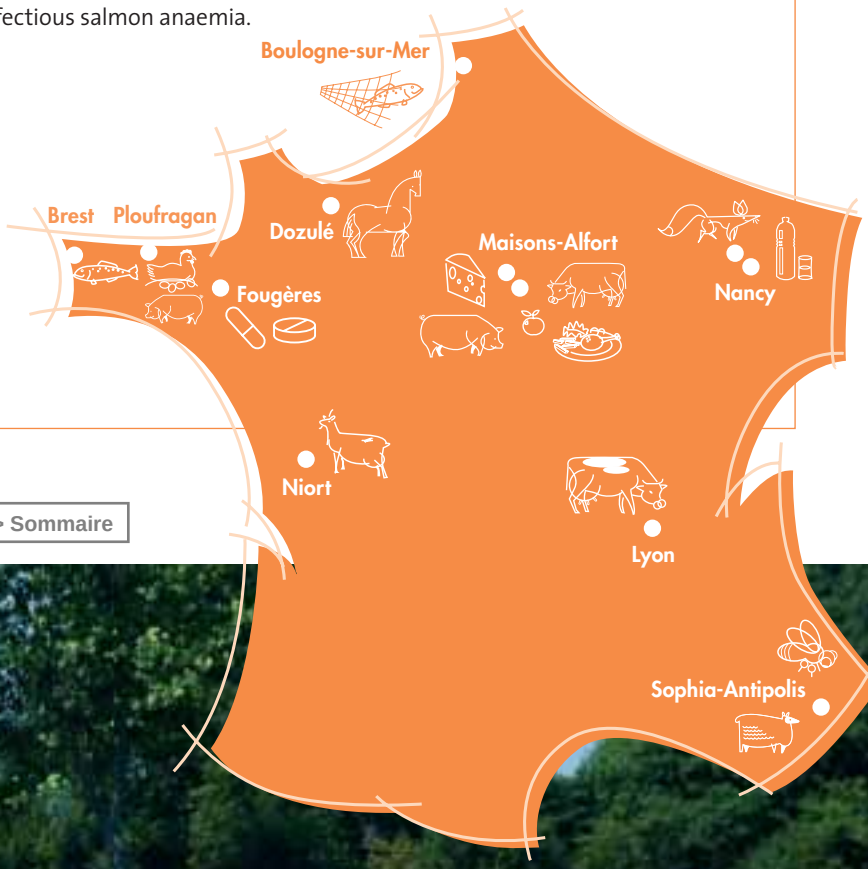
Fishery activities

National reference laboratory for rhabdoviruses (VHS – viral haemorrhagic septicaemia – and IHN – infectious haematopoietic necrosis) and ISA – infectious salmon anaemia.

Sophia-Antipolis

Laboratory for studies and research on small ruminants and bees

- OIE reference laboratory for bee diseases.
- National reference laboratory for *Visna-Maedi*, *Aethina Tumida* and *Tropilaelaps* infestations, American and European foulbrood, nosemosis, acariosis, varroasis and residues in honey (associated).



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4. CONDUCTING AND BOOSTING RESEARCH

The Agency produces the scientific knowledge required to meet health challenges. It relies on its own research resources and also mobilises those of other bodies, both public and private. Examples of its programmes include the study of pathogens, the immune potential of animals, the prevention of bacteriological contamination of food, the study of environmental contaminants or the analysis of dietary habits. Afssa also coordinates European and international scientific cooperation initiatives led by France in its areas of expertise. In particular, it is involved in the building of European research.

ANR call for tenders:
5 projects out of 11 accepted
The laboratories have been encouraged to submit projects to the Agence nationale de la recherche (ANR or French National Research Agency). In 2005, 8 projects out of 21 were ultimately accepted. In 2006, 5 projects out of 11 were selected, notably concerning Q fever, *Bartonella* and *Chikungunya* infections; fewer projects submitted but a higher success rate.

5. VIGILANCE, MONITORING AND ALERT ACTIVITIES

The Agency draws the attention of the public authorities to the emergence of phenomena liable to be harmful to human and animal health, particularly *via* food and exposure to zoonotic or animal diseases. Its vigilance in terms of health problems with a view to their anticipation and prevention is based particularly on international publications, the analysis and synthesis of data gathered via the epidemiological monitoring networks that it leads and official health inspection and monitoring systems, as well as analysis of the results of the studies, surveys and research that it conducts.

It also relies on information exchanges with other health and safety players, both in France and abroad. Since pathogens liable to present health risks in France are often transmitted via international flows of people and goods and movements of wild fauna, Afssa looks beyond mainland France. To this end, it establishes partnerships and collaborates in the work of several international bodies.

The *Salmonella* network: 10 years of existence

Coordinated by the Laboratory for studies and research on food quality and food processing, the *Salmonella* network brings together more than 150 laboratories, which enter, analyse and interpret 15,000 pieces of data relative to salmonella of non-human origin every year. It provides valuable information on the types of *salmonella* present in 4 sectors: Health and animal production, food hygiene, environment and animal feedstuffs. It thereby supports Afssa in its intelligence and alert missions with respect to this pathogen, which is the leading cause of collective foodborne disease. In exchange for their voluntary participation, the members of the network benefit from information in the form of quarterly bulletins and annual inventories.

Development prospects

After ten years of existence, the network's strategy is to:

- reinforce its epidemiological monitoring activities through the implementation of performance indicators. This step ought to contribute to a better management of the network, optimise the quality, reliability and recognition of the monitoring system and contribute to the development of alert signals;
- develop characterisation of salmonellas by molecular techniques and monitoring of their resistance to antibiotics, with respect to public health risks;
- participate in risk analysis research work, in particular making it possible to better define food and animal sources of salmonella poisoning.

6. INFORMING AND TRAINING

In the interests of improving health safety, the Agency is committed to developing exchange with all players involved in its fields of expertise: public authorities, health agencies, consumer associations, professional industries. These relationships are necessary to identify the needs and constraints of the people it works with and to reinforce the relevance, understanding and adoption of its opinions.
It is also determined to provide scientific information that is accessible to the general public, in order to make every citizen a partner in health and to encourage an informed approach to food-related risks. Finally, it encourages the dissemination of scientific knowledge and health education via specific training initiatives targeting professionals, in France and abroad, and by taking on trainees and students.

7. REPRESENTING FRANCE AT THE EUROPEAN FOOD SAFETY AUTHORITY (EFSA)

Created in 2002, EFSA is the Community body for risk assessment in all matters directly or indirectly related to the safety of food intended for human or animal consumption. It leads the network of national structures with similar missions. Afssa is present within the consultative forum that units these structures. Afssa also coordinates the French bodies working in EFSA's fields of expertise.

In 2006, Afssa participated in the drawing up of 6 opinions issued by the European Food Safety Authority (EFSA) relative to animal health and animal welfare: rabies, echinococcosis, pigs and housing conditions, avian *influenza*, brucellosis and bluetongue.

8. ACTING AS THE HEALTH AUTHORITY IN THE FIELD OF VETERINARY MEDICINES

Charged with ensuring that the regulations relative to veterinary medicinal products are respected, Afssa has specific expertise in this field, *via* the ANMV (National Agency for Veterinary Medicinal Products). In addition to its scientific assessment function, this agency also has inspection and decision-making powers. It issues, suspends or withdraws marketing authorisations for medicines, controls their quality and side effects, and monitors veterinary pharmaceutical establishments.

A new tax system is applied to the various authorisations issued by the ANMV. It takes into account changes in Community law and is in line with the development of its activities.
To find out more: www.anmv.afssa.fr

Continued restructuring and development of the ANMV

In 2006, Afssa continued restructuring the ANMV and the implementation of the development plan undertaken in 2004 to better meet the expectations of those it works with: citizens, veterinarians, veterinary medicine manufacturers, professional organisations, governing authorities, etc. Anticipating the business plan, it carried out its work with a constant view to optimising synergies and the use of resources. It continued its quality assurance policy and began to reform the ANMV's information systems and funding system.

Strong European commitment

The Agency carries out most of its work within a European context. It is proactively involved in the network of national and European drug agencies, thus placing France amongst the leading 3 Member States in terms of European marketing authorisation procedures. It also got involved in the procedure harmonisation process, relative to vaccine control, for example, or to assessment of pharmacovigilance cases or the assessment of the performances of European agencies. Its assessment teams have worked very hard to ensure that vaccines against avian *influenza* can be very quickly available.

Reinforcement of worldwide technical assistance

Keen to reinforce its position as a world reference in the field of veterinary medicine, the Agency has increased the number of its staff working in the field of international affairs. Its technical assistance to 170 member countries of the World Organisation for Animal Health (OIE) has led, in particular, to studies carried out with the World Health Organisation to prevent and tackle antibiotic resistance in veterinary medicine or to services to developing countries (creation of a medicines agency in West Africa, support for the Dakar medicines control laboratory, etc.).

Multidisciplinary and integrative, Afssa (French Food Safety Agency) is run by more than a thousand employees working over ten geographical sites across France.
The laboratories are naturally based alongside the professional sectors concerned by their work and bodies that interact to contribute to benefit and risk assessment in the fields of human health, animal health and plant protection.

The *Agence nationale du médicament vétérinaire* (French Agency for Veterinary Medicinal Products/ANMV) oversees the whole of the assessment chain through to issuing marketing authorisations and controls.
This assessment process relies on thirteen scientific panels and two committees which issue opinions on the basis of an independent collective expert evaluation.
The ANMV has a Board of Directors and Scientific Advisory Committee.

Appointed by decree of the President of the French Republic for a 3-year mandate, the Director General acts in all areas concerning the management of Afssa, its activities, guidelines and organisation. The law endows it with specific powers for decisions on veterinary medicinal products and the Agency's opinions and recommendations.

ORGANISATION AND INDICATORS 2006

A Board of Directors open to consumers and professionals

Made up of 25 members, including the Chairman who is appointed by the President of the French Republic, Afssa's Board of Directors gathers together qualified individuals, representatives of consumer associations, professional bodies and representatives of Afssa personnel, as well as the French ministries concerned.
It deliberates over pluriannual strategic guidelines, the annual activity report, investment programmes, the budget and accounts, grants given to the Agency and the acceptance or refusal of donations and legacies.
The Board of Directors met 4 times in 2006.

The Scientific Advisory Committee

Placed under the Director General, the Scientific Advisory Committee ensures the consistency of the scientific policy. It is made up of 15 members, including 10 external scientists.
In 2006, it approved the appointment of Mr Jean-François Girard as Chairman of the Scientific Advisory Committee and met 3 times.

13 Scientific Panels

Afssa's scientific opinions are issued collectively, based on the principle of independent and impartial multidisciplinary expert evaluation.
They are drawn up in 13 scientific panels (CES), for which Afssa's teams provide the secretariat:

- Human nutrition CES
- Microbiology CES
- Biotechnology CES
- Transmissible subacute spongiform encephalopathy CES
- Chemical and physical contaminants and residues CES
- Animal nutrition CES
- Food contact materials CES
- Additives, flavourings and processing aids CES
- Animal Health CES
- Water CES
- Chemical plant protection products CES
- Micro-organism plant protection products CES
- CES fertilisers and crop supports

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FUNCTIONAL ORGANISATION CHART OF AFSSA AT 31 DECEMBER 2006

See the latest version of the organisation chart on www.afssa.fr

The scientific panels are composed of scientists from the fields of research, medicine, universities and science and technology colleges, who participate on an individual basis. New members join every 3 years through a public call for applicants.

Renewal of the CES

In 2006 the third term of the 10 original scientific panels of Afssa got under way. Their renewal occurred at the same time as the 3 scientific panels on crop treatment products were formed through a public call for applicants. Out of 569 applications, 266 people were appointed CES members.
A list of 255 competent individuals likely to become experts for Afssa was also drawn up. Of these experts, 53 are from the university and medical spheres, 41 from Inra (French National Institute for Agricultural Research), 26 from veterinary colleges, 24 from science and technology colleges, 24 from Afssa, 10 from CNRS (French National Centre for Scientific Research) and 4 from Inserm (French National Institute of Health and Medical Research).

2 commissions in the field of veterinary medicinal products

- Marketing authorisation commission for veterinary medicinal products
- National commission for veterinary drug monitoring

FRENCH AGENCY FOR VETERINARY MEDICINAL PRODUCTS (ANMV)

Afssa ensures compliance with regulations governing veterinary medicine through scientific assessment, inspection and decision-making. It fulfils this particular remit *via* the ANMV.
Organised into 3 main departments and four transverse departments, the ANMV has 80 staff members.
Its main roles are to decide on marketing authorisations (MAs), monitor side effects of medicinal products and inspect pharmaceutical establishments and the veterinary medicinal product market.
It also contributes to discussions on veterinary medicinal products and to the drafting of many regulatory and technical texts in this area.
Active within several international bodies, it works particularly in collaboration with the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and is a member of the European Medicines Agency network.

It assesses:
- national and European market authorisation files for veterinary medicinal products;
- European files related to maximum limits of residue from veterinary medicinal products acceptable in foodstuffs of animal origin.

It monitors:
- the risk of side effects or ineffectiveness of medicinal products (drug monitoring);
- the quality of medicinal products;
- veterinary pharmaceutical establishments;
- advertising of medicinal products.

It authorises:
- the marketing of medicinal products;
- their clinical trials;
- the opening of pharmaceutical establishments involved in the manufacture, use, wholesale distribution and exportation of medicinal products;
- the importing, temporary use and exportation of medicinal products.

It comprises:
- 3 main departments:
  - marketing authorisation (MA),
  - drug monitoring,
  - inspection and controls;
- 8 transverse support departments and missions:
  - international affairs,
  - legal affairs and disputes,
  - human resources, documentation, communication, IT,
  - accounting and finance.

2006 indicators

MA

Updating of MA
- 77 summaries of product characteristics were drawn up for medicinal products put on the market.
- 136 revised quality files were assessed.
- 540 MA modifications were assessed.

Temporary authorisations
16 temporary sale authorisations to professionals and 1,002 TAUs (temporary authorisations for use) issued.

Import authorisations
218 applications, 174 import authorisations were issued.

Timeframe for assessing marketing authorisation applications at the national level
- Average timeframe for studying the admissibility of the application: 9 days.
- Average timeframe for the first assessment of a national application: 114 days.
- Average timeframe for issuing the list of questions: 15 days.
- Average timeframe for assessing an answer to the list of questions: 83 days.
- Average timeframe for issuing the MA: 18 days.

MA APPLICATIONS IN 2006

	Chemical medicinal products	Immunological medicinal products	TOTAL APPLICATIONS
National procedure	54	4	58
Mutual recognition procedure	32	11	43
Decentralised procedure	16	3	19
Centralised procedure	11	3	14
TOTAL	113	21	134

134 MA applications were submitted in 2006 compared with 123 in 2005.

133 MAs were issued in 2006 compared with 91 in 2005 (115 for chemical medicinal products, 15 for immunological medicinal products and 3 for homeopathic medicinal products).

CLINICAL TRIAL APPLICATIONS PROCESSED IN 2006

	Chemical medicinal products	Immunological medicinal products	Refusals	Modifications	TOTAL APPLICATIONS
Clinical trials	41	8	0	40	49

49 applications were processed in 2006 compared with 57 in 2005.

VETERINARY PHARMACEUTICAL ESTABLISHMENTS AUTHORISED IN 2006

Manufacturers	Operators	Importers	Wholesale distributors/ selling agents	Medicated footstuff manufacturers	Medicated foodstuff distributors
93	64	13	249	262	171

The "Establishments" database was updated in 2006, resulting in a repeal of 326 opening authorisations that had become obsolete (105 in 2005).

OPENING AUTHORISATION APPLICATIONS

	Number of applications	Discontinued classification	Refusal
2005	80	12	2
2006	62	12	4

TECHNICAL MODIFICATIONS ORDERED

	Manufacturers of veterinary medicinal products	Medicated foodstuff industry
2005	61	5
2006	62	15

65% of applications accepted were processed within the regulatory timeframes.

EXPORT CERTIFICATION

	Applications	Certificates published	Appendices countersigned
2005	897	3,426	384
2006	711	2,308	456

MANAGEMENT OF QUALITY DEFECTS IN VETERINARY MEDICINAL PRODUCTS

Year	2000	2001	2002	2003	2004	2005	2006
Number	1	3	6	4	6	4	12

Despite a significant increase in the number of declarations, probably tied in with the putting on line of the "Batch recall" procedure on the ANMV website, this number is still very low. In 2006, the quality defects declared led to 8 batch recalls.

INSPECTION OF VETERINARY PHARMACEUTICAL ESTABLISHMENTS

	GMP inspections	GLP inspections	GDP inspections	TOTAL	Number of inspection days	Inspections in other countries
2005	43	11	12	66	167	3 (19 jrs)
2006	37	11	13	61	140	5 (31 jrs)

GMP = Good Manufacturing Practices

GLP = Good Laboratory Practices

GDP = Good Distribution Practices

The inspection pressure was maintained in 2006 despite a visibly declining number of days devoted to these assignments. The number of available FTEs was lower than 2005.

The planned inspection frequencies were nevertheless adhered to.

INQUIRIES RELATED TO OPENING AUTHORISATIONS OR MODIFICATIONS

	Authorisations	Modifications	Targeted inquiries	TOTAL
2005	21	69	4	84
2006	13	63	5	81

The number of inquiries has stabilised after a sharp increase in 2003 and 2004.

Targeted inquiries are conducted unexpectedly, following complaints, for example.

In 2006, one of these actions led to the transmission of an observation report to Parquet.

CONTROL OF VETERINARY MEDICINAL PRODUCTS

	Number of medicinal products controlled	Number of COFRAC reports	Number of non-conformities
2005	52	61	5
2006	77	77	6

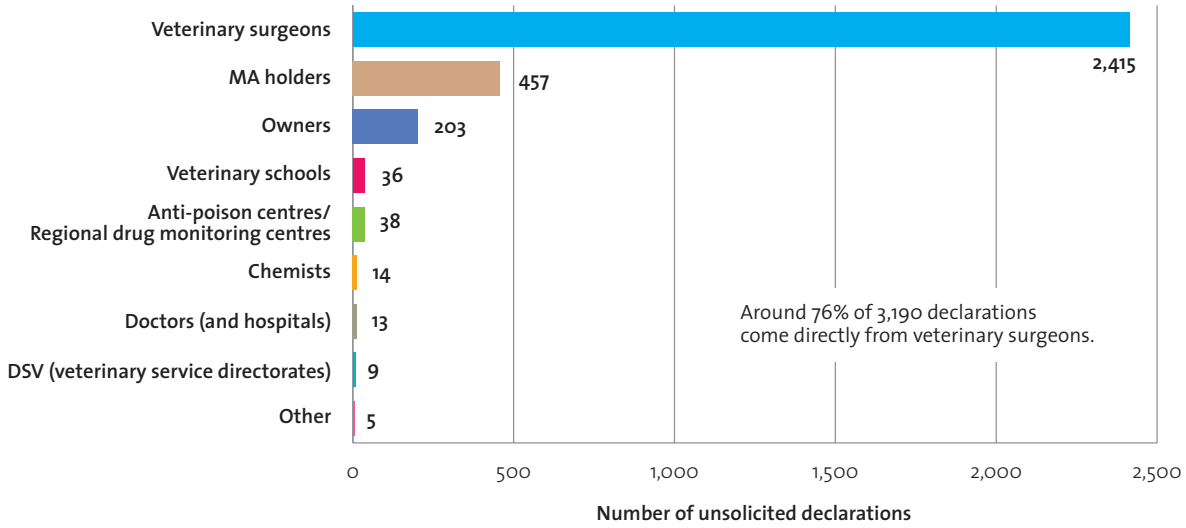
The number of medicinal products controlled is increasing significantly since 2006, through optimised programming and planning of samples.

All non-conformities have been monitored and led in particular to MA modification applications.

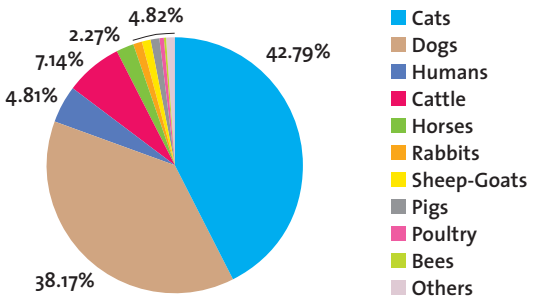
MA holders received comments or requests concerning 8 medicinal products.

10 collaborative studies have been conducted by the European Directorate for the Quality of Medicine and the partnership with Afssaps (French Health Product Safety Agency) was strengthened.

ORIGIN OF UNSOLICITED DECLARATIONS OF SIDE EFFECTS OF VETERINARY MEDICINAL PRODUCTS (IN FRANCE IN 2006, 3,190 DECLARATIONS)

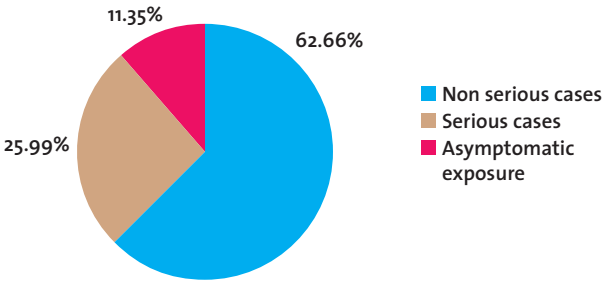


SIDE EFFECTS LISTED PER SPECIES



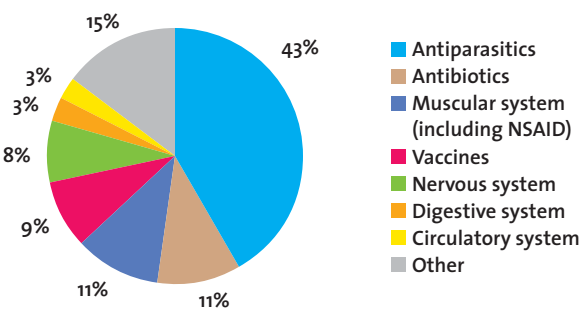
As in previous years, these declarations mainly concern reactions occurring in pets: 60% in cats and dogs.
Few declarations concern animals for production and/or industrial holdings.

SIDE EFFECTS DEPENDING ON THEIR SEVERITY



26% of declarations concern serious side effects in humans (97 declarations or around 3% of the total number of declarations recorded) or reactions causing the death of an animal.

SIDE EFFECTS PER CATEGORY OF MEDICINAL PRODUCT



43% of side effects occur following exposure to an antiparasitic. The breakdown of the number of declarations per category of medicinal product remains more or less that of previous years.

THE DEPARTMENT FOR THE EVALUATION OF NUTRITIONAL AND HEALTH RISKS

This conducts collective expert evaluations on the basis of which Afssa issues opinions and recommendations and produces reports in the fields of public health and animal health.
Its work forms the scientific basis for decision-making by the authorities: drafting of regulations, authorisations regarding products, practices, preventive measures, etc.
It works together with 10 scientific panels covering the whole of its remit.
With a total of 66 personnel members, it comprises:

- 5 risk assessment units (water-related, nutritional, biological, physico-chemical and risks related to animal health and nutrition);
- A risk assessment scientific support unit responsible for managing and exploiting databases on food composition, contamination and consumption and methods for calculating population exposure;
- A support unit for expertise enhancement and quality.

The department also contributes to Community and international projects through research programmes and training and assessment.

2006 indicators

Fewer but more complex requests. Down by 18% in 2006, the number of requests is the same as the first years in Afssa's existence. This decrease is partly due to the centralisation by the European Food Safety Authority (EFSA) of certain types of industrial Community files (authorisation applications for the use of additives in animal feed for example). Class 1 requests therefore account for under half of all requests registered, compared with almost two-thirds in 2005.
Urgent requests (answer required in under 3 months) account for almost 30% of requests. These have increased as a result of the emergence of health crises such as avian *influenza* and bluetongue, and requests from authorities facing Community deadlines.

Out of the hundred or so requests thus counted, two thirds were of a very urgent nature (answer was required within a month) and most concerned the fields of animal health and TSSE.
Self-requests almost doubled, mainly concerning mycotoxins, legionnella, *toxoplasma gondii,* bluetongue, TSE in sheep, recycled PET, substances added to animal feed, etc.

BREAKDOWN OF REQUESTS PER CLASS

Class	Number of requests registered in 2005 (%)	Number of requests recorded in 2006 (%)
Class 1: risk assessment on authorisation applications (industrial files)	271 (65%)	149 (44%)
Class 2: risk assessment: opinion on regulatory text	68 (16%)	72 (21%)
Class 3: risk assessment: other situations (urgent requests, general complex requests, etc.)	35 (9%)	47 (14%)
Class 4: request by accredited consumer associations	3 (< 1%)	0
Class 5: self-requests	21 (5%)	31 (9%)
Class 6: scientific and technical support	18 (4%)	42 (12%) of which 15 requests for scientific and technical support (4%) concerning laboratories
TOTAL	416 (100%)	341* (100%)

* 18 requests were deemed inadmissible after analysis of the file.

Requests are becoming ever more complex to deal with. Class 1 mandates, which are processed on the basis of a standardised procedure, are reducing in favour of those requiring an *ad hoc* expert evaluation method and cross-disciplinary ones, falling within the remit of several scientific panels and/or requiring the participation of Afssa laboratories, are on the rise. This trend is particularly linked to the establishment of the "Hygiene Package".
Class 6 requests (Scientific and technical support) have tripled, due to the centralisation of application registration.
Half of the requests in 2006 concerned three areas of expertise: Human Nutrition, Water and Animal Health. The latter replaces Animal Nutrition in comparison with 2005.

- Accounting for 22% of mandates, Human Nutrition concerns the same share of requests as pre-2005, the year which saw a peak in the number of requests in the field of food supplements.
- **Animal Health mandates doubled,** due to avian *influenza* and bluetongue. Expert evaluation in this field, representing 16% of requests, is increasingly called on due to the emergence or resurgence of infectious animal diseases.
- The fall by half in Water mandates (12% of mandates) is down to 3 main factors: a fall in authorisation applications for exploitation of natural mineral water (from 21 in 2005 to 11 in 2006) which will no longer be addressed by Afssa in 2007; a growing number of regulatory files registered in 2005 in line with modifications to the Code of Public Health; the transfer of files on the approval of laboratories to the laboratory for studies and research in hydrology (13 requests in 2005 compared with 0 in 2006).

Animal Nutrition requests are in decline for the second year running
(– 40% in 2005 and – 44% in 2006), given the management of expert evaluation of Community files directly by EFSA.

BREAKDOWN OF REQUESTS PER COORDINATING FIELD OF EXPERTISE (1999-2006)

Coordinating field of expertise*	1999	2000	2001	2002	2003	2004	2005	2006	Trend 2005/2006	TOTAL MANDATES
Human nutrition	2	80	63	61	69	70	122	75	↗	542
Microbiology	8	31	14	22	17	17	19	30	↗	158
Biotechnology	11	31	14	10	23	22	26	14	↘	151
Transmissible subacute spongiform encephalopathies	5	27	36	30	23	17	15	22	↗	175
Chemical and physical contaminants and residues	11	15	14	24	19	13	14	16	↗	126
Animal nutrition	6	64	52	48	88	107	64	36	↘	465
Animal health	7	21	31	16	21	18	27	55	↗	196
Food contact materials	2	20	12	14	13	6	4	2	↘	73
Additives, flavourings and processing aids	6	21	21	24	30	26	18	10	↘	156
Water	1	32	80	88	79	92	84	41	↘	497
Veterinary medicinal product	1	1	6	4	6	7	6	6	=	37
Plant and Environment	–	–	–	–	–	–	–	6		6
Laboratories								15		15
Other (without attachment to a coordinating CES)**	5	14	4	9	4	7	17	13	↘	73
TOTAL	65	357	347	350	392	402	416	341		2,670

* Although a single request may cover several fields of expertise, this table attributes the request to the main field only.

** This category includes requests that processed directly by General Management or the Department for the Evaluation of the Nutritional and Health Risks.

Three other fields also saw a fall in the number of requests: Biotechnology, Additives, Flavourings and Processing Aids and Food Contact Materials. The fall in Biotechnology requests reflects the declining number of GMO files processed at European level in 2006. Fewer Additives, Flavourings and Processing Aids files were submitted within the national authorisation system.
Microbiology requests increased by 58% because of the establishment of the Hygiene Package (requests for opinions on technological processes, good hygiene practice guides and simplification of national regulations) and self-requests on the description of microbiological hazards.
TSSE requests increased by 47% in 2006. Examination of the roadmap, the purpose of which is to revise the 1999 regulations on BSE and new basic scientific issues on animal health and monitoring methods concerning TSSE in small ruminants explain this trend.

