The Director General

Maisons-Alfort, 26 January 2012

OPINION
of the French Agency for Food, Environmental and Occupational Health & Safety

regarding an internal request on the risks of introducing and spreading exotic pathogens in mainland France and on proposed measures for reducing these risks

ANSES undertakes independent and pluralistic scientific expert assessments.
ANSES primarily ensures environmental, occupational and food safety as well as assessing the potential health risks they may entail.
It also contributes to the protection of the health and welfare of animals, the protection of plant health and the evaluation of the nutritional characteristics of food.

It provides the competent authorities with all necessary information concerning these risks as well as the requisite expertise and scientific and technical support for drafting legislative and statutory provisions and implementing risk management strategies (Article L.1313-1 of the French Public Health Code).

Its opinions are made public.

1. REVIEW OF THE REQUEST

On 20 November 2009, the French Agency for Food (which became the French Agency for Environmental and Occupational Health & Safety in 2010) issued an internal request on the risks of introduction and spread of exotic pathogens in mainland France.

2. BACKGROUND AND PURPOSE OF THE REQUEST

The environment in which diseases emerge and develop has changed. Diseases can now emerge, re-emerge and spread much more easily from one country to another, even over very long distances. This is due to factors such as the intensification of production systems in relation to the increased consumption of animal products, the globalisation of trade, the changing face of natural and cultivated systems and the evolution of ecosystems favourable to disease vectors.

French and EU animal health regulations are currently undergoing radical changes. In France, these far-reaching changes are affecting both veterinary authorities and the resources allocated to them. France's national consultation on the animal health sector (*Etats Généraux du Sanitaire* - EGS), in 2010, was the occasion for a thorough reconsideration of the current situation. Its conclusions were taken up by the new action plan of the Directorate General for Food (DGAL) and the Act on Agricultural and Fishing Modernisation (LMAP), voted on 13 July 2010. As a result, there have been m–arked changes in the implementation of programmes to prevent and control animal diseases, especially exotic diseases.

The emergencies caused by exotic pathogens introduced into France in the last decade have emphasized the need for effective systems to detect, prevent and control them.

The increasing risk of exotic diseases being introduced into mainland France led ANSES to issue an internal request with three objectives:

1) draw up a list of exotic pathogens causing diseases in defined target species (swine, poultry, horses and ruminants), prioritised according to the risk of them being introduced and spread in mainland France;
2) suggest epidemiological surveillance and monitoring procedures to detect the introduction of an exotic pathogen and/or the development of an epizootic outbreak , in the light of the previous risk analyses;
3) indicate the main principles to apply in order to prevent the introduction and spread of exotic pathogens on a national scale and at farm level.

Scope of the expert appraisal

The first objective of the internal request, detailed above, was fulfilled following a joint effort by two working groups (WGs): the WG created in response to this internal request (2009-SA-0294) and a previous WG set up to develop a prioritisation methodology (2008-SA-0390[1]).

Points 2 and 3 of the above-listed objectives took into consideration the list of priority diseases previously established following their categorisation.

The study was restricted to mainland France.

Four livestock sectors were studied: swine, poultry, horses and ruminants.

Pathogens were considered exotic when they met all three of the following criteria:
- not currently found among the targeted domestic species in France;
- inducing disease in at least one of the animal species lying within the scope of the request;
- responsible for zoonotic and/or epizootic disease.

Diseases meeting one of the following two criteria were excluded:
- diseases occurring in mainland France including sporadic outbreaks;
- exotic diseases that are non zoonotic and unlikely to lead to an epizootic outbreak.

It should be noted that the WG was not asked to:
- give a critical analysis of supranational surveillance systems;
- perform a global analysis of French systems supporting prevention and control of animal epidemics in developing countries;
- analyse procedures for selection of research topics and funding allocation.

3. ORGANISATION OF THE EXPERT APPRAISAL

The expert appraisal was carried out in accordance with French standard NF X 50-110 “Quality in Expert Appraisals – General requirements of Competence for Expert Appraisals (May 2003)”.

The issues being appraised lie within the scope of the Expert Committee on animal health (CES SANT).

[1] ANSES (2010) Prioritisation methodology for animal diseases. ANSES report (2008-SA-0390). 152 pp. http://www.anses.fr/Documents/SANT2008sa0390.pdf

A WG on *Risks of the introduction and spread of exotic pathogens in France* was created on 20 November 2009 for the purposes of Internal Request 2009-SA-0294.

It met 18 times from January 2010 to September 2011, six times with the WG on *Prioritisation methodology for animal diseases* (Internal Request 2008-SA-0390), to draw up a priority list of exotic pathogens.

