

# Annual Report 2008

French Institute for Public Health Surveillance

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**French Institute for Public Health  
Surveillance (Institut de veille sanitaire)  
Annual Report 2008**

*In memory of Vincent Pierre,*

*coordinator of the Réunion-Mayotte interregional epidemiology unit*



**Françoise Weber,**  
Executive Director,  
InVS



**Maurice Giroud,**  
Chair, InVS  
Management Board

2008 was the 10<sup>th</sup> anniversary of the French Institute for Public Health Surveillance (InVS). This anniversary gave us an opportunity to assess the very considerable progress made over these 10 years and especially the extensive results for public health. This year has been one of consolidation, development, and preparation for tomorrow's crises.

These achievements include the extension of non-specific or syndromic surveillance to most French regions, in particular, surveillance of emergency department use: today more than 120 emergency departments are electronically connected to the system. Moreover, the information systems have been massively improved and upgraded over the past 2 years. The Institute is thus engaged in the essential modernization of its surveillance, monitoring, and communication tools.

During the second half of the year, InVS actively participated in the French presidency of the European Union, a task that helped stimulate its analyses and activities in the most sensitive domains of health surveillance. The European Conference on Human Biomonitoring was the opportunity to review the orientations and methods of the large-scale studies

that several countries, including France, are preparing to launch. The seminar on syndromic surveillance compared the experience of different European countries for the first time, laying the foundations for common development and for networking these systems, which are intended to identify the emergence of threats from anywhere and everywhere.

The efficacy of the fight against tomorrow's health threats depends on the ability to set up networks and coordinate our surveillance activities in Europe and throughout the world, on our constant willingness to do so. This aim is expressed in many types of tasks, such as our active participation in coordination of European projects such as ANAMORT, a project completed in 2008 that examined the comparability of mortality data.

In France, InVS has continued to act on all fronts, from meningitis in Seine-Maritime to surveillance of populations exposed to polluted sites, to the establishment of large-scale cohort and sample studies, such as COSET (Cohorte pour la surveillance épidémiologique en milieu de travail, a cohort for epidemiologic surveillance in the workplace) and ENTRED (Echantillon national témoin représentatif des personnes diabétiques, national



representative sample of people with diabetes). In all, InVS has conducted several hundred studies and investigations initiated in the main domains of public health.

InVS does not claim sole credit for these results, which are almost all the fruit of very active partnerships and collaborations with health-care professionals, hospitals, and laboratories. InVS is also involved in interinstitutional initiatives for large national or European projects, with more collaborations and partnerships that continued to develop in 2008. We work with research bodies, health insurance funds, and other health and safety agencies. Our activities are complementary to theirs and our joint interventions, especially for studies and investigations, are increasingly better coordinated.

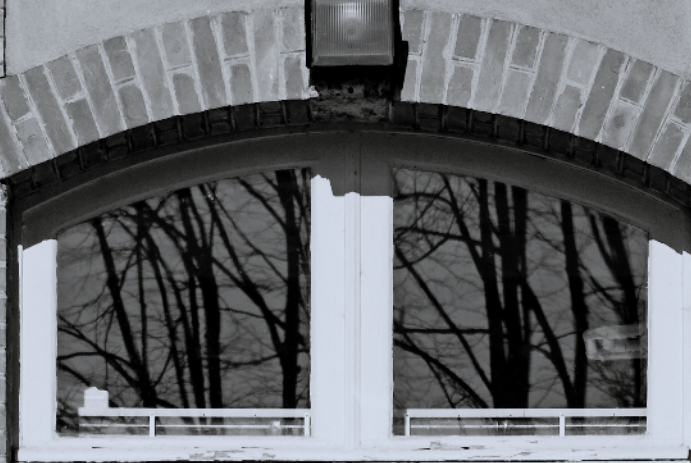
InVS continues to prepare for major crises and has reinforced its international surveillance for situations such as huge gatherings.

It has maintained special vigilance for emerging threats, such as arboviroses, particularly the dengue epidemic that is expanding regularly across the world, and the continuing risk of influenza pandemic.

Most especially we saw in 2008 that the threats that we think we know and have controlled change constantly. The renewed increase in sexually transmitted diseases (STDs), the long litany of disease outbreaks, whether foodborne or attributable to polluted sites, and the resurgence of measles epidemics linked to a decrease in vaccination coverage—they all show that these apparently benign phenomena, at least at the population level, are potential human dramas that require vigilance, surveillance, and evaluation.

To meet the challenges of great crises, including but not limited to these resurgent threats, InVS must continuously modernize its surveillance systems and extend its networks to work with health-care professionals, laboratories, hospitals, and other health and safety agencies. All of our activities are complementary—and essential.

One of the fundamental elements in extending our ability to respond to public health needs will be the development and consolidation of the interregional epidemiology units (cellules interrégionales d'épidémiologie, CIRE) that will become part of the regional health agencies (agences régionales de la santé, ARS).





## Focus

### “1998-2008: 10 years of health surveillance”

Ten years after adoption of the law intended to reinforce health surveillance and the safety of products intended for human use (L. n° 98-535), the French health security system is an ineluctable model today. The effectiveness of this system is constructed at the national level, by the complementarity of the health and safety agencies, and at the regional level, by the proximity of local policy-makers and scientific expertise supported by the surveillance tools provided by InVS. The Institute is one of the key participants in health surveillance in France and has to its credit several hundred studies that have helped influence public policies—both for the long term including prevention of human immunodeficiency virus (HIV) and other infectious risks, air pollution, and cancer screening, etc.—and in response to health crises such as severe acute respiratory syndrome (SARS), chikungunya, and preparation for a possible influenza pandemic.

## Time to take stock

On 20 June 2008, InVS celebrated its 10th anniversary (1998-2008) with all of its staff, past and present, its principal partners, numerous scientists, and Roselyne Bachelot-Narquin, the Minister of Health. It was the occasion to assess the activities conducted and to measure the distance InVS has traveled.

### Cross-sectional tool for surveillance of the population's health status

After the different health crises of the 1980s and 1990s — contaminated blood, "mad cow", growth hormones, asbestos, it was obvious that cross-sectional structure was needed to provide surveillance of the population's health status, detect health threats, and manage alerts.

The foundation of such a system had been laid in 1992 with the creation of the National Public Health Network (Réseau national de santé publique, RNSP), which introduced to France the concepts and methods of epidemiology-supported intervention, on the model of the United States Centers for Disease Prevention and Control (CDC). The RNSP also understood the globalization of public health emergencies and thus the importance of organizing international surveillance. These principles are the foundation of InVS today.

### A large national and international network for optimal responsiveness

The road traveled since the RNSP has nonetheless been long. Today InVS is one of the key elements of the French health surveillance system. These 10 years of experience have shown that health surveillance cannot be exercised by a single public institution but must rely on a set of partners, organized in a common approach. Convinced of this need since its establishment, InVS has worked to build a large network based on dynamic partnerships with health-care professionals, health-care facilities, and laboratories. Today this network covers all of France and the entire field of public health.

During this period, InVS was also able to draw lessons from the crises it experienced. The dramatic episode of the 2003 heat wave demonstrated how ineffective the surveillance tools then available, albeit useful for known risks, were for detecting unexpected events. Thus, since 2004, InVS has been working to develop a syndromic surveillance system (système de surveillance sanitaire des urgences et des décès, SurSaUD®), that is, a system not specific for known diseases. Right now, it is one of the most complete among such systems in Europe and in the world.

InVS completes this network with CIRE, the interregional epidemiology groups that give it its strong regional presence. In addition, its activity cannot be conceived without strong daily operational associations with the other health agencies, which are responsible for risk assessment in one or several specific fields.

Finally, in a globalized environment where the risk of outbreaks is likely to become global, InVS has set as one of its priorities European and international cooperation in the field of surveillance, monitoring, and health alerts. It has thus developed close partnerships with the European Centre for Disease Prevention and Control (ECDC) and with World Health Organization (WHO). It also participates in numerous European programmes, contributes to the global outbreak alert and response network (GOARN), and provides technical support to other countries.

Today, InVS is making health surveillance operational. Its objective is to assemble and assess all information about population health, to ensure that health threats, known or emerging, are detected and assessed, and to apply the public health and health safety orientations and policies chosen by the policy-makers.





**François Dabis** is a physician, epidemiologist, and professor at the Institute of Public Health, Epidemiology, and Development (Institut de santé publique, épidémiologie et développement, ISPED)

of Victor Segalen University in Bordeaux. He will complete his second term as president of the InVS Scientific Council (Conseil scientifique) during 2009. He assesses the past 6 years at its head.

### **What are the missions of the InVS Scientific Council?**

The Scientific Council is a body intended to help the InVS Executive Director and its departments to define and construct their scientific policies. Accordingly, it issues opinions and formulates guidelines. Unlike the Board of Directors, our Council does not make decisions; its role is solely advisory. We meet 3 or 4 times a year, because we suggest to the Executive Director that we should examine a specific Institute activity, or because she or the Board of Directors would like our opinion about a specific activity, or so that we can be consulted during a referral to InVS by its supervising ministry. About 2 years ago we also began a systematic review of the principal programmes of each department: how they work, their priority themes, and how they are approached. This lets us help the Institute's teams to conduct a prospective analysis of their particular fields. We thus bring to InVS an outsider's look at its organization, its choices of priorities, and its results, to help it to develop a complete and consistent system of health surveillance and to fulfill its tasks as well as possible.

### **You have chaired the Scientific Council for six years now. What is your assessment?**

For 6 years, I had the chance of accompanying InVS and assessing its evolution in the French health landscape. It has truly become the sentinel of the health of the French population. Historically very focused on infectious diseases, InVS has progressively enlarged its fields of skills and activities, so that today it covers the entire set of major public health problems, as the Health Security Act intended. I rejoice to see InVS's useful and pertinent management of the different crises and health problems with which its teams have had to cope during these years—the 2003 heat wave, SARS, the preparation for a possible influenza pandemic, chikungunya. Our role in these circumstances consisted in supporting the Institute by asking its teams for operational feedback and retrospective analysis of events, especially of their handling. We have also attempted to work on intermediate- and long-term planning, to help InVS analyze the organization

**“To bring an outsider's look... to set out guidelines and help to analyze prospectively”**

of its future activities, beyond crisis management and the activities already planned.