The origin of mandates was marked by the following trends in 2006:

- **Requests from the French Ministry of Agriculture increased by 66%** and its share doubled in requests registered by Afssa. The rise in Animal Health requests, requests for scientific and technical support from Afssa laboratories and the enforcement of the Hygiene Package explain this situation;
- **The fall by 48% in requests from the French Ministry of Consumer Affairs,** which now only accounts for 38% of requests registered by Afssa, is due to the decrease in class 1 mandates, mainly from the Directorate General for Consumer Affairs, Competition and Fraud Control (DGCCRF);
- **The fall by 40% in requests from the French Ministry of Health** is due to those related to drinking water, for which this ministry is the main one involved;
- **The doubling of interministerial requests** is mainly due to avian *influenza*, which concerns the French Ministries of Health and Agriculture.

BREAKDOWN OF REQUESTS PER ORIGIN (2005-2006)

Origin: request author(s)	Requests registered in 2005	Requests registered in 2006
Ministry of Consumer Affairs (DGCCRF)	226 (54%)	130 (38%)
Ministry of Health (DGS)	89 (21%)	53 (16%)
Ministry of Agriculture (DGAI)	62 (15%)	103 (30%)
Mandates issued jointly by at least 2 of Afssa's governing ministries	11 (2,5%)	22 (6%)
Other ministries	3 (< 1%)	1 (< 0,5%)
Afssa: self-requests	21 (5%)	31 (9%)
Accredited consumer associations	3 (< 1%)	0
Other agencies (AFSSAPS, AFSSET)	1 (< 0,5%)	1 (< 0,5%)
TOTAL	416 (100%)	341 (100%)

The production of assessments and expert evaluations in 2006 was equivalent overall to that of 2005 (the slight reduction does not give an exact reflection of the number of requests concluded as several expert evaluation products may be attached to a single mandate). The modifications mainly concern the breakdown between fields of expertise.

A large number of requests prior to 2006 were addressed, particularly in the field of water.

The three fields of Human Nutrition, Water and Animal Health concern over half of the opinions issued, "Animal Nutrition" fell by 13% in comparison with 2005.

BREAKDOWN OF EXPERT EVALUATIONS ISSUED BY AFSSA PER FIELD (2005-2006)

Coordinating field of expertise	Number of expert evaluations issued in 2005	Number of expert evaluations issued in 2006
Human nutrition	54 (15%)	60 (18%)
Microbiology	20 (6%)	16 (5%)
Biotechnology	22 (6%)	14 (4%)
Transmissible subacute spongiform encephalopathies	17 (5%)	29 (9%)
Chemical and physical contaminants and residues	16 (5%)	18 (5%)
Animal nutrition	84 (24%)	37 (11%)
Animal health	24 (7%)	57 (17%)
Food contact materials	4 (1%)	9 (3%)
Additives, flavourings and processing aids	18 (5%)	8 (2%)
Water	72 (21 %)	65 (19%)
Other (without collective expert evaluation)*	9 (< 3%)	14 (4%) including 4 scientific and technical support from PASER
Veterinary medicinal product	9	7 (2%)
Plant and Environment Department	_	1 (< 0,5%)
TOTAL EXPERT EVALUATIONS	349 (100%)	337 (100%)
Scientific and technical support given by Afssa laboratories (centralised and registered in 2006 by DERNS)		11

* The category "Other" represents expert evaluations without attachment to a coordinating scientific panel, produced internally, by justified dispensation from a collective expert evaluation.

AVERAGE TIMEFRAMES FOR PROCESSING REQUESTS, PER FIELD OF EXPERTISE (2005-2006)

Field of expertise	2005 Average timeframe (no. of requests concluded in 2005)*	2006 Average timeframe (no.of requests concluded in 2006)*	Trend	No. of requests under way at 31/12/06
Human nutrition	187 days (6 months) (52 requests concluded)	250 days (8 months) (58 requests concluded)	↗	118
Microbiology	261 days (9 months) (24 requests concluded)	310 days (10 months) (16 requests concluded)	↗	36
Biotechnology	97 days (3 months) (21 requests concluded)	95 days (3 months) (14 requests concluded)	=	5
TSSE	110 days (4 months) (14 requests concluded)	109 days (4 months) (25 requests concluded)	=	6
Chemical and physical contaminants and residues	283 days (9 months) (18 requests concluded)	175 days (6 months) (16 requests concluded)	↘	15
Animal nutrition	93 days (3 months) (84 requests concluded)	96 days (3 months) (37 requests concluded)	=	10
Animal health	117 days (4 months) (21 requests concluded)	54 days (2 months) (55 requests concluded)	↘	9
Food contact materials	362 days (12 months) (4 requests concluded)	716 days (> 24 months) (7 requests concluded)	↗	3
Additives, flavourings and processing aids	384 days (13 months) (18 requests concluded)	180 days (6 months) (8 requests concluded)	↘	12
Water	407 days (13 months) (83 requests concluded)	499 days (17 months) (86 requests concluded)	↗	74**

* The timeframe for processing one request is equal to the time between the date Afssa received the request and the date that the expert evaluation was produced, thereby concluding the request.

** Out of the 74 mandates under way, 22 related to natural mineral water should be concluded following the publication in the French Official Journal of 12/01/2007 of decree 2007-49 of 11/01/07 on the safety of water for human consumption.

The annual average timeframe for processing requests, 8 months in 2006 compared with 7 months in 2005, should be analysed on the basis of the residual number of requests in previous years.

A large number of requests were received during the same period for two fields of expertise:

- 77% of requests received in **Human Nutrition** were concluded (58 processed out of 75 received). To deal with this accumulation, the scientific panel will meet twice as often in 2007;
- The Water scientific panel processed more than double the number of requests it received through the year (86 processed for 41 received). This effort to catch up on requests received before 2006 explains why the average processing timeframe is over 1 year.

In Animal Health, despite twice as many requests, the average timeframe for processing them fell from 4 to 2 months between 2005 and 2006, due to the emergency context. Except for requests on avian *influenza* and bluetongue, the average timeframe for processing other requests in Animal Health is less than 3 months, which corresponds to the business plan 2007-2011 of 4 April 2007 as regards processing emergency requests. The average timeframe for processing requests in Food Contact Materials is over 2 years, due to the conclusion of four self-requests dating prior to 2005.

CREATION OF THE PLANT AND ENVIRONMENT DEPARTMENT (DIVE)

Created on 22 August 2006, this department is responsible for the scientific assessment of crop treatment products before they are marketed:

- It processes marketing authorisation (MA) applications submitted by manufacturers;
- It assesses the effectiveness of these products on crops and the risks they may pose to human health and the environment;
- It submits an opinion to authorities that issue marketing authorisations.

In swift development since its creation, it had 90 employees at the end of 2006, most of whom are scientists with varied and complementary qualifications.
It prepares the work of 3 scientific panels (chemical plant protection products, plant protection products containing microorganisms, fertilisers and crop supports) and plays an active role in EFSA's work.

It studies risks for:

- consumers;
- users (agricultural workers, gardeners, etc.);
- natural environments (soil, air, water);
- living organisms (microorganisms in the soil, flora and fauna).

It analyses agronomical benefits using data on:

- product efficacy in the fight against crop pests;
- the risks it presents for the crop to be protected;
- testing in the field.

It summarises the risks and benefits:

- it compares the product efficacy with the effectiveness of other agronomical solutions that exist for the same use;
- it suggests risk management measures.

It comprises:

- 5 assessment units (physico-chemistry and analytical methods, occupational health and toxicology, residues and consumer safety, ecotoxicology and the environment, effectiveness);
- 1 European affairs and assessment coordination unit;
- 1 MA management unit;
- support departments.

2006 indicators

The Plant and Environment Department issued its first opinion on 27 September 2006 on a draft decree concerning the withdrawal from human consumption of foodstuffs of animal origin contaminated by pesticidal residues.

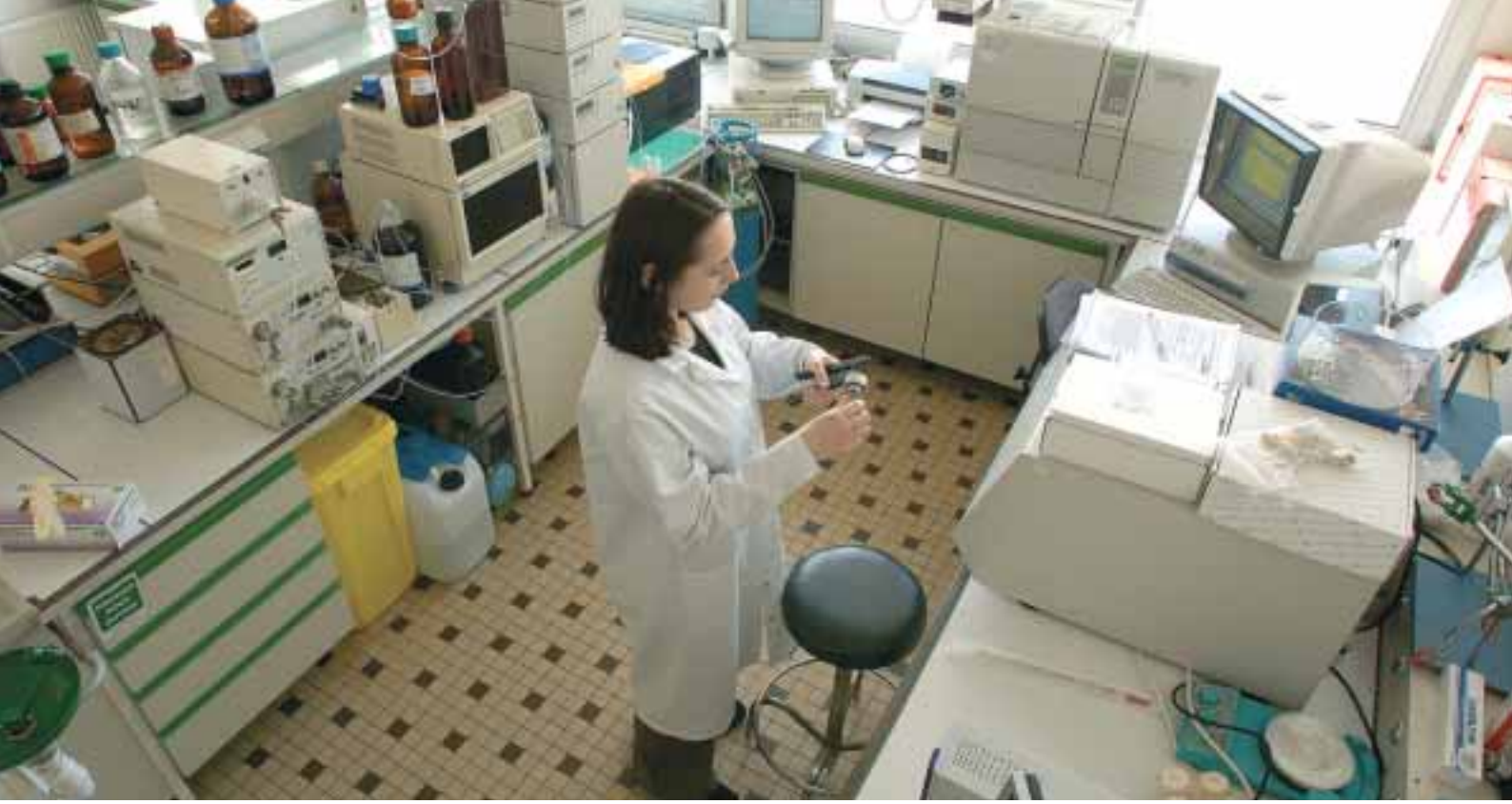
Very diverse products

Used to ensure harvests and the quality and safety of plant produce (cereals, vines, fodder plants, fruit, vegetables, flowers, forests, oil plants, etc.), these include:

- plant protection products (pesticides) which protect plants against pests, weeds and disease;
- fertilisers that nourish plants (fertilisers) and the soil (modifications such as manure, compost, etc.);
- crop supports replacing soil (heath-peat, peat, compost, glass wool, etc.).

ESTABLISHMENT OF THE SCIENTIFIC DEPARTMENT

On 2 January 2006, the Department for Laboratory Programming became the Scientific Department. Its role is to boost, coordinate, support, lead, monitor and assess Afssa's scientific activities, whether these concern work carried out by laboratories, the ANMV, the DERNS or the DiVE. Adopting its definitive organisation in October 2006 only, with the appointment of its director, its activities focused on laboratories until the end of the last quarter. 2006 was therefore a transitional year.



LABORATORY FOR STUDIES AND RESEARCH ON FISHERY PRODUCTS

The laboratory in **Boulogne-sur-mer**, with 16 personnel members, contributes to the quality and safety of fishery products:

- It develops methods for detecting, characterising and quantifiying pathogenic agents (microorganisms and parasites) present in fish, shellfish and crustaceans;
- It carries out pre-normative research (health quality chemical and microbiological criteria);
- It performs analyses for health authorities and professionals (chemical and microbiological analyses, molecular characterisation of pathogenic bacteria, etc.);
- It conducts studies on product safety and quality.

4 testing departments

- Microbiology
- Chemistry
- Molecular biology
- Parasitology

Research programmes

- Assessment of fish alteration by chemical markers
- *Listeria monocytogenes* in smoked fish (genetic variability, virulence, optimisation of growth tests, etc.)
- Pathogenic vibrions in fishery products (detection, characterisation, quantification, etc.)
- Parasitology of fish (identification, assessment of prevalence, abundance and intensity of economically significant species, etc.)

Reference activities

- *Vibrio parahaemolyticus*
- Histamin
- Volatile amines

Types of analysis

- Identification confirmation and research into factors of pathogenicity for Vibrio parahaemolyticus through Polymerase Chain Reactions (PCRs).
- Assay of total volatile basic nitrogen (TVB-N).
- Assay of TVB-N and Trimethylamine (TMA) by steam distillation and calculation of the TMA/TVB-N ratio.
- Assay of histamine by high performance liquid chromatography (HPLC).

Inter-laboratory aptitude tests (ILATs)

- Assay of TVB-N.

Activities of accredited laboratories

- Assay of TVB-N.
- Assay of TVB-N and TMA by steam distillation and calculation of the TMA/TVB-N ratio.

2006 indicators

- 4,973 analyses
- 8 ILATs

Apparatus

- Gas chromatography-mass spectrometer
- Atomic absorption spectrometer
- Liquid chromatography (HPLC chain)
- Isoelectrofocalisation
- Pulsed field electrophoresis
- Quantitative PCR
- Microscopy (binocular magnifier, straight and inverted microscope, image acquisition system)

Partners

- Aérial
- Institut Pasteur de Lille
- Institut Pasteur de Paris
- CEVPM
- Universities
- Trade unions and manufacturers in the fishery products sector
- Ifremer
- CNRS
- Inra
- Pôle filière produits halieutiques
- ADRIA
- École Nationale Vétérinaire de Maisons-Alfort
- ENITIAA
- Conseil général du Pas-de-Calais
- Conseil régional du Nord - Pas-de-Calais
- Communauté de communes

Publications 2006

- In scientific reviews with a reading committee: 5

LABORATORY FOR STUDIES AND RESEARCH ON EQUINE DISEASE

The laboratory in **Dozulé**, with 20 personnel members, works towards improving the health of horses:

- Coordinator of the national epidemiosurveillance network and observatory of equine diseases, it monitors the emergence and/or spread of major and emerging infections and analyses their causes, particularly through autopsies;
- it studies infectious agents and gastro-intestinal parasites in horses;
- it develops diagnosis tools and prevention means for infectious and parasitic diseases;
- As a National Reference Laboratory (NRL) for contagious equine metritis, it provides scientific and technical support in veterinary inspections carried out by authorities (sample analysis, training of laboratories in the field and monitoring of the quality of their analyses, etc.).

4 scientific departments

- Epidemiology
- Pathological anatomy
- Microbiology-immunology
- Parasitology

Reference activities

NRL for contagious equine metritis and dourine.

Types of analysis

- 9 second-intention diagnostic analyses on contagious equine metritis were carried out (bacteriology, immunofluorescence and PCR), resulting in 2 confirmations.
- 135 serological tests by complement fixation were conducted in the search for an anti-dourine antinbody.

Inter-laboratory aptitude tests (ILATs)

As part of the reference activities concerning contagious equine metritis, the following were organised:

- ILAT for bacteriology (84 accredited laboratories);
- ILAT for indirect immunofluorescence (45 accredited laboratories).

2006 indicators

- 2,069 analyses
- 2 ILATs
- 129 supervised laboratories

Main research programmes

Microbiology-immunology

- Contagious equine metritis: development, optimisation and/or validation of diagnostic tools (e.g. specific PCR for *T. equigenitalis*) - development and application of molecular epidemiosurveillance tools - surveillance of the antibiotic resistance of *T. equigenitalis* strains
- *Rhodococcus equi*: development and/or optimisation of medical prophylaxis tools - development and application of targeted molecular epidemiosurveillance tools on the study of virulent plasmid biodiversity - optimisation of existing serological diagnostic tools (ELISA)

Pathological anatomy

Enhancement of the autopsy database:

- study into the representativeness of the number of horses autopsied compared with the reference equine population;
- retrospective study of *Rhodococcus equi* infections in a population of 1,730 autopsied foals: epidemiological, clinical and lesional aspects.

Epidemiology

- Exploitation of the ARS (acute respiratory syndrome) network database
- Epidemiological study on rhodococcosis in foals in Lower Normandy: prevalence, usual methods of diagnosis, treatment and prevention of the disease, risk factors in holdings

Parasitology

Biology of the L3 larva of gastro-intestinal strongyles in horses. Life expectancy and living areas. Consequences on the health prophylaxis of pastures.

Partners

- Conseil régional de Basse-Normandie
- Conseil général du Calvados
- European Union
- National stud farms
- Association pour le développement de la recherche équine en France (ADREF)
- University and university hospital in Caen
- Laboratoire départemental Frank Duncombe
- National veterinary colleges in Maisons-Alfort, Lyon and Toulouse
- École Nationale Professionnelle des Haras - La jumenterie du Pin
- American (S. Giguere) and Japanese (S. Takaï) scientific teams
- Association vétérinaire équine française (AVEF)

Publications 2006

- In scientific reviews with a reading committee: 11
- In reviews for professionals and the general public: 1

> Sommaire

Extension of the Dozulé laboratory's activities

Planned in 2004, the gradual transfer to the Dozulé laboratory of some activities from the Laboratory for studies and research on animal disease and zoonoses (Maisons-Alfort) concerning the equine sector was completed in 2006. This transfer reinforces this laboratory's position in the regional competitiveness cluster. It concerns parasitic diseases, dourine, babesioses, fasciolosis and viral diseases, viral arteritis, infectious anaemia, herpes and equine flu (excluding interspecific transmission aspects).

Parasitology: transfer of diagnostic techniques

For parasitic diseases, the transfer of knowledge took place from May to July, focusing on serological diagnostic techniques for fasciolosis (*Fasciola hepatica*) by immunoelectrophoresis, dourine (*Trypanosoma equiperdum*) and babesioses (*Theileria equi*, *Babesia caballi*) by complement fixation.
In 2006, the parasitology department thus conducted 59 serological tests concerning fasciolosis, 135 dourine and 259 babesioses. After setting up and acquiring the methods, it stopped practising first-intention diagnostic analyses, except in the case of dourine for which there are no accredited laboratories.
The transfer of equine virological activities will take place in 2007.

LABORATORY FOR STUDIES AND RESEARCH ON VETERINARY MEDICINAL PRODUCTS AND DISINFECTANTS

The laboratory in **Fougères**, with 65 personnel members, mainly contributes to improving knowledge of the benefits and risks of veterinary medicinal product and disinfectant use by the food processing industry.
With recognised competence in the field of genetic toxicology, it contributes to the assessment of risks associated with the presence of chemical substances (residues of medicinal products, pesticides, contaminants, etc.) in food.
It focuses on three main areas of activity:

- screening for residues of veterinary medicinal products in foodstuffs of animal origin;
- antimicrobial effectiveness of antibiotics and disinfectants and the development of resistance of these products;
- assessment of the genetic toxicity of food contaminants.

As the National Reference Laboratory (NRL) for veterinary medicinal product residue, it plays a role in inspecting disinfectants, ensuring proper use of veterinary medicinal products and observing antibiotic resistance, in France and Europe.
It also acts as an expert in a number of French, Community and international bodies.

Reference activities

- Community Reference Laboratory (CRL) for antibiotic residue and colourings
- NRL for veterinary medicinal product residue
- NRL for antibiotic resistance in partnership with Afssa Maisons-Alfort and Afssa Ploufragan
- Expert laboratory on the effectiveness of disinfectants used in holdings and food processing industries

Types of analysis

Veterinary medicinal product residues and antibiotic residue and colourings

- Confirmation analysis by liquid chromatography-mass spectrometry in tandem in matrices of animal origin (Meat, Milk, Eggs).
- Chloramphenicol, Nitrofuran Metabolites, Malachite green, Carbadox and Olaquindox Metabolites, Dapsone.

■ Betalactamins, Tetracyclines, (Fluoro)Quinolones, Aminoglycosides, Macrolides, Phenicols, Sulfamides, Amino-glycosides.
■ Avermectines, Benzimidazoles.
■ Non-steroid anti-inflammatory medicinal products.

Antibiotic resistance

Measurement of the minimum inhibitory concentration in various antibiotics.

Marketing authorisation for disinfectants and approval

■ Measurement of the bactericidal, virucidal and fungicidal activity of disinfectants and antiseptics.
■ Processing of 110 files within the framework of European regulations on Biocides, on behalf of the French Ministry of Agriculture during 6 Committees. European files were followed up through 10 CES sessions within Afsset and the French Ministry of the Environment.

Inter-laboratory aptitude tests (ILATs)

Chains for inter-professional dairy laboratories.

Detection of inhibitors.

■ Accredited reference activities
■ Programme 99.6: analysis of chemical contaminants in animals, in products and foodstuffs intended for human or animal consumption: veterinary medicinal product residues.
■ Programme 6: tests to determine the efficacy of antiseptics and disinfectants.

Indicators 2006

■ 1,438 analyses
■ 7 ILATs
■ 110 supervised laboratories

4 research units

■ Veterinary medicinal product residues
■ Pharmacokinetics-pharmacodynamics
■ Antimicrobial hygiene products
■ Genetic toxicology of food contaminants

Testing means

■ Animal testing of large animals and rodents
■ Bacteriology, virology and molecular biology laboratories
■ Toxicology laboratories
■ Analytical chemistry laboratories
■ Chromatography-mass spectrometry and physical detection equipment (UV, Fluorescence)

Main research programmes

Veterinary medicinal product residues

■ Design and validation of methods for confirming veterinary medicinal product residues by mass spectrometry
■ Pharmacokinetics of ionophore anticoccidials in poultry

Pharmacokinetics-Pharmacodynamics

■ Assessment of the exorpstion of fluoroquinolones in the intestinal lumen in pigs
■ Assessment of the risk of resistant genes transferring to betalactamins in human intestinal micro-flora
■ Assessment of the antibiotic resistance of *Escherichia coli* et *Enterococcus faecium*

Genetic toxicology of food contaminants

■ Assessment of the genotoxicity of cyanotoxins (cylindrospermopsin, nodularin, microcystin)
■ Assessment of azo food colourings (tartrazine, sunset yellow et amaranth)

Antimicrobial hygiene products

■ Assessment of the resistance to antibiotics and disinfectants of *Campylobacter* sp, *Listeria monocytogenes*, *Escherichia coli* and *Enterococcus faecium*
■ Assessment of the efficacy of disinfectants on food viruses

3 theses accepted in 2006

Main partners

■ European Commission. Directorate for Health and Consumer Protection, Directorate General for Food, Conseil régional de Bretagne, Network of National Reference Laboratories for veterinary medicinal product residues, Partners in the European integrated project BIOCOP www.biocop.org, University of Rennes (Vie-Agro-Santé doctoral college). Associated laboratory, Member of UPRES EA 3892 “Optimisation biopharmaceutique des passages transmembranaires”, Mixed Unit Inra/ENV Toulouse, Network of National Reference Laboratories for antibiotic resistance, Network of Laboratories within the CEN and OCDE, ACTIA, GIS “Cyanobactéries”, Australian Water Quality Center (AWQC), Afsset, Inserm Rennes, U, CeRBEp, Institut Pasteur Paris, Conseil général d’Île-de-France

Publications 2006

■ In scientific reviews:
- with a reading committee: 20
- without a reading committee: 2

■ In reviews for professionals and the general public: 3

LABORATORY FOR STUDIES AND RESEARCH ON BOVINE DISEASE AND MEAT HYGIENE

The laboratory in **Lyon**, with 72 personnel members, mainly works towards improving bovine health and meat safety. Specialising in transmissible spongiform encephalopathies (TSEs) and mycoplasmoses, it is also expert in all ruminant animals:

- it studies the agents responsible for major and emerging diseases;
- it studies the pathogenic bacteria likely to contaminate meat and their resistance to antibiotics;
- it monitors the appearance and spread of diseases and analyses their causes;
- As a national reference laboratory (NRL) for several diseases, it provides scientific and technical support for veterinary inspections carried out by authorities (validation of data and analytical methods, training of field laboratories, management of epidemiosurveillance data, etc.).

Reference activities

NRL for animal TSEs (BSE and scrapie)
NRL for enzootic bovine leucosis (EBL)
NRL for viral bovine rhinotracheitis (IBR)
OIE reference laboratory for contagious bovine peripneumonia (CBPP)

Types of analysis

TSE
Implementation of reference techniques for confirming first-intention diagnoses conducted in a decentralised manner for different BSE and scrapie surveillance channels (clinical network, rendering and slaughtering tests).
Management and analysis of BSE and scrapie epidemiological surveillance data using data produced by the laboratory and data provided by the Directorate General for Food, and publication of a monthly management chart for epidemiosurveillance of these two diseases.

EBL
408 serological expert evaluations (sera corresponding to sera analyses) and 20 reagent inspections.

IBR
Serological expert evaluations concerned 930 individual analyses and 300 for pooled milk. Reagent inspections were carried out on 35 batches of ELISA reagents for both individual and pooled analyses.

CBPP
No strain of *M. mycoides subsp.* mycoides SC, the exclusive agent of CBPP, has been detected within the VIGIMYC network. 28 serological studies were performed in the framework of exports or purchases. Two clinical suspicions turned out to be negative.

Inter-laboratory aptitude tests (ILATs)

TSSE
65 laboratories took part in an ILA for BSE and/or scrapie.

Antibiotic resistance (October 2006)
46 laboratories took part to establish their ability to carry out antibiogrammes (antibiotic susceptibility tests) on reference bacterial strains.

Mycoplasms
Assessment of the sensitivity of isolation techniques for mycoplasms in ruminants applied in veterinary diagnosis laboratories. This trial was suggested to 27 laboratories and 26 gave a response. It reveals that overall sensitivity of these techniques, with account taken of all the laboratories, is excellent and adequate by a long stretch for diagnosing clinical mycoplasmoses in ruminants.

EBL
102 laboratories took part in three trials (Elisa on serum, Elisa on milk, GID)

IBR
110 laboratories took part in two trials (on serum and milk).

Indicators 2006

- 2,898 analyses
- 8 ILATs and 350 supervised laboratories

5 scientific support and research units

- Non conventional transmissible agents
- Bovine bacteriology and meat safety
- Epidemiology
- Serodiagnostic immunology
- Mycoplasmology

Main research programmes

- Differential diagnostic tests between BSE, classic and atypical scrapie
- Development of transgenic mouse models for studying TSE
- Biochemical characterisation and by bio-tests of atypical forms of BSE and scrapie.
- Descriptive and analytical epidemiology of BSE and classic and atypical scrapie
- Descriptive epidemiology of the antibiotic resistance in bacteria from cattle
- Resistance mechanisms to antibiotics in bacteria from cattle
- Molecular markers and genetic tools for the epidemiology and diagnosis of mycoplasmoses in ruminants
- Pathogenicity factors and markers associated with the virulence of pathogenic mycoplasms of ruminants
- Assessment of respiratory infection models to *Mycoplasma bovis* in heterological species

2 theses accepted in 2006

Main partners

Nationwide
CEA, Cirad, National veterinary colleges, Inra, Inserm, Institut de l'Élevage, Institut Pasteur, Onerba, Sngtv.