The WG's report was submitted to four external reviewers. Its work was presented and accepted by the CES SANT on 14 September 2011.

4. ANALYSIS AND CONCLUSIONS OF THE WORKING GROUP

ANSES's rationale is based on the conclusions of the WG on *Risks of the introduction and dissemination of exotic pathogens in France,* summarised below.

Sixty-two exotic diseases were divided into three groups[2] according to the priority given to the risks involved (see Annex of the current opinion and report [ANSES, 2010[1]]). The first 21 priority diseases, corresponding to the first two groups, were then analysed in relation to current surveillance and control systems, in order to pinpoint advantages and disadvantages and suggest possible improvements, within the following three areas:

- epidemiological surveillance of these diseases,
- decreasing the risk of introducing exotic diseases into France,
- decreasing the risk of allowing exotic diseases to spread in mainland France should they be introduced.

Existing tools and systems were assessed, including surveillance systems, laboratories, current regulations and resources available to control diseases, particularly through vaccination.
This work is included in the current opinion and report.

Essentials of exotic disease control – Current situation in France

The basic tenets of the collective fight against exotic diseases are mostly the same as those for controlling the animal diseases already existing in the country. The same four categories of role-players, i.e. farmers, veterinarians, laboratories and veterinary authorities, contribute to the different components of disease control. To work efficiently together, they need dedicated structures and opportunities for consultation to decide on control measures and how to tailor them to the evolving epidemiological situation.

The specifics of exotic disease control may be divided into four successive steps according to the threat's progress: epidemiological surveillance in the countries where the diseases are already present; epidemiological surveillance in France; ways that the exotic pathogen can be introduced into France and how it may be detected; preventing the spread of the disease following this introduction.

The epidemiological surveillance of exotic diseases cannot be restricted to national monitoring. France continues to support developing countries in monitoring and controlling diseases through international partnerships and mandated organisations. France also helps prevent and control disease in French overseas departments and territories (DOM-TOM)[3], which acts as a surveillance and early-warning system for mainland France.

[2] Editor's note: To avoid confusion between the categorisation of animal diseases undertaken nationally following Order 2011-862 of 22 July 2011, the three categories of exotic disease resulting from the first prioritisation study (ANSES, 2010) shall be named "groups" in this opinion. Thus, "group 1" corresponds to "category 1" in the ANSES report of 2010; "group 2" to "category 2" and "group 3" to "category 3".

[3] Now known as DROM (*Départements et régions d'Outre-Mer* – overseas departments and regions) and COM (*Collectivités d'Outre-Mer* – overseas communities)

The measures to be taken in order to avoid the introduction into France of exotic pathogens are tailored to the main ways that each pathogen may be introduced, namely through trade in live animals—whether productive livestock or pets, including exotic pets—or in animal products , whether imported legally or illegally.

The early detection of an exotic pathogen in a previously disease-free country is essential in order to be able to control the resulting disease. The time that elapses between a pathogen's introduction and its detection depends mostly on the vigilance of players in the field (farmers and veterinarians) and on the availability and performance of laboratories responsible for diagnosis.

To prevent the spread of exotic diseases should they be introduced into France, emergency preparedness plans have been drawn up. They not only include conventional measures such as restricting movement of animals, products or people, but also dedicated measures such as culling or emergency vaccination. Emergency plans are operational for foot and mouth disease, African swine fever, classical swine fever and highly pathogenic avian influenza.

The French system, based on three main players—veterinary authorities, veterinarians and laboratories—has proved its ability to react quickly and efficiently during recent incursions of exotic diseases (foot and mouth disease in 2001, highly pathogenic avian influenza in 2006 and bluetongue in 2007 and 2008). However, improvements are both possible and desirable.

Improvements to exotic disease control have different scopes. They may be:

- general, being applicable to all exotic diseases and all three control areas—surveillance, introduction and spread;
- generic, being applicable to a given area for all exotic diseases;
- applicable to a given area for several but not all exotic diseases (i.e. applicable to groups of diseases);
- applicable to one of the areas for a particular exotic disease (specific improvements).

Suggestions for globally improving exotic disease control

A census with geo-referenced locations of all livestock farms, combined with an improvement in the identification and traceability of animals should provide input for a reliable database, a prerequisite for effective disease control (whether exotic or already present in France).

The responsiveness of disease detection systems—mainly based on passive surveillance of incidents and epidemiological vigilance—appears to be satisfactory, but there is room for improvement. International epidemiological information should be centralised more effectively and data provided in real time to risk managers and assessors.

The system of referring veterinarians could also be optimised by training new referring specialists throughout France focusing on a particular species and/or disease.