### **Your presidency of the Scientific Council coincides with the 10<sup>th</sup> anniversary of InVS. Which changes and perspectives have you noticed in health surveillance?**

Without any doubt, by its organization and by the diversification of its fields of observation, surveillance, and alert, InVS has demonstrated its solid expertise in all of the priority issues related to the health of the French. One of the principal developments in the past few years was the establishment of a syndromic surveillance system, that is, not specific for any particular disease, but rather a system that makes it possible to detect with a good level of confidence the signals of health problems that are, by definition, unexpected and accordingly, to anticipate many threats. Another very positive point is the regionalization of InVS activity through the CIRE. These regional layers offer the Institute the advantages of real local anchors for health alerts. Finally, InVS is aware of the importance of an international vision of public health problems for the fulfillment of its missions and has succeeded in developing an important network of partnerships in Europe and throughout the world.

The Scientific Council continues to encourage InVS to reinforce the fields in which it is engaged, fields that reflect the major themes essential to health surveillance today. The Institute must pay particular attention to the precise contours of its domain of competence, to ensure its complementarity with the duties of the other participants in health surveillance. It must therefore work in ever closer partnership with the other health and safety agencies, the research institutes, and the universities, placing itself in the role of coordinator, or head of the network. InVS truly can become the centre of gravity for the observation of human health questions in France, if it unites all of the participants in the public health network. InVS is the coordinator of the French system of health surveillance, and I am sure it will continue to perform this task optimally.

## InVS today

Created as a result of L. n° 98-535 (dated 1 July 1998) on the reinforcement of health surveillance and the control of the health security of products for humans, InVS is a public agency reporting to the Ministry of Health. Its missions involve surveillance, monitoring, and alerts in all domains of public health. L. n° 2004-806 (dated 9 August 2004, on public health policy) expanded and extended the tasks assigned to InVS, to meet new challenges—those revealed by recent health crises and those created by emerging risks.

### Mandates reflecting public health needs

InVS is responsible for the **permanent surveillance and observation of the population's health status**. It therefore participates in the collection and treatment of data about the population's health status for epidemiologic purposes, relying especially on the public and private correspondents that constitute the national public health network.

It implements **health surveillance and vigilance**. Accordingly, it collects, analyzes, and updates knowledge of health risks, their causes, and their evolution. It also prospectively detects risk factors that might modify or impair the health of all or some component of the population, on a sudden or widespread basis. Finally, for each type of risk, it studies and identifies the most vulnerable or threatened populations.

It is responsible for managing **health alerts**. In this framework, it must inform the Minister of Health immediately of any threat to the health of the population or of any specific subgroups and must recommend appropriate measures or actions to prevent the occurrence of the threat or to lower its impact.

Finally, InVS contributes to the **management of health emergencies** by proposing necessary measures or activities to the public authorities.

As part of its missions, it also participates in **European and international activities** of France, especially through collaboration with international public health networks for health surveillance and alerts.

### A cross-sectional field of action

The tasks of InVS involve all domains of public health:

- **infectious diseases:** infection by HIV, B and C hepatitis viruses (HBV and HCV), sexually transmitted diseases, tuberculosis, foodborne infectious risks, zoonoses, vaccine-preventable diseases, nosocomial infections and antibiotic resistance, respiratory infections, seasonal and pandemic influenza, arboviruses, and tropical diseases and the risks of their importation;
- **effects of the environment on health:** risks related to air pollution or exposure to chemical pollutants or ionizing radiation, waterborne risks, physical hazards, and risks related to climate variations;



- **occupational risks:** occupational cancers, effects of asbestos and the fibers used as substitutes for it, musculoskeletal diseases, and morbidity associated with occupational exposures;
- **chronic diseases and injuries:** cancer, cardiovascular diseases, diabetes, nutrition, accidents and injuries, respiratory diseases, mental health, and rare diseases;
- **international and tropical risks:** infectious diseases affecting other countries but likely to reach French residents or to be imported (e.g. avian influenza, Ebola, yellow fever, and arboviruses), diseases and threats affecting the overseas districts: dengue, Chagas disease, and pesticide and mercury pollution.

## A large network of partners

All health-care professionals participate in this mission of health surveillance, for such surveillance cannot be organized around a single participant, but only through a network of partners united in a common approach that aims, depending on the theme, to collect, validate, and analyze morbidity and mortality data and to provide, if necessary, a quantitative risk assessment. InVS must mobilize, coordinate, and support the different public health teams working to establish a national public health network. This collaboration is the source of benefits shared by all partners involved in these networks, who thus acquire greater visibility in the health context in which they work.

InVS has developed important partnerships at national level. Accordingly, it relies on national networks that participate in the surveillance of the population's health status; it leads and supports these networks in their health surveillance functions, including the national reference centres (centre national de référence, CNR), morbidity registries, the networks combatting nosocomial infections, and health-care professionals, both hospital-based and in private practice (mandatory reporting of some diseases). It also relies on different surveillance systems or networks of care services, such as hospital departments (emergency or specialized), hospital and private laboratories (e.g. surveillance networks for gonorrhea and for invasive bacterial and meningeal infections), and physicians, regardless of specialization or type of practice (private practice, hospital-based, or mixed).

Moreover, it works with organisations whose activities are partly related to providing public health and surveillance data, such as the national health insurance fund for salaried workers (Caisse nationale d'assurance maladie des travailleurs salariés, CNAM-TS) and the other social insurance funds (Régime social des indépendants, the RSI, for self-employed workers and Mutualité sociale agricole, the MSA, for farmers), the

National Institute for Health and Medical Research (Institut national de la santé et de la recherche médicale, Inserm), and the Department of Research, Studies, Evaluation, and Statistics within the Ministry of Health (Direction de la recherche, des études, de l'évaluation et des statistiques, DREES).

Finally, InVS works in close collaboration with the other agencies in the French system of health security and monitoring, and namely with the French Food Safety Agency (Agence française de sécurité sanitaire des aliments, AFSSA), the French Drug and Medical Products Agency (Agence française de sécurité sanitaire des produits de santé, AFSSAPS), the French Agency for Environmental and Occupational Safety (Agence française de sécurité sanitaire de l'environnement et du travail, AFSSET), the National Authority for Health (Haute autorité de santé, HAS), the Institute of Radioprotection and Nuclear Safety (Institut de radioprotection et de sûreté nucléaire, IRSN), the French Blood Agency (Établissement français du sang, EFS), the Biomedicine Agency (Agence de la biomédecine, LABM), and the National Institute for Prevention and Health Education (Institut national de prévention et d'éducation pour la santé, INPES).

InVS also collaborates with numerous European and international health networks.

At the European level, it represents France at the Management Board of the ECDC, and its experts participate in different bodies and activities. It contributes to the development of surveillance networks and the control of communicable and environmental diseases in Europe.

It also collaborates with programmes coordinated by other States and with the European network for the surveillance, alert, and control of infectious diseases, which brings together the Ministries of Health and the surveillance institutes of the various States. The alert system, based on a secure transmission network between the States, enables the rapid exchange of epidemiologic information on infectious risks that may affect several states and the early identification of emerging infectious risks in Europe.

Internationally, InVS interacts with the WHO at 3 levels: participation in its Lyons office, participation in GOARN, and collaboration with the WHO regional office for Europe. Working with the Ministry of Foreign Affairs, InVS can also provide technical support to other countries.

## An organization that balances scientific expertise and territorial networks

InVS is directed by an Executive Director, Dr Françoise Weber, assisted by an associate director.



It is organized into several departments:

- **a Directorate-General**, including the Department of Scientific Development and Prospective (direction du développement scientifique et de la prospective) and the Department of Strategy and Planning (direction de la stratégie et de la programmation), which coordinate especially the tasks of European development, regional development, and outside training; the Alert Coordinating Committee (cellule de coordination des alertes, CCA); the Editorial Support Committee (la cellule de valorisation éditoriale); and Management Control (contrôle de gestion);
- **5 scientific departments**: the Department of Infectious Diseases (Département des maladies infectieuses, DMI), the Department of Environmental Health (Département santé environnement, DSE), the Department of Occupational Health (Département santé travail, DST), the Department of Chronic Diseases and Injuries (Département des maladies chroniques et des traumatismes, DMCT), and the International and Tropical Department (département international et tropical, DIT);
- **5 horizontal service departments**: the departments of communications, of documentation, of information systems, of finance, logistics, and economics, and finally of human resources.

InVS also has regional branches, the **interregional epidemiology units**, the CIRE, which carry out InVS's missions locally, while applying the regional health policy and dealing with its specificities. Codirected by the regional health and welfare bureaus (Direction régionale des affaires sanitaires et sociales, DRASS) and InVS, they are located within the DRASS, thus as close as possible to the regional health authority. They provide methodological support, expertise, and an analysis of health alert signals to these decentralized national offices. The system currently includes 17 CIRE, 15 in mainland (metropolitan) France and 2 overseas. There are 9 interregional CIRE and 8 that cover a single region.

InVS has a Board of Directors with 23 members (11 representatives of the government) responsible for approving the Institute's major strategic directions, its activity programmes, and the human and financial resources necessary for the accomplishment of its missions. It also has a **Scientific Council**, with 17 members responsible for monitoring the consistency of the scientific policy of the Institute.

In 2008, InVS had a budget of €56.4 million, with 394 employees, mainly epidemiologists, trained in a variety of health or information sciences.





## InVS tomorrow: aspirations and perspectives

For 10 years, InVS has used its skills to provide population health protection. In the years to come, it will work to strengthen the contribution and role of health surveillance within the French health security system.

To this end, in 2009 InVS will sign a contract with the Ministry of Health that sets forth its objectives, targeted performance, and commitments for the years to come. The Institute will also develop its educational project in 2009. This project will help the Institute to specify clearly its values, principles for action, organizational methods, and main directions for the future. It will mark the developments necessary to cope more effectively with the challenges of tomorrow.

### Developing new health surveillance tools

InVS must continuously improve its scientific methods and expertise. It has set several objectives towards this purpose.