At the regional level
Afssaps, BioMérieux, Cnrs, Ens Lyon sciences, Envl, Ibcp, Inserm, Claude Bernard Lyon I University

Publications 2006

- In scientific reviews with a reading committee: 22
- In reviews for professionals or the general public: 8

> Sommaire

LABORATORY FOR STUDIES AND RESEARCH ON ANIMAL DISEASES AND ZOONOSES

This laboratory, located in **Maisons-Alfort**, has more than 120 personnel members and helps to protect animal and public health. Its work focuses on major and emerging diseases which are specific to animals (epizootics) and/or transmissible to humans (zoonoses), and covers a wide number of species.
The laboratory relies on all of its skills to assist in the decision-making of health authorities:

- it develops detection, characterisation and prevention tools;
- it studies pathogenic agents (viruses, bacteria and parasites) and host-pathogen-relations;
- it monitors the emergence and spread of diseases and analyses their causes;
- it contributes to the assessment of related risks;
- as a laboratory of reference for various animal diseases at the national, European and international level, it provides scientific and technical support for health inspections (identification and characterisation of infectious agents, production and control of biological reagents and vaccines, validation of analytical data, standardisation and assessment of analytical methods, training of field laboratories, etc.).

Research team and units

- Bacterial zoonoses
- Epidemiology
- Virology (mixed unit Afssa-Inra-ENVA)
- Molecular biology and parasitic and fungal immunology (mixed unit Afssa-Inra-ENVA-Paris XII University)
- Anthrax

Reference activities

- Reference laboratory of the World Organisation for Animal Health (OIE) and Food and Agriculture Organization of the United Nations (FAO): brucellosis, bovine tuberculosis, paratuberculosis
- Community Reference Laboratory (CRL): brucellosis
- National Reference Centre (NRC): brucellosis
- NRC – Associated laboratory: anthrax
- National Reference Laboratory (NRL): brucellosis, anthrax, avian chlamydiosis, tuberculosis, tularaemia, foot and mouth disease, swine vesicular disease, horse sickness, trichinellosis, toxoplasmosis

Types of analysis of the bacterial zoonoses unit

Implementation of the following actions in the reference field, other than the permanent activities listed in the table below:

- organisation of a second Ring-Trial (participants: Germany, Belgium, Spain, Italy, Portugal, United Kingdom and France) in view of the standardisation of certain class biotyping tests of *Brucella* with presentation of results at the closing seminar of the COST 845 action in Silvi Marina (Italy);
- as part of its term as a CRL for animal and human brucellosis, start of mass production of reagents for the official typing of Brucella so as to be able to make them available to various reference laboratories in the Member States of the European Union (in 2006: production of 4 bacteriophages of type: Tb, Wb, Iz1 and R/C).
- start of animal testing in partnership with the Afssa site of Sophia-Antipolis in view of the production of 2 European sheep and goat sera intended for the European standardisation of official serological tests on brucellosis in small ruminants;
- participation in work conducted by OIE reference laboratories to develop a goat serum and pig serum of international reference in brucellosis;
- in tularaemia, continued assessment of a sensitivity test to erythromycin of Francisella tularensis strains isolated from organs or identified by the unit set up in routine testing. This testing detects strains belonging to a different biotype to the one identified usually in France;
- further to the development of a rapid detection system by differential PCRs of mycobacteria of complex *M. tuberculosis*, *M. avium* and *Mycobacterium sp.* on pathological samples from cattle, pigs, wild fauna, small carnivores and the environment, identification of the infection by uncultivable mycobacteria in cats (*Mycobacterium lepraemurium*) (publication under press), sea lions (*Mycobacterium pinnipedi*), and Psittacidae (*Mycobacterium genanvense*).

Inter-laboratory aptitude tests (ILATs)

- Organisation of the second session of Brucellosis serology ILAT which involved 16 laboratories before presenting anomalies at the first session organised in 2005.
- Almost 20,000 analytical services from the Bacterial Zoonsoses Unit as part of the Reference activity in 2006.

Reference activities accredited for programmes 109 and 116.

Types of analysis by the Anthrax Team

- Bacteriological examinations and/or exams by molecular biology.
- Research on *B. anthracis* by culture using samples (96).
- Research on *B. anthracis* by culture and PCR (162).
- Strains of identified *B. anthracis*/ for identification (22/10).
- Strains of Bacillus received for identification (15).

Types of analysis by the UMR Virology

Serology

- Viral neutralisation techniques for detecting antibodies against the viruses of foot and mouth disease, horse sickness, bluetongue, vesicular stomatitis, swine vesicular disease;
- ELISA techniques for the detection of antibodies against the viruses of foot and mouth disease, horse sickness, bluetongue, vesicular stomatitis, swine vesicular disease, West Nile.

Virology

- Isolation of viruses by inoculation on embryonated eggs (bluetongue virus) or on cell lines (foot and mouth disease, horse sickness, bluetongue, vesicular stomatitis, swine vesicular disease); Detection of viral genomes by RT-PCR techniques.

Inter-laboratory aptitude tests (ILATs)

Serodiagnosis of West Nile virus infection in 2006.

Types of analysis by the UMR BIPAR

- Diagnosis of equine babesioses until June 2006. Around 800 analyses.
- Diagnosis of foodborne parasitoses: confirmation of the presence of nematodes or trematodes and molecular typing.

Inter-laboratory aptitude tests (ILATs)

Organisation of Trichine ILATs in France.
Organisation of Trichine ILATs in Europe.

Indicators 2006

- 24,691 analyses
- 4 ILATs
- 80 supervised laboratories

Main research programmes

- Virology: foot and mouth disease, bluetongue, viral zoonoses (West Nile, Borna virus) and the species barrier, equine viruses, emerging (Hepatitis E, encephalomyocarditis) and re-emerging viruses, recombinant vaccines
- Bacterial zoonoses: brucelloses, mycobacterial infections, tularaemia, avian chlamydiosis, anthrax, diseases spread by ectoparasites (*Bartonella*, *Erlichia*...)
- Parasitic zoonoses: trichinellosis, toxoplamosis, giardiosis, cryptosporidiosis.
- Mycoses: *Aspergillus*, *Pneumocystis*...
- Epidemiology: modelisation, decision-aiding, biostatistics...

5 theses accepted in 2006

Main partners

In France

Directorate General for Food, InVS, Inra, CIRAD, National Veterinary Colleges, Institut Pasteur de Paris, ACERSA, FNGDS, MERIAL, Office National de la Chasse et de la Forêt, Centre d'Études du Bouchet, Hôpital interarmées Begin, Centre de recherches du Service de Santé des Armées, Laboratoire Central de la Préfecture de Police, Paris-Sud-Orsay University, Conseil régional d'Île-de-France...

Abroad

Lanzhou University of Agriculture (China), CODA-CERVA (Belgium), University of Arizona (Flagstaff, USA), CITA (Saragosse, Spain), European national reference laboratories...

Publications 2006

- In scientific reviews:
  - with a reading committee: 74
  - without a reading committee: 5
- In reviews for professionals and the general public: 6

LABORATORY FOR STUDIES AND RESEARCH ON FOOD QUALITY AND FOOD PROCESSING

This laboratory, located in **Maisons-Alfort**, has 140 personnel members and uses its specialist knowledge of analytical development to improve management of quality, food hygiene and food processing, from the food to the fork.

Food quality and hygiene

The laboratory focuses its work on microbiological, physico-chemical and nutritional hazards present in food or associated with the conditions in which food is produced and prepared:

- it develops knowledge on the identification of hazards present in food;
- it develops methods for detecting, characterising and quantifying them;
- it analyses the cause of their emergence and factors of their development;
- it contributes to the assessment of their related risks;
- as a reference laboratory, it provides scientific and technical support to health inspection services (analysis of samples, validation of analytical methods, training of field laboratories and monitoring of the quality of their analyses, coordination of studies, etc.) and participates in exchanges with European scientific partners.

Quality and hygiene of processes

- The laboratory studies the methods designed for controlling microbiological hazards;
- it measures the hygienic qualities of group catering facilities (test laboratory for attributing the Food Hygiene NF mark).

8 research units

- Hygiene and microbiology of food products
- Bacterial epidemiology and characterisation
- Milk authenticity and characterisation, sensory analysis
- Quantitative microbiology and risk estimation
- Microbiological safety in out-of-home catering and in industrial processes
- Toxins, organic pollutants and pesticides
- Minerals and inorganic contaminants in the environment
- Virology of food and water

Main research programmes

- Standardisation of molecular diagnosis methods (PCR and chips) of *Salmonella* and STEC
- Parametres affecting the presence of *Escherichia coli* O157:H7 on open surfaces in food processing premises
- Identification of milk microorganisms using molecular methods
- Incidence of heat treatment on milk microflora on the growth kinetics of *Listeria monocytogenes*
- Assessment of the hazards of manufacturing processes used and study into the suitability of control measures
- Rumenic acid in butter and influence on experimental atherosclerosis
- Speciation of arsenic by HPLC-ICP-MS coupling in foodstuffs of animal origin
- Characterisation of *Staphylococcus enterotoxins* by proteomic analysis and related risk assessment

4 theses accepted in 2006

Reference activities

Community reference laboratory

- Dairy products and milk hygiene
- Staphylococcus and staphylococcus enterotoxins
- *Listeria monocytogenes*

National reference laboratory

- Composition of milk and dairy products
- Coagulase-positive staphylococcus/ enterotoxins
- *Listeria monocytogenes*
- Milk hygiene
- Marine biotoxins
- Pesticides
- Heavy metals
- Radionuclides
- Phycotoxins
- Mycotoxins
- Antibiotic resistance (together with Afssa-Fougères and Afssa-Ploufragan)

Indicators 2006

- 21,283 analyses
- 12 ILATs and 231 supervised laboratories

Main partners

Directorate General for Food, Directorate of Veterinary Services, Inra, CNRS, CEMAGREF, Institut Pasteur, Muséum d'histoire naturelle, InVS, universities, CHU, veterinary colleges, agricultural colleges, technical food processing centres, professional federations, ACTIA, Conseil régional d'Île-de-France, etc.

Publications 2006

- In scientific reviews:

- with a reading committee: 41
- without a reading committee: 2

Nancy

LABORATORY FOR STUDIES AND RESEARCH ON RABIES AND WILD ANIMAL DISEASE

This laboratory, located in **Nancy**, has 47 personnel members and specialises in animal rabies and certain dominant and emerging zoonoses (1) in wild animals, alveolar echinococcosis in particular.
It plays a part in monitoring the health of wild animals nationwide:
- it studies pathogenic agents (viruses and parasites);
- it monitors the emergence and/or spread of diseases, analyses their causes and assesses the health risks of some of them; it thus participates in gathering and interpreting data for monitoring the health of wild animals;
- it develops and implements preventive methods, particularly a contraceptive vaccine intended to limit certain dog populations.

As a WHO collaborating centre, it helps to draw up and apply guidelines on rabies and provides scientific expertise on methods for controlling rabies.
As a national and Community reference laboratory for rabies, it provides scientific and technical support and expertise to health institutions and authorities in France, Europe and worldwide.
As an OIE reference laboratory, it plays an active role in developing and standardising diagnosis methods.
The laboratory has two research units, three departments and a test centre.

2 research units

- Epidemiosurveillance of diseases in wild animals and domestic carnivores
- Rabies and emerging diseases

Reference activities

- Zoonoses: WHO collaborating centre (research and management)
- Rabies serology: Community reference laboratory
- Rabies: OIE reference laboratory, WHO collaborating centre, Community reference laboratory, national reference centre, national reference laboratory
- Echinococcosis, national reference laboratory

Types of analysis

- Diagnosis of rabies epidemiosurveillance. In 2006, 636 samples were received for diagnosing rabies. Two routine tests were conducted to diagnose rabies: direct immuno-fluorescence (603 samples) and the inoculation test on a culture of murine neuroblastoma (593 samples). As part of the surveillance of the infection in bats by the lyssavirus, 203 bats were received by the laboratory. Only a common serotine discovered in Crosses in the Cher region of France in July showed up positive.
- Epidemiological monitoring of rabies.
- Titration of anti-rabies antibodies in dogs and cats vaccinated against rabies, and in foxes.
- Vaccine control (oral and parenteral use).
- Analysis of tetracycline on fox teeth.

Inter-laboratory aptitude tests (ILATs)

- Titration technique of neutralising anti-rabies antibodies (56 international laboratories).

Indicators 2006

- 7,421 analyses
- 2 ILATs and 56 supervised laboratories

Main research programmes

- Rabies in bats in France: assessment of the pathogenicity of certain viruses circulating in France for domestic carnivores and foxes
- Alveolar echinococcosis: tests on preventive means, study into the role of dogs and cats in the cycle, assessment of carriage by urban foxes
- Development and standardisation of methods: rabies serology, echinococcosis diagnosis
- Biological regulation of roaming dogs: development of a vaccine

Partners

- European Commission, Directorate General for Food, World Health Organization (OMS), World Organisation for Animal Health (OIE), Entente Rage et Zoonoses (ERZ), Office National de la Chasse et de la Faune Sauvage (ONCFS), Network of 53 international laboratories for rabies serology, Veterinary Laboratories Agency (VLA, Weybridge), Franche-Comté University, Institut Pasteur Paris and Lyon, Conseil général de Meurthe-et-Moselle, Conseil régional de Lorraine, Communauté urbaine du Grand Nancy.

Publications 2006

- In scientific reviews:
  - with a reading committee: 4
  - without a reading committee: 1
- In reviews for professionals or the general public: 6

(1) Animal diseases that can be passed on to humans.

LABORATORY FOR STUDIES AND RESEARCH ON HYDROLOGY

This laboratory, located in **Nancy**, has 17 personnel members and specialises in water for consumption or use in the food chain. Through its monitoring, expertise and research activities, it helps to ensure the health quality of water:

- it processes authorisation applications for using natural mineral water, on behalf of the Directorate General for Health. In this regard, it inspects facilities, determines the physico-chemical and bacteriological characteristics of water and draws up technical and health expertise reports;
- it conducts activities of reference: it issues a technical opinion on applications submitted by laboratories in view of their accreditation for water quality control, it runs a network of laboratories on call for quality control and organises inter-laboratory tests to validate analytical methods;
- it manages the national file of mineral water springs which lists the results of quality control analyses performed since 1992 (50,000 analysis reports). This date is used to assess the stability of mineral waters or carry out thematic, geographical or historical studies on their quality;
- it participates in drawing up guidelines and health standards for water;
- it assesses risks related to water, its composition and its treatment and distribution processes;
- it conducts research on organic pollutants and minerals and on microbiology.

Indicators 2006

- 18,258 analyses
- 2 ILATs
- 4 supervised laboratories

Main research programmes

- Disinfection by-products in drinking water mains
- Viruses and parasites associated with treatment processes

Main partners

- French Ministry of Health
- InVS
- Laboratories accredited for water quality control
- Communauté urbaine du Mans
- Conseil général de Meurthe-et-Moselle
- Conseil régional de Lorraine
- Communauté urbaine du Grand Nancy
- Henri Poincaré University in Nancy
- Inra
- DGCCRF

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LABORATORY FOR STUDIES AND RESEARCH ON GOATS

This laboratory, located in **Niort**, has 22 personnel members. It studies the main diseases in goats, classic and emerging ones, as well as the hygiene and quality of dairy products made from goat's milk.
The laboratory conducts epidemiosurveillance through an autopsy and diagnosis service for goat farmers and veterinary practitioners in the region. Its research unit into goat disease specialises in:

- molecular virology (study of lentiviruses in small ruminants and optimisation of diagnosis tools);
- epidemiology and control of parasitism (alternative methods to chemical treatments, particularly, resistance to anthelminthics);
- bacterial diseases and milk contaminants;
- scrapie (physiopathology and epidemiology).

As a national reference laboratory, it participates in controlling enforcement of French regulations for caprine arthritis encephalitis virus (CAEV). It also performs official analyses for diagnosing scrapie in goats and tuberculosis.
It provides scientific and technical expertise to professional organisations.

Reference activities

- CAEV

Types of analysis

- First-intention diagnosis: identification of CAEV antibodies in serum and milk by ELISA.
- Confirmation diagnosis: identification of CAEV antibodies in serum and milk by ELISA.
- Validation of diagnosis kits on sale for the serological diagnosis of CAEV (ELISA and gel immunodiffusion).

Indicators 2006

- 8,000 analyses

Main research programmes

- Epidemiology of CAEV and *Visna-Maedi* in small ruminants
- Molecular characterisation of lentiviruses in small ruminants
- Resistance of nematodes to anthelminthics and alternative prevention methods in goats
- Epidemiology and control of cryptosporidiosis in kids
- Epidemiology and diagnosis of mycoplasmoses in goats
- Epidemiology and diagnosis of paratuberculosis in goats
- Physiopathology and genetics of scrapie in goats

1 theses accepted in 2006

Main partners

- Conseil régional de Poitou-Charentes
- Inra (parasitology, paratuberculosis, scrapie)
- Universities of Poitiers and Tours (host laboratory)
- Interprofessional bodies

Publications 2006

- In the scientific reviews:
- with a reading committee: 7
- without a reading committee: 2
- In reviews for professionals and the general public: 9

LABORATORY FOR STUDIES AND RESEARCH ON POULTRY, PIG AND FISH FARMING

The laboratory of **Ploufragan - Brest**, which has 200 personnel members, specialises in studying poultry, rabbits, pigs and farmed fish.
It contributes to improving animal health and welfare as well as the quality of animal-related data:

- it studies the agents responsible for major, zoonotic diseases, regulated or with a strong economic impact and the immune potential of animals;
- it develops tools and methods for diagnosis and prevention in animals;
- it monitors the emergence and development of avian, pig and fish diseases and antibiotic consumption and resistance in poultry and pig industries, through the management of networks and observatories;
- as a national and international reference laboratory for several diseases, it provides scientific and technical support to professional and the veterinary sectors (analysis of samples, supplies of reference reagents, quality monitoring of diagnosis laboratory analyses...);
- it assesses the risks associated with the consumption of food from the poultry and pig industries and helps to prevent bacterial contamination of this food;
- it analyses the consequences of new breeding methods on animal welfare and behaviour and on the hygiene of products from these holdings.

Reference activities

International

- Reference laboratory for the World Organisation for Animal Health (OIE)
- Gumboro disease
- Aujeszky's disease
- Avian metapneumovirosis (file put together in 2006)

National

- Newcastle disease
- Avian *influenza*
- *Salmonella*
- Campylobacter
- Avian mycoplasmoses
- Classic swine fever
- African swine fever
- Aujeszky's disease
- Viral diseases of fish

Indicators 2006

- 27,850 analyses
- 8 ILATs
- 145 supervised laboratories

9 research units

- Mycoplasmology - bacteriology.
- Hygiene and quality of poultry and pig products
- Pig immunology and virology
- Viral genetics and biosafety
- Virology, immunology and parasitology in poultry and rabbits
- Epidemiology and welfare in poultry and rabbit farming
- Epidemiology and welfare in pigs
- Animal nutrition
- Viral diseases in fish

4 theses accepted

4 test departments

- Poultry and rabbit testing.
- Breeding and testing in avian disease
- Production of decontaminated pigs and testing
- Fish testing

Partners

- Directorate General for Food, Conseils régionaux de Bretagne et des Pays de la Loire, Conseils généraux des Côtes d'Armor et du Finistère, European Union, Inra, CEMAGREF, Inserm, Ifremer, ONCFS, IPP, CIRAD, Universities, Veterinary colleges, Technical institutes and centres (ITAVI, IFIP, etc.), foreign research institutes, etc.,
- Interprofessional bodies: ARIP, CRP, CIDEF, UGPVB, SFAM, FFA, CITPP, etc.

Publications 2006

- In scientific reviews:
  - with a reading committee: 42
  - without a reading committee: 2
- In reviews for professionals and the general public: 27

Integration of the activities conducted in Brest into the Ploufragan laboratory

In 2006, the laboratory of Ploufragan integrated the Laboratory for Studies and Research on diseases in fish.
With a research unit in viral diseases in fish from now on, it has become the Laboratory for Studies and Research on poultry, pig and fish farming.
Discussions have been held on the future activities of this unit, which is based in Brest. It has refocused its scientific activity on viral diseases and immunology in fish and an epidemiosurveillance network of fish disease (RENESUP) was officially created on 30 November 2006. From 2007, it will operate through the collaboration of farmers, veterinary practitioners, laboratories, health protection groups and researchers (Inra, Ifremer, ENV de Nantes, etc.). It will strengthen ties with the fish industry and enable emerging diseases to be detected.
The dynamics created by this integration has already resulted in a research programme of regional interest being obtained, funded by the Conseil régional de Bretagne. This project, involving the creation of a molecular virologist position, will reinforce the unit's specialist knowledge in the field of innovation in molecular detection methodology and viral phylogeny.

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LABORATORY FOR STUDIES AND RESEARCH ON SMALL RUMINANTS AND BEES

The laboratory of **Sophia-Antipolis**, which has some 40 personnel members, has two research units: the small ruminant disease unit and bee disease unit.
It contributes to improving the health of sheep, goats and bees. It studies their main diseases and transmission means, by observing problems in the field, it develops diagnostic tools and preventive means.
Its research also covers honey contaminants and pesticide or veterinary medicinal product residues, in order to improve the safety of honey-based products.
A national reference laboratory for several diseases, it provides scientific and technical support for veterinary inspections carried out by authorities (validation of data and analytical methods, training of field laboratories, management of epidemiosurveillance data, etc.)

The laboratory also takes part in post-university practical training and education in biotechnology, cell engineering and quality management in bee farming.

Indicators 2006

- 9,312 analyses
- 7 ILATs
- 175 supervised laboratories

Main research programmes

Small ruminants

- Bacteriology: abortive diseases, Q fever, *Staphyloccocus aureus* mastitis
- Virology: lentivirus (*Maedi-Visna*, CAEV), pestivirus (Border disease, BVD), contagious ecthyma, bluetongue

Bees

- Viral or parasitic diseases
- Pesticidal intoxications
- Residues in honey and honey-based products

1 theses accepted in 2006

Main partners

- French Ministry of Agriculture
- Directorate General for Food
- Conseil régional de Provence - Alpes - Côte d'Azur
- Conseil général des Alpes-Maritimes
- CNRS, Inra, InVS, LNCR, ADILVA, Institut Mérial, Universities, Veterinary colleges, CHU (University Hospital) de Nice, etc.
- Interprofessional bodies: FRGDS, FNOSAD, SPMF, etc.

Reference activities

National reference laboratory

- Bee diseases
- Residues in honey (associated)

Reference laboratory of the World Organisation for Animal Health (OIE)

- Bee diseases

Publications 2006

- In scientific reviews:
- with a reading committee: 23
- without a reading committee: 1
- In reviews for professionals and the general public: 3

THE MEN AND WOMEN

The people who work for Afssa have a wide variety of statuses, which is a source of great wealth, enabling the Agency to meet requirements of excellence, reliability and responsiveness, but the complexity of which requires careful management. In 2006, Afssa continued its efforts to modernise the management of its human resources, particularly by acquiring predictive management tools, including with regard to skills. The measures

RESOURCES, TRAINING AND QUALITY

should keep up the pace, pending the development plan for human resources development for 2008-2010, provided for by the business plan 2007-2011 of 4 April 2007.
The implementation of promoted/promotable ratios improving the career moves of established staff members took effect in 2006 for civil servants in the "training and research" field; in 2007 it will be extended to researchers.

Job insecurity on the decline: fixed term contracts (FTCs) have fallen by 53% in 3 years

Application of the decree of 7 March 2003 clearly reduced job insecurity at Afssa: excluding employees recruited on study and research agreements, the Agency employed 69 FTCs in 2006 compared with 146 at the end of 2003. The next social report should highlight yet more progress in this area, due to the flexibility brought by the LOLF (French finance law regulating the preparation of the national budget), and the integration in the 2007 budget of 27 jobs, that had not previously been permanent (funded by agreement by the French Ministry of Agriculture).

Management methods: significant changes under way

Several events, requiring a modernised, more transparent and flexible management approach based on concerted efforts, marked the year.

- Full-Time Equivalents have replaced the traditional but very rigid table of budgetary positions.
- Establishing the implementation of their specific management context, the first meeting of the Joint Consultative Commission of contract staff was held in accordance with the decree of 2003.
- With the mutual optimisation of skills in mind and on the basis of the work started in 2005, the annual personal assessment was conducted for the first time, together with staff representatives. This innovation attests to the gradual setting up of the new human resource

under way, with the contribution of countless employees, should be completed in 2007.

Career improvement plan: almost a third of established staff members have benefited from this in 3 years

The implementation of the plan, presented on 18 July 2003 to Afssa's governing ministries and which aimed to improve career prospects of established staff members, replacing the application of the decree of 7 March 2003 for the benefit of contract staff, was completed in 2006.
While there were only 10 promotions announced in 2003, 64 took place in the period 2004-2006, i.e. the annual rhythm doubled. 3 employees changed jobs (by internal competition or choice) in 2003, and 68 between 2004 and 2006, i.e. almost 10 times more per year.
In 3 years, this promotion push has involved almost a third of established staff members at Afssa (excluding staff on secondment). The options selected for 2007 in terms of internal competition

management framework, boosted by the reform of the State (decree of April 2002 on the marking, assessing and progress of established staff members). It is based on personal job descriptions laying down the responsibilities and activities of each employee, which will shortly be rounded off with the definition of the skills needed for carrying out the roles of the job held. The reference for standard jobs and professions at Afssa is currently being finalised.

- Conducted jointly by the Human Resources Department and trade union organisations, the drafting of the new agreement protocol for continuous training has made headway. Its final version should be presented to the Technical Joint Committee for approval in early 2007.
- The integration of employees, previously made available by the French Ministry of Agriculture, into Afssa's own personnel as from 1 July 2006 has made this ministry's budgetary contribution to Afssa's activities clearer.

THE BUDGET

In 2006, the normal operating expenses were identical in volume (18.6 M€) to those in 2005, i.e. a spending rate of close to 90%, excluding allocated resources.
As for personnel expenditure, the integration in the middle of the year of the payroll of employees previously made available to Afssa and the creation of the Plant and Environment Department mean that its 2006 volume cannot be compared properly with previous years. Nevertheless, its spending rate is still on the rise, increasing from 94% in 2005 to almost 98% in 2006, with 40.5 M€ spent. These rates establish the rigidity of Afssa's budget on this item.
Regarding investment expenditure, amounting to 16.8 M€, its spending rate in 2006 was higher than ever before in Afssa's history: 76.5%.
At the end of the 2006 financial year, a positive trade profit in operation was observed at an amount of 9.04 M€ and a negative one in investment, at an amount of -14.2 M€. The working capital of the Agency is automatically reduced by -5.2 M€, a figure resulting from the good level of revenue payment (97% of entries) over the year, thereby limiting erosion of Affsa's own resources and safeguarding the ability to carry out the most essential investments in 2007.

LOLF management control: integration of management information systems is almost complete

A unique budgetary preparation tool, for the budget presented by account and for the analytical budget justifying all expenses, was used at the end of 2006 in all Afssa departments for preparing the estimated budget 2007.
The establishment of an interface between the human resources information system and the analytical accounting module of the accounting information system has also enabled the automatic unloading of the payroll, as soon as the management gets under way in 2007, to monitor analytical implementation and publishing of the corresponding annual report.

Strategic establishment plan: discussions for the Supporting Roles section under way

Discussions opened in March 2006 between all administrative and financial department heads of the Agency (bodies and secretariat general) with a view to preparing the "supporting roles" section of the strategic establishment plan pursuant to the business plan.
These are taking place 2 years after application of the management and information systems (ASTRE RH and SIREPA-Net) and new functions gradually implemented due to changes in the management methods initiated by the LOLF and the integration of broader ambitions in terms of public HRM (skills management and assessment in particular), and following the MAGE 2004 action plan presented in March 2003 to the Board of Directors.

Information systems development plan 2003-2006: fulfilment of most objectives

Afssa's second information systems development plan (SDSI 2) is in its final stages.
In addition to continuing the application of the system devoted to laboratory activities, which is due to end in late 2008, the acquisition of the software package establishing an infocentre for management control at the end of 2006 marked the achievement of this plan's key objectives.

Information system of Afssa's laboratories (SILA)

Afssa wants to provide its laboratories with a "Laboratory information management system" (LIMS) covering management of a laboratory's "classic" activities, from the arrival of a sample through to the analytical result report, in the same way as the management of other activities such as resource and assignment planning, research project management and quality management.
Launched in March 2006, the project is being run in four pilot laboratories: Nancy (Hydrology), Fougères and the two laboratories in Maisons-Alfort. The following have been completed during the year: functional analysis of LIMS functions in their strict sense and quality management, drafting of a detailed functional specifications document and configuration of this part of the application.