The efficiency of laboratory diagnosis could be improved by the appointment of a national reference laboratory (NRL) for each of the 21 high-priority exotic diseases. Each NRL should be relayed by at least one other laboratory, and should play a key role in the analysis of epidemiological surveillance and vigilance data.

Current emergency preparedness plans for foot and mouth disease, classical swine fever and avian influenza should be regularly updated. Preparedness plans should be established for high-priority exotic diseases not yet covered by an emergency plan. These include *peste des petits ruminants* (PPR), Rift Valley fever and African horse sickness. Simulation exercises should be carried out to ensure these plans are fully operational.

The biosafety part of the guide on good hygiene practices for the livestock processes concerned should be consolidated. Health inspections on farms offer the opportunity to check that the measures described in these guides are being applied.

Recommendations by disease control sector

- **Epidemiological surveillance**

  - ***International epidemiological surveillance***

Encourage information exchange with neighbouring countries, especially those around the Mediterranean Basin, and foster cooperation with their reference laboratories.

Fully review of the French support to disease surveillance and control in developing countries in order to ensure optimisation. Improve coordination between French organisations supporting international surveillance.

  - ***Epidemiological surveillance in France***

When health regulations allow for a prefectural monitoring decree (APMS) in the event of suspected animal disease, it would be beneficial to encourage the declaration of suspected cases by implementing a modular warning system including more relaxed measures for livestock farmers should suspicions be minimal.

For zoonoses with a major public health impact most likely to be introduced by international travellers, emergency plans should be drawn up in cooperation with the French Directorate General for Health.

Surveillance systems should continue to be assessed using the OASIS (*Outils d'analyse et systèmes de surveillance* - Analytical tools and surveillance systems) methodology.

Other actions taking into account the specific characteristics of each disease have been suggested (see the WG report).

- **Preventing the introduction of exotic diseases**

Increasing awareness and providing training to key players such as farmers and veterinarians is, along with surveillance, essential to prevent the introduction of exotic pathogens into France.

Measures related to the importation of live animals and animal products of are governed by health regulations and customs controls. They are applicable at different scales:

  - Nationally, a number of measures are recommended, such as the inclusion of specific messages on the travel advice pages of the Ministry of Foreign and European Affairs' website, informing travellers about the dangers relating to animals and products of animal origin from various countries or regions infected by exotic diseases. Customs authorities could introduce a signed statement on the non-introduction of animal products like those to be filled in when entering Australia and the United States.

  - As far as Europe is concerned, current health regulations need to be applied very strictly at EU borders. It is also necessary to harmonise conditions for the importation of non-domestic animals with health guarantees specific to each disease so as to better secure intra-community movements.

On an international level, it is important to support animal disease control in countries where the diseases are endemic so as to reduce the risk of their transmission to disease-free countries.

- **Preventing the spread of exotic diseases**

Measures relating to diagnostics of and vaccination against exotic diseases have been recommended, in particular:

- the constitution of European vaccine banks for diseases such as bluetongue, African horse sickness and epizootic haemorrhagic disease,
- a short-listing of potential suppliers for vaccines currently available abroad and meeting the European pharmacopoeia criteria, so as to be able to implement an urgent vaccination programme after requesting a temporary authorisation for use against diseases such as PPR, Rift Valley fever, epizootic haemorrhagic disease or Venezuelan equine encephalitis,
- for the most threatening and contagious exotic diseases, the implementation of diagnostic techniques by several regional laboratories, thus supporting the national reference laboratories, should a disease be introduced and spread within France.

Improvements specific to certain diseases were also suggested (see the WG report).

- **Research and development recommendations**

The internal request's objectives did not include the establishment of research priorities. Important research topics were nonetheless listed, but not exhaustively.
"Upstream" research was recommended on the biology of pathogens and vectors or reservoirs, host-pathogen interactions, the physiopathology of diseases and immune responses.
"Downstream" research was recommended on vaccines and diagnostic methods, along with work on the definition of alert thresholds for syndromic surveillance.
Research should be continued on most vector-borne diseases both with respect to the geographical distribution of known vectors and the competence of potential vectors for different pathogens.
It was also suggested that the ways in which research on exotic diseases is selected and funding decisions made should cut across the public/private divide, with a combination of authoritative, active players in this field from both sides.

To conclude, the considerations arising from this internal request focused on disease epidemiology and the characteristics of current disease control systems, which can affect the risk of introduction and spread of exotic pathogens.

While the current disease prevention and control system appears globally effective, it could be further improved. The WG's report makes several recommendations, summarised in the first part then detailed in the second part on the data sheets for each disease.

The points made on the drawbacks of the current surveillance and control systems, along with recommended improvements, should be regularly reassessed in the light of updated epidemiological information, whether for France or for foreign countries.