It continues to develop tools for signal analysis and modeling, in partnership with research institutions, and to pursue the evaluation of its surveillance systems, to verify their efficacy and improve their performance. It will also work to make better use of the health-related administrative and environmental databases to which it has access. It will consolidate the existing warning instruments, and particularly for syndromic surveillance, ensure the availability of scientific and technical expertise on a 24/7 basis, and formalize alert procedures.

Because of the multiplicity of topics on which InVS's advice is sought, it needs a method to document its priorities and their ranking, and to reevaluate its work programme regularly. It will continue to reinforce its priority surveillance programmes and their links to its public health objectives and to the national and regional public health plans. It will pay special attention to developing specific tools that facilitate responses to the priority questions: an appropriate surveillance strategy for emerging environmental risks, and methods and tools for the surveillance of exposures and diseases likely to be of occupational origin.

Finally, InVS will work to determine the most efficient choices for the major surveillance tools of the future and to build the tools most likely to provide the responses necessary for public health. Large-scale cohort surveys and biosurveillance programmes are incontestably the epidemiologic tools of tomorrow.

### Strengthen cooperation

The efficacy of health surveillance in the years to come also depends on its proximity to the regions and its operational capacity to react without delay. To reach these goals, InVS intends to work in several directions.

#### Regionalized organization

InVS will pursue the regionalization of surveillance through the CIRE, its regional echelon, focused on alerts, investigation, and risk assessment.

The reorganization of the decentralized departments planned by the pending bill on hospitals, patients, health, and territories, and the creation of regional health agencies will certainly affect the regional health surveillance system. The provisions of this statute, to be voted on in the spring of 2009, will require InVS to propose a new organizational plan adapted to the needs of the regional health agencies and of the district prefects. Particular attention will be paid to the leadership and reinforcement of the dynamics of work with health-care professionals at the regional level in different domains (e.g. general practice and occupational medicine).

InVS also wants to adapt health surveillance more specifically to the needs of the overseas districts and territories by taking the particularities of these regions and their environment into account more effectively.

#### More and smoother exchanges at national level

The Institute plans to ask more from its numerous networks and to provide more regular feedback to them, especially to health-care providers and facilities. The French health surveillance system will thus be oriented

toward reinforcement of the collaboration between InVS and the other health and safety agencies.

## Stronger international involvement

InVS will continue to contribute to the methodological harmonization of data transfers, methods of health impact assessment, and the design and establishment of surveillance systems and surveys. It will also continue its involvement in European and international surveillance networks, especially those of the ECDC and the WHO.

Another priority InVS objective is to develop active collaboration with the neighboring countries of overseas French districts and territories, countries with large migrations to and from France, and countries with a large number of French citizens, to improve their capacity for health surveillance, alert, and response.

Generally, the French health surveillance and security system is preparing for a period of consolidation of its tasks, to which InVS will contribute actively and effectively.

## 20 June 2008: celebration of InVS's 10<sup>th</sup> anniversary

On 20 June 2008, InVS celebrated its 10<sup>th</sup> anniversary. Emotions and memories were strong that evening — marked by the strength of the commitments, the immensity of the work accomplished, the good and the not-so-good times, and especially a very great solidarity, something that, beyond each individual story, resembled fraternity.

It was also a moment of recognition: the Minister of Health honored InVS with her presence and held out a mirror in her speech: as a permanent sentinel, we must decipher meaning and look for evidence; we must show not only scientific rigor, but also imagination,

perspicacity, and creativity, at the service of an activity and a public policy aimed at protecting and constantly improving the health of our fellow citizens. Madame Bachelot also described the esteem in which InVS is held because of the quality of its expertise, which guarantees it a central place in the future in the new system of agencies. Jacques Drucker and Gilles Brücker talked about the road traveled over these 10 years, and about the continuity of our activity.

Françoise Weber



*From left to right: Mr Christian Cambon, senator and mayor of Saint-Maurice; Prof. Jacques Drucker, Executive Director of the RNSP and then InVS from 1992 to 2002; Prof. Gilles Brücker, Executive Director of the InVS from 2002 to 2007; Dr Françoise Weber, Executive Director of InVS since 2007; Mme Roselyne Bachelot-Narquin, Minister of Health and Sports.*



**Didier Houssin**, Director-General of Health and interministerial delegate to the committee on avian influenza, looks back over the 10 years since the enactment of the law reinforcing the health surveillance and security

system. On this occasion he also describes his vision of regional health surveillance.

**A celebration was held to mark the 10th anniversary of the passage of L. n° 98-535 (dated July 1998), to reinforce health surveillance and the safety of products intended for human use. What is your assessment of these past 10 years?**

This law considerably modified the context of health surveillance in France. France has progressively developed a complete system of health surveillance and security, based on the concept of agencies. The assessment of these 10 years shows positive aspects: the health surveillance system is much more solid than what existed before. It is also the result of lessons drawn from some crises that we unfortunately did not succeed in avoiding—such as the heat wave of 2003. Today, the system is sometimes judged difficult to understand, complicated: we need to make it less complex. We have therefore made efforts to understand its systemic aspect, especially with the establishment in May 2008 of an agency system leadership committee (Comité d'animation du système d'agences, CASA).

**What is the committee's role? How does it operate? What are its objectives?**

For several years, the Director-General of Health has been meeting every Wednesday morning with all of the directors of the main health security agencies, as well as with the director of the main departments involved—those responsible for hospitalization and the organization of care, for food, for consumer protection, competition and fraud prevention, and for civil security, as well as the Nuclear Safety Authority (Autorité de sûreté nucléaire, ASN). These weekly meetings let us review the week's health security news and issues, share information, make decisions, and especially structure work on cross-sectional topics between agencies. These meetings are important and make true cohesion possible in our health security system. But we have also seen that dialogue is needed on other more strategic, less topical subjects, especially on questions of research, expertise, and positioning on the international scale, particularly within the European Union. I therefore proposed the CASA to the Minister of Health. The objective of this committee is to improve the functional

coordination of the health security system, to enable the different participants in health security to exchange, share, and build together on topics of common and strategic interest. This committee meets approximately every two months and works on a programme set up according to the priorities of the public policy agenda and the reciprocal expectations of the Directorate-General of Health (Direction générale de la santé, DGS) and of the agencies. For 2009, the priority themes are the harmonization of DGS referrals to the agencies, questions about the links and structures between French and European agencies in terms of risk assessment, and reflections on the ways for the health and safety agencies to help define the Ministry's research orientations. More than a reflection on the structures of the agencies themselves, CASA meets a real need for strategic coordination.

**On 10 February 2009, the National Assembly began examination of a bill about hospitals, patients, health, and territories. What will be its implications for and consequences on regional health surveillance? More broadly, how do you envision the future of regional health surveillance?**

This bill creates regional health agencies (ARS) that will bring together, beginning in 2010, all strategic participants involved in health in the region. This regional restructuring of the health system provides an opportunity to create a regional hub for health surveillance and security. The major issue of this reorganization is to improve the flow of information related to health security, in both directions, and in particular, to structure the links between the future ARS and the regional health surveillance participants. A regional echelon of InVS, administratively linked to the DRASS, the CIRE will remain a major participant in this system of regional health surveillance. They provide methodological support, expertise, and analysis of health alert signals to these decentralized departments. The ARS will be more involved in preparedness and response, in the event of health incidents or threats, in association with district and local stakeholders. As the law creating the ARS has not yet passed, the question of their precise positioning relative to one another will be addressed in the months to come. The organization of health surveillance and security with the ARS and the link between the ARS and the health agencies, especially with the InVS CIRE, are priority themes in the CASA work programme.

More generally, the future of regional health surveillance lies in constructing links with the health observation systems, and especially with the regional health observatories. This is why the future ARS should make it possible for the CIRE to have a broader vision of the entire health-care system in the fields of public health and health care, as well as in the fields of environmental and occupational health.







## National activities

“InVS—at the core of the health security system and the national public health network”

Among the national agencies serving as the foundation of the French health security system, InVS has a central role. Its surveillance of the population's health status, epidemiologic investigations, health alerts, and health risk assessments make its role pivotal in the analysis of health-related risks in any field. Moreover, InVS is responsible for the mobilization, coordination, and support of different parts of the national public health network, able to provide essential health surveillance information. These components include the National Reference Centres (CNRs) for various diseases, morbidity registries, networks for the control of nosocomial infections, and health-care providers (especially *via* the mandatory reporting of some diseases). Similarly, it coordinates its activity with the CNAM-TS and other health insurance funds, with Inserm, and with the DREES. Finally, it also collaborates with hospital departments, hospital and private laboratories, and general practitioners and specialists. InVS has succeeded in building an information network that is simultaneously vast and effective and in positioning itself as an essential participant in the national public health network. The pages that follow describe the highlights of 2008 in the domains of infectious diseases, environmental health, occupational health, and chronic diseases and injuries.

## Detecting new health threats: syndromic surveillance

Since its creation in 2003, the Alert Coordination Unit (Cellule de coordination des alertes, CCA) has been responsible for conducting syndromic surveillance within InVS and for informing and alerting the authorities *via* a daily alert bulletin (Bulletin quotidien des alertes, BQA). Moreover, it maintains the continuity of InVS activities (call schedule, continuity plan, operational feedback, and drills).

To face the emergence of new health threats and the onset of events unpredictable in scope and consequences (such as the 2003 heat wave), public health officials must detect health signals, even of low intensity, as early as possible. They must thus complete specific surveillance systems with non-specific or syndromic surveillance that makes it possible to detect phenomena of unknown nature—infectious, environmental, or other—that may be a public health threat. This is the objective of “SurSaUD®” (Surveillance sanitaire des urgences et des décès, health surveillance of emergency departments and deaths), the syndromic surveillance system established by InVS. This system is based on routine real-time collection of indicators considered to be markers of the early phases of health events.

### FOCUS

#### The SurSaUD system®: health surveillance of emergency departments and deaths

The August 2003 heat wave demonstrated the inadequacy of the existing specific surveillance systems for unforeseen situations and revealed the need for surveillance systems based on non-specific health data, such as the number of patients seeking emergency medical treatment. In 2004, InVS developed a pilot system named SurSaUD® that was based on a network of hospitals, physicians in private practice, and death records.