Technical facilities and equipment: completion of the modernisation programme

The investment programme presented to the Board of Directors at its meeting in September 2003 has been implemented fully, with the exception of P3 for the Nancy laboratory (still being outlined, the project was selected on 9 March 2007 following an architect competition).
Afssa also proved responsive in the design and implementation of operations with the delivery, in under a year, of the level 3 protected laboratory in Ploufragan devoted to the study of avian *influenza*, which did not originally feature in this programme.
The establishment of the Plant and Environment Department in Maisons-Alfort is also proof of reactivity in this field, which required close collaboration between users and all units of the Financial and Technical Directorate, including the general means of the head office.
Expenses on scientific facilities have also increased sharply (+ 87%), the same applies for IT expenses (+ 98%).
The latter is mainly down to the regulation of the first section of the information system devoted to laboratory activities.
The investment plan is continuing through an active co-funding policy: 4 major projects have been completed or are being developed in Boulogne-sur-mer, Nancy, Maisons-Alfort and Ploufragan.

NET EXPENDITURE OF INVESTMENT PER TYPE (thousands of euros)

	2000	2001	2002	2003	2004	2005	2006	TOTAL	Average
IT	988	809	969	2,062	1,399	1,184	2,345	9,756	1,394
Scientific equipment	2,264	1,449	1,422	3,411	2,116	1,790	3,352	15,804	2,258
Work	1,967	1,611	2,597	3,078	5,864	8,959	9,133	33,209	4,744
Misc.	591	331	912	349	311	658	1,977	5,129	733
TOTAL	5,810	4,200	5,900	8,900	9,690	12,591	16,807	63,898	9,128

(Sources: Afssa financial accounts)

In addition to the 64M€ of investments made by Afssa since its creation in April 1999, account must also be taken of those for which Afssa is not the owner and which benefited from significant co-funding, particularly for the laboratories in Niort, Dozulé and Alfort (HQSA centre), amounting to 13M€. The actual amount of investments made in eight years to ensure that Afssa's scientific and IT equipment and facilities comply with standards and are up to date is therefore around 77M€.

A founding property programme in Ploufragan

The major property investment programme under way in Ploufragan to obtain an optimum-safety high-quality working tool took on concrete form in 2006 with the commissioning of a purification plant for contaminated effluents, the construction of a joint reception for virology units, the doubling of the surface area and renovation of the immunology and virology unit on pigs, the construction of a new laboratory for the hygiene and quality unit for pig and poultry products and the first stages of the construction of a laboratory confined to level P3 devoted to research on avian *influenza*. All of the laboratories in Ploufragan are thus gathered on the Les Croix site.

A network of centres

Henceforth, all virology units are grouped in one area, which should facilitate exchanges and the sharing of scientific equipment between teams. This "virology" centre is coupled with a "bacteriology" centre: the two mycoplasmology/bacteriology and pig and poultry product quality and hygiene buildings have also been merged. This ambitious programme will continue in 2007 with the development of an "animal welfare/epidemiology" centre and the start of the renovation of protected test facilities.

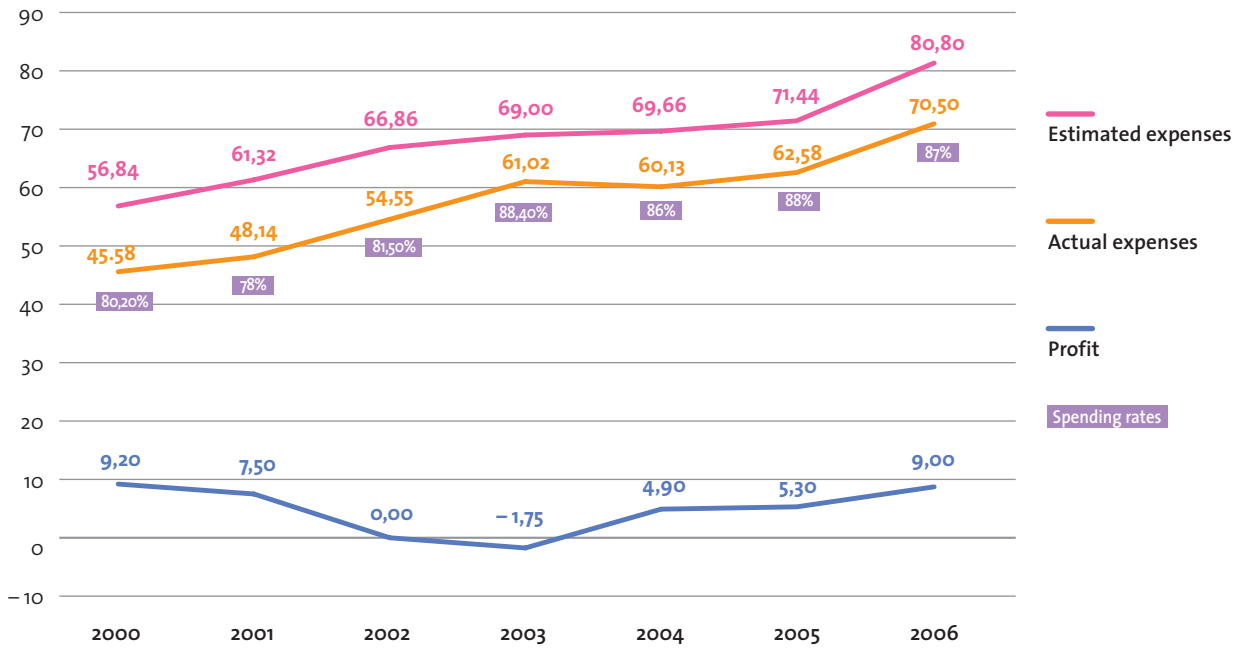
Reorganisation of the premises of the Laboratory for studies and research on rabies and wild animal disease

Afssa continued the administrative and technical measures under way to reorganise the premises and build an extension confined to level 3. In line with quality assurance requirements and hygiene and safety standards, this work is key for the continuation of its reference activities. The ownership assistance and programming mission, describing the need, feasibility and cost of the project, was completed in 2006. Commitments were obtained from local authorities, the State and the European Union (Communauté urbaine, Conseil régional, Conseil général, regional prefecture) to provide co-funding for the project, for which the first stone should be laid late 2007/early 2008.

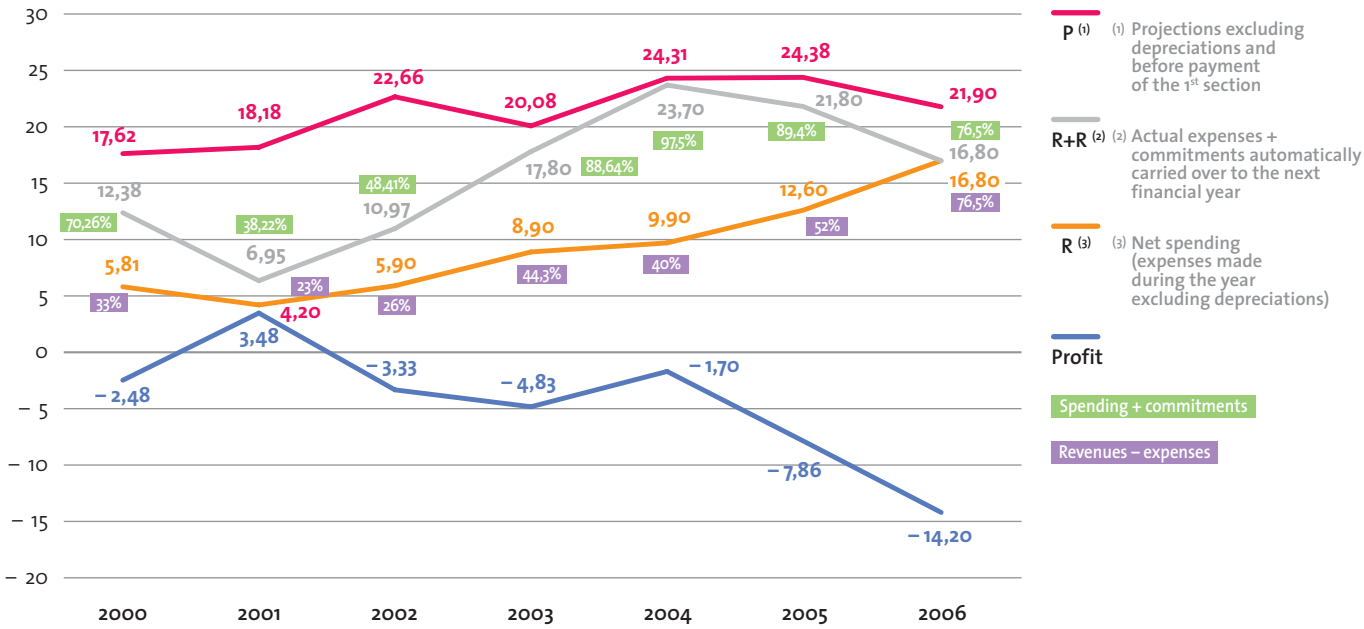
Renovation at Maisons-Alfort

The building of the Mixed Unit for research on molecular biology and fungal and parasitic immunology (Maisons-Alfort) was up and running in 2006. The Directorate General for Food and the Île-de-France region contributed to the funding of this project.

OPERATING EXPENSES (millions of euros)



INVESTMENT EXPENSES (millions of euros)



QUALITY

Signed on 5 January 2006, Afssa's new quality policy confirms and reinforces the quality commitment for all of its activities: quality trials, analyses, studies, methods and other measures conducted as part of reference activities; quality processing of marketing authorisation files for veterinary medicinal products and inspection roles; quality assessment, expertise and research activities. A new area of expertise for Afssa, the assessment of crop treatment products has been incorporated into the quality policy from the outset.

Accreditation of reference activities

Under the decree of 4 January 2006, a National Reference Laboratory newly appointed by the French Minister of Agriculture must be accredited within twenty-four months. In addition to accreditations for conducting analyses and developing methods, this also involves accreditation for the organisation of inter-laboratory aptitude tests which should, in a number of cases, be obtained by Afssa laboratories.
18 units or sectors are already accredited by COFRAC (French Accreditation Committee) as per standard ISO 17025 (cf. box text). All COFRAC assessments were conducted according to the new version of the standard, ISO 17025: 2005. Accordingly, special efforts were made, for units and sectors who were already accredited, to assist with updating their quality management systems in line with this new version, conducting adjustment audits and management reviews of accredited laboratories.

Fields of expertise accredited by COFRAC

- Research on physico-chemical contaminants of foods: pesticides, heavy metals, veterinary medicinal product residues, radionuclides, microbial toxins, mycotoxins, phycotoxins
- Physico-chemical analyses of milk
- Food microbiology
- Quality control of veterinary medicinal products
- Efficacy tests of disinfectants
- Toxicology
- Pharmacokinetics
- Animal immuno-serology
- Animal bacteriology
- Mycoplasmology
- Animal virology

Quality of expert work and assessment

The working group "Good Practices of Collective Expert Work" created in June 2005 issued its report in July 2006 (cf. box text). After consulting the Afssa's Scientific Advisory Committee, the recommendations that it contains have been integrated into the procedures of the Department for the Evaluation of Nutritional and Health Risks and have led to the production of a good practice guide on collective expert work at Afssa. The working group's research and conclusions have also been widely used in drawing up a certification reference standard for departments which conduct collective expert work, and this standard may apply to any assessment body, irrespective of its speciality.
The French Agency for Veterinary Medicinal Products conducts its own quality initiative so as to take account of the diversity of its specialities. Ensuring reliable decision-making assistance for veterinary medicinal products involves combining quality inspections (standard ISO 17020), expertise (NF X 50-110) and general organisation in a cohesive manner. Authorisation management and inspection for pharmaceutical establishments are subject to a quality initiative based on standard ISO/CEI 17020, with a view to obtaining their recognition by COFRAC.

Production of a report on Good Practices of Collective Expert Work

The working group created in May 2005 as part of the action plan aimed at continuously improving the quality of Afssa's expert evaluations issued a report on Good Practices of Collective Expert Work.On the basis of 6 years of experience of the Department for the Evaluation of Nutritional and Health Risks, the means for controlling the critical points of collective expert work were defined and recommendations were formulated. A panel of sheets, covering the activity of the expert, evaluation procedures and relations with the parties concerned in the assessment was drawn up. In addition, 3 sheets of good practices were drafted in order to formalise the commitment of members, chairs and deputy chairs of Afssa expert groups. This work forms part of the quality certification process of departments which conduct collective expert work that Afssa carries out in compliance with standard NF X50-110.

Research quality

Because Afssa's research fuels its monitoring, reference and assessment activities, it must meet the same quality requirements as all of its activities. This is why Afssa conducts an ambitious policy in this area. The reference standards to which it refers for the quality of its research are the American standard ANSI/ASQ Z1.13-1999 and the European reference standard EARTO. Its test initiative under way for several years already involves combining the quality management system ISO 17025 and a research project management quality system in laboratories and units that have already been accredited by COFRAC. PhD theses undertaken in the laboratories of Maisons-Alfort (food quality and food processing), Fougères and Ploufragan are already carried out within the framework of a quality management system. In their theses, PhD students defend the issue raised, the results they have obtained and all of the measures drawn up for reliable results, including the quality management system of their work, before a jury made up of peers.

Personal and collective assessment procedures in laboratories

Under way for four years now, the first collective assessment cycle in laboratories involved the laboratories of Niort, Sophia-Antipolis and Dozulé in 2006. In addition, discussions have been held to bring the second assessment cycle into line with procedures recognised by the *Agence d'évaluation de la recherche et de l'enseignement supérieur* (French Agency for Higher Education and Research Assessment/AERES). The assessment system will therefore have to ensure compliance with objectives, the usefulness of research and the excellence of scientific approaches and organisational procedures enabling their implementation. Personal assessments of staff who play a role in the running of Afssa, at all levels, should focus both on their skills in terms of knowledge and expertise and their performances in terms of results. This procedure must be part of a dynamic predictive management policy of human resources, which is currently being set up in Afssa and is based in particular on the work of the Specialised Scientific Committee (SSC). Having met for two sessions, in 2006 the SSC suggested the appointment to a permanent post of 7 research trainees and the promotion of a research director. It also set up the biennial assessment of all Afssa research directors.

Afssa, a skilled proposer

Associated with the Assessment and Demonstrations Committee of AFNOR (French Standardisation Association), Afssa has contributed in particular to amending standard ISO/CEI 17025 on general recommendations concerning the expertise of test and calibration laboratories.

Afssa was entrusted with the creation and chairing of the Expert Evaluation Standardisation Committee of AFNOR.

Boulogne: extension of COFRAC's accreditation

The surveillance audit conducted by COFRAC at the Boulogne laboratory in December 2006 maintained the accreditation for the programme on meat analyses, meat preparations, meat-based products and aquaculture animal-based products (prog. 80). Accreditation for the programme on microbiological analyses of agri-food products (prog. 59) was also renewed and its scope extended to include the detection of *Listeria monocytogenes* using the VIDAS *Listeria monocytogenes* 2 method and the detection of *salmonella* using the VIDAS Easy *Salmonella* method, VIDAS ICS method and ISO methods included in the hygiene package – Commission Regulation (EC) 2073/2005.

Innovative screening methods

The VIDAS ICS test implements an automated immunological capture and specific release process, enabling Salmonella concentration using pre-enrichment broth. The bacteria released are then detected by inoculation in a selective *Salmonella* medium.
The two other techniques use an immuno-enzymatic test enabling the detection of *Listeria monocytogenes* or *Salmonella* antigens using the Enzyme Linked Fluorescent Assay method.
This method involves a pre-enrichment followed by inoculation of a new medium on which the post-incubation test is carried out.
These techniques have reduced analysis timeframes from 4 to 2 days.

Afssa contributed to the development of COFRAC research, particularly in the fields of inspection and food processing analyses.

COFRAC accreditation of the Fougères laboratory has been renewed. This project was run by the laboratory quality team which also led the laboratory computerisation project for which Fougères is the pilot site.

The Laboratory for Studies and Research on Animal Disease and Zoonoses (Bacterial Zoonoses Unit) was accredited in November 2006 by COFRAC for its analytical activities of immuno-serology and bacteriology in the diagnosis of brucellosis, avian chlamydiosis, paratuberculosis, tuberculosis and tularaemia.

Niort laboratory: commitment to a quality initiative with a view to obtaining COFRAC accreditation for its reference activities related to caprine arthritis-encephalitis virus (CAEV), *Visna-Maedi and* enzootic bovine leucosis. The first management review conducted in November 2006 proved satisfactory. The accreditation application is due to be submitted in the 1st half of 2008.

TRAINING

Afssa considers professional training to be a key supporting tool, particularly to ensure the proper implementation of its missions through the acquisition, maintenance and development of personal and group skills.
Personnel training needs have mainly been identified in annual assessment interviews since 2005, although occasional needs or those arising from national themes are also taken into account.
75.7 % of Afssa personnel members were trained in 2006, i.e. 713 employees from all categories. 4,133 training days were held thanks to the coordination of different participants in Afssa's professional training network (training leaders, Human Resources Department) for an overall sum of 491,000 € (teaching and travelling expenses) (cf.graph below).

Teaching about the culture of safety, its related specificities and requirements, within the scientific community and among professionals of general training (engineers, veterinary surgeons) is key. Through this action, Afssa participates in the national training policy which seeks to encourage vocations for scientific careers.

Accordingly, Afssa has organised **83 training schemes for 374 trainees from France** and abroad. It has also organised training programmes in the field.
The awarding of thesis grants is a key research tool at Afssa. Afssa has a budget with which it can permanently fund a total of 25 thesis grants lasting 3 years, i.e. award 8 full grants each year.
Seven projects have been selected to begin at the start of the 2006-2007 university year, in the framework of the call for tenders launched by Afssa. They concern food hygiene (antibiotic resistance, marine biotoxins, *enterobacter sakazakii*, *trichinella*) and animal health (replicon vaccine derived from porcine circovirus: biosafety).
There are also four theses co-funded by Afssa and Inra as part of a second joint call for projects. As in 2005, they concern animal health (antibiotic therapy, digestive ecosystem of young rabbits) and for the first time, on food safety (*staphylococcus aureus*, *bacillus cereus*)
In addition to these grants, there are also those co-funded with other research institutions or local authorities, as well as grants funded by these external partners.
In 2006, 48 theses were being prepared in laboratories or the Health and Nutrition Risk Assessment Department and 18 were finalised and accepted. This relatively high number given the size of the Agency proves both the intensity of its research work and training efforts.

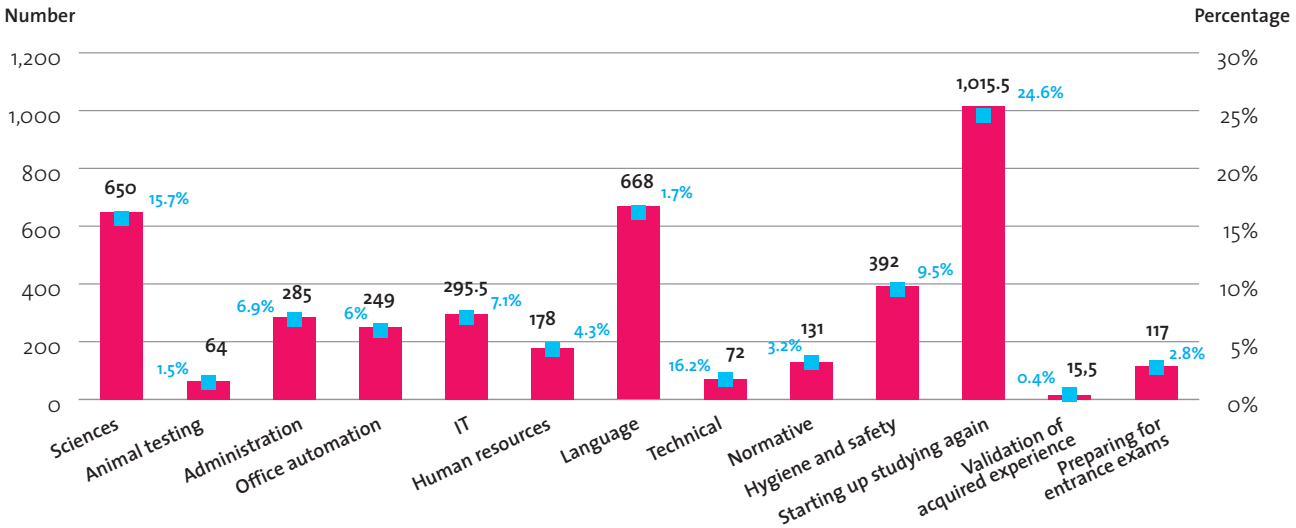
Researching a vaccine against rhodococcosis for foals

The study on the secretome of *Rhodococcus equi* in traditional growth conditions has been completed at the Dozulé laboratory as part of a University thesis. Some thirty proteins have thus been isolated and identified by mass spectrometry. By sequence homology in Internet databases, a theoretical function for the majority of these proteins was defined. Several of them could be used to develop a vaccine for foals against late forms of rhodococcosis. They are currently being over-expressed at the laboratory to assess their immunogenic potential in rodents.

Development of the pharmacokinetic-pharmacodynamic approach in antibiotic therapy

The thesis funded by Afssa and accepted in 2006 on the study of the antibiotic resistance in foecal flora falls within the pharmacokinetic-pharmacodynamic (PK/PD) approach developed by the Fougères laboratory over the last

NUMBER OF TRAINING DAYS PER TRAINING THEME



few years with a view to optimising dosing regimens in antibiotic therapy. It showed that this tool can also be used to assess the impact of antibiotics on commensal and foecal flora and that marbofloxacin administered parenterally or intravenously has a considerable impact on these commensal bacteria. This method is also applied in the framework of two other theses which began in 2006. Co-funded by the Brittany region and Afssa, one focuses on human intestinal microflora and cephalosporin resistance and the other, co-funded by Inra and Afssa, on the influence of factors associated with a metaphylactic type antibiotic therapy on the PK/PD relations of antibiotics. Moreover, this tool has been used in the framework of a thesis accepted in May 2006 ("cellular and molecular mechanisms of the persistence of avian and pig mycoplasmas after a course of treatment by fluoroquinolones") which relied on collaboration between the Fougères and Ploufragan laboratories.

Theses on the toxicity of newly formed products in food

Two theses were accepted in 2006 before the University of Rennes 1 on newly formed products, one on 3-MCPD (3-monochloropropane-1,2-diol), the second on acrylamide.

3-MCPD

The first is the fruit of a collaboration between Inserm in Lyon, the Department for the Evaluation of Nutritional and Health Risks and the Fougères laboratory. 3-MCPD is formed by the high-temperature acid hydrolysis of plant proteins. It is found particularly in soy sauces. This research aimed to enrich scientific knowledge on the toxicity of this compound so as to be more exact in assessing the risk for consumers. It confirmed that 3-MCPD is a non-genotoxic compound and found that it had no effect on the testicular organogenesis in rats.
A promotive effect and modifications in the hormone balance seem to be involved in the carcinogenic effects of 3-MCPD observed in animals.

Acrylamide

The thesis on acrylamide is the result of a collaboration between the Fougères laboratory and the Department for the Evaluation of Nutritional and Health Risks. Acrylamide is a compound which forms in starchy foods when cooked at a temperature exceeding 120°C. It is a genotoxic substance classified as probably carcinogenic for humans. The study confirmed the genotoxic nature of brain and testicular tumours in rats. However, concerning the tests carried out, acrylamide does not seem to be hepatocarcinogenic in this species. The toxicokinetics of acrylamide in rats and pigs have shown differences between species in the metabolism of this contaminant. The very low levels of adducts (2) expected for doses to which humans are exposed through their food may explain the absence of harmful effects of acrylamide observed to date in retrospective epidemiological studies.

(2) Result of an addition reaction.

In 2006, Afssa funded 20 Master's courses lasting 6 months in laboratories and the Department for the Evaluation of Nutritional and Health Risks. These courses identified students of quality and worked out future thesis subjects.

One thesis on the pathogenic potential of the avian infectious bursitis virus was accepted in the OIE reference laboratory for infectious bursitis (Ploufragan - Brest). The results have led to proposals of new viral characterisation molecular methods and have, for the first time, proved the existence of reassortment phenomena inducing modifications in the pathogenic potential.

Another thesis validated the expert evaluation of the Ploufragan – Brest laboratory in terms of studying the immune response of pigs after viral infection, on the classical swine fever model.

Co-supervised by Afssa and Inra, a thesis was accepted on the welfare of laying hens placed in a laying houses. Their welfare proved to be better overall in a laying house than in a traditional cage, and hens from breeding houses were better adapted to laying houses than those from converted ground areas.

The cellular and molecular mechanisms of the persistence of avian and pig mycoplasms after treatment by fluoroquinolones were studied in the framework of a thesis undertaken at the Ploufragan – Brest laboratory.

ANIMAL HEALTH, WELFARE AND ZOONOSES

Afssa's activities in 2006 were marked by health crises. The Agency continued its active involvement in the surveillance of avian *influenza* and expert evaluation of risks associated with the H5N1 virus. The Agency was also requested following the development of cases of exotic strain bluetongue in Europe and the introduction of surra into the country as a result of importation of infected camels from the Canaries - a regulated contagious disease due to *Trypanosoma evansi*.
The Agency mobilised all of its resources to deal with these emergency situations. It also conducted an overview of the direction of its activities in terms of the evolution of Community animal health policy in order to improve its responsiveness and better prevent risks of infection. It also examined means which could be considered to increase the protection of animal health within the European Union.
These events confirmed the importance of taking account of the emergence or re-emergence of infectious diseases from wildlife within its programmes of activities.
Afssa continued its strategy of organising and broadening its reference activities in order to continue to respond rapidly to unpredictable events such as new emerging diseases. In the case of avian *influenza*, the French system was supplemented by decentralising the H5N1 sub-type PCR detection technique, as already done for classical swine fever or for serological analyses (avian *influenza*, foot and mouth disease, classical swine fever).

2006 IN DETAIL

This decentralisation of testing services to *départemental** veterinary laboratories accredited by the Ministry of Agriculture is essential to allow the processing, in the minimum of time, of a significantly increased number of samples generated by a major health crisis.
The emergence of exotic strains of viruses in Europe highlights the health limitations of the free trade policy for goods and merchandise within the Union, and emphasises the need to strengthen the exchange control system for live animals, their products and sub-products, between Member States of different health status. In association with the enlargement of the Union and extension of its borders, the limited controls on intra-community exchanges of animals and foodstuffs (in light of the numbers of exchanges) argues in favour of improving traceability of all of these movements, as these may now favour the spread of epizootics.

Animal welfare requires an integrated approach, to take account of the needs relating to animal welfare, health and food safety.

The indicators are obtained from an overview of behavioural observations, lesions and health signs.

THE DIRECTOR FOR ANIMAL HEALTH AND WELFARE

Assisted by a project manager, the director ensures the Agency's policy for animal health and welfare is coherent, and he leads its activities in this area.
In conjunction with the Scientific Department he takes part in:
- defining scientific guidelines;
- establishing research subjects;
- animating and co-ordinating laboratory research activities;
- assessing teams and projects;
- designing and applying scientific and technical activities.

He takes part in the expert review and evaluation activities conducted within the Department for the Evaluation of Nutritional and Health Risks.
He monitors partnerships with veterinary organisations from other countries and research conducted in the international bodies on animal health topics, in particular with the World Organisation for Animal Health (OIE), the European Food Safety Authority (EFSA), and the European Directorate for Quality of Medicine (EDQM) and European Commission.

* sub-regional

AVIAN INFLUENZA

19 opinions published in 2006

Since the emergence of highly pathogenic (HP) H5N1 avian *influenza* in Europe, Afssa has been extensively consulted for its expert evaluation, as mortality in wild birds suggest a risk of spread of the virus. From August, 2005 to the end of 2006, the Agency published 27 scientific opinions, 19 of which were in 2006. It was requested whenever the epizootic progressed in Europe or when new information emerged.

A responsive organisation

In order to meet these requests as responsively and effectively as possible, an avian *influenza* emergency collective expert working group, supported and co-ordinated by an emergency cell was established linked to the Animal Health scientific panel.

Formalisation of a reference grid

These iterative assessments firstly provided more detail and refined the different levels of risk depending on the epidemiological situation in France and worldwide, and secondly, for each risk level, recommended the introduction of protective measures (biosafety, vaccination, confinement) broken down according to the type of bird farming. Application of these recommendations depending on level of risk was formalised in a reference grid and a coherent national regulatory framework. Major collaboration took place with ornithologists from the Natural History Museum.