5. AGENCY CONCLUSIONS AND RECOMMENDATIONS

The French Agency for Food, Environmental and Occupational Health & Safety endorses the Working Group's conclusions.

ANSES would also like to emphasise the importance of assessing the risks of introducing exotic pathogens, a topical subject in the light of the recent discovery among French ruminants near the German and Dutch borders of a new Bunyaviridae virus known as the *Schmallenberg* virus.

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KEYWORDS

Exotic disease, exotic pathogen, disease control, epidemiological surveillance, risk of introduction, risk of dissemination, prevention

ANNEX

Exotic diseases with their score, priority and group as classified by the WGs on *Prioritisation methodology for animal diseases* and *Risks of the introduction and dissemination of exotic pathogens in France* (ANSES, 2010[4])

Disease	Overall score[5]			Level of risk
	minimum	maximum	mean	
Foot and mouth disease	100	324	212	1st GROUP
Avian influenza H5N1	142	273	208	
Bluetongue	74	243	159	
Classical swine fever	98	180	139	
Epizootic haemorrhagic disease of deer	60	207	134	
African swine fever	55	168	112	
West Nile encephalitis	38	168	103	
Brucellosis caused by *B. melitensis*	64	128	96	
Nipah virus encephalitis	39	123	81	
Brucellosis caused by *B. abortus*	48	90	69	2nd GROUP
Rift Valley fever	28	110	69	
African horse sickness	33	105	69	
Rabies	26	112	69	
Japanese encephalitis	25	96	61	
Contagious bovine pleuropneumonia	22	90	56	
Crimean-Congo haemorrhagic fever	2	90	46	
Swine vesicular disease	14	68	41	
Myiasis caused by *Cochliomyia hominivorax*	9	72	41	
Peste des petits ruminants	17	61	39	
Venezuelan equine encephalitis	14	57	36	
Trypanosomiasis caused by T. *evansi* (surra)	10	54	32	
Viral haemorrhagic septicaemia	16	36	26	3rd GROUP
Babesiosis caused by *Babesia bovis*	15	36	26	
Babesiosis caused by *Babesia bigemina*	15	33	24	
Eastern equine encephalitis	0	47	24	
Contagious caprine pleuropneumonia	11	36	24	
Western equine encephalitis	0	41	21	
Akabane disease	10	31	21	
Nairobi sheep disease	0	39	20	
Teschen disease	2	36	19	

[4] ANSES (2010) Prioritisation methodology for animal diseases. ANSES report (2008-SA-0390). 152 pp. http://www.anses.fr/Documents/SANT2008sa0390.pdf

[5] When prioritising exotic diseases, the uncertainty on the score awarded to a criterion was taken into consideration by allocating a range from minimum score to maximum score. The addition of minimum scores given for the different criteria corresponds to the overall minimum score recorded in the table. The same rule applies for maximum scores. The mean overall score is calculated on the basis of the previous two values.

Myiasis caused by *Dermatobia hominis*	5	32	19	
Glanders	0	32	16	
Jembrana disease	0	30	15	
Taeniasis caused by *Taenia solium* (cysticercosis caused by *Cysticercus cellulosae*)	0	27	14	
Trypanosomiasis caused by *T. vivax* (nagana)	1	24	13	
Myiasis caused by *Chrysomya bezziana*	1	24	13	
St Louis encephalitis	0	21	11	
Trypanosomiasis caused by *T. brucei* (subspecies *gambiense* and *rhodesiense*)	1	18	10	
Heartwater	0	18	9	
Theileriosis caused by *Theileria parva* (East Coast fever)	0	18	9	
Ross River encephalitis	0	18	9	
Sheep pox	1	17	9	
Goat pox	1	17	9	
Hendra virus disease	0	17	9	
Louping ill	1	15	8	
Semliki Forest virus encephalitis	0	16	8	
Theileriosis caused by *Theileria lestoquardi*	0	15	8	
Ehrlichiosis caused by *Ehrlichia bovis*	0	12	6	
Lumpy skin disease	1	10	6	
Equine encephalosis	0	10	5	
Aura encephalitis	0	5	3	
Murray Valley encephalitis	0	5	3	
Una encephalitis	0	5	3	
Schistosomiasis caused by *Schistosoma japonicum*	0	5	3	
Schistosomiasis caused by *Schistosoma margrebowiei*	0	5	3	
Schistosomiasis caused by *Schistosoma mattheei*	0	5	3	
Pythiosis	0	3	2	
Vesicular stomatitis	0	2	1	
Bovine ephemeral fever	0	2	1	
Wesselsbron disease	0	1	1	
Coccidioidomycosis	0	1	1	
Rinderpest	0	0	0	