Managed by the CCA, the SurSaUD system® is based on the combination of 4 data sources centralized at InVS:

- data transmitted by hospital emergency departments in the OSCOUR® network (Organisation de la surveillance coordonnée des urgences, Organization of Coordinated Emergency Department Surveillance);
- data from the federation of SOS Médecins France groups;
- mortality data centralized by the National Institute for Statistical and Economic Studies (Institut national de la statistique et des études économiques, INSEE), from vital records offices;
- Inserm data on the causes of death, based on electronic certification of deaths.

The advantages of this type of surveillance are its rapid responsiveness and its automation, which means that



it does not create additional work for the health care personnel involved: the establishments participating in the OSCOUR® networks and SOS Médecins have highly developed information systems that automatically record each call or patient. Moreover, for several years now, INSEE has been managing a computer system that reports mortality data, entered by the vital registry departments of 1042 municipalities distributed across the country (including the overseas districts). The data managed in SurSaUD® are automatically extracted each day from these different computer systems.

>>> Read the rest p. 18



Although SurSaUD® is not yet full-grown, it is still developing and it shows strong potential as a tool for non-specific surveillance. In 2008, 115 emergency departments and 50 associations of SOS Médecins France distributed across the country collaborated in the collection of data, centralized by InVS. We review the year with **Danièle Ileff**, head of the CCA.

### What were the principal advances in SurSaUD® in 2008?

For the CCA, 2008 was notable especially for further progress in the SurSaUD® system, for which we recruited 2 statisticians. The committee wanted to have a software that can optimize receipt and handling of this syndromic surveillance data transmitted by numerous sources (OSCOUR®, SOS Médecins, etc.). The development of specifications for this project was an important task for us this year. At the same time, the CCA finalized a strategy document setting priorities and objectives for the syndromic surveillance system. SurSaUD® offers enormous potential that cannot all be developed simultaneously. Ranking activities was therefore essential. Setting these priorities requires substantial cross-sectional work with the scientific departments.

Finally, each day the CCA analyzes the data produced by the system. It has contributed especially to documenting some health-related incidents such as allergies to dimethylfumarate, found in particular in armchairs imported from China. Another example is the surveillance conducted during the crisis involving Chinese infant milk formulas, contaminated by traces of melamine. This surveillance included examination of hospital data on several syndromes (such as urolithiasis and kidney failure) that suggest poisoning by this substance. We also contributed to the surveillance of seasonal epidemics (influenza, bronchiolitis, and gastroenteritis) by providing the Infectious Diseases Department with an analysis of our data.

### Are there highlights to report about your activity in general?

Besides 2 statisticians, we also hired a crisis logistician last October, allowing us to make progress in preparedness for health crises and the development of a pandemic influenza plan. We had previously not had sufficient resources to invest in these projects and were able to accelerate their development in 2008. Finally, as part of the French presidency of the European Union, the CCA organized a European seminar on syndromic surveillance, the occasion for each member state to share its experience and expectations in this domain. The suggestion of creating a European society of syndromic surveillance came out of this meeting.

### What are the perspectives for development in the year to come?

The objective is the regionalization of the analysis of syndromic surveillance data by moving closer to the field. The use of the new software in 2009 will enable the CIRE to access the different types of information transmitted by the networks on which SurSaUD® relies and thus to implement this regionalization. Finally, the Directorate-General of InVS, to which the CCA reports, will be substantially reorganized in 2009. I have been assigned to plan a department responsible for coordination of both alerts and the CIRE. It will also be necessary to assess the potential advantages of combining these 2 hubs.

**“To develop nonspecific or syndromic surveillance at a regional, national and European level”**

#### | PROFILE |

#### Alert Coordinating Unit

##### Director

Danièle Ileff

##### Creation

2003

##### Number of staff

7

##### Organization

3 epidemiologists  
3 statisticians

##### Contact

alerte@invs.sante.fr

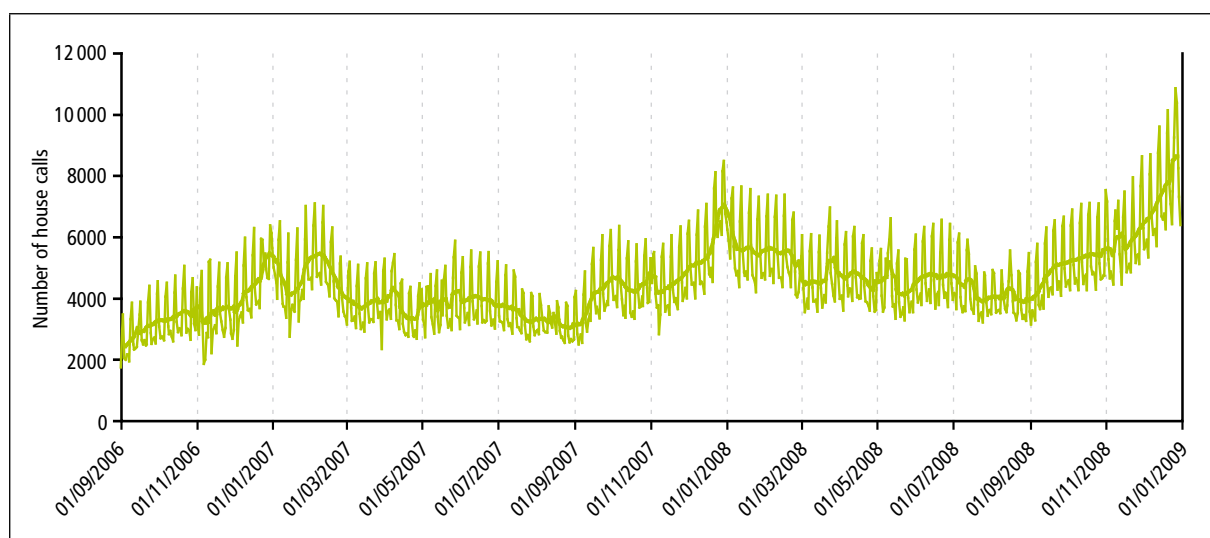
Setting up the SurSaUD® system meets various objectives. It makes it possible to reach public health goals by generating alerts based on the detection of unexpected health phenomena or the early discovery of epidemics, and also by helping to measure and describe the health situation.

It also meets strategic objectives, to the extent that the system makes it possible to develop networks of partners at the national and regional levels and to improve the capacity of InVS to respond to requests for information,

especially from the media and the population during alert or crisis situations.

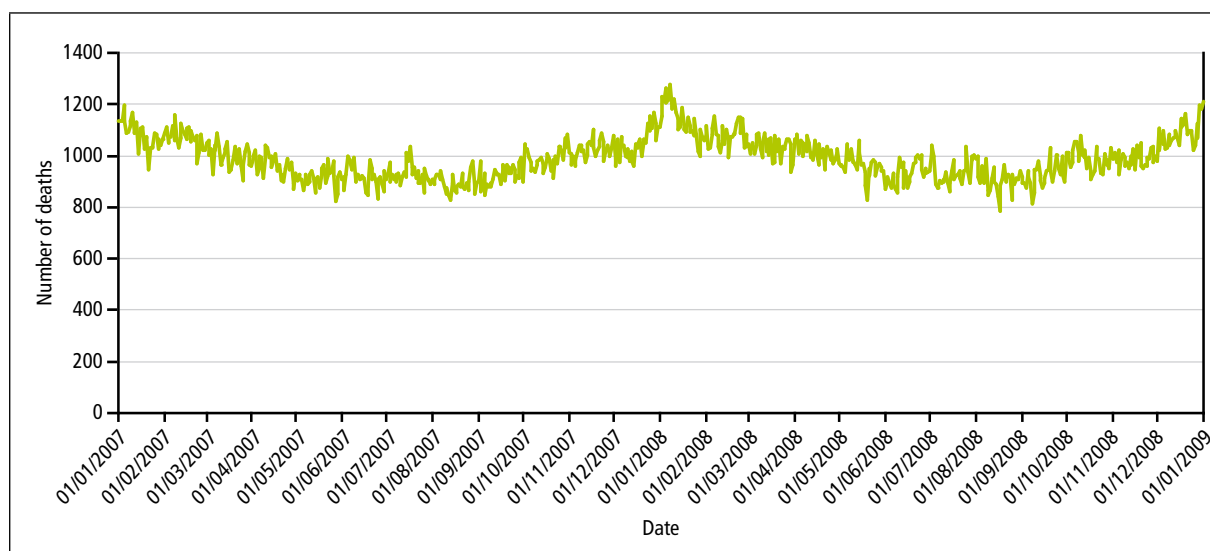
Currently, the network is progressing each month. As of now, CCA provides only a daily national analysis of the data. In regions where the network is well developed, when the CIRE have resources devoted to this activity, a regional strategy of exploitation may be developed. The forthcoming implementation of a computer system should help to accelerate the process of regionalizing data analysis.

**| Daily activity (number and 7-day moving average) of the SOS Médecins associations participating in SurSaUD® from 1 September 2006 to 31 December 2008 |**



Source: InVS-CCA/SOS Médecins.

**| Number of deaths transmitted daily by INSEE since 1 January 2007 |**



Source: InVS-CCA/INSEE.



## Monitored infectious diseases

Infectious diseases are subject to intense surveillance in France. The InVS Department of Infectious Diseases (DMI) plays a pivotal role in this field through its liaisons with numerous partners. Beyond its missions of alert and surveillance, it conducts or contributes to numerous expert groups that provide decision support for the Ministry of Health, the High Council of Public Health (Haut conseil de la santé publique, HCSP), and the other health and safety agencies.

### FOCUS

#### Decision support and fine-tuning public policies

As part of its mandate to provide decision support for the public authorities to keep public health programmes as attuned as possible to changing situations, the DMI analyzes trends in the epidemiology of infectious diseases and produces studies of the impact of different potential interventions to reduce the risk of diffusion of various diseases. It relies for this purpose on tools developed with its research partners at Inserm that make it possible to model the process of pathogen transmission.

Preparation for any influenza pandemic includes work on the impact of antiviral agents and influenza immunization.

Since 2007, the DMI has reinforced surveillance of tuberculosis and of vaccination coverage in children so that information will be available to assess the potential impact of a modification in the BCG (bacillus Calmette-Guérin) vaccination strategy. This monitoring was established as part of the national programme against tuberculosis, which began in 2007.