Review report

The working group also engaged into producinga review report on HP H5N1 avian *Influenza* and animal health, on the basis of all the expert evaluations which the Agency has conducted on this subject.

Emergency approval of vaccines

In the face of the risk of an epizootic due to the highly pathogenic avian *Influenza* virus and in the absence of preventive measures, the veterinary medicinal product industry was encouraged to submit marketing authorisation (MA) dossiers for vaccines. The Agency assessed submitted dossiers on reduced timescales, establishing minimal requirements for their contents (which do not represent the current MA requirements). Thanks to 5 temporary sales authorisations for professionals (ATVAP) granted in the first six months of 2006, 200 birds were vaccinated and stores of vaccines were established to pre-empt the possible development of an epizootic.

The Agency also took part in defining minimum acceptable requirements for emergency use of a vaccine at Community level. This guideline note was designed to allow a rapid and consistent authorisation of a vaccine in Europe under exceptional circumstances. Two vaccines underwent a centralised European procedure with France as the rapporteur for one of these. They both received an MA under specific obligations. These specific authorisations will be reviewed annually.

Exceptional mobilisation of Agency administrative and scientific teams and experts

Whereas the first cases of highly pathogenic avian influenza emerged in France in 2006, surveillance of wild birds set up in France by the Directorate General for Food, in close collaboration with the Afssa national reference laboratory (NRL) in Ploufragan, demonstrated how relevant this was. Similarly, the NRL's anticipation of the transfer of rapid sample screening methods and the running of a veterinary diagnosis laboratory network helped towards remarkable responsiveness in crisis management. The skills, availability and public service duty of the Agency teams involved in surveillance, analysis and emergency expert evaluations have been highlighted by the public bodies and professional partners.

Remarkable increase in resources

Exceptional funding was used to recruit 3 study technical specialists and 2 contracted technicians, to procure the structural equipment (sequencer, nucleic acid extractor, heat cycles etc.) and to establish a biosafety level 3 extension of the NRL. A new organisation system was set up in the first six months to extend the working hours to seven days a week.

Flood of samples and confirmation diagnoses

Because of the extension of virology surveillance the laboratory had to handle a huge sample input (more than 1,900, equivalent to almost 500 cases). This resulted in the identification of virus belonging to sub-types H5 and H7 (around one hundred, of which more than forty were HP H5N1) and around twenty viruses of other sub-types. A major molecular epidemiology study was performed and will be published in 2007.

Intensification of vaccine research work

The NRL also intensified its vaccination research work, both for the development of new vaccine approaches or expert evaluations and scientific and technical support (contributing to analysing dossiers for inactivated or recombinant vaccines, design of a vaccine strategy which could be considered for non-confineable bird species and the establishment of surveillance and monitoring protocols). All of these studies are reflected in membership of four new European research programmes dedicated to Avian *influenza*. Operational epidemiology activities have added to the quality of managing the consequences of the crises. The teams' responsiveness has been made possible by ongoing research activity in the years before the crises. This activity must now be strengthened.

In 2006, the SAGIR, the national health surveillance network for wildlife collected 3,426 birds as part of the avian *Influenza* surveillance, i.e. almost 7 times more than before the emergence of the highly pathogenic H5N1 virus in France. This network is based on a partnership between Afssa, the National Game and WIldlife Bureau, the federation of Hunters and the départemental veterinary laboratories.

A new situation

Faced with the emergence of a new kind of spread of bluetongue (BT) in Europe during the summer of 2006, Afssa made a self-mandate in September 2006 and set up an emergency collective expert group supported and co-ordinated by an emergency cell linked to the Animal Health scientific panel. Since then, the group has published 11 opinions on the subject.

Unusual features

The BT detected in August 2006 in cattle and sheep in the Maastricht area (Netherlands) is an attenuated form of the disease known as Bluetongue. It is due to serotype 8, which had never previously been isolated in Europe, and emerged in the far north of its usual area of geographical distribution (Mediterranean basin) and in the absence of its usual vector (*C. Imicola*).
It particularly affected cattle, whereas it is usually seen in sheep. More than 2,000 infected herds have been identified to date in Belgium, Germany and the Netherlands. Only a few outbreaks have been identified in France and Luxembourg in 2006. The only measures available to reduce the spread of this disease, which is transmitted by biting insects, are disinfection and limitation of the movements of ruminants from and around the outbreaks.

Identification and characterisation of the virus

The Laboratory for studies and research on animal disease and zoonoses has isolated and characterised the Bluetongue virus from blood samples taken from Belgian and French cattle. It has developed a quantitative PCR method and has also contributed to many expert evaluations on the subject, at national, European and international level.

7 opinions in 2006

Most of the opinions produced by the Agency examine the strategy to combat BT and future prospects coming out of the crisis, particularly the possibility of derogations to the prohibition of animal movements. They have stressed the specific situation in France, peripheral to the centre of the epizootic with very low spread of the virus as seen by the serological surveillance conducted around outbreaks in 2006. The many uncertainties over the origin and routes

of spread in the north of Europe have also been highlighted. They indicate the need for some degree of caution in assessing the likelihood of resurgence of the disease in 2007 and the crisis exit prospects In fact, the origin of this epizootic remains unknown. Several hypotheses have been advanced: animal importation, contamination of vaccines (as was seen in the United States a few years ago) and contamination of semen (a very rare method of transmission), etc.

PRION DISEASES

Identification of the origin of cases of BSE detected in cattle born after the prohibition of meat and bone meal (MBM)

85% of cases of bovine spongiform encephalopathy (BSE) detected in France affected animals born after the prohibition of meat and bone meal (MBM) in cattle feed (July 1990), which were recognised to be the major source of contamination. In order to explain these so-called NAIVE [3] cases, the hypothesis of cross-contamination at different stages of food manufacture or distribution has been proposed.

Three risk factors

The Lyon laboratory conducted an epidemiological study (supported by the Directorate General for Food and the "Prion infection" scientific interest group) in 182 cattle farms which had suffered a case of BSE, and in 182 control farms. The surveys were conducted using a standardised questionnaire completed in an interview with the farmer and based on invoices for feed purchases. The results of these analyses identified the limitations of the 1990 control measures, and for the first time provided statistical confirmation of the routes of contamination proposed hypothetically:

- **consumption of compound feed by cattle under two years old** was still the major risk factor after 1990;
- to a lesser extent, contamination in farms probably existed because of the **distribution to cattle of feed which was intended for other species**, particularly poultry, (purchase of poultry feed by farms increases the risk of BSE);
- **feeding calves with substitute milk sources** which are liable to contain contaminated animal fats, also emerges as a secondary risk factor.

Confirmation of the existence of prion diseases other than BSE linked to meat and bone meal

The previous identification of two forms of prion diseases with features distinct from those typically associated with bovine spongiform encephalopathy (BSE), one of which the so-called type H by the Lyon laboratory in 2003, raises the question as to their origin compared to the BSE epidemic transmitted by feed. The cases identified until then indicated that this disease exhibits extremely individual features due to a unique infectious agent. Work on the identification and characterisation of the atypical cases of BSE conducted within the Neuroprion European network of excellence, in which Afssa participates, clearly suggests the existence of prion diseases in cattle which are distinct from those diseases linked to meat and bone meal.

Association of 2 atypical forms of BSE with 2 specific agents

During 2006 it was shown that the two "atypical" forms of BSE (type H and type L or BASE) are associated with two different strains of infectious agents which are distinct from BSE. These results were the fruits of research conducted by the Lyon laboratory on conventional mice, in collaboration with Inra and with the German reference laboratory on "bovinised" transgenic mice.

Identification of atypical cases of BSE in many countries

Three cases identified in the Neuroprion work deserve particular attention: in Sweden, a country considered to be at low risk from BSE (first case of BSE identified), in Switzerland (a zebra in a zoo) and in the United States (a second native case of BSE). These studies to which Afssa has contributed have shown that these were "atypical" type H cases.

Observation of similarities between type H BSE and Creutzfeldt-Jakob disease

The Lyon laboratory has also identified molecular similarities between type H BSE and "sporadic" or genetic forms of Creutzfeldt-Jakob disease in human beings.

Improved detection and knowledge of scrapie

Scrapie is a disease characterised by degeneration of the central nervous system which can be transmitted to small ruminants. It was first described in France in 1942. It is a prion disease for which

(3) Born After the Prohibition of Animal Suets.

surveillance and control were increased in 1997 as part of the public policies to protect against bovine spongiform encephalopathy.
The work on this disease by the Niort laboratory, co-funded by the French National Interprofessional Dairy Centre (CNIEL) and the Poitou-Charentes region was continued in 2006, in particular with a view to adapting the animal health measures when a flock is infected.

- Analyses conducted on slaughtered flocks (rendering): identification of 2 epidemiological profiles within flocks: enzootic (15 to 30% of infected animals) or sporadic (low diseases prevalence).
- Analyses conducted in cases of derogation from mass slaughter: assessment of the relevance of ante mortem diagnosis by tonsillar biopsy (a test with a sensitivity of approximately 90% in 11 flocks studied) and systematic analysis of dead or condemned animals (7 flocks).

Research activities

Description of the distribution of the prion protein (PrPsc) in infected goat tissue: consistency between the means of spread in goats infected either naturally or experimentally, early infection of intestinal lymphoid and tonsillar tissue.
Development of an *ante mortem* diagnostic tool with Inra, using tonsillar biopsy.
Study of possible links between methods of farming and development of the disease: hygiene, separation of mothers and kids, introduction of adult animals into the flock, etc.
Study of genetic resistance of goats to scrapie, in partnership with Inra: identification of different forms of the prion gene (genotypes) and consequences on its incubation period, spread of the prion within the body and infectivity of goat products consumed by human beings.

Transmissible spongiform encephalopathies (TSE) in sheep: in an opinion of December 2006, Afssa again recommends that screening be performed by slaughterhouse sampling.

■ OTHER WORK

Farming conditions predisposing to foal rhodococcosis have been identified

As part of the epidemiological study on foal rhodococcosis in Lower-Normandy conducted since 2004 with several partners (4), the Dozulé laboratory undertook a field survey intended principally to identify at risk farming practices. Several of these have been identified in the preliminary results obtained in 2006.

A survey of 136 farms

Work conducted at the Dozulé laboratory since 1986 has shown that rhodococcosis is a major cause of deaths in 1 to 6 month old foals. This disease appears to develop enzootically in certain farms, whereas others remain clear of the disease.
It was therefore important to establish the risk factors for the development and maintainance of the disease which are linked to farming practices.
The survey was conducted on 136 farms: 34 infected with rhodococcosis and 102 control farms. It was based on a questionnaire on different aspects of rearing behaviour which according to the literature were liable to influence the development of rhodococcosis, and on a visit to each farm.
A total of 480 parameters were studied.

Preliminary results

An initial exploratory analysis examined 44 farms and 186 variables (selected from the literature as being potentially the most relevant to analyse risk factors for rhodococcosis). It identified that 15 factors appeared to significantly influence whether the farm was in the diseased or control group.
In particular these were the presence of previous rhodococcosis, paddock grass quality, density of brood mares on the paddocks, early births and, receiving of a significant number of external brood mares. Grouping these factors into categories identified at risk practices particularly involving density, exposure to dust and animal mixing and movements.

(4) Lower-Normandy equine veterinary practitioners, Lower-Normandy Horse Breeders, University of Caen - Lower-Normandy General Register of Tumours, Calvados Research Unit, François Baclesse Centre Clinic, Prof. Michel Henry-Amar.

Advances in the knowledge of mycoplasma virulence

Whilst the mechanisms of the pathogenic activity of mycoplasma remain poorly understood, the Lyon laboratory has identified the production of extra-cellular material by Mycoplasma mycoides sbsp mycoides biotype SC, which is the agent for contagious bovine peripneumonia. This research has opened new perspectives in the understanding of the host-pathogen interaction. Afssa has shown that, under certain conditions, this mycoplasma can produce an extra-cellular matrix which surrounds it and which may be involved not only in its resistance to the immune system but also in the development of auto-immune reactions and the chronic nature of the infections. This extra-cellular matrix is responsible for the variation i n colony phenotype. It is also involved in the formation of biofilm.

Study of biofilm formation

Biofilms now have an important place in bacterial virulence. The Lyon laboratory has developed methods able to reproduce *in vitro* the formation of biofilm by *M. mycoides* and has studied factors which influence its development. It found that biofilm formation depends on the initial phenotype of bacterial colonies and on the presence of glucose, a source of carbon and energy for bacteria. Glucose modifies the expression of several genes involved in the synthesis of the extracellular material. Studying the formation of biofilm and characterising genes and regulation mechanisms involved in this phenomenon have opened two major lines of research: assessment of the biofilm form of the bacterium as a vaccinal strain and identification of new genes involved in mycoplasma virulence.

Epidemiological survey on tuberculosis in the Brotonne forest wildlife

The Laboratory for studies and research on animal disease and zoonoses has conducted a survey in order to estimate the effects of corrective and preventive measures introduced in 2001-2002 to reduce the transmission of tuberculosis in wild ungulates. This work showed not only that the prevalence of infection in boars and deer populations has continued to increase (41% for boars, i.e. a 12% increase and 24% in deer, i.e. a 10% increase) but also that clinical signs have worsened for both species, and principally in deer. This led the local authorities to make a drastic decision to reduce the population of deer totally in order to stop intra-species transmission, but also to reduce the population of other wild ungulates, domestic ruminants and other species of animals. Indeed, the bacterium was also found in a fox and a roedeer, and new outbreaks of tuberculosis were declared in the bovine herds close to the Brotonne forest. Molecular typing of the strains responsible for these infections showed that this was the same strain as the strain isolated from the wild outbreak. This study was funded with a competitive grant from the Directorate general for Foods and was conducted in collaboration with the National Game and WIldlife Bureau.

Mapping of strains of *M. bovis* isolated in France

The Laboratory for studies and research on animal disease and zoonoses showed that over the period 2001-2006, 75% of *M. bovis* strains responsible for outbreaks of bovine tuberculosis belonged to 5 very specific spoligotypes. In the study conducted from 1980 to 2000, when infection was more prevalent in the country, the strains isolated were far more heterogeneous: 80% belonged to 100 different types, with only 5 strains or fewer per type. These results can be explained by the introduction of nearly systematic herd culling in 2000, which became compulsory in 2003 and led to a significant reduction of the number of infected flocks and by the setting of a network of laboratories to diagnose bovine tuberculosis

To improve understanding of avian chlamydiosis in ducks, the Laboratory for studies and research on animal disease and zoonoses conducted a study in three farms in which cases of psittacosis, a serious disease in human beings, were recorded in 2006. Correlations were found between human samples (Bordeaux National Reference Centre) and samples from ducks. Mutations were identified which suggested that the strains isolated in this study were of a new genotype.

The Laboratory for studies and research on rabies and wild animal diseases continued its multi-disciplinary field surveys on renal haemorrhagic fever in collaboration with the Pasteur Institute, CNRS and the Charleville-Mézières Regional Hospital Centre.

The Laboratory for studies and research on animal disease and zoonoses (UMR BIPAR) continued its work on pathogenic bacteria transmitted by arthropods. Its research is intended to establish whether the tick Ixodes ricinus is a vector for Bartonella henselae, an emerging zoonotic agent and, where appropriate, to analyse its transmission. The work also analysed the genetic diversity of the genus and its animal reservoir, as well as other bacteria, including *Anaplasma*.

The Laboratory for studies and research on rabies and wild animal disease conducts 2 projects on *E. multilocularis*. One is based on the transmission of the parasite by urban red foxes, and the second on its prevalence in dogs in the endemic area.

Identification of a specific interaction between sub-types of lentivirus and small ruminant species

The plans to combat CAEV and *Maedi-Visna* viruses still come up against many difficulties, particularly the antigenic variability of viral strains and the diverse modes of transmission.

A recent epidemiological survey revealed preponderant circulation of the B1 sub-type in goat flocks, and of the B2 sub-type in sheep flocks, despite the concomitant identification of inter-species spread for both sub-types. These observations highlight the need to fully understand the antigenic properties of the circulating strains of the virus depending on species of animal, and the relative importance of routes of contamination, in order to adapt serological diagnosis techniques and prophylactic measures.

Establishment of a cross-infection study in goats and sheep

This study was conducted by the Niort laboratory in collaboration with the Sophia-Antipolis laboratory and was conducted for a PhD thesis. The animals were monitored for one year using ELISA and PCR techniques.

It demonstrated:

- the effectiveness of horizontal respiratory transmission of the CAEV virus in goats, regardless of viral sub-type;
- later seroconversion of goats infected by the B1 sub-type;
- resistance of sheep to the infection after intra-tracheal inoculation of the B1 sub-type;
- a more constant viral load in sheep than in goats after infection of the B2 sub-type.

Confirmation of epidemiological data

These results show a specific interaction between viral sub-type and species of animals. The specific interaction between goats and the B1 sub-type correlates with preferential transmission of the virus through the gastro-intestinal tract, whereas the transmission seen between sheep for the B2 sub-type may be due to more sustained viral expression.

These results also show the need to consider the respiratory tract as a significant method of infection in goats, which may explain some of the failures seen in the control measures of the disease. The impact of cross-infection on the effectiveness of different serological diagnostic tools is currently being investigated.

MYCO-ID Project: almost 50 strains of caprine mycoplasma identified at the Niort laboratory. ⓘ

Caprine paramphistomosis in Saône-et-Loire: prevalence over 50% in farms studied by the Niort laboratory. ⓘ

Prevention of swine respiratory diseases: final phase of a huge research programme

The Ploufragan - Brest laboratory has continued the research programme started in 2004 on enzootic pulmonary disease in growing pigs, which is a major concern to the pig industry.
The first stages were mostly dedicated to developing high performance detection tools for the pathogenic agents involved, to studying their transmission, the knowledge about the critical points in clinical expression in farms and to evaluating the pathological potential of isolates under experimental conditions. The last stage (end of 2006 and the year 2007) is dedicated to an analytical epidemiological survey, conducted in about a hundred farms, intended to highlight factors predisposing to expression of the disease.
The work is also directed towards detailed characterisation of isolates (*Mycoplasma hyopneumoniae*), the experimental approach to mixed pneumotropic infections (bacteria + viruses) and vaccination. Its final objective is to provide field operators with effective supports for preventive action.
This programme is co-funded by pig farming professionals and the veterinary pharmacy industry, the Brittany Region and a consortium of SMEs involved in farm building equipment.

Work conducted at the Ploufragan - Brest laboratory has helped to improve knowledge about piglet wasting disease in terms of the epidemiology, pathogenesis and routes of transmission of the type 2 porcine circovirus. ⓘ

Bee paralysis: sequencing the viral genome

The Sophia-Antipolis laboratory has continued its work on the chronic paralysis virus through the "characterisation and dynamics of chronic paralysis virus infections: study of viral infection in bees, viral infection in the colony, the disease, descriptions of symptoms" project. The chronic paralysis virus is involved in the "weakening and mortality" problem because of the symptoms it produces which are similar to those of poisoning and because of the bee deaths it causes.
The ongoing programme has in particular allowed: assessment of the distribution of the virus and thresholds for infection in diseased or asymptomatic colonies; sequencing of the viral genome; detection of the virus in many samples.
These samples have included *Varroa destructor*, but also other hymenoptera which may constitute viral reservoirs: demonstrated contamination by this infectious virus in the environment of colonies suffering from chronic paralysis: and identification of the variability of the viral genome, which requires the adaptation of molecular detection techniques and the realisation of phylogeography studies.

New knowledge about the *Staphylococcus aureus* genes associated with sub-clinical mastitis

The work under way for several years already by the Sophia-Antipolis laboratory in collaboration with the Nice Sophia-Antipolis University - CNRS Valbonne genomics platform has led to significant advances in studying viorulence genes of *Staphylococcus aureus* strains responsible for sub-clinical mastitis.
A comparison of 113 isolates from goats, sheep and dairy cattle using the DNA probe technique against 187 virulence genes has allowed the identification of specific genetic signatures related to clonality of strains from the PACA region, and of genes specific to sheep and goat strains which are distinct from those in bovine strains. This work is part of a larger study which resulted in a PhD thesis being accepted.

Q Fever: diagnostic measures

As part of the Med-Vet-Net network of excellence, the Sophia-Antipolis laboratory was appointed to conduct work in order to harmonise diagnostic methods for Q fever in Europe and to develop molecular epidemiological methods. A PhD thesis, funded by Afssa and seeking to develop serological methods using recombinant antigens to distinguish the different stages of infection in adults has also started. Moreover, the laboratory has taken part in building an evaluation protocol for a field vaccine, conducted by the National Caprine Inter-professional Association (ANICAP). It is also participating in the working group led by the Association for the Certification of Farm Animal Health (CERSA) on the control plan of Q fever within affected farms.

Pestivirus: monitoring the wildlife reservoir

In order to define the risk of new pathotypes emerging, the Sophia-Antipolis laboratory has extended the work which it is conducting on domestic ruminants pestiviruses to the wild animal population. In 2006, it took part in continuing the doctorate thesis work of a Tunisian veterinarian aimed at estimating the prevalence of bovine viral diarrhoea in North Tunisia. It also conducted a retrospective study on the molecular characterisation of strains of border disease virus responsible for miscarriages in sheep, which have been collected in France since 1984. This work led to a more comprehensive approach of pestivirus infections, both in domestic ruminants (cattle and sheep) and in the wildlife (wild Izard goats). Experiments started at the end of 2006 on gestating ewes, in collaboration with the Lyon 1 University. They are intended to compare the pathology of pestivirus strains isolated from sheep and from the wildlife.

The Sophia-Antipolis laboratory has identified predominance of the A2 serotype of *Mannheimia haemolitoca* and serotype T4 of *Pasteurella trehalosi* in small ruminants suffering from respiratory symptoms in France between 2000 and 2004.

ANALYSIS AND DIAGNOSIS TOOLS

RFLP plasmid typing: a new epidemiological surveillance tool for foal rhodococcosis

As part of the study of the molecular biodiversity of the virulence plasmid of *Rhodococcus equi* (the agent causing foal rhodococcosis), a new epidemiological surveillance tool has been incorporated into the Dozulé laboratory routine techniques : RFLP plasmid typing. The initial results of this study demonstrate the presence of several new types of virulence plasmid in Lower Normandy; one of these is in the process of being sequenced. It is now important to characterise the variable regions within this plasmid, and to assess their impact on the bacterium's pathogenic potential.
Major partners: Caen University - Lower-Normandy Environment Microbiology Laboratory Applied Biology Research Institute, Prof. Axel Hartke.

Trichinellosis: characterisation of new antigens used for diagnosis and prevention

The Laboratory for studies and research on animal disease and zoonoses has identified two first early antigens of the nematode parasite *Trichinella*, as part of the Med-Vet-Net research contracts and contracts with Mexico and China. These new immunodominant antigens have been used to develop a more sensitive, specific, early and reproducible indirect ELISA serological test than the current standard ELISAs, in partnership with Inra and the university of Jilin (China). Early test strip serological diagnosis will also be offered in human beings by using the two recombinant antigens. These two early antigens are currently under analysis for vaccination purposes in the pig at the Ploufragan - Brest laboratory.

Comparison of antibiotic diffusion techniques

As part of its activities as an associated National Anthrax Reference Centre, the Laboratory for studies and research on animal disease and zoonoses is conducting studies on antibiotic sensitivity and resistance of strains isolated in France. Comparative tests on antibiotic diffusion methods have been conducted on strains of *B. anthracis*.

Correlations have been found between conventional MIC, the conventional antibiotic sensitivities in agar and E-Tests, in order to validate the former, more recent and faster method and to allow it to be used (its use is relatively easy for laboratory specialists in case of emergency). The same work has been conducted on strains of *F. tularensis* as a continuation of the project undertaken for the Francisella National Reference Centre in 2005. All of this work was conducted in collaboration with the Grenoble Army Health Service Research Centre and the Bégin Inter-Army hospital.

Organisation of inter-laboratory trials to detect trichinella in France

The Laboratory for studies and research on animal disease and zoonoses has developed a novel technique to prepare calibrated samples of *Trichinella spiralis*. Since setting up inter-laboratory trials, the sensitivity of detection of the larvae has increased for all départemental veterinary laboratories. Out of 53 laboratories, 51 had a sensitivity of more than 75% in 2006 compared to 20 in 2004. France currently has the first widespread network for routine laboratories able to detect at least one trichinella larva per gram in any meat matrix, regardless of the host animal species.

Toxoplasma gondii: publication of a report on food health risks

The report from the working group set up at the initiative of Afssa in April 2003 to assess the health risks from *Toxoplasma gondii* in food and water was presented publicly on 24 March 2006. It includes a literature review focusing on factors liable to be involved in *T. gondii* contamination of water or food, and an analysis of the available data on the effectiveness of water treatment, food packaging, storage and preparation procedures against this parasite. It takes account of the quantitative risk assessment process conducted from these experimental and epidemiological data in order to estimate the impact of the consumption of potentially contaminated food on the incidence of toxoplasmosis in pregnant women and of congenital toxoplasmosis. It reviews the appropriateness and application conditions for the current recommended preventive measures.

Recommendation for national concerted action

Afssa has identified several fields for investigation or priority actions and recommends the establishment of a concerted national initiative between professionals and health organisations involved in the management of congenital infection prevention. This report has also been presented in national and international meetings. Following this expert report, a survey on *T. gondii* in slaughterhouse sheep is intended in France in 2007.

Development of detection tools for tularaemia

The Laboratory for studies and research on animal disease and zoonoses has developed a VNTR molecular typing tool for *F. tularensis* on a sample of 140 strains isolated mostly from hares. It has developed a real time PCR intended to make available a rapid reliable detection tool so as to limit culture to positive samples only. A review (2003-2005) comparing results obtained by bacterial culture and by conventional PCR for the diagnosis of tularaemia has been conducted and was presented in two meetings.

Comparison of diagnosis techniques for ovine paratuberculosis

The Laboratory for studies and research on animal disease and Zoonoses has started a study intended to compare different diagnostic techniques for ovine paratuberculosis. This remains a particularly complex disease to diagnose and the methods used for cattle are not easily transferable to sheep. Sheep strains of *M. avium subsp.* paratuberculosis are reported to be difficult to culture and the current project is intended to compare and select the most appropriate culture medium. In parallel, other direct or indirect diagnostic techniques (ELISA and PCR) are compared in flocks of different breeds whether or not exposed to paratuberculosis. The strains isolated will undergo molecular typing (PFGE, VNTR) in order to study their biodiversity. This work is being conducted in collaboration with Inra, a Spanish partner and the Midi-Pyrénées Regional Federation of Animal Health Defence Groups (GDS).

The Laboratory for studies and research on animal disease and zoonoses has developed and validated a real time PCR method to detect *M. tuberculosis* and a study has been started for the *M. avium* complex.

Launch of a research project on caprine paratuberculosis

In collaboration with Tours Inra and the Nantes National Veterinary College, Afssa has started a 3 year programme on caprine paratuberculosis intended to make available epidemiological data and both diagnosis and control tools.

Evaluation of the efficacy and safety of an inactivated Spanish vaccine (GUDAIR) under French conditions of use

The study being conducted by the Niort laboratory will provide information for the importation dossier for this product. The follow-up study on a cohort of 300 young vaccinated or unvaccinated goats has started. Blood and faecal samples will be taken from the animals every 6 months for direct or indirect diagnosis tests (cellular and humoral immunity). The initial results involving the kinetics of the biological reactions are expected in 2007. This follow-up study will also provide samples from animals of known status (under natural infection conditions).

Evaluation of the use of interferon-gamma measurement in the early diagnosis of paratuberculosis

This work which has received European funding (6 RDFP) is being conducted as part of a veterinary thesis. This test has to be improved before it can be used routinely (choice of antigen, incubation time, etc.).

Study of the "epidemiological bases to control caprine paratuberculosis"

This survey, conducted for a university thesis, has examined around a hundred farms from different goat production areas in order to establish the prevalence of caprine paratuberculosis. The apparent prevalence has been estimated to be 55%. Few regional differences emerge.

Validation of a diagnostic ELISA serological kit for rabies

After 3 years of collaboration with the Bio-Rad company, an ELISA PLATELIA RAGE II (ELISA PLATELIA RABIES II) test has been developed and validated by the Nancy laboratory. This test allows the detection of amounts of anti-rabies antibodies present in dogs, cats and foxes vaccinated against rabies A collaborative study has also been started to examine its reproducibility. This shows that the kit is highly specific and offers very satisfactory sensitivity and reproducibility. It could replace the reference cell seroneutralisation techniques (FAVN and RFFIT tests).

Towards OIE certification

This ELISA should shortly obtain certification from the World Organisation for Animal Health (OIE) – it will then be the first diagnosis kit to obtain this status. This will have a crucial consequence on international movement of domestic carnivores, as it will allow laboratories which are currently accredited to perform anti-rabies serological controls to use the PLATELIA RAGE II in the same way as the FAVN and RFFIT tests.
Furthermore,this kit will also give laboratories in countries where fox rabies is still present access to a serosurveillance tool for populations of vaccinated foxes
This work led to the publication of 2 articles in international peer-reviewed scientific journals.

DNA probes for genomic research

The Ploufragan - Brest laboratory has developed a sophisticated method to analyse in detail the behaviour of cell genes (10,000 genes) in response to viral aggression,, in order to allocate these activation profiles with a predictive value for the zoonotic potential of an emerging virus These studies have used genomic, specifically transcriptomic, tools (DNA probes).
Similarly, it is now possible to precisely define the insertion site of a porcine retrovirus into the genome of a human cell. This work has been made possible using high output sequencing techniques.

VETERINARY MEDICINAL PRODUCTS AND DISINFECTANTS

In 2006, the Agency continued the activities it began in 1998 in the field of antimicrobial resistance.
Its incorporation into the European network of national reference laboratories reflects recognition of its work and is helping it to continue its activities in this area: evaluation, animation of the Resapath and *Salmonella* laboratory networks, and information gathering about the use and consumption of antibiotics in animal production, which is being conducted by the Lyon and Ploufragan laboratories and the National Veterinary Drug Agency.
A review of work conducted in 2003 and 2004 appeared in the FARM report "French Programme for surveillance of antibiotic resistance of animal bacteria" which was published in August 2006 as a result of the partnership between the different teams. This report adds to the scientific publications and oral presentations on the subject by the Agency's laboratories.
Two PhD theses based on the research work on antibiotic resistance were also accepted, and partnerships with French and European research institutes have been established, particularly within the Med-Vet-Net network of excellence.

Finally, Afssa has continued its involvement with international organisations particularly in defining critical antibiotics for veterinary medicine. The Agency is also studying problems linked with the development of resistance to anti-parasitic agents used for the control and treatment of many animal diseases.

Publication of an antimicrobial resistance report

The report entitled "Veterinary uses of antibiotics, bacterial resistance and consequences on human health" which was published in January 2006 is the result of significant expert evaluation work conducted by a cross-disciplinary working group combining bacteriologists, epidemiologists, molecular biologists, doctors and veterinarians. It was reviewed by 3 Afssa scientific panels (Microbiology, Animal Health and Animal Nutrition) and by an external peer review committee before being discussed with professional and consumer organisations. This report establishes many general recommendations on the use of antibiotics as well as on information, training of users, interventions on practices of use, and resistance surveillance methods in animals and how these can be increased.

Antimicrobial resistance: 1st cross-disciplinary mission established

The designation of the Fougères laboratory director as manager of the antimicrobial resistance project gives concrete expression to the cross-disciplinary project which the Agency is looking to emphasise to increase its effectiveness.
This organisation, today in project mode, will be developped in 2007.

Production of the critical veterinary antibiotics list (VCIA)

The Agency took an active part in the World Organisation for Animal Health (OIE) working group set up to propose a methodology for the identification and listing of critical veterinary antibiotics (VCIA). With this in mind, the Agency prepared a questionnaire for the 167 OIE member countries and analysed its results, which were reported in the general session of the OIE in May 2006. A more detailed list was then requested, and the working group produced a new proposal to be presented at the May 2007 session. This list will be used to create three categories of antibiotics (critical antibiotics, highly important antibiotics and important antibiotics) based on criteria relating to their frequency of use, availability, severity of the disease being treated and the possibility or otherwise of using an alternative medicinal product. This work forms part of the expert

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consultation launched jointly in 2003 by the World Health Organisation (WHO), the Food and Agriculture Organization of the United Nations (FAO) and the OIE in order to improve knowledge of and prevent resistance to antibiotics in the fields of human and animal health. The lists of critical antibiotics for human use and of the critical veterinary antibiotics should be compared in 2007.

Characterisation of animal strains of *Escherichia coli* resistant to third generation cephalosporins

In 2006, for the first time in France, the Lyon laboratory published a characterisation of strains of *Escherichia coli* isolated from cattle, pigs and poultry which were resistant to the latest generation of cephalosporins (C3G). These were strains isolated by the départemental laboratories belonging to RESAPATH (the Network for Surveillance of Pathogenic Bacterial Resistance). Enteric bacteria are usual gastro-intestinal tract hosts and are also present in the soil and in water. In veterinary practice the most commonly seen are *Escherichia coli* and *Salmonella*, *Klebsiella*, *Proteus* and *Enterobacter*.
Enteric bacteria exhibit natural resistance often supplemented by multiple acquired antimicrobial resistance.
The beta-lactamases are the major natural and acquired resistance mechanism to beta-lactamins in these bacteria.
The resistance spectrum of the beta-lactamases may extend by molecular evolution: single point mutations in the resistance gene may therefore induce substitution of amino acids close to the enzyme site and lead to better affinity for other beta-lactamins. Certain broad spectrum beta-lactamases (BSBL) therefore confer a high level of resistance to the latest generation of cephalosporins (C3G), although these antibiotics are sometimes the last line of treatment for human infections, particularly in children. Within these BSBL, a new family called the cefotaximases (CTX-M) has emerged. These enzymes are found throughout the world, showing that the CTX-M enzymes are widely prevalent in human enteric bacteria. CTX-M enzymes have been described in French strains of human *Salmonella* and also in poultry (CTX-M-9).
The work conducted by the Lyon laboratory shows that resistance of *E. coli* strains isolated from the animal sector to C3G is conferred by two types of cefotaximases: CTX-M-1 and CTX-M-15. The presence of insertion sequences close to these genes suggests possible mobilisation of "progenitor" genes of the CTX-M genes present originally in bacteria belonging to the Kluyvera genus, an environmental bacterium rarely seen in medical bacteriology. The presence of these insertion sequences and these genes in plasmids facilitates the mobility and spread of the BSBL within the enteric bacteria.

Management of resistance to worming agents in goats

Infestation of farmed grazing goats by gastro-intestinal Strongyloides reduces milk production. Intensive use of worming agents to combat these parasites has led to the emergence and spread of worms which are resistant to these molecules within populations of goat flocks.
The Niort laboratory is monitoring and studying the development of new resistance and is looking for means to control infections with the least possible use of worming agents, in order to preserve their effectiveness.

Characterisation of dual resistance to 2 families of worming agents

Dual resistance to benzimidazoles and levamisole has been confirmed in 2 flocks of Deux-Sèvres goats. This is currently being characterised under experimental conditions (identification of the causal species and development of diagnosis tests in collaboration with Tours Inra).

Tests on targeted worming

The aim of the method being studied was to limit treatment only to the most heavily infested animals, with a view to reducing parasite pressure in the herd and to reduce selection pressure on the Strongyloides. The use of this method requires the identification of the most heavily infected animals. For this purpose, indicators have been tested : colour of the ocular mucosa (anaemia), milk production and body state. Measurement of body state appears to be a reliable indicator in situations of high

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parasite pressure. This evaluation will be continued in order to identify variation factors other than parasite load and ease of use within flocks.

Drug monitoring: increasing involvement from health professionals

The number of declarations of adverse effects and lack of efficacy of veterinary medicinal products recorded in the national veterinary drug monitoring database increased by 50% compared to 2005. There were more than 6,500 of these, almost half of which involved unsolicited declarations in France: 15% concerned reactions occurring outside of France (i.e. an increase of 25%); 36% were recorded after interim updated safety assessment reports (these increased by more than 70% in 2006).
This situation reflects increasing involvement by health professionals in improving the safety of use of veterinary drugs. The information feedback and assessments conducted have helped to better inform users and, where applicable, to modify some drugs. The publication of issues 2 and 3 of *La lettre de pharmacovigilance vétérinaire* has also helped to improve information for professionals.
Following the mandates from the National Veterinary Drug Monitoring Commission, the drug monitoring department initiated four surveys (adverse effects of aglepristone, carprofen and loperamide, and the safety and efficacy of vaccination against bovine respiratory diseases).

The Laboratory for studies and research on rabies and wild animal disease has developed a contraceptive vaccine for Canidae, in order to control the feral dog populations responsible for almost all of the cases of human rabies in the Maghreb countries (North Africa) and for the importation of rabies to France.

The National Veterinary Drug Monitoring Commission has produced an assessment methodology for declarations of lack of effect of veterinary medicinal products, which was submitted to the drug monitoring working group of the veterinary medicinal product committee for European approval.

The Sophia-Antipolis laboratory has confirmed the efficacy of the medicinal product used mostly in the treatment of varroasis in its studies on losses of bee colonies.

In view of the increasing number of periodic safety update reports (PSUR) to be assessed, consideration has been given on a European scale to sharing their evaluation between Member States.

Drug monitoring Commission Secretariat: 6 opinions published

- Opinion on measures to be taken in order to prevent adverse effects from exposure to anti-parasite collars containing amitraze
- Opinion on measures to prevent adverse effects from exposure to imidocarbe
- Opinion on measures to prevent adverse effects from exposure to an anti-parasite solution of amitraze intended for dogs.
- Opinion on measures to prevent adverse effects from exposure to an anti-parasite solution of amitraze intended for cattle, sheep, goats and pigs
- Opinion on measures to prevent adverse effects from exposure to an anti-parasite solution of lindane intended for dogs and horses
- Opinion on measures to prevent adverse effects from exposure to anti-parasite collars containing deltamethrine

Disinfectants: increased activity through application of the Biocides directive

The Fougères laboratory was closely involved in the marketing authorisation (MA) procedure for disinfectants, their accreditation and in the application of the Biocides directive (98/8/EC).
It assessed 110 products featured in MA applications and took part in following up European dossiers for biocides in the scientific panel of the French Agency for Environmental and Occupational Health Safety (Afsset) and the Ministry for the Environment, which also studied the problem of the use of formaldehyde and biocide resistance.
The laboratory also contributed to several Afssa expert reports (Avian *Influenza* virus in water, decontamination of poultry carcasses, national and international use of disinfectants in notifiable contagious animal diseases).
It is also involved in standardisation activities on measurement tests on the effect of antiseptics and disinfectants nationally (AFNOR), and on a European (CEN) and international (OECD) scale. This work is essential for setting up the European regulations and bringing the viewpoints of OECD Member Countries more in line.
The laboratory also took part in two European inter-laboratory trials on European standards.

Fougères laboratory, the Community Reference Laboratory (LCR) for antibiotic residue, in conjunction with other LCRs **has produced** a validation guide on screening methods for antibiotic residues used by national reference laboratories.

Obtaining industrial value from research

In addition to the research and development agreements with companies, commercial value is achieved by the lodging of patents and the transfer or granting of licences, and by knowledge transfer agreements.
In collaboration with the company INRA transfert, the Agency's advisor for commercial value, the procedures used to obtain commercial value from Afssa inventions have in particular involved vaccination of brood mares to protect foals against *Rhodococcus equi* infection (work by the de Dozulé laboratory), vaccination of farmed fish against nodavirus (work by the Brest laboratory) and PCR identification of pathogenic bacteria in foods (work by the Laboratory for studies and research on food quality and food-processing).

ANIMAL NUTRITION

Definition of good manufacturing and wholesale distribution practices for medicated feed

Throughout 2006, the Agency defined good manufacturing and distribution practices for medicated animal feed, stipulated by the Code of Public Health legislation, with the support of the ministries responsible and animal nutrition sector professionals.
These terms have finalised the transposition of the European directive on conditions for the preparation, marketing and use of medicated feed for animals in the Community (90/167/EEC) into French law. Their publication by Afssa on 12 February 2007 (5) is leading to a ministerial decree.
The document is organised into 10 general chapters and 3 specific guidelines, consistent with the accepted plan for the different good manufacturing decrees for health products. In particular it envisages compulsory analytical controls on finished products in order to validate the manufacturing procedures used at time intervals appropriate for the establishments' volume of activity. It stresses combating cross-contaminations which are the main risk in food manufacturing factories and the application of pharmaceutical responsibilities (significantly less

(5) Cf. www.anmv.afssa.fr.

stringent than other veterinary pharmaceutical establishments, in terms of cumulative activity, time of presence and position in the management systems).

Afssa has reviewed the use of plant substances and products incorporated into animal feed and proposes a process to evaluate these.

Animal nutrition research conducted by Ploufragan is seen in 2 projects: firstly the launch of work in partnership with Inra on the intestinal toxicity of Deoxynivalenol (DON) in pigs, and secondly, as part of the Poultryflorgut European coordination programme, the commission of 18 reports on control of the ecology of poultry intestinal flora.

In collaboration with the Brittany regional agricultural chamber, the Ploufragan - Brest laboratory is organising the health monitoring of animals in a station intended to study pig nutrition. This work will be particularly useful for examining the influence of the farming system on various contaminants.

FOOD HEALTH QUALITY

After contributing scientifically to the reform of Community food hygiene regulations, Afssa has been closely involved in its application. The "Hygiene Package" came into effect on 1 January 2006, and is designed to simplify the texts which apply in the European Union and to harmonise levels of health safety by engaging all those involved in the food chain, formalising the responsibility of professionals and optimising health authority controls. This should reinforce surveillance and monitoring by the health authorities and expert bodies, with a view to improving consumer protection.

PRODUCTION CONDITIONS

Good hygiene practice guides (GHPGs)

In this context, professionals are encouraged to construct GHPGs to provide a guarantee of the management methods used in a sector. Afssa has constructed guidelines for the evaluation of national guides involving foodstuffs, so that professional sectors know precisely which validation criteria are used by the Agency. It has also started an evaluation cycle for community guides on animal nutrition. In addition, it has produced risk description sheets (data sheets on micro-organisms responsible for food poisoning available on www.afssa.fr) which companies may use to construct their own guides. Its laboratories have also produced knowledge for use by professionals – e.g. the Laboratory for studies and research on food quality and food-processing on thawing procedures or food storage temperatures – which may ultimately be incorporated into the guides.

Adaptation of the French regulations

Afssa also took part in the deliberations to revise the national hygiene criteria for procedures – which are only partially defined at European level It started its expert review on microbial flora which could be used as hygiene indicators for procedures. This work is continuing in 2007 with the evaluation of criteria proposed by different sectors from the food industry.

Food allergies: do genetically modified plants have an impact?

Food allergies are an increasingly widespread public health problem in developed countries. They affect approximately 3% of the French population, with a higher prevalence in children. These figures now justify assessment of allergenicity as a prerequisite before any novel food is marketed.

Afssa has assessed the benefits and risks which genetically modified plants (GMPs) could carry in terms of food allergies. Published in 2006, its report describes:

- the physico-chemical characteristics which may be deemed to be **beneficial or adverse factors in the allergenic nature of a protein** (resistance to enzymatic digestion, heat stability, etc.);
- **the current allergenicity evaluation process** for proteins as part of the global assessment of a GMP. Methods under development will allow allergenicity of the GMP itself to be taken into account, and not just the allergenicity of the protein coded by the transgene;
- **possible benefits** which the GMP may bring with the development of certain "hypoallergenic" varieties (peanut, rice, soya, wheat, apple trees) which is still in the research stage. The creation and use of less allergising varieties may ultimately help to reduce population sensitivity to some plants;
- **potential allergic risks** from the GMP such as the emergence of neo-allergens, cross-allergy or over-expression of endogenous genes. Within current knowledge the GMPs do not carry more risk of allergy than plants obtained by conventional methods. Indeed, other cultivation and selection techniques may contribute to increasing the allerginicity of our foods (e.g. the use of resistance gene activators, or the selection of varieties particularly liable to synthesise stress proteins).

Exposure to mycotoxins in the food chain

In 2006 Afssa decided to conduct an expert evaluation on the possible presence of mycotoxins in the food chain in order to update knowledge and assess the risks to consumers and animals. Mycotoxins are generated by certain strains of moulds and are liable to contaminate plant foods, particularly cereals, fodder and fresh and dried fruits and products manufactured from these substances intended for human food or animal feed. They can also be found in milk, eggs or offal if the animals have been exposed to contaminated foods. Some mycotoxins exhibit very considerable acute toxicity, although it is extremely rare in Europe to be poisoned by a single dose of contaminated food. Afssa has therefore based its examination on repeated exposure to small doses (chronic effects).

Progress report

Produced in December 2006, its progress report provides a review of current knowledge on each mycotoxin or family of mycotoxins which are of interest from a food processing or health point of view: aflatoxins, ochratoxins (ochratoxin A in particular), patulin, ifumonisins, zearalenone, trichothecenes and, particularly, deoxynivalenol (DON). It also recommends that research be conducted on some of these toxins and on their transfer into animal products. It recommends measures to set up surveillance and control plans and the development of more sensitive analytical techniques. Its deliberations will continue on exposure in animal health.

Development of a tool to characterise freshness of fish

Given the need for objective criteria to characterise the freshness of fish, the Boulogne-sur-mer laboratory has conducted research on the chemical evaluation of the extent to which the fish has deteriorated.

An important health challenge

Evaluation of the freshness of fish is an important health challenge, particularly as consumption of raw fish is increasing. This is currently based on sensory and chemical methods (particularly those involving assay of volatile nitrogenated compounds and trimethylamine). The sensory approach is effective on whole fish, but is demanding and expensive and performs less well for fillets.

Identification of volatile compounds

The laboratory has focused its studies on the identification and quantification of numerous volatile compounds in order to take objective account of odours, which are the most explicit expression of fish deterioration. The method which it has developed involves extracting odours by SPME (Solid Phase Micro-Extraction). This is simple and fast, readily automatable and cheap, and does not require solvents.

Its relevance has been demonstrated for whiting, cod and mackerel. Ongoing studies on plaice, pouting and salmon appear promising.

The impact of *chilling* on the development of *Listeria monocytogenes* and the background flora contained in smoked salmon

In collaboration with the Laboratory for studies and research on food quality and food-processing, the Boulogne laboratory has conducted research in order to assess the impact of *chilling* on the growth potential of *L. monocytogenes* and the background flora contained in smoked salmon. This method involves storing the packaged products between 0°C and their freezing point. This stops multiplication of bacteria whereas refrigeration (cold storage at a positive temperature) only slows multiplication. The method therefore appears to be unique.

Comparative study

A comparative study was conducted between smoked salmon which had been chilled (– 2°C) and had then stored at a positive temperature (+ 4°C and + 8°C) and salmon stored directly at a positive temperature (+ 4°C and + 8°C) after manufacture, using naturally contaminated samples. The batches of smoked salmon were stored for their shelf life and were analysed regularly throughout storage. The products contaminated with *L. monocytogenes* were characterised by pH, water and salt content, phenol content and their thermophysical properties (initial freezing temperature, water activity, amount of frozen water depending on temperature).

The strains of *L. monocytogenes* isolated from contaminated products were characterised by serotyping and pulsotyping.

The results allow the effects of this practice on the final product to be assessed and are an aide to determining the use-by date. They also help in the establishment of a scientific database which could be incorporated into a quantitative risk assessment.

Food surfaces: observation of a new effect of bacterial contamination

A study designed to reproduce the change in contamination of food processing industry workshop surfaces by *Pseudomonas fluorescens* has been conducted by the Laboratory for studies and research on food quality and food-processing. This study has led to an unexpected discovery: of thedivision and accumulation of viable but not culturable cells of this bacterium on surfaces.

Viable but non-culturable cells (VBNCs)

Ceramic test tubes were contaminated on a single occasion with Pseudomonas fluorescens in the presence of meat exsudate. They were then subjected daily to a cleaning agent, a disinfectant and mixing with the exsudate. The cells then accumulated, and after 10 days a remarkable difference was seen between the number of culturable cells (10^4 UFC.cm^{-2}) and the total number of cells (10^6 cells/cm^{-2}). This difference was shown not to be due to accumulation of dead cells, but in most cases to so-called viable but non-culturable cells (unable to form macrocolonies on agar) which had respiratory activity. These divide and accumulate on the surface. In addition, the daily stress applied appeared to stop the cells entering a new latent phase. A single addition of micro-organisms was sufficient to provoke this effect which had never been seen before and was not possible to prevent.

ENVIRONMENTAL CONTAMINANTS

CALIPSO Study on the risks and benefits of heavy consumption of fish

The CALIPSO study (Study of dietary consumption of seafood and contamination with trace elements, Pollutants and Omega 3) conducted from 2003 to 2006 by the French Food Safety Agency and the French National Institute for Agricultural Research (Inra) assessed the intake of Omega 3 and physico-chemical contaminants by French heavy consumers of seafood.

Dietary exposure and biomarkers

The study took account of consumer behaviour in this population, its lifestyle and how the food was obtained.

The original nature of this study, however, lies in the fact that it measured both dietary exposure and incorporation into consumers' biological tissues from blood and urinary biomarkers.

From a methodological perspective CALIPSO is therefore an important means of investigation in the overall approach to the dietary balance of health risks and benefits.

Nutritional recommendations

The study's results confirm the solid basis

of recommendations put forward in the PNNS or Afssa opinions, i.e. that nutritional requirements for omega 3 are easily covered just by eating fish at least twice per week, including one portion of oily fish. CALIPSO also highlights the importance of eating a wide range of seafood products, both in terms of species and sources. Finally, the results demonstrate the need to continue efforts to reduce upstream pollution, particularly by dioxins and PCBs.

Launch of a total nutrition study

Afssa has started a new total nutrition study (EAT) after the study conducted with Inra in 2000. This type of national survey, which is recommended by the World Health Organisation (WHO), is intended principally to monitor population exposure to substances of public health interest through analysing foods as they are actually consumed. It is helping to facilitate international comparisons and to provide a scientific basis for decision-making.

A 4 year national survey

The study started in 2006 is centred on plant health residues, trace elements and mineral salts, environmental contaminants, phytoestrogens, additives, acrylamide and mycotoxins. It is being funded by the Ministries for Agriculture, Health, the Economy and finance, and by Afsset.

1,500 foods were selected from the INCA2 study data on food consumption and will be sampled in eight large French regions.

Increasing the reliability of the shellfish health safety system

In 2006, Afssa received 2 mandates on the French shellfish health safety system, one of the major components of which is REPHY (PHYtoplancton REservoir). This network, which was set up in the 1980s to identify toxin-producing species of phytoplankton and the health status of shellfish areas, has proved to be effective. This system uses an official (both at national and Community level) test on mice to diagnose the health status of shellfish. It has helped to avoid foodborne illness outbreaks and to detect emerging toxic strains of phytoplankton and emerging toxins.

Episodes of atypical toxicity

Over the last few years this system has identified episodes of "atypical" toxicity: shellfish toxicity was detected by the mouse test although it could not be linked to known toxins. These sporadic, formerly minor, episodes on the French coastline became more frequent in 2005 and 2006 in the Arcachon Basin, and led to the Afssa mandates during the summer of 2006.

Evaluation of the diagnosis test

The first mandate was to evaluate the mouse bio-test. The study was conducted by the Laboratory for studies and research on food quality and food-processing, which is the National Reference Laboratory (NRL) for marine biotoxins.

Overall evaluation of the system

The second mandate, carried out by an emergency collective expert group, involved a general assessment of the device and of the specific situation in the Arcachon Basin. The NLR set up a scientific steering committee consisting of complementary research teams to produce firstly, a review of environmental and contamination data on shellfish from the basin and secondly, a list of specifications for the research programme to be conducted in 2007.

In its opinion published in October 2006, Afssa recommends measures for surveillance of the production areas, shellfish marketing, palliative devices, the mouse bio-test and the collection of epidemiological data.

European research on the reliability of current tests and identification of alternative tools conducted within the Community reference laboratory and the European Food Safety Authority should further inform these recommendations, particularly with respect to episodes of atypical toxicity.

Study of exposure to dioxins and furans around household waste incineration plants

As part of the study of dioxin and furan impregnation conducted with the French Institute for Public Health Surveillance (InVS), Afssa was instructed amongst other factors to define those people exposed to contaminants around household waste incineration plants (HWIP).

Delineation of dispersion areas

Smoke dispersion areas were determined by modelling around the 8 HWIP concerned in order to measure exposure

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to dioxins and furans *via* consumption of locally produced foods. These areas were delineated from the HWIP emission data and dispersion models taking account of cumulative dioxin deposits, meteorological data over 5 years and the geographical relief. The levels of ground impregnation calculated theoretically was similar to the observed findings, as were the orders of magnitude of maximum values.

Survey on dietary habits

Afssa also constructed and tested questionnaires on dietary habits in general and home production practices (products obtained from people's own gardens or own farm). These enabled InVS to identify the role of home consumption of foods of animal origin such as dairy produce and eggs as a vector for impregnation of populations neighbouring high dioxin emitting HWIPs by these contaminants. No link could be established for consumption of local fruit or vegetables.

Dietary exposure to bromide flame retardants

Afssa was requested by the Directorate General for Foods to clarify the exposure of the French population to bromide flame retardants (BRFs) in foods. BRFs are chemical substances often incorporated into plastics, electronic circuits, foams and textiles to give them fire retardant properties. They consist of a relatively large range of molecules including the polybromodiphenyl ethers (PBDEs).

Effects of PBDEs on health

Based on current knowledge Afssa recommends that toxico-kinetic studies be conducted to document the fate and metabolism of the PBDE in the body and that toxicity studies be performed on the isolated congeners to assess their effects. Priority for these studies should be given to the PBDEs most frequently found in human beings. Toxicological data were considered to be inadequate to define reference toxicology values.

Food vectors

The major food vectors for the PBDE in the French population in decreasing order of importance are: seafood, milk and dairy products, and meats. As the Calypso study provided data about seafood products, Afssa recommends that PBDE testing be focused preferentially on meats and poultry, as well as milk and dairy products, for which no French data are available.

Molecules to be monitored

Afssa recommends that 11 categories of retardants be measured: 8 PBDE together with HBCD, TBBPA and PBB 153, consistent with the EFSA opinion of February 2006.

Afssa is involved in 3 field studies on exposure of the French West Indian population to chlordecone, in the extension of its first exposure estimate of 2005: 2 surveys on chlordecone residues in foods in Martinique and Guadeloupe, and a food survey coupled with the mother child cohort study co-ordinated by Inserm.

In November 2006 Afssa published an expert evaluation report on the health risks from the use of recycled PolyEthyleneTerephtalate (PET) in food packagings.

Afssa has updated the guidelines on assessment of the health safety of plastic materials treated by ionising radiation at more than 10 Kgy and used for food packagings.

In collaboration with Inserm, the Fougères laboratory has started a research project funded by the National Research Agency (ANR) intended to validate a human hepatoma model to study the chronic toxicity and mutagenic and/or carcinogenic effects of environmental and dietary contaminants.

NUTRITION AND DIETARY BEHAVIOUR

As an author of many works and studies on food behaviour in French people, Afssa is also contributing to the production of scientific knowledge enabling the risk manager to take informed decisions and better define his or her nutritional policies (PNNS).
However, the Agency considers that stable scientific data within this field are still too partial,and it is seeking to identify areas in which it would be appropriate to promote research work.

Phytosterols: provided by 99 foods in France

Afssa took part in the research programme entitled "Contributions to establishing a database and food composition table for phytosterols", the main objective of which was to improve knowledge on the micro-constituent composition of foods.
In particular, because of their ability to inhibit the absorption of cholesterol, phytosterols may offer beneficial nutritional properties and may thus play a role in preventing the risk of cardiovascular diseases.

4 sections of research

The analytical methods for extracting and purifying phytosterols have firstly been optimised. Foods consumed in France were then sampled: 99 foods were identified as major sources of dietary phytosterols in France,
from the composition data obtained from the scientific literature and from consumer data from the INCA survey. These were 5 grocery products, 15 cereal products, 21 fresh fruits, 10 types of dried fruit or nuts, 35 vegetables and 13 fats. Phytosterol content was then measured in the 99 matrices selected (4,126 phytosterol content values were listed in the Régal databank).
This work which was co-funded by Actia provides better quantitative and qualitative knowledge about the phytosterol composition of foods consumed by the French population. It may be used to estimate phytosterol intake in the French population, and possibly to more clearly identify a possible protective role against systemic diseases.

Towards the establishment of the food quality observatory

Together with Inra, Afssa took part in a feasibility study to establish a food quality observatory, requested jointly by the Ministries of Agriculture and Health following the PNNS2.
The conclusions of this study should be published shortly. The remit of this observatory will be to monitor qualitative changes in available foods, *via* descriptions of marketed products, in a context of rapid changes in knowledge and technologies that leads to an increasing rate of appearance of products.