A serepidemiologic survey will be launched in 2009 to estimate the proportion of people in the French population (aged 6-49 years) immunized against the 5 vaccine-preventable diseases (measles, rubella, mumps, chickenpox, and hepatitis A), as well as the proportion with positive serology results for other diseases (toxoplasmosis, hepatitis E, herpes virus 1, and cytomegalovirus). This survey will make it possible to assess the impact of changes in vaccination policies on immunity levels in the French population.

In addition, diverse expert assessments are currently underway or planned for other decision support systems:

- health-economic analysis of the introduction of vaccination against meningococcus C;
- continuation of the evaluation of vaccination strategies against papillomavirus;
- resumption of the expert assessment of vaccination against rotavirus infections;
- preparation of the assessment of vaccination of elderly subjects with the new 13-valent pneumococcal conjugate vaccine;
- evaluation of screening strategies for HIV, toxoplasmosis, rubella, and HBV, in association with the French National Authority for Health;
- continuation of our contribution to updating the influenza pandemic plan, with the use of mathematical models of the distribution of a pandemic virus where appropriate, in association with Inserm U707.

#### | PROFILE |

#### Department of infectious diseases

##### Director

Jean-Claude Desenclos\*  
and then Christine Saura

##### Creation

1995

##### Number of staff

70

##### Organization

Five functional units:

- HIV, chronic HBV and HCV infections, and STIs
- vaccine-preventable infections
- enteric and foodborne infections and zoonoses
- tuberculosis, legionellosis, imported and emerging diseases
- nosocomial infections and antibiotic resistance

##### Three cross-sectional functions

- biostatistics and mathematics
- coordination of surveillance systems
- administrative, financial, and secretarial support

##### Contact

dmi@invs.health.fr

\* Named scientific director on 1 November, 2008.



Infectious diseases are subject to a surveillance adjusted and fine-tuned according to the public health issues they present and to the emerging risks. Examples include vectorborne diseases, such as chikungunya

and West Nile virus infection, which had new outbreaks in Europe in 2007 and 2008 and are the object of particular attention. **Christine Saura**, director of the DMI, summarized the department's activities in 2008.

**“Maintain our current alert, surveillance, and expertise capacity while modernizing our surveillance systems”**

### **What highlights would you mention for 2008?**

From an epidemiologic point of view, the DMI dealt with numerous events, including several measles outbreaks, especially in communities where children and adolescents were inadequately vaccinated, various episodes of health care-related infections outside of health-care facilities, and salmonellosis outbreaks. The DMI was particularly attentive to the hyperendemic invasive meningococcal infections (IMI) in Seine-Maritime and the Somme and conducted several expert assessments to determine priority populations for vaccination. As part of the modification of the BCG vaccine strategy, the DMI reinforced tuberculosis surveillance and assessment of vaccination coverage in at-risk persons. We published reports of interesting epidemiologic trends in antibiotic sensitivity, in particular for methicillin-resistant *Staphylococcus aureus* (MRSA) and for pneumococci, in nosocomial infections (incidence of surgical-site infections), and in HIV infection in France. Structurally, we made significant progress in modernizing databases for mandatory disease reporting and long-distance transmission of nosocomial infection reports. We also set up an internal centre to coordinate surveillance systems; its principal objective is to harmonize data variables, guidelines, and treatment, and to define needs as we prepare specifications to develop new software.

### **How is your surveillance network organized?**

The DMI works in close liaison with the network of 17 CIRE, or interregional epidemiology groups, especially for the investigation of signals and for alerts. Its activities rely on numerous partners: the CNRs, the DDASS, hospital-based and private-practice health-care providers, research institutes such as Inserm, and the other health

and safety agencies. This territorial networking allows rapid reaction and interaction at the local level to investigate signals and manage alerts responsively. It also transmits the surveillance data to us so that we can analyze them to optimize national public health policies and health recommendations.

### **What projects are on the agenda for 2009?**

Our 2009 programme meets new needs by reinforcing some systems and modernizing the information systems that are the essential basis of the department, with completion expected by 2011. The development or reinforcement of some types of surveillance will complete the data useful for the evaluation or evolution of public health plans. Analysis of restructuring systems such as the surveillance networks based on private-practice physicians and the CNRs is planned for 2009 and will permit development of surveillance tools that are effective in a setting with evolving needs and constant resources. Expertise in the field of vaccine-preventable diseases, HIV, and nosocomial infections will continue to develop so that public decision-making can have the strongest possible foundation. Optimization of the interface with research, restructuring of prospective monitoring procedures, and evaluation of several surveillance systems are also planned, together with the new scientific direction. Finally, the 2009 programme will explore new fields such as the health of prisoners and sex workers. We will also produce new surveillance data about population immunity levels for several vaccine-preventable diseases and about the public health burden of influenza-like illnesses and acute diarrhea. New tools development will include work on the HCV test for detecting recent infection.

## Vaccine-preventable diseases

### Invasive meningococcal infections in Seine-Maritime: epidemiologic situation and expert assessments for decision support (vaccination)

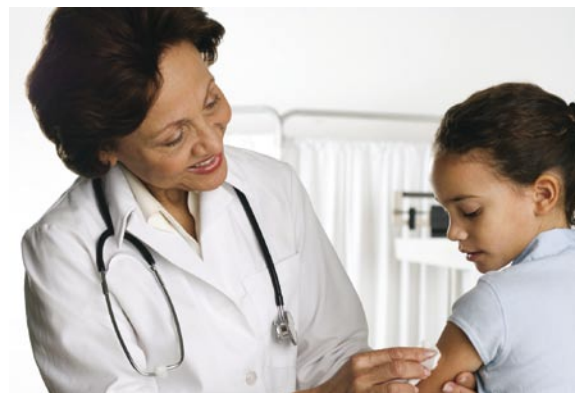
Since 2003, the district of Seine-Maritime, especially Dieppe, has been faced with hyperendemic invasive meningococcal infections (IMI) of serogroup B, linked to the B:14:P1.7.16 strain. A vaccination campaign began in 2006. Due to vaccine availability, it was limited to children aged 1 to 5 years in 6 areas of Dieppe. The campaign was enhanced in 2007 to include all children aged 1-19 years.

#### A worrisome district situation...

In 2008, 49 cases of IMI (34 of them serogroup B) were reported in Seine-Maritime, including 7 in Dieppe. The district had the highest IMI incidence rate in the country: 3.9/100 000 *versus* 1.2/100 000 in France.

Epidemiologic analyses by InVS and immunogenicity cross-protection data led the Immunization Advisory Committee (Comité technique des vaccinations, CTV) to recommend at the end of 2007 that vaccination be extended to infants from the age of 2 months. Overall, vaccination was recommended for 29 196 children aged 2 months to 19 years. At the end of 2008, 73% had received

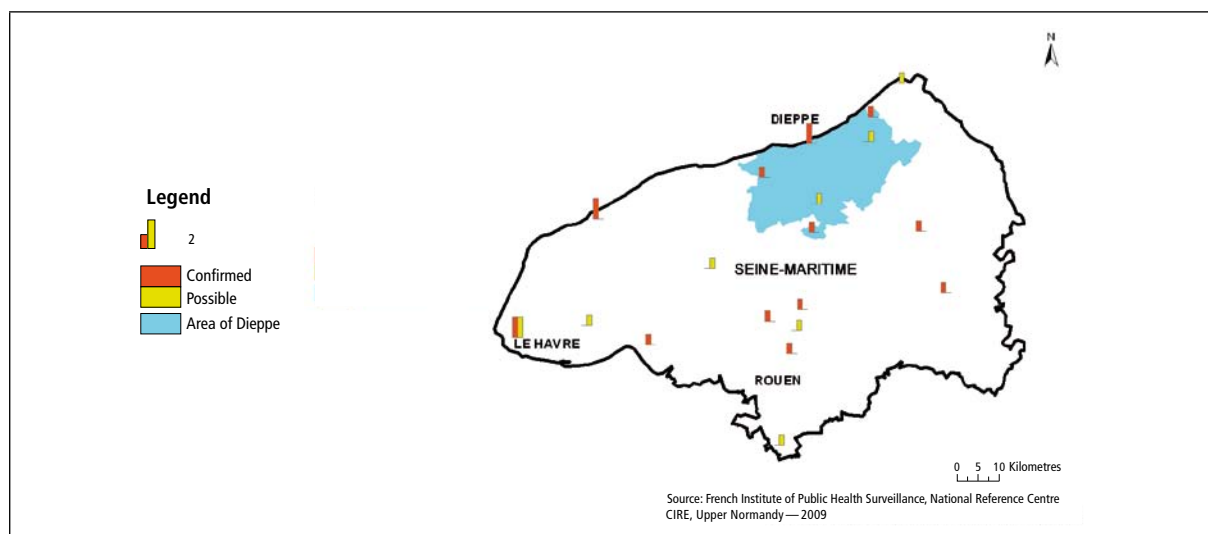
at least one dose of vaccine and 22% had completed their vaccination schedule.



#### ... but encouraging results

Outside Dieppe, in cantons not yet targeted for vaccination, the incidence rate of IMI confirmed or suspected to be associated with the B:14:P1.7.16 strain increased from May 2007 to July 2008. On the other hand, the rate in the Dieppe area began to diminish substantially, from 11.9 in 2006 (when the vaccination campaign began) to 7.6 in 2008. The incidence of confirmed and suspected B:14:P1.7.16 cases has decreased since April 2008, and the last case was reported in August 2008.

#### | Suspected and confirmed IMI B:14:P1.7.16 cases in Seine-Maritime in 2008 |





The absence of cases in the 6 districts of Dieppe in the last part of 2008 and the decrease in the incidence rate observed since April 2008 suggest that the epidemiologic situation in this area has improved. Nonetheless, not enough time has passed for a statistical analysis of vaccination impact to be possible.

## Case clusters of measles

Although measles vaccination was introduced more than 20 years ago, the most recent WHO estimates show almost 200 000 measles deaths in 2007, principally in Southeast Asia and Africa. In 2007, for the first time, the majority of the 7000 cases reported in Europe (60%) concerned the western zone of the continent. It seems unlikely that the WHO objective of eliminating measles by 2010 will be met, especially since several measles outbreaks occurred in 2008, including in France.

## Subject to mandatory reporting since July 2005

Measles surveillance data from a sentinel network of general practitioners showed the impact of vaccination on the estimated number of measles cases: there were 300 000 cases in 1986 and 4000 in 2005. Nonetheless, the low number of cases means that these figures are not reliable. Accordingly, after an epidemic in the Provence-Alpes-Côte d'Azur (PACA) region in 2003, measles became subject to mandatory reporting in

July 2005. This allows following the progress in disease elimination and rapidly implement preventive measures around cases.

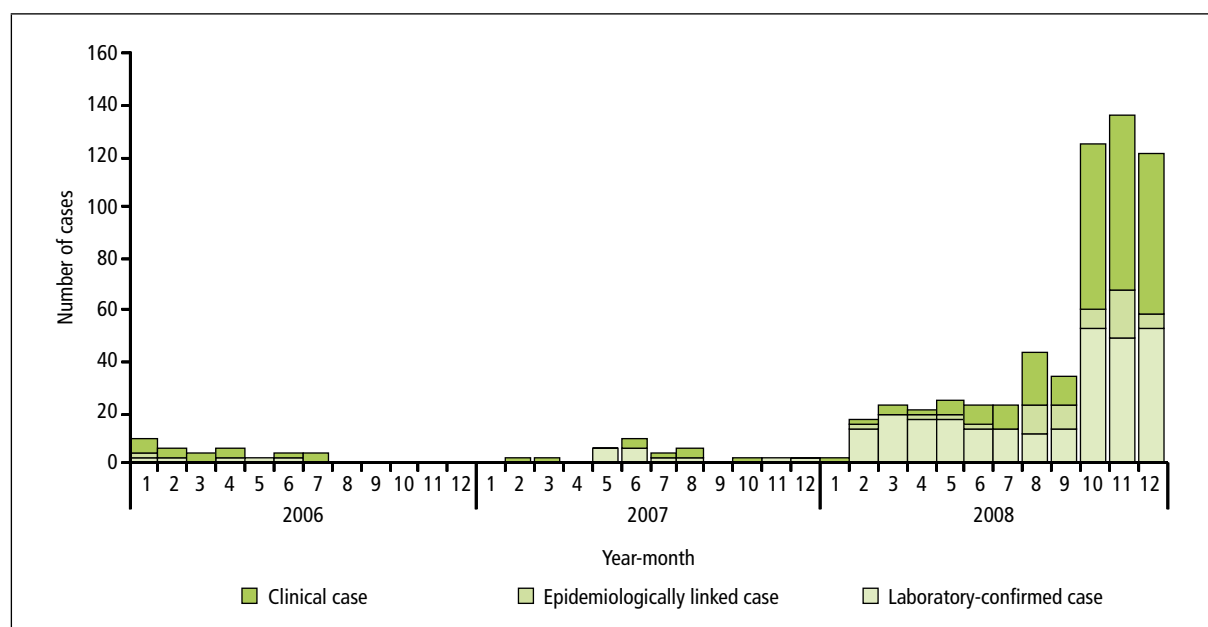
## A threatening resurgence of cases in 2008

In 2006 there were 40 cases of measles reported in France, in 2007, 44, but in 2008, InVS received more than 600 case reports. The proportion of hospitalized cases was almost 20% for all age groups combined (50% of those older than 20 years) and nearly a third of the hospitalized cases had complications, especially lung diseases (no encephalitis in 2008 but one case led to a death in early 2009). At the same time, of all the cases for which vaccination status was known, 89% had not been vaccinated, 9% had received only one dose of vaccine, and 2% two doses.

## Several epidemic episodes in France in 2008

More than 20 epidemic clusters were recorded in France in 2008, half of them in September or later. InVS paid particular attention to 2 types of episodes: cases of nosocomial transmission and epidemic outbreaks in communities of children and adolescents. Nosocomial cases were found in Reims and in southeastern France, where investigations led by the CIRE showed chains of transmission including hospital health-care personnel with inadequate vaccination coverage.

### | Cases of measles each month – Mandatory reporting, 2006-2008, France |



Several interregional outbreaks were also investigated, in summer camps and in schools, mainly private religious schools. Two elements characterized these episodes: inadequate vaccination coverage and a low rate of mandatory reporting, explained by the absence of doctors' visits, especially when entire sibling groups were affected, and physicians' disregard of their obligation to report all suspected case to the DDASS.

## Vaccination coverage must be improved

As in the rest of Europe, inadequate vaccination coverage is most often explained by parental reluctance, either because of lack of awareness (disease not considered serious), unfounded fear of side effects of the vaccine, or philosophic considerations. Mean vaccination coverage in France at the age of 2 years is on the order of 87%; to stop viral circulation it would need to reach 95%.

## Reinforcement of tuberculosis surveillance and evaluation of vaccination coverage in individuals at-risk as part of modification of the BCG vaccine strategy

In July 2007, mandatory BCG vaccination was replaced by a strong recommendation targeting children at high risk of tuberculosis. The Ministry of Health asked InVS to assess the impact of this change in the policy of BCG vaccination coverage. In February 2008, in collaboration with the ACTIV association (Association of Tradespeople, Shop-owners and Independent Workers of Veynois (Association des artisans, commerçants et travailleurs indépendants veynois), InVS carried out a national survey among infants visiting private practitioners.

## Insufficient coverage in children targeted by the vaccination guidelines

This survey was conducted among 285 physicians who were members of the Infovac-France network (6.5% participation rate) and concerned 2356 children aged 2 to 23 months, 1377 of whom met the criteria for recommended BCG vaccination. Vaccination coverage in children meeting the new vaccination guidelines and followed by private practitioners was 68%; it was 58% in children born after mandatory vaccination

was suspended (68% in Île-de-France, 48% outside Île-de-France). Among private practitioners, 75% regularly performed BCG vaccinations and 58% had recommended or suggested vaccination for the unvaccinated children at risk. Vaccination was accepted by 76% of the parents when it was proposed.

This survey suggests inadequate vaccination coverage in children at risk targeted by the guidelines, visiting private practitioners, and born after the suspension of mandatory vaccination. On the other hand, it provided encouraging information, including good acceptance by physicians and families of the new vaccination policy. In this context, InVS recommended strengthening communication with physicians who vaccinate (general practitioners and paediatricians).

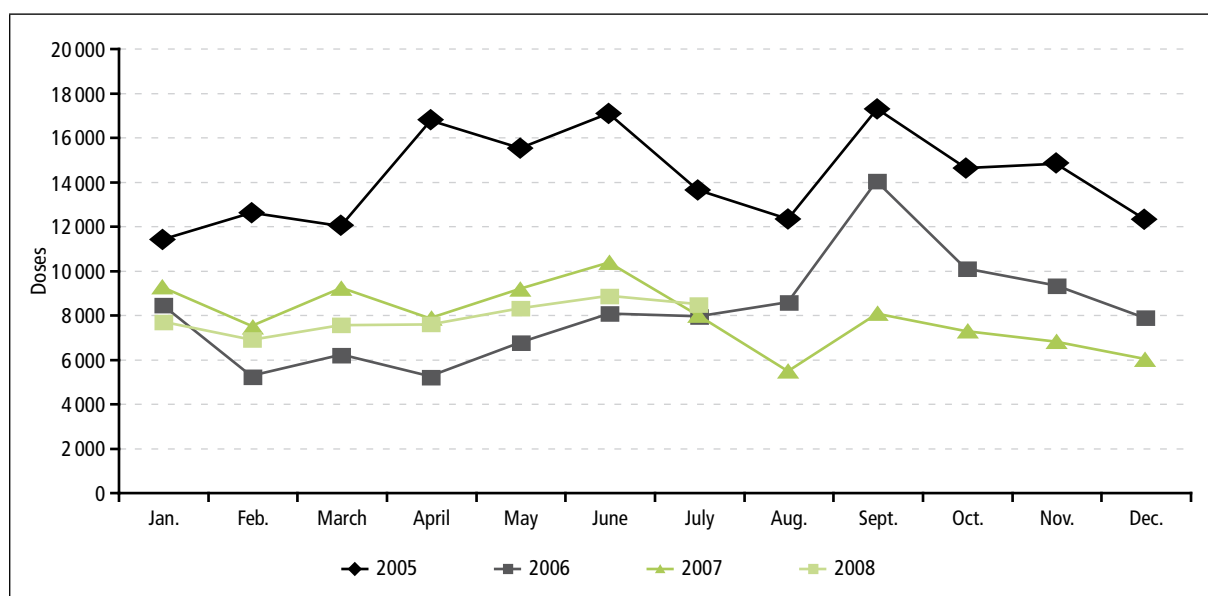
## Analysis of BCG vaccine sales in Île-de-France

InVS also analyzed the sales of BCG vaccine in both the private and public sectors of Île-de-France, a region where vaccination is recommended for all children. These data show that vaccination coverage in Île-de-France (40% of reported tuberculosis cases in France) dropped to 37% between 2005 and 2007, confirming the inadequacy of comprehensive BCG coverage vaccination of the population at risk. Children younger than 2 years are the only population likely to have been affected by this recent policy change. In this group, the number of tuberculosis cases in Île-de-France and in French Guiana, both regions where vaccination is recommended for all children, was similar in 2007 to its level in previous years. In the rest of France, incidence in this age group has increased slightly, but it is not possible at this stage to attribute this increase to decreased vaccination coverage.

## Assessment follow-up in 2009

The evaluation of BCG vaccination coverage will continue in 2009. A protocol for assessing vaccination coverage in children seen in mother-child health centres (Protection maternelle et infantile, PMI) was prepared in 2008 and the survey will be conducted during the second quarter of 2009. Moreover, collaboration with Inserm U707 will allow us to evaluate vaccination coverage and practices among private practitioners in France in 2009, as well as vaccination coverage in children at the highest risk of tuberculosis in Île-de-France.

## | Number of BCG vaccines purchased in the private sector in Île-de-France, 2005-2008 |



Source: Gers.

## | Estimated change in the number of children vaccinated in Île-de-France, 2005-2007 |

		Children vaccinated			
		2005	2006	2007	Change 2007/2005
<b>Private</b>					
	Monovax®	158 108	0	0	
	SSI®	11 796	97 623	94 611	
	Total	169 904	97 623	94 611	-44%
<b>Public (PMI)</b>					
	Monovax®	47 733	0	0	
	SSI®*	16 959	63 705	53 548	
	Total	64 692	63 705	53 548	-17%
<b>Total</b>		<b>234 596</b>	<b>161 328</b>	<b>148 159</b>	<b>-37%</b>

\* Extrapolation of the number of children vaccinated based on a mean 1.5 children vaccinated per multidose vaccine vial in the public sector - (Source: Gers and Sanofi-Pasteur MSD).

### For further information:

Guthmann JP et al. Couverture vaccinale BCG en médecine libérale: premières données chez le nourrisson, sept mois après la levée de l'obligation vaccinale en France, Archives de pédiatrie. March 2009.



## Foodborne infections

### Epidemic of infections by *Salmonella enterica* serovar Give, associated with consumption of infant formula

Powdered infant formula is intended to feed infants and very young children, a population particularly sensitive to the health quality of food. Because their immune system is, so to speak, under construction, any foodborne infection is a major emergency, further amplified by its likelihood of engendering a crisis. InVS wishes to increase the awareness of all health-care actors on the importance of early response, whether this involves an alert or the management of a foodborne infection outbreak.



### An early interregional alert

On 18 September 2008, hospital staff pediatricians at the Nantes University Hospital Centre informed the Loire-Atlantique DDASS of a case of salmonellosis in a baby fed only by bottle. Two new cases hospitalized at the Niort University Hospital were reported to the Deux-Sèvres DDASS on 22 September.

than 1 year and living throughout France. Investigations of 30 of these cases all concluded that the infant's consumption of this formula in the days preceding the onset of symptoms was the cause of the contamination.

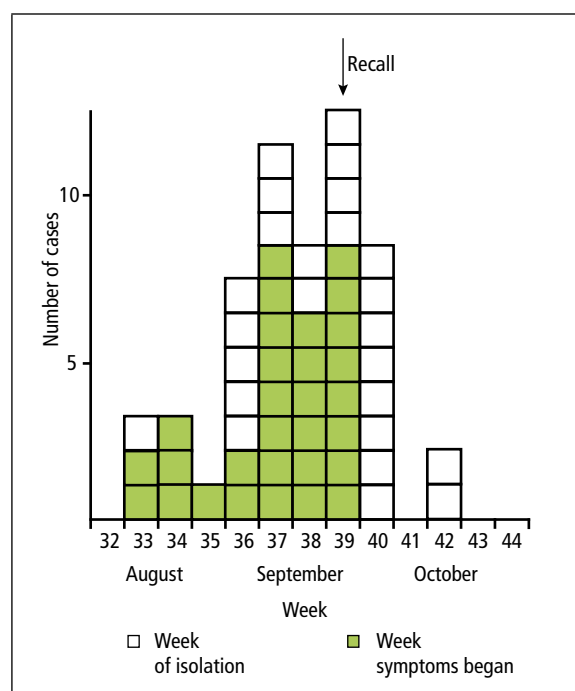
### Great responsiveness of the different actors

By 22 September, InVS, the CIRE, and the DDASS began a telephone investigation of the cases reported and the cases identified by the CNR for salmonella, at the Institute Pasteur in Paris. This made it possible to identify a single lot of infant formula produced in Spain as the source of the outbreak. The recall of the product was decided on 22 September, and was expanded by the health authorities and the producer to all lots (because consumers found it difficult to identify lot numbers). The recall campaign was relayed by alert messages sent to health-care facilities, the DDASS and DRASS, regional hospitalization agencies, and health-care providers, beginning on September 22.

The French alert enabled Spanish authorities to conduct tests at the production site in Spain as early as 22 September and implement prevention activities for company staff and for production. No other European country reported any case of salmonellosis due to serovar Give.

Analyses of formula packages on 25-26 September by the Directorate-General of Competition, Consumer Affairs, and Fraud Prevention (Direction générale de la concurrence, de la consommation et de la répression des fraudes, DGCCRF) confirmed the presence in the product of *Salmonella* serovar Give.

### | Confirmed cases of *S. enterica* serovar Give, France, 2008 (N=57) |



### An outbreak stopped rapidly

From 20 August to 18 October 2008, the CNR received 57 isolates of *S. enterica* serovar Give from children younger

## Nosocomial infections and antibiotic resistance

### Increase in alerts for care-related infections

Infections associated with care include both infections contracted during care received in hospitals (nosocomial infections) and infections contracted during care in outpatient clinics or by physicians in private practice. Several alerts managed by InVS in 2008 showed that the risk associated with the latter is indeed a reality. They are not yet monitored as thoroughly as nosocomial infections are, and specific activities will be conducted in the future to reinforce this surveillance.

### Risks associated with endocavitary echography

Two DDASS reported deficient hygiene in the use of endocavitary echographic (endorectal or transvaginal) probes in 5 medical imaging centres in the north of France. The DGS asked InVS to analyze the infectious risks associated with these practices.

Because the literature contains no cases of such infection, InVS coordinated a systematic analysis of this risk by a group of multidisciplinary experts. It concluded that the individual risk of contracting an infection under these circumstances was extremely low. Nonetheless, in view of the size of the population exposed and under the maximizing hypothesis that all ultrasound procedures had been performed without protection or disinfection of the probes, at least one infection could have occurred following these procedures for the following microorganisms, in decreasing order of risk: HBV, *Chlamydia trachomatis*, HIV, HCV, and *Treponema pallidum* (syphilis).

The DGS thus decided to inform the patients and recommended screening for the infections mentioned above. The CIRE Nord monitored this screening campaign. Of 3351 patients contacted, 472 (14%) participated in the screening, and 3 had positive results, each for a different infection (HBV, HCV, and syphilis). These patients had visited different centres at different times, and it could not be determined whether this infection had been contracted during these examinations. The campaign did not show an increase in the prevalence of these infections in the population of screened patients or any case clusters of infection associated with the same centre.

### Infectious risks associated with capillary micrografts (hair transplants)

Following reports to InVS by a hospital centre of a severe case of infection (facial cellulitis) by group A streptococci in a patient who had undergone a hair transplant in a plastic surgery centre in the Lyon area, the DDASS, the DRASS, and the Nosocomial Infection Control Coordinating Centre (Centre de coordination de la lutte contre les infections nosocomiales, CCLin) identified practices that did not meet hygienic standards. An infectious risk assessment coordinated by the DRASS concluded that the risk of transmission of the bloodborne virus associated with these practices could not be ruled out and that this conclusion justified informing the patients exposed. At the end of September 2008, a system to provide information and advice to patients was set up, using the press and a free telephone number established by the authorities of the Rhône district. The system was subsequently extended to patients of 2 other centres (in Nantes and Bordeaux) that worked with the first centre and were also inspected.

No case of supplementary infection associated with these 3 centres has been reported, but it was recommended that the DDASS remain particularly vigilant for reports that might be related to this type of activity. Projects aimed at improving supervision of the practices of capillary micrografts and other cosmetic procedures are currently being drafted at the Ministry of Health, to reinforce regulations in this area and ensure patient safety.

### Analysis of infectious risk associated with failure to sterilize the rotating instrument holder between patients in dental surgery

Inspections by the Ministry of Health from 2006 to 2008 observed that the guidelines for sterilizing rotating instrument holders between each patient were not followed in several dental offices within prison medical units. In July 2008, the DGS asked InVS to analyze the risk of transmission of a bloodborne virus in these conditions. InVS brought together a multidisciplinary working group for this purpose.

On the basis of a review of the literature and modeling, the group concluded that in the general population, the mean

individual risk of contracting an infection from dental care without sterilization of the rotating instrument holder between each patient is lowest for HIV (1/420 million) and highest for HBV (1/516 000). The risk in a prison population is around 8-fold higher.

In this context, the group recommended strict compliance with standard precautions and good sterilization practices in dental and oral surgery, as well as reinforcement of hygiene training for oral surgeons and their assistants. Research is also required to strengthen the foundations for instrument treatment guidelines. The decision to inform patients who had dental care in an office that did not comply with these specific guidelines must be made on a case-by-case basis, taking into account this evaluation and other possible breaches of good practices.



## Trends in the incidence of surgical site infections in France

Measuring the nosocomial infection rate in surgical patients — surgical site infections (SSI) — is essential for controlling the risk of postoperative infection. As part of the nosocomial infection alert network (Réseau d'alerte, d'investigation et de surveillance des infections nosocomiales, RAISIN), the Cclin and InVS set up a national surveillance system



for SSIs in 1999. These data are collected each year and supply reference rates for assessing local (in each health-care facility practicing surgery) and national policies for prevention of these infections.

From 1999 through 2006, the network monitored nearly one million operations. Approximately 3 patients per 200 developed an SSI in a participating health-care facility, including approximately one per 200 among the patients at low risk of infection. Nearly half the infected patients (42%) developed a deep SSI, sometimes accompanied by complications. Extrapolation of these data to the 7 million surgical procedures performed in France each year indicates that there are approximately 102 000 SSIs each year. Looking at the available European data, we see that France is in the average of European Union countries for some interventions, including cholecystectomy, colon surgery, cesarean deliveries, and hip prostheses.

During these 8 years of surveillance, the crude incidence of SSIs has decreased significantly for some interventions generally monitored, especially for gastrointestinal surgery, hip replacement, cesareans, and breast surgery. These results are encouraging and suggest that the policy of nosocomial infection control is having a significant impact. This policy includes the SSI-RAISIN network, which is today an essential and unique surveillance tool in France.

### For further information:

Daniel F, L'Héritau F. Surveillance des infections du site opératoire, France, 1999 à 2006 – Résultats. Saint-Maurice (Fra) : Institut de veille sanitaire, octobre 2008, 54 p. Available on the InVS website: [www.invs.sante.fr/publications/2008/iso\\_raisin/index.html](http://www.invs.sante.fr/publications/2008/iso_raisin/index.html)



## Trends in antimicrobial susceptibility

Resistant bacterial colonies can emerge in response to massive antibiotic use. Some of these bacteria isolated in hospital settings can be resistant to multiple drugs. These multiresistant bacteria are a real public health concern in France as abroad. Among the bacteria under surveillance, penicillin-resistant *Streptococcus pneumoniae* in private practice and MRSA, in hospitals, are good indicators of overall trends in bacterial resistance to antibiotics. These indicators are used for follow-up for the national plan to preserve the efficacy of antibiotics and the national programme for nosocomial infection control.

### Towards a reduction in *S. pneumoniae* infections...

Surveillance in France of strains of *S. pneumoniae* is organized by the national reference centre for pneumococci in collaboration with 22 regional pneumococcus observatories and InVS. In 2006, this centre analyzed 1411 strains from 406 laboratories representing 444 health-care facilities. Negligible in 1987, the proportion of penicillin-resistant *S. pneumoniae* increased regularly through 2002, when it reached



53%; it fell thereafter and stabilized at 38% in 2006. This decrease is concomitant with the implementation in 2001 of the national plan for the preservation of antibiotic efficacy, which is targeted especially at the appropriate use of antibiotics by physicians in private practice.

### ... and *Staphylococcus aureus* infections

There are several types of surveillance data covering MRSA: French data from the national observatory of the epidemiology of antimicrobial resistance, transmitted to the European Antimicrobial Resistance Surveillance System (EARSS) since 2001, data from the BMR-RAISIN network for methicillin-resistant bacteria (BMR-RAISIN) since 2002, surveys of nosocomial infection prevalence since 1996, and data from hospitals, such as those from the Paris public hospital system (l'Assistance publique—Hôpitaux de Paris, AP-HP) since 1993. In France, the proportion of MRSA fell from 33% in 2001 to 26% in 2007 according to data transmitted to the EARSS network. A similar decline has been observed in the other networks or surveys mentioned above.

### Proportion of resistant strains still too high

Although it is difficult to link these encouraging results to specific activities, in view of the multifactorial and simultaneous interventions applied (better antibiotic prescription practices, vaccination for pneumococci, hand hygiene for staphylococcus), the results suggest that the prevention policies set up since 2000 are effective and must be continued and strengthened.

#### For further information:

Anonymous. Recent trends in antimicrobial resistance among *Streptococcus pneumoniae* and *Staphylococcus aureus* isolates: the French experience, Eurosurveillance vol.13, 46, 2008. [www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19035](http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19035)

### Trends in HIV infection in France

According to the surveillance systems coordinated by InVS, France is in the paradoxical situation of conducting extensive screening activity at the same time as too many individuals are still diagnosed only at an advanced stage of disease.

### Reduction in discovery of HIV seropositivity in France

In 2007, of the 5 million tests performed, approximately 6500 people were found to be seropositive for HIV, 17% of them already at the clinical AIDS stage. Despite relatively stable screening activity in recent years, the number of people who have discovered that they are seropositive has diminished since 2004 (7500).

### Divergent trends according to groups

Of those first found to be seropositive in 2007, 60% were contaminated during heterosexual relations, and half of them (46%) were from a country in sub-Saharan Africa. The number of new seropositive identifications in this population has been decreasing since 2003, although migration from this region appears stable. This decline may be explained by a decrease in use of screening

by African populations, related to statistical trends in anti-immigration policies.

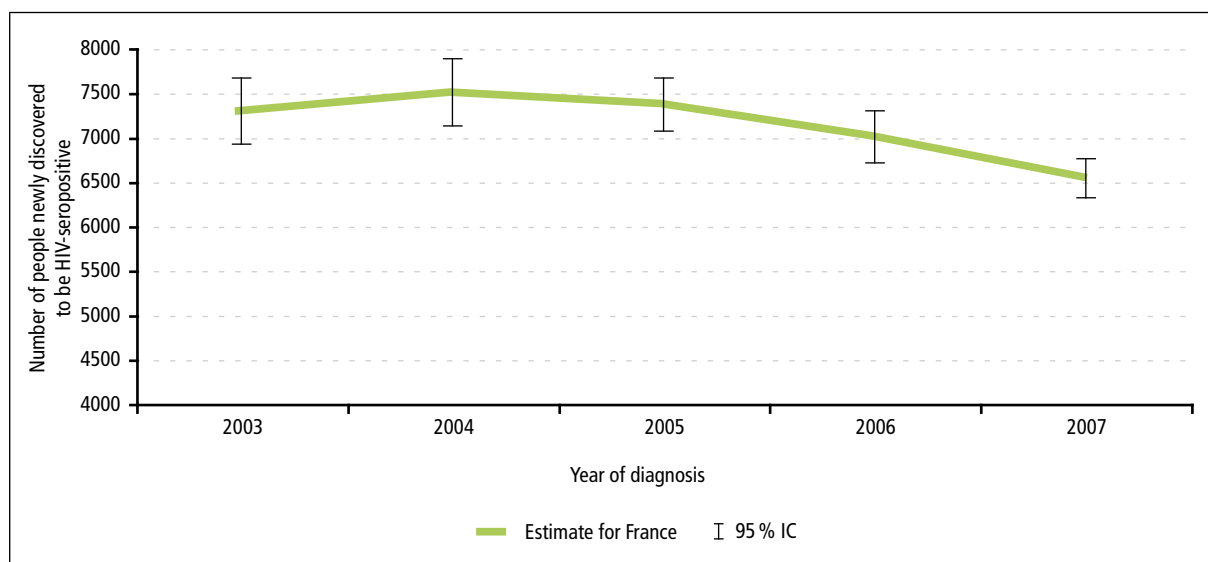
Although the number of French individuals contaminated during heterosexual relations remains stable, the number of new diagnoses of HIV seropositivity has increased in men having sex with men since 2003 with 2500 diagnoses in 2007. Sexual behavior at risk continues in this group.

Finally, drug users represent approximately 2% of the new discoveries (130 cases in 2007) and their number has diminished slightly but regularly for the past several years. Nonetheless, if we relate these figures to the population of drug users, the rate of HIV in this group remains very high (20 times higher than non-drug-using heterosexuals).

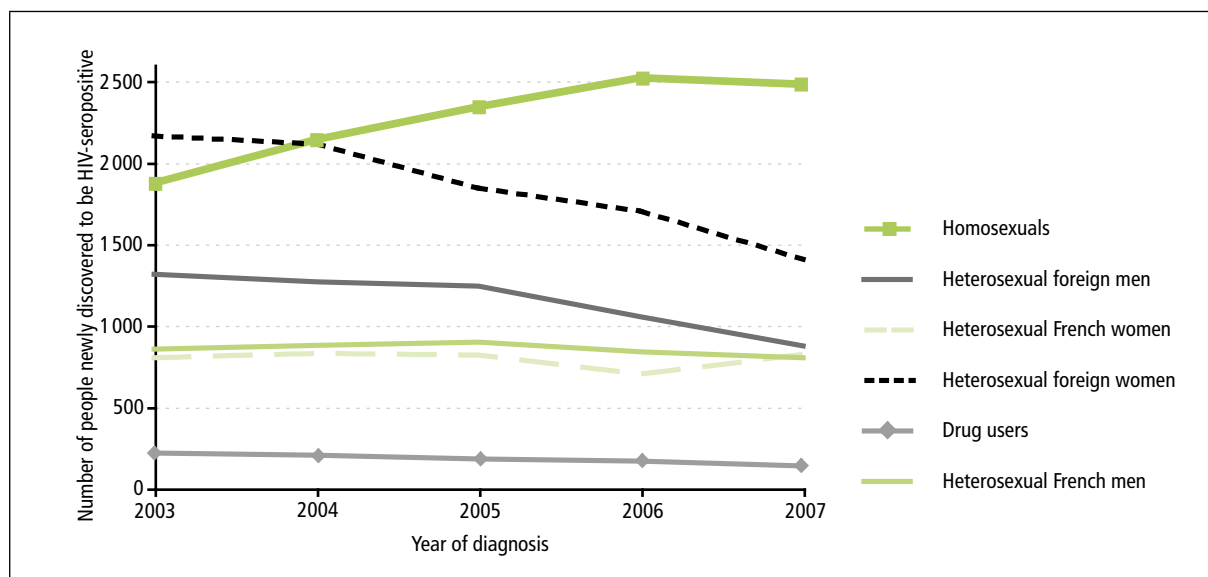
### Prevention: a key tool in the fight against HIV

Prevention policies must be adapted to each population. The policy of risk reduction for drug users has shown its efficacy in reducing HIV transmission and must therefore be continued and expanded to HCV. Early screening and access to treatment for sub-Saharan Africans living in France are clearly key elements in the fight against HIV and must be reinforced. It also appears essential to continue and reinforce prevention activities, especially among men having sex with men, so that they might internalize these prevention messages.

#### | Discovery of HIV seropositivity in France between 2003 and 2007 |



**Discovery of HIV seropositivity between 2003 and 2007, according to mode of transmission, sex, and nationality**



**For further information:**

- Cazein F, Pillonel J, Le Strat Y, Lot F, David D, Leclerc M, Couturier S, Benyelles L, Brunet S, Thierry D, Barin F, Semaille C. Surveillance de l'infection à VIH/sida en France, 2007. Bull Epidemiol Hebd 2008;45-46:434-43.
- Infection à VIH et sida en France. Dossier thématique. Available on the InVS website: [www.invs.sante.fr/surveillance/vih-sida](http://www.invs.sante.fr/surveillance/vih-sida)
- Lutte contre le VIH/sida et les infections sexuellement transmissibles en France – 10 ans de surveillance, 1996-2005. Saint-Maurice (Fra): Institut de veille sanitaire, mars 2007, 156 p.



## Environmental health: surveillance on five major fronts

The health effects linked to the environment—a subject of concern to our fellow citizens—are an important activity of InVS. The principal mission of the Department of Environmental Health (DSE) is to monitor and assess the health consequences of environmental modifications, whether they are accidental or chronic, natural or anthropogenic. This InVS department has implemented 5 units responsible for various surveillance programmes and endeavors to respond to the diverse referrals of the public authorities and to questions from the public. The DSE conducts studies and also provides methodological support to the interregional epidemiology groups (CIRE