Nutritional recommendations for pregnant and breast-feeding women

Afssa produced the scientific bases for a dietary guide for pregnant women or women wishing to become pregnant and those who have just given birth.
This reference document was written as part of the National Nutrition and Health Programme (PNNS) and follows the guides for which, in previous years, the Agency has provided the scientific bases for the elderly, children and adolescents etc.
It is the result of the collective expert evaluation by the Human Nutrition scientific panel and ad hoc working groups. The two versions it contains – one for consumers, and one for health professionals - will be distributed by the National Institute for Health Prevention and Education in 2007.

Healthier eating

This guide contains specific details, dietary restrictions and risks for pregnancy, as well as for a few months before and after it. It gives practical recommendations on healthier eating during this period. In particular, it stresses the benefits of breastfeeding and the risks of iron and folate deficiency.
In addition, it examines issues of smoking and alcohol consumption, specific dietary risks in the pregnant woman (listeriosis, toxoplasmosis) and using food supplements without medical opinion.

Contribution to European deliberations on claims

In 2006 Afssa undertook several studies to fuel the Community deliberations on centralising the assessment of claims in the European Food Safety Authority. Through an evaluation of the assessment process for claims conducted by the Human Nutrition scientific panel, the Agency produced guidelines for the creation and assessment of dossiers on claims. Four situations may arise from the assessment of these dossiers: definitive rejection of the claim; evaluation of the product carrying the claim; scientific evaluation of the claim including its public health relevance; formulation of the claim and its understanding by the consumer. The Agency is also taking part in establishing a register of functional health claims, and is involved in deliberations about the nutritional profiles of products, the access condition to the claims. During the year, one third of the dossiers assessed by the Human Nutrition scientific panel concerned claims.

Proposed revision of nutritional labelling

Afssa was requested by its 3 responsible ministries for tightening national and Community nutritional policy. Afssa conducted a review in order to improve food nutritional information labelling, as the current regulations are not entirely satisfactory for either consumers, scientists or the industry. It was asked to propose changes based on scientific and nutritional criteria to make these more relevant, at the same time reconciling clarity and abilities to compare. It was also asked to list the priority categories of nutrients which should appear on the labelling and to propose the most relevant wording to allow the consumer to adapt consumption to needs. Afssa's final opinion should be published in 2007.

Study on school canteen services: initial results

During the academic year 2005/2006, Afssa conducted a study on the operation of school canteens and foods offered in a representative sample of secondary education establishments in mainland France and in the overseas départements. This study will enable application of the circular of 25 June 2001 on the composition of meals served in school canteens and food safety to be assessed. A total of 815 establishments responded to a questionnaire and 707 sent the menus served for at least 20 consecutive days. This study was conducted entirely by mail. In particular, Afssa recorded, verified and then coded the questionnaires and menu sequences.

50% of establishments stated that they had applied the circular of 25 June 2001

The initial interim results indicate that 40% of establishments stated that they have not transmitted the circular of 25 June, 2001 for application, and 10% of establishments stated that they did not know about it. The major factors hindering application were lack of financial resources, staff training and human resources. Whilst health safety appears to be widely applied in school restaurants, nutrition is still largely ignored at all levels: requirements in specifications, menu control, staff training, pupil information, etc. One quarter of establishments never or almost never used the food service frequency recommendations. Four years after being published, approximately one out of two establishments appears to have taken measures to apply the circular of 25 June 2001. These results may or may not be confirmed from the continued analyses and in particular from the examination of menus served by school restaurants. The final report from this study should be completed during the first six months of 2007.

Deliberations were started to update recommended dietary allowances for fatty acids with regard to the current scientific data. A review ranging from cell and animal studies to clinical trials will be produced in order to provide a reference base to assess applications for claims.

The INCA 2 study, which has been conducted since December 2005 and is recording food consumption in 5,500 people, is being continued throughout 2006. Its results will be available in the second half of 2007 and will be linked to the National Health Nutrition Study (ENNS) conducted by the French National Institute for Public Health Surveillance (InVS).

Afssa has instructed nutritional analyses on approximately 90 foods for the requirements of the INCA 2 study on food consumption. It has also contributed to a study to produce a nutritional composition table for aquatic products.

70,000 nutritional composition data items were collected by Afssa from 50 food processing companies, with the establishment of agreements increasing the safety of use of the data for the first time.

WATER QUALITY

The Agency continued its activities to prevent health risks, both from direct consumption of water and from the role of water as a vector for physico-chemical or microbiological contamination. In particular its assessments concerned treatments for the mains water supplies.

Assessment of the risks associated with temporarily exceeding the quality reference standards for health for 4 new parameters

The 1998 European Directive on drinking water, which increased health protection, provided a derogation for exceeding quality standards. In 2003, Afssa was requested by the Directorate General for Health to assess the health risks from drinking tap water containing pollutants above the quality reference standards, in order to set limit values for derogation. A risk assessment grid was produced for each physico-chemical parameter concerned, enabling the public bodies to take the appropriate health measures. In 2006, the Agency examined 4 pollutants, adding to the 12 studied previously.

Copper may be present in water sources or migrate into water from the networks. The major exposure vector is diet. Afssa considers that the available toxicological data do not enable a long term assessment of the quantitative risk from exceeding the copper quality reference standards in drinking water to be conducted. It is recommended however that the **first flow of tap water should not be consumed**, particularly for drinking or preparing infant foods, as this contains the highest levels of metal elements. In addition, copper levels over the quality limit may lower water organoleptic quality.

Tri and tetrachloroethylene may be present in some water sources following contamination from their industrial use. These 2 substances are probable carcinogens and are highly volatile: the assessment takes account of all routes of exposure (oral, cutaneous and respiratory) using a specific methodology. It is considered acceptable for trichloroethylene to exceed the quality limit up to 20 µg/L and tetrachloroethylene up to 40 µg /L. A conservative approach assuming that the effects of these two substances are additive is proposed if both are present in water.

The public water supply is a minor source for the **polycyclic aromatic hydro carbons (PAC)**. The three predominant molecules present in water are amongst the least toxic.

Orthophosphate treatment of water supplies

Orthophosphate treatment of water supplies for human consumption has been monitored for 2 years; Afssa analysed the results of this monitoring in 2006. Based on this work, Afssa confirmed that orthophosphate treatment reduces lead concentrations, and noted that it also reduces copper and nickel concentrations. Advanced testing techniques showed that the biofilm bound to pipework was significantly increased and Afssa tightened its guidelines of 10 December 2003 on approval for the use of orthophosphate treatments. In addition to the monitoring requested, Afssa also performed bacterial counts in order to detect slow drifts which may be the result of changes in the ecological balance in the circulating biomasses bound in the water supply network. It also noted, however, that the quality reference standard for lead concentration in water will fall from 25 to 10 µg/L in 2013 and that orthophosphate treatments alone will not allow these to be achieved if lead piping still comes into contact with the water supply.

Assessment of risks from antibiotic-resistant bacteria in drinking water

As part of its work on antimicrobial resistance, Afssa was instructed by the Directorate General for Health to examine the risks linked with antibiotic resistant bacteria in drinking water. In view of current scientific knowledge, and given the potability treatments which set up several barriers to contamination by antibiotic-resistant bacteria, the Agency considers that water intended for human consumption in France is not a favourable environment for increased antimicrobial resistance nor for even greater reasons does it represent a route of exposure which may have consequences on human health.

Water cycle

The Agency described mechanisms which may result in the presence of these bacteria (cf. diagram). Through the water cycle it identified environments acting as a barrier or “sink”, leading to

disappearance of the bacteria (water processing plants), or "source" role predisposing to bacterial selection and gene transfer (particularly human and animal flora) and environments with both roles (separating plants).

Exposure scenarios

Two human exposure scenarios have been described in the hypothetical situation when an antibiotic-resistant bacterium is ingested in drinking water: one involving infection and a second involving gene transfer. The likelihood of both of these scenarios occurring is deemed to be nil to negligible for a non-immunodeficient consumer drinking water from current sources without chronic contamination, and negligible to low for an immunodeficient consumer drinking water from a current supply without chronic contamination.

Guidelines to assess treatments to combat Legionnella

Afssa made a self-request for guidance on compiling authorisation applications for Legionella treatments in water supplies intended for human consumption, and specifically about tests to be conducted on the effectiveness of these treatments.

Safety assessment

Following the conclusions of the Water Scientific panel, the Agency recommends that, prior to efficacy assessment, information must be provided to prove that the treatment product or procedure is safe, together with the results of standardised tests as required in the "biocide" directive certifying the efficacy of the active substance(s). It recalls that the use of a procedure to combat Legionella must not mask defective practices nor compensate for possible errors in design or installation. It is essential for this that installation diagnostics be performed together with corrective actions for observed deviations and that analytical monitoring be undertaken whilst the system is in operation.

Efficacy evaluation

The claim and evaluation are based only on curative action, once safety has been assessed. A sufficient number of results must be provided in the dossier and be analysed statistically. The efficacy tests conducted by the claimant must allow the change in *Legionella* concentration to be compared in pairs of identical installations operating simultaneously, one of which is equipped

with the treatment procedure. When experiments take place on an actual inhabited site, all precautions must be taken to protect and inform people. Afssa therefore proposes the necessary basis for the scientific evaluation of this type of application.

Assessment of risks from the presence of cyanobacteria and their toxins in drinking water

Afssa has assessed the health risks from the presence of cyanobacteria and their toxins in the public water supply, in partnership with Afsset which commissioned the "Bathing Places" section of the work. Proliferation of potentially toxin-producing cyanobacteria is regularly found in French mainland water, and it is occasionally accompanied by cyanotoxins. However, no cases of human poisoning have been attributed to cyanotoxins, in France. On the other hand, since 2002 over 30 dogs have been suspected to have been poisoned by cyanotoxin neurotoxins in mainland France.

Current situation and recommendations

After reviewing knowledge about the effects of these toxins in animals and in human beings and the ways of exposure, Afssa considers that the likelihood of exposure via the public water supply to a concentration of microcystine-LR liable to cause short term effects on health appears to be nil to negligible from the data available in France.

Its major recommendations are on:

- the long term prevention of cyanobacterial proliferation based on reducing the ingress of nutrients, particularly phosphorous, into water sources;
- optimising treatment systems in water production plants, particularly through staff training and surveillance of the source and the water produced;
- non-use of algicides upstream from treatment stations to avoid cell rupture and resultant release of toxins;
- the setting up of permanent surveillance for the presence of cyanotoxins in different sources of exposure, in the same way as is performed for surveillance of marine phytotoxins.

The research project on the ingestion toxicity of cyanotoxins, funded by Afsset, has been continued at the Fougères laboratory, which has also started a research programme on the in vivo study of the genotoxicty and carcinogenicity of cylindro-spermopsin, in collaboration with the *Australian Water Quality Centre.*

Study of disinfection sub-products in the drinking water supply

In 2006, the Nancy laboratory analysed 274 samples as part of the study conducted with the InVS to establish concentrations of disinfection sub-products (DSP) in the drinking water supply.
Disinfection sub-products are generated following chemical reactions by chlorine, ozone or chlorine dioxide used to make water drinkable. This study was conducted on 4 sites (Nancy, Le Mans, Sablé and Le Mervent) and will help to improve measurement of population exposure to DSP, an essential pre-requisite for health impact studies. In particular it will be used to determine whether over-chlorination of supply decided on in 2003 as part of Vigipirate may affect the health of the French population. By improving knowledge about DSP it will also help to optimise water treatment and supply systems.

Towards a health impact study

The research programme is examining:
- description of spatial and temporal variations in DSP concentrations;
- examining links between these variations and factors influencing the production of DSP (characterisation of the water source treatment and supply network);
- constructing a predictive model for changes in DSP concentrations;
- characterising health risks;
- assessing population exposure measurement methods;
- recommendations on population exposure measurement methods for the health impact study, and on the sampling strategy used in health control.

Natural mineral water subject to pollution pressures

In 2006, in collaboration with the Department of the Evaluation of Nutritional and Health Risks, the Nancy laboratory conducted a study on the quality of a panel of natural mineral waters, with particuliar attention given to organic micropollutants (plant health products, volatile organic compounds etc.). Samples were taken from 18 bottles and 49 sources. The study revealed the presence of trace amounts of organic micropollutants in 44% of bottles and 24% of sources, indicating environmental pollution pressure which does not spare the deep natural mineral water sources. The health assessment of these results was accompanied by a proposed definition for the purity of natural mineral water, taking account of the health risk from organic substances and the quality requirement levels for these waters.

PARTNERSHIPS, NETWORKS AND INTERNATIONAL LINKS

Afssa is committed to strengthening partnerships with research institutions and health safety organisations, particularly in the framework of European networks. It is also involved in developing and leading epidemiosurveillance networks.

NATIONWIDE

Afssa, partner of the French Pesticide Residue Observatory (ORP)

The ORP gathers and distributes information about pesticides in the environment. It is one of the key elements of the interministerial plan to reduce pesticide risks (PIRRP, 2006-2009). The French Agency for Environmental and Occupational Health Safety (Afsset) currently oversees the technical coordination. In this context, Afssa is seeking to improve knowledge of the assessment of food exposure to pesticides.
In 2006, its activities involved:
- analysing agricultural practices (market crops, large-scale arable crops, tree cultivation and viticulture) so as to improve the theoretical food exposure indicator;

EXCHANGES, INFORMATION AND COMMUNICATION

- launching the first French total food study (EAT) on pesticides to improve knowledge of "actual" population exposure levels to pesticides;
- acquiring and establishing a database on pesticide residues in foods using the monitoring and inspection plans of administrations with a view to better characterizing the acute risk for populations;
- setting up a research project on "Determinants of general population exposure to pesticides" in partnership with the InVS, Inéris and Inserm;
- standardizing risk assessment methods with the European Food Safety Authority.

For more information: www.observatoire-pesticides.fr

Call for projects for joint research with Inra

For the second time, a call for projects for transverse research between one or more Afssa teams and one or more Inra teams was launched. Six projects were selected: five in animal health, involving six units from three Afssa laboratories (scrapie in goats, mycobacteria, trichinosis, swine mucosal immunity, bluetongue) and one in food safety involving the Laboratory for studies and research on food quality and food-processing (verocytotoxic *E. coli*).

Enrichment of the epidemiosurveillance network on horse disease

A new team, including a veterinary practitioner supplied by the Conseil général du Calvados, is now responsible for managing and running the Epidemiosurveillance network on horse disease (RESPE) in Dozulé laboratory.
The RESPE already had 3 sub-networks on viral respiratory diseases, infections of the nervous system of toxic or parasitic infectious origin, and on atypical myopathy. It has been enriched with a new network specialising in strangles (infection specific to horses caused by *Streptococcus equi*) which aims to assess the incidence and prevalence of this disease in its acute form, and to study the characteristics of outbreaks (epidemiology, clinical aspects, complications, etc.). It recorded 50 declarations in 2006 for 11 positive outbreaks. In 2006, it recorded 50 declarations which led to 11 positive outbreaks.
The RESPE gathers 110 sentinel veterinary practitioners who are members of the French horse veterinary association, Laboratory for studies and research on animal disease and zoonoses (Maisons-Alfort), départemental (sub-regional) Frank Duncombe laboratory, national veterinary colleges, the Pasteur Cerba laboratory, and the French national society for veterinary technical groups.

Contamination with hepatitis E virus through contact with pets

In partnership with the Hyères Hospital, the Laboratory for studies and research on animal disease and zoonoses has shown that a patient suffering from hepatitis E in France had been

contaminated through contact with his pet, a dwarf pig. This is the first time that direct contamination through simple contact with an infected animal has been demonstrated in humans.
In humans, the hepatitis E virus (HEV) is responsible for epidemics of acute cases in regions where it is endemic and of sporadic cases in Europe, the United States and Japan. Although water is a well characterised source of epidemics, the source of sporadic cases is often local and still unknown. The HEV is the only hepatitis virus for which there is an animal reservoir and its potential to spread to humans through the ingestion of raw contaminated foodstuffs (venison, i.e. meat from boar or deer) has been demonstrated.

In partnership with Inra, the Laboratory for studies and research on animal disease and zoonoses is conducting a study on *M. avium subsp. paratuberculosis* to obtain an overall analysis of the biodiversity of the strains responsible for paratuberculosis, applied to phylogeny, epidemiology and diagnosis.

Afssa is taking part in the research group Adaptation of animal feed processing industries to sustainable development challenges (FA2D) together with Inra, CEMAGREFF, AGROCAMPUS and the national veterinary college of Nantes.

The Dozulé laboratory is drawing up a 2006 review of the epidemiosurveillance networks specialising in horse disease that it coordinates (flu and respiratory form of rhinopneumonia, neurological diseases, atypical myopathy).

INTERNATIONALLY

Selected as a strategic guideline in the 2007-2011 targets and means contract drawn up in 2006 and signed on 4 April 2007, the strong position of Afssa at European and international level is a reality: whether this be as researchers, representatives of a reference centre, trainers or more generally as experts, Afssa staff members are developing their activities far beyond France's borders. Working closely with the Scientific Department, the Mission for International Affairs supports and coordinates the initiatives of the various bodies in this field.

New impetus within EFSA

In 2006, Afssa was particularly active at making proposals, particularly as a member of the Advisory Forum of the European Food Safety Authority (EFSA), with a view to initiating and supporting the development of reinforced cooperation within the network composed of national health risk assessment agencies and EFSA (cf. text boxes p. 92-93).

Recognition of the reference role of laboratories

Community and international recognition of the reference role of Afssa's laboratories has been strengthened further.
On 23 May 2006, the European Commission confirmed the mandate of 3 Afssa laboratories as Community reference laboratories (CRLs) : for milk and dairy products, certain veterinary medicinal product residues and contaminants in foodstuffs of animal origin, and verification of the efficacy of anti-rabies vaccines respectively.
Following a call for applications, the Commission also appointed 3 new CRLs within Afssa: for *Listeria monocytogenes*; coagulase-positive staphylococcus including *Staphylococcus aureus*; and brucellosis.
At the international level, 3 applications were submitted by Afssa in 2006: 2 to be reference laboratories for the World Organisation for Animal Health (OIE) for avian chlamydiosis and avian metapneumoviruses; and the other to be a collaborating centre of the World Health Organization (WHO) for assessing consumer exposure to chemical contaminants in food.

Twinning projects

Afssa staff members have also been called on to act as experts in European or international twinning projects providing support for the reinforcement or implementation of national health systems in animal and human nutrition, animal health and welfare and veterinary medicinal products. They have, for example, helped to reinforce the capacities of analytical laboratories in Morocco and Tunisia, and assisted Serbian authorities in the field of veterinary medicinal products in view of standardization with Community regulations.

Towards the FP7

The Sixth Framework Programme for Research and Technological Development (FP6), which constitutes the main EU funding tool for research and development, came to an end in 2006. It was replaced by the Seventh Framework Programme, which will last until 2013.
The negotiations in previous years, firstly in France to define national positions, and then with our European partners, achieved a significant increase in the funding allocated to this programme and an expansion of the thematic research areas, offering wider opportunities for participation and funding for Afssa.

Med-Vet-Net: at the halfway point

Coordinated by Afssa, the main objective of the network of excellence, Med-Vet-Net, is to integrate research on food safety, food zoonoses in particular, at the Community level. While 9 out of the 11 programmes started in the first year were completed in 2006, 11 new projects have been launched in line with the recommendations in the scientific strategy document.
The sustained activity of the 2 governing committees and the Scientific Department is proof of the involvement of the managers in the life of the network.

Communication and training

Crises communication introductory courses have been set up by the Communication unit, and the revision of the monthly newsletter which publishes MedVetNet's activities is under study.
This year, 14 young scientists were able to visit and work in one of the network's laboratories. Workshops were organised on controlling salmonella and monitoring foodborne pathogenic organisms and

diseases in new Member States. Traineeships were also organised on risk assessment and on the technique of pulsed field electrophoresis.

Scientific partnerships

Two working groups were set up to monitor emerging and orphan zoonoses and Lyssaviruses. A partnership has been forged with the American network FSRRN with a view to organising meetings and short courses. The fruit of another transatlantic initiative, a conference was held in Berlin on prioritising food zoonoses and pathogenic agents. The annual conference of Med-Vet-Net took place in Malta.

Discussions on the future of the network

With Med-Vet-Net at midway point in its existence, its 16 partners have begun discussing what it will become after 1 September 2009. A European economic interest group project has been presented, and an association project is being studied.

A joint programme on animal health research has been drawn up within Club V, gathering Swedish (SVA), Danish (DFVF), Dutch (CIDC) and British (VLA) laboratories and Afssa.
Major scale economies should be made through this synergy.

Assessment of European medicines agencies

Afssa is closely involved in the assessment and improvement procedure of performances of national agencies in charge of medicines for human and veterinary use, which was established at Community level in 2003 and allowed to identify the best practices and to facilitate experience sharing between agencies.

Known as BEMA (*Benchmarking exercise of medicines agencies*), this procedure began in 2005 with a self-assessment of each agency. In 2006, each agency was assessed by a team of 3 auditors of different nationalities, in accordance with reference standard NF EN ISO 9004 (2000). The audit mainly focused on the general organisation of the structure and marketing authorisation, inspection and drug monitoring activities [6].
This procedure, which is co-chaired by France and Ireland, will be carried out from 2007 to 2009.

(6) The report of this audit is available on the Heads of Medicines Agencies website (www.hma.eu).

Close involvement in EPIZONE

Launched on 1 June 2006 as part of the Sixth Framework Programme for Research and Technological Development (FP6), EPIZONE is a network of excellence for diagnosing and controlling epizootic diseases. Comprising 18 institutes, it is funded by the European Union.
With 9 scientists taking part in different projects, Afssa is playing a key role in this initiative, for which it has been granted an annual amount of 243,000 euros.
EPIZONE is the counterpart, for epizootics, of the Med-Vet-Net which focuses its research on zoonoses. Coordinated by the CIDC (Netherlands), it is composed of 18 institutes (15 European, 2 Chinese and 1 Turkish) and the Food and Agriculture Organization of the United Nations (FAO). In addition to its creation in the form of a virtual institute, the work of this network focuses on: strategic integration, distribution of excellence, diagnosis, surveillance and epidemiology, intervention strategies and risk assessment. This network offers Afssa an excellent opportunity for preparing the FP7 programmes.

An agreement has been signed with the CODA-CERVA

A Franco-Belgian partnership on epizootic diseases: an agreement has been signed between CERVA and Afssa.
Signed on 28 June 2006 for a three-year period, this agreement gives concrete expression to the close ties – particularly in virology and bacteriology – which already existed between the Agrochemical and Veterinary Research Centre (CERVA) and Afssa laboratories in Ploufragan, Sophia-Antipolis and Maisons-Alfort.
In the last quarter of 2006, it established a replacement for CERVA to actively monitor foot and mouth disease during the renovation of the "P3-foot and mouth" zone of the Maisons-Alfort laboratory: CERVA conducted confirmation tests for diagnosis of the disease at the request of the Afssa laboratory. In exchange, the Belgian health authorities asked this laboratory, (the National reference laboratory in association with the CIRAD), to act as the reference laboratory for bluetongue in Belgium.
International requirements concerning reference laboratories require the creation of network and reciprocal support between Member States.
The European Commission strongly favours this type of solidarity between Member states' laboratories

Launch of a European surveillance programme of influenza in pigs

The Ploufragan – Brest laboratory is one of 11 partners in the project "EpidemioSurveillance Network of Influenza in Pigs" (ESNIP2) which replaces a programme that was completed in 2003. Working closely with organisations of pig breeders in Brittany, corresponding veterinarians and the laboratory technical staff point out spontaneous cases of *influenza*. A team of epidemiologists from Ploufragan takes samples (nasal swabs from sick animals, serological kinetics) and virologists perform detailed characterization of the isolates.
At the same time, a network of "sentinel" holdings throughout Brittany are monitored twice a year. The emergence of spontaneous cases of influenza in these holdings is also pointed out.
The first results (2006) show that *influenza* viruses present in pig holdings all belong to sub-types A/H1N1 and A/H1N2. The A/H3N2 viruses, very prevalent in the late 1980s, have not been active in Breton pig holdings for several years.

As part of the EuroFIR network (European Food Information Resource), whose purpose is to create a database on food composition in Europe, Afssa supervised the description of more than 20,000 national foods and put forward a system prototype for assessing data quality and a process model for compiling data.

Afssa participated in the drafting of 6 opinions produced by the European Food Safety Agency (EFSA) on animal health and welfare: rabies, echinococcosis, pigs and housing conditions, avian *influenza*, brucellosis, bluetongue.

Main international partnerships

International bodies

Worldwide

- World Organisation for Animal Health (OIE)
- Food and Agriculture Organization of the United Nations (FAO)
- World Health Organization (WHO)
- West African Economic and Monetary Union (UEMOA)
- Association of South-East Asian Nations (ASEAN)
- Codex Alimentarius
- Joint FAO-WHO committees
- ISO

At European level

- European Commission
- European Food Safety Authority (EFSA)
- European Medicines Evaluation Agency (EMEA)
- European Committee for Standardization (CEN)
- European Pharmacopoeia

Expert evaluation, development and research networks, projects and programmes

- Seventh framework programme of the European Community for research, technological development and demonstration activities (FP7)
- European Cooperation in Scientific and Technical Research (COST)
- International Cooperation on Harmonization of Technical Requirements for Registration of Veterinary Medicinal Products (VICH)
- Community or French cooperation programmes (TAIEX, MEDA, PHARE)
- Global Environment Monitoring System - Food Contamination Monitoring and Assessment Programme (GEMS - FOOD)
- Gripavi
- Aviflu (Avian *Influenza*)
- EuroFIR (European Food Information Resource)
- EFCOVAL (European Food Consumption Validation)
- Poultryflorgut
- BRAVE (Bee Research And Virus in Europe)
- EHEDG (European Hygienic Engineering Design Group)
- EVISA (European Virtual Institute for Speciation Analysis)
- EPIZONE
- Med-Vet-Net
- ESNIP 2 (European Surveillance Network for Influenza in Pigs)
- ARBAO (Antibiotic Resistance in Bacteria of Animal Origin)
- DIPNET
- Neuroprion
- FMD ImproCon (Improvement of Foot and Mouth Disease control)

Foreign research bodies

- Academy of Medical Sciences (Croatia)
- Central Institute for Animal Disease Control (CIDC, Netherlands)
- National Veterinary Institute (Denmark)
- Basque Foundation for Health Research and Innovation (Spain)
- German Institute of Human Nutrition (DIFE)
- Gent University (Belgium)
- International Institute for Life Sciences (ILSI-Europe)
- Hassan II Agro-Veterinary Institute (Morocco)
- Veterinary Research Institute of Tunisia (IRVT)
- Institute of Food Research (IFR, United Kingdom)
- National Institute of Food and Nutrition Research (INRAN, Italy)
- National Institute for Public Health (Czech Republic)
- Organisation for Applied Scientific Research (TNO, Netherlands)
- Wageningen University (Netherlands)
- National Institute for Public Health and the Environment (RIVM, Netherlands)
- Laval University, Sainte Hyacinthe Veterinary Faculty of the University of Montreal (Canada)
- University of Oslo (Norway)
- Veterinary Laboratories Agency (VLA, United Kingdom)

Launch of a European cooperation strategy

Two key events have marked the European network of national health risk assessment agencies led by the European Food Safety Authority (AESA). The EFSA Advisory Forum, gathering managers from these agencies, has adopted a declaration of intention which aims to reinforce scientific information exchange between Member States.
The EFSA Board has adopted a general cooperation and networking strategy to improve the accuracy of scientific assessment of health and nutritional risks in the European Union, with a view to making scientific opinions more reliable and accordingly increasing the trust that health authorities and citizens place in them.
Supported by Afssa, which made a considerable number of proposals in the field, the principle of gradual integration, from exchange of scientific data to standardisation of assessment methods and development of joint projects, was chosen as the operational procedure.

Contribution to Community expert evaluations conducted on anticoccidials

Through its research and reference activities, the Fougères laboratory has provided useful information for the reassessment of anticoccidial food additive risks undertaken by EFSA, which put forward maximum residue limits in foodstuffs from the poultry industry. Used to prevent coccidiosis, a disease which affects poultry holdings, these molecules are authorised in animals for fattening but not in laying hens in production.

A new screening method

The laboratory developed a multiresidue method coupled with mass spectrometry applicable to muscle, eggs and liver. Intended to improve control of anticoccidial residues in foodstuffs, it is likely to encourage compliance with good practices for using these additives. It has been used as part of experimental plans set up with the Directorate General for Food. The one conducted in 2006 on eggs and liver revealed a higher frequency of anticoccidial residues. These results need to be compared with the maximum residue levels currently being discussed. Described in several Member States, this phenomenon is explained by cross-contamination during food manufacture or non-compliance with waiting times. A group of EFSA experts is currently assessing this risk.

Development of a pharmacokinetic model

A PhD thesis involving teams from the Fougères and Ploufragan laboratories has also been initiated to compare the pharmacokinetics of two molecules (Monensin and Salinomycine) in chickens and turkeys and to develop a pharmacokinetic model based on physiology. Experimental work has produced new data which EFSA used to draw conclusions on the pharmacokinetic behaviour of Monensin residues in different tissues.

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Aspartame: pro-active partnership within EFSA

Following an Italian study (Soffritti *et al.*) which suggested a link between rat exposure to aspartame and the emergence of cancer, Afssa made an active contribution to the health risk assessment entrusted to the European Food Safety Agency (EFSA) by the European Commission. In 2006, Member States were able to access raw data from the Italian team to bring them to EFSA's attention. After a group of experts analysed this data, Afssa concluded that the experimental study conducted on aspartame in rats had methodological weaknesses which meant that its results could not be used in the framework of a risk assessment for consumers. Given the results from the risk assessments conducted to date, which have led to an acceptable daily intake of 40 mg/kg of body weight, estimations for aspartame consumption in France in the highest consumers (16 mg/kg) and methodological weaknesses of the Italian study, Afssa considered that there was no new element likely to cast doubt on the safety of aspartame use. For example, a person weighing 60 kg would need to consume more than 80 units of aspartame per day to exceed the acceptable intake.

International Symposium on *Salmonella* and Salmonellosis

As the National Reference Laboratory for Salmonella, the Ploufragan - Brest laboratory has contributed to the organisation and scientific management of the 4th International Symposium on *Salmonella* and Salmonellosis (I3S) which took place in Saint-Malo from 10 to 12 May 2006 and which also constituted a key moment for its research activities in food hygiene. Over the three days, conferences of high scientific value were given in all areas concerning *Salmonella*: detection and characterisation, antibiotic resistance, immune response and epidemiology from primary production to humans, quantitative risk analysis. The laboratory gave 3 papers and presented 14 posters, attesting to the strength of its activities on *Salmonella* for 4 years.

As part of the European programme COST 845, the Laboratory for studies and research on animal disease and zoonoses completed the study on the identification of biovars and strains of *Brucella* suis isolated in France and abroad from different animal species and humans.

Afssa presented projects for vaccine monographs or guidelines on veterinary vaccines during the meetings organised by the European Medicines Agency (EMEA) and the European Directorate for Quality of Medicines (EDQM).

Afssa takes part in the European Food Consumption Validation project which seeks to develop a joint food data collection tool in different European countries. It is involved in 5 working groups.

As part of the STREP project on paratuberculosis (FP6), Afssa (Maisons-Alfort and Niort laboratories, together with Inra in Tours) is particularly involved in assessing new cell antigens for the early diagnosis of caprine paratuberculosis (natural and experimental infection conditions) and the more general improvement of *M. avium subsp. paratuberculosis* detection in faeces. Moreover, the collection of sera of varied infectious states is under way to constitute reference sera from goats, sheep and cattle.

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Rabies serology: an international meeting on interlaboratory tests

As the Community Reference Laboratory (CRL) for Rabies Serology, the Nancy laboratory organised a meeting on interlaboratory tests on 11 and 12 May, following the enlargment of the European Union and the application of new Community regulations for the introduction of pets from third countries on European territory. Interlaboratory tests enable the over time assessment of the performance of accredited laboratories for rabies serology, and to guarantee their results. Their organisation is the main task of the CRL. The meeting, in Nancy, gathered 49 scientists representing 35 accredited laboratories from 26 different countries. The European Commission was also represented.

Exchanges on techniques and the regulations

Discussions focused mainly on the technical aspects of seroneutralisation tests and on the criteria for assessing results used for interlaboratory tests. It is important to note that, for 5 years, no failure was observed for the specificity criterion, irrespective of the method used and laboratory taking part. Participants particularly expressed a desire for techniques to be standardised between accredited laboratories and for work under quality assurance. After the meeting, technical recommendations were drawn up and approved by all participants. Modifications to the Rabies chapter were submitted to the OIE to update the 6th edition of the OIE manual and the interlaboratory test procedure was subsequently reviewed.

Participation in the 11th ISVEE

At the 11th International Symposium on Veterinary Epidemiology and Economics which took place in Australia, the Laboratory for studies and research on animal disease and zoonoses presented the qualitative risk analysis method used by the working group "health impact of global warming". The qualitative risk analysis method is currently being developed and is the subject of various publications, one of which is due to appear in 2007. The consequences of global warming form another area of pluridisciplinary research. Contacts and partnerships are being created in connection with the National Meteorology.

Afssa forges links in China

France was given pride of place in October 2006 in the rich region of Huangpu, a priority zone for the development of the Chinese food industry. Present in the delegation led by Jacques Santer, the former president of the European Commission, Afssa travelled alongside 25 French companies who had come to enhance the know-how of the French food processing industry.

A first

With a Franco-Chinese partnership blossoming in the food safety field, Afssa deemed it a good time to attend the second international economic and commercial conference of the food industry, which took place in October. It is the first time that Afssa has taken part in an international trade show in Asia. Its participation in conferences gave Chinese participants an insight into its activities and a clearer understanding of national and European risk assessment systems. Benefiting from a translation into Chinese, the Afssa stand was highly acclaimed. It provided a context for rich exchanges with the visitors, particularly on their practices and on the theme of product traceability.

Prevalence surveys on brucellosis in Lebanon

In immuno-serology, the Laboratory for studies and research on animal disease and zoonoses was associated with a programme intended to assess the prevalence of the main infectious diseases among goats in Lebanon (885 animals tested for brucellosis), together with Afssa's Niort laboratory, and with a prevalence survey of *Brucella* suis biovar 1 brucellosis in pigs on the Territory of Wallis and Futuna Islands (920 animals tested). Benchmarking of serological screening tools for *B. suis* brucellosis in pigs, funded by the European Union, was carried out.

Assessment of Turkish regulations on bottled water

As part of the France-Turkey twinning arrangement on water and health, under the aegis of the European Commission, Afssa was entrusted with assessing Turkish regulations on natural mineral water and bottled water. In 2006, it carried out 2 assignments in Turkey and welcomed a Turkish delegation for a week's training. Encounters with Afssa scientists and a visit to a bottling factory were organised in this regard. The assignment will continue in 2007.

At the first international conference of reference laboratories and OIE collaborating centres, Afssa established contacts with a view to forming twinning arrangements in West Africa and Latin America. **For more information: www.anmv.afssa.fr**

From 5 to 7 October, Afssa hosted a conference for the World Health Organization on measures to reduce salt intake. Research on doses and monitoring salt content in foodstuffs consumed in France, conducted by Afssa and the French National Institute for Consumers, was presented on this occasion.

Afssa is participating in the WHO international Food Safety programme. Since 2006, in the framework of the GEMS/Food programme, it has been monitoring the transfer of French data on food contamination and providing methodological assistance in the definition of standard diets worldwide, particularly with a view to assessing pesticide risks.

The Laboratory for studies and research on rabies and wild animal disease has provided scientific and technical assistance in various areas and expert evaluations on rabies worldwide, particularly in Poland, Slovenia, Ukraine and Morocco.

INFORMATION AND COMMUNICATION

Our communication policy should give Afssa a role in maintaining the population's trust in the health and safety system in France. This policy is implemented on the basis of independent communication, a necessary condition for this trust to develop. The Information and Communications Department endeavours to supply useful and relevant information to all target groups.
It also seeks to:

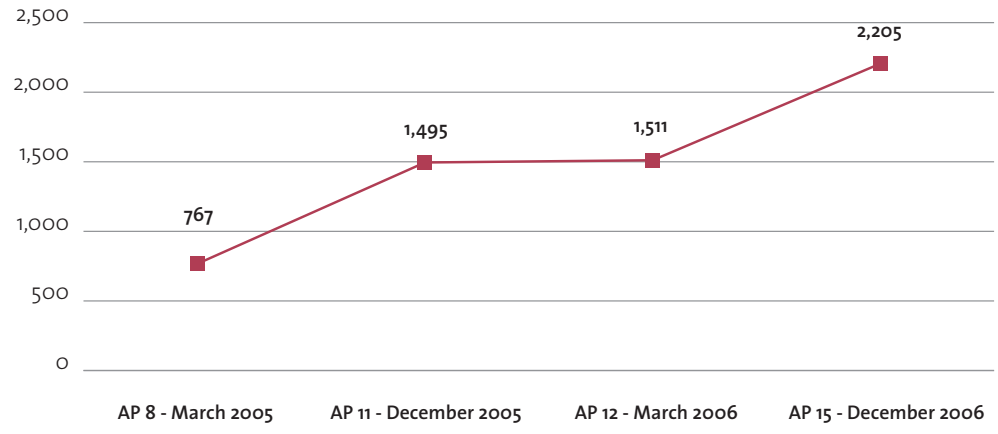
- provide information in between crises situations
- reinforce information based on the current situation;
- strenghthen dialogue with all health safety players;
- enhance the value of all of Afssa's activities and cross-disciplines.

2006 was full of key events for Afssa's new Information and Communications Department. With 9 Full-Time Equivalents as of 31 December 2006, this department has expanded throughout the year to meet the challenges raised by the extension of Afssa's scope to crop treatment product assessment, the creation of a new website (launched in Spring 2007), the establishment of internal communication tools and thematic sheets (15 created in 2006).

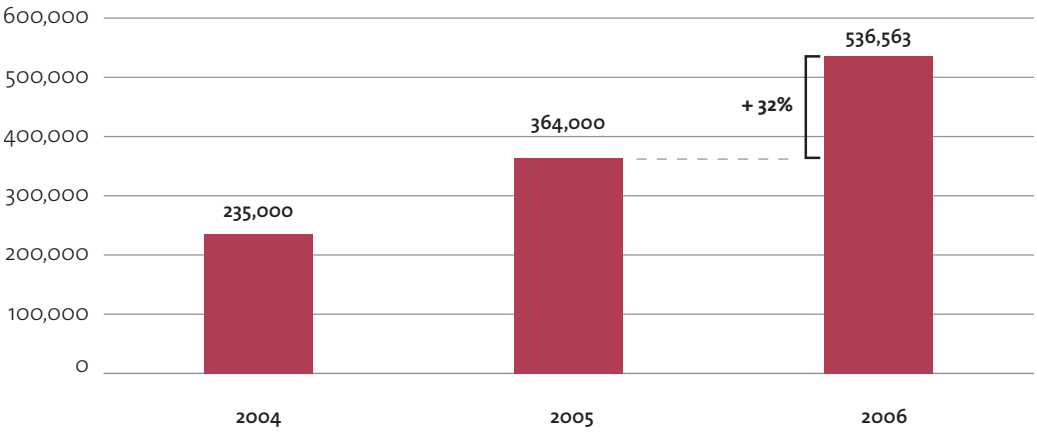
Creation of an internal newsletter

An internal newsletter, "afssa-infos", has been designed to reflect the Agency's life. This is the first tool intended for all staff members. The staff, work under way, changing scopes, cross-disciplines: everything is reviewed.
Issued fortnightly, this letter is the first concrete element of the link that the Directorate General wanted to create between all of Afssa's units, especially since they are scattered throughout the national territory., which is an asset in all circumstances... except as far as internal communication is concerned!
With the same aim in mind, a weekly newsletter has been launched to tell staff about updates on the intranet and internet sites.
Many people make an active contribution to "afssa-infos".

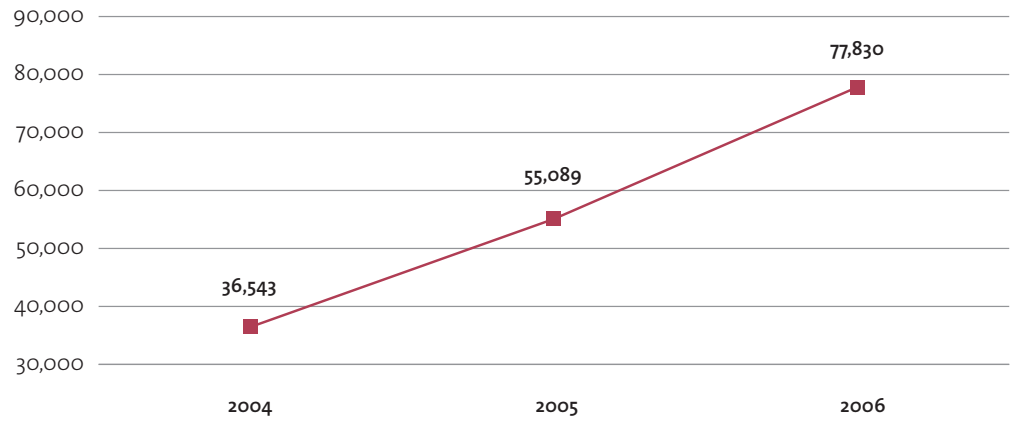
RISE IN NO. OF SUBSCRIPTIONS TO EXTERNAL NEWSLETTER *À-PROPOS*



INCREASE IN NO. OF VISITORS TO WEBSITE



REGULAR VISITORS ON THE RISE



Regular users of the website www.afssa.fr increased by more than 35% in 2006.

A figure that the Information and Communications Department is monitoring very attentively, especially since it was chosen as one of the 10 key indicators of the Business Plan 2007-2011.

A special effort in distribution

The example of the external newsletter "à-Propos", whose subscribers have almost tripled since March 2005.

Behind the scenes of a new website

Redesigning www.afssa.fr as an accessible, easy-to-use link to meet Afssa's opening commitment was a priority in the work agenda of the Information and Communications Department in 2006.
Afssa's activity creates bridges between the scientific world and the public.
It is important that the website fosters these natural links through a language that is suited to different types of public and an easier access to opinions.
The website map has been designed to meet the expectations of users, whatever their level of scientific knowledge.
Our challenges: thematic approach per target group, possibility of accessing a document through multiple channels, a powerful search engine.
In a nutshell, we sought to establish a real reading contract with our different types of public, a contract which will prompt us to developing this new tool on a regular basis.
Our objectives: better accessibility to information about our activities and our vast scope, better ergonomics so that users enjoy browsing our site, assistance with understanding useful recommendations for the entire population, a working tool for Afssa teams.
From September 2006, news updates have been launched on the website that have been very popular among users.

Participation in 7 trade shows

Afssa boosted its institutional presence at trade shows in 2006, whether they be local, national or international, for professionals or the general public, thematic or cross-disciplinary.

Over 7,000 subsequent press articles

In 2006, the Information and Communications Department published 20 press releases. Careful work in terms of press information generated over 7,000 articles in response. The four main subjects broached: avian influenza (56% of articles), marine biotoxins, bluetongue and the creation of the Plant and Environment Department.
An electronic press review was set up in September 2006.

More information on veterinary medicinal products

With a view to improving transparency, Afssa has developed its communication towards veterinary medicinal product professionals, in particular by increasing online information. Above all, the Agency has endeavoured to produce notes on regulatory changes.
Since 2006, the following have particularly been consulted on the website www.anmv.afssa.fr:

- the list of authorised veterinary medicinal products together with their Product Characteristic Summaries when these are available;
- a document on generic veterinary medicinal products in "question-answer" form, for the application of a new European directive;
- a note on parallel importation following the publication of a decree introducing this new procedure.

7 TRADE SHOWS IN 2006

February	International Agriculture Trade Show - Paris
March	Medec, General Medicine Trade Show - Paris
September	SPACE, Animal Production Trade Show - Rennes
October	SIAL, International Food Trade Show- Paris Science Festival – Fontenay-sous-bois International Trade Show of the Economic and Commercial Conference of the Food Industry in Canton (China)
November	1st CAPR'INOV trade show - Niort

Listeria monocytogenes day

On 29 November 2006, Afssa organised a day of exchange and discussion upon the publication of research results on *Listeria monocytogenes* exposure through chilled products*, and the appointment of the Laboratory for studies and research on food quality and food-processing as the Community and National Reference Laboratory for *L. monocytogenes*.
Around 160 people attended.

Strategies to reduce risks

After the context and challenges over controlling the *Listeria* risk were put into perspective, results of the research project were presented for rillettes and smoked salmon, and then discussed in terms of their implication for scientific and technical support and expert evaluation and for professionals. Conducted in close partnership with the Lyon veterinary college, Research Institute for Environmental and Agricultural Engineering (Cemagref), French National Institute for Agricultural Research (Inra), Technical Centre for Salted Meats, Pork products and Tinned Meat (CTSCCV) and several manufacturers over a four-year period, this study focused particularly on describing bacterial growth in products between the time they leave the factory and their consumption. It sought to improve the tools and methods for assessing risks, as part of an interdisciplinary procedure. Based on the construction of a model, strategies were identified to reduce the risks of listeriosis: the effort undertaken by manufacturers to reduce the number of products contaminated by *L. monocytogenes* is to be continued; a fall in the time for which and/or temperature at which chilled products are stored in homes is a second way for improvement.
The day concluded by a round table devoted to the challenges of the Hygiene Package and gathered national and European public authorities and professionals.

* The results of the study can be consulted on www.afssa.fr, sections "Publications et marchés publics" then "Rapports édités".

Two scientific days organised in 2006

Intended to strengthen discussions between Afssa's scientific teams and foster exchanges, two days were organised on the "prevention of health and nutrition risks" and "molecular biology and vaccine prevention". They involved researchers from the Department for the Evaluation of Nutritional and Health Risks and Afssa laboratories as well as external guests involved in these issues.

On 20 June 2006, the ANMV organised an information meeting for professionals working in the wholesale distribution of veterinary medicinal products after the publication of regulatory texts on their activities.
For more information: www.anmv.afssa.fr

Over 2,000 visitors to the 1st professional trade show on goats CAPR'INOV (Niort, 29-30 November 2006)
Afssa's presence among some sixty exhibitors enabled various contacts with breeders, technicians, professors, students, researchers and so on to be formed. The 3 lectures given by the Niort laboratory on antiparasitic resistance, scrapie in goats and tools for controlling paratuberculosis in goats were very highly rated.

The "Pig" industry council met on 10 March 2006 in Ploufragan, chaired by Afssa. It gathered some one hundred representatives of professional federations, local authorities, research establishments, technical institutes and consumer associations.

LIST OF ACRONYMS AND ABBREVIATIONS

A

AAAT Additifs, arômes et auxiliaires technologiques (Additives, flavourings and processing aids)
ADN Acide désoxyribonucléique (see DNA)
ACERSA Association de certification de la santé animale (Certification Association for Animal Health)
ACTIA Association de coordination technique pour l'industrie agroalimentaire (Technical Coordination Association for the Food Industry)
ADI Admissible Daily Intake
ADILVA Association française des directeurs et cadres de laboratoires vétérinaires publics d'analyses (French Association of Directors and Executives of Public Analytical Veterinary Laboratories)
Adria Association pour le développement et la recherche en industrie agroalimentaire (Association for Research and Development in the Food Industry)
AEM Agence européenne des médicaments (see EMEA)
AESA Autorité européenne de sécurité des aliments (see EFSA)
AFNOR Association française de normalisation (French Standards Agency)
Afssaps Agence française de sécurité sanitaire des produits de santé (French Health Products Safety Agency)
Afsset Agence française de sécurité sanitaire de l'environnement et du travail (French Agency for Occupational and Environmental Health Safety)
AIDS Acquired Immunodeficiency Syndrome
aMPV Avian metapneumovirus
ANR Agence nationale de la recherche (National Research Agency)
Anmv Agence nationale du médicament vétérinaire (French Agency for Veterinary Medicinal Products)
Anvar Agence française de l'innovation (French Agency for Innovation)
AQS Aliment qualité sécurité (French research programme on food safety and quality)
ARBAO Antibiotic resistance in bacteria of animal origin
ASEAN Association of Southeast Asian Nations)
ATU Autorisation temporaire d'utilisation (temporary authorisation for use)
Aviflu Avian *Influenza*

B

BSE Bovine spongiform encephalopathy

C

CAEV Caprine arthritis encephalitis virus
CBP Contagious Bovine Peripneumonia
CCRVDF Codex Committee on Residues of Veterinary Drugs in Foods
CEA Commissariat à l'énergie atomique (French government-funded technological research organisation in nuclear energy)
Cemagref Centre d'études du machinisme agricole, du génie rural, des eaux et des forêts (Research Centre for agricultural mechanisation, rural engineering, water and forests)
CES Comité d'experts spécialisés (Scientific panel)
CEN Comité européen de normalisation (European Committee for Standardization)
CFI Collective Foodborne Illness
CIPA Comité interprofessionnel des produits de l'aquaculture (Interprofessional Committee for Aquaculture Products)
CIQUAL Centre d'information sur la qualité des aliments (Centre of Information on Food Quality)
CIRAD Centre de coopération internationale en recherche agronomique pour le développement (Centre for International Cooperation in Agricultural Research for Development)
CIV Centre d'information des viandes (Meat Information Centre)
CLAs Conjugated Linoleic Acids
CLCV Consommation, Logement et Cadre de Vie (French association for consumers, environmental protection and education)
CMD(v) Coordination Group for Mutual Recognition and Decentralised Procedures (veterinary)
CNIEL Centre national interprofessionnel de l'économie laitière (National Interprofessional Centre for the Dairy Economy)
CNPV Commission Nationale de Pharmacovigilance (National Drug Monitoring Commission)
CNRS Centre national de la recherche scientifique (National Centre for Scientific Research)
COFRAC Comité français d'accréditation (French Accreditation Committee)
COM Contrat d'Objectifs et de Moyens (Business Plan)
COST Conseil d'orientation scientifique et technologique (Scientific and Technological Steering Council)
CRL Community Reference Laboratory
CSF Classical Swine Fever
CVMP Committee for Veterinary Medicinal Products

D

DBP Disinfection Byproduct
DC Dentritic cells
DCPOR
DGAl Directorate General for Food (French Ministry of Agriculture)
DGCCRF Directorate General for Fair Trading, Consumer Affairs and Fraud Control (French Ministry for Consumer Affairs)
DGS Directorate General for Health (French Ministry of Health)
DILGA Délégation interministérielle de lutte contre la grippe aviaire (Interministerial Delegation for Avian *Influenza* Prevention)
DNA Deoxyribonucleic acid
DRL Départemental Reference Laboratory

E

EAGGF European Agricultural Guidance and Guarantee Fund
EFSA European Food Safety Authority
EHEC Enterohaemorrhagic escherichia coli
EHEDG European Hygienic Engineering & Design Group
EIA Equine Infectious Anaemia
EMEA European Agency for the Evaluation of Medicinal Products
EMCV Encephalomyocarditis virus
ENGREF École nationale du génie rural, des eaux et des forêts (National School for Rural Engineering, Water and Forests)
ENNS Étude nationale nutrition santé de l'InVS (National School for Nutrition and Health of the InVS)
ENVA École nationale vétérinaire d'Alfort (Alfort National Veterinary School)
ENVT École nationale vétérinaire de Toulouse (Toulouse National Veterinary School)
ERDF European Regional Development Fund
ESNIP European Surveillance Network for Influenza in Pigs
EVISA European Virtual Institute for Speciation Analysis

F

FAO Food and Agriculture Organization of the United Nations
FDA Food and Drug Administration
FI Food Industry
FIV Feline Immunodeficiency Virus
FMD Foot and mouth disease
FP European Union Framework Programme for research and technological development

G

GCPs Good Clinical Practices
Géves Groupe d'étude et de contrôle des variétés et des semences (Group for Research and Monitoring of Varieties and Seeds)
GLPs Good Laboratory Practices
GMO Genetically Modified Organism
GSI Group of Scientific Interest
GSS Gerstmann-Sträussler Sheinker Syndrome

H

HEV Hepatitis E Virus
Hevra Heads of European Veterinary Regulatory Authorities
HFRS Haemorrhagic Fever with Renal Syndrome
HMA Heads of Medicines Agencies

I

IARC International Agency for Research on Cancer
ICP-MS Inductively coupled plasma mass spectrometry
IEC International Electrotechnical Commission
Ifen Institut français de l'environnement (French Institute for the Environment)
Ifremer Institut français de recherche pour l'exploitation de la mer (French Research Institute for Sea Exploitation)
ILTs Interlaboratory tests
IGAS Inspection générale des affaires sociales (General Inspection of Social Affairs)
IHN Infectious haematopoietic necrosis
IHNV Infectious haematopoietic necrosis virus
Inca Enquête individuelle et nationale sur la consommation alimentaire (National Individual Survey on Food Consumption)
INPES Institut national de prévention et d'éducation pour la santé (National Prevention and Education Institute for Health)
INRA Institut national de la recherche agronomique (National Institute of Agricultural Research)
INSERM Institut national de la santé et de la recherche médicale (French National Institute of Health and Medical Research)
InVS Institut de veille sanitaire (French Institute for Public Health Surveillance)
IPN Infectious pancreatic necrosis
IPNV Infectious pancreatic necrosis virus
ISO International Organization for Standardization
ITPLC Institut technique des produits laitiers caprins (Technical Institute for Dairy Products from Goats)
IUEM Institut universitaire européen de la mer (European University Institute for the Sea)

J

JECFA Joint FAO/WHO expert committee on food additives

L

LC/MS-MS Liquid chromatography tandem mass spectrometry

LERQAP Laboratoire d'études et de recherches sur la qualité des aliments et les procédés agroalimentaires (Laboratory for Studies and Research on Food Quality and Food Processing)

LNCR Laboratoire national de contrôle des reproducteurs (National Control Laboratory for Breeders)

LOLF Loi organique relative aux Lois de Finances (French finance law regulating the preparation of the national budget)

M

MA Marketing Authorisation

MARC Maladies animales réputées contagieuses (Animal diseases deemed contagious)

MEDEC French medical trade fair

Med-Vet-Net European network of excellence working for the prevention and control of zoonoses and foodborne diseases

MRL Maximum Residue Limit

MRU Mixed Research Unit

MUMS Mashhad university of medical sciences – Iran

N

NAC Nouveaux animaux de compagnie (New Pets)

NCR National Centre of Reference

NRL National Reference Laboratory

O

OCA Observatoire des consommations alimentaires (Food Consumption Observatory)

OECD Organisation for Economic Co-operation and Development

OFIMER Office national interprofessionnel des produits de la mer et de l'aquaculture (National Interprofessional Office for Aquaculture and Fishery Products)

OIE World Organisation for Animal Health

ONCFS Office national de la chasse et de la faune sauvage (National Game and Wildlife Bureau)

ORP Observatoire des résidus de pesticides (Pesticide Residue Observatory)

P

PAH Polycyclic Aromatic Hydrocarbon

PCB Polychlorobiphenyl

PCR Polymerase Chain Reaction

PCS Product Characteristic Summary

PET Polyethylene terephtalate

PFGE Pulsed field gel electrophoresis

PMWS Post-Weaning Multisystemic Wasting Syndrome in Pigs

PNNS National Programme for Nutrition and Health

Q

QRA Quantitative Risk Assessment

R

RAPD Random amplification of polymorphic DNA

RDA Recommended Dietary Intake

RESAPATH Réseau d'épidémiosurveillance de l'antibiorésistance des pathogènes (Epidemiological monitoring network for antibiotic resistance to pathogens)

RESSAB Réseau d'épidémiosurveillance des salmonelloses des bovins (Epidemiological monitoring network for bovine *salmonella*)

RIVM Royal Dutch Institute for Public Health and the Environment (Rijksinstituut voor volksgezondheid en Milieu)

RT-PCR Reverse Transcriptase-Polymerase Chain Reaction

S

SARS Severe Acute Respiratory Syndrome

SIV Swine influenza virus

SIMV Syndicat de l'industrie du médicament vétérinaire (Trade Union for the Veterinary Medicinal Product Industry)

SPF Specific Pathogen Free

SRLV Small ruminants lentivirus: CAEV and *Maedi-Visna*

SRM Specific Risk Material

STS Scientific and Technical Support

T

TDI Tolerable Daily Intake

TPGAH Technology Platform for Global Animal Health

TSE Transmissible Spongiform Encephalopathy

TSSE Transmissible Spongiform Subacute Encephalopathy

U

UFC Union française des consommateurs (French Union for Consumers)

V

VICH International Cooperation on Harmonization of Technical Requirements for Registration of Veterinary Medicinal Products

VHS Viral haemorrhagic septicemia

VM *Visna-Maedi*

VMRI Veterinary Mutual Recognition Index

W

WHO World Health Organization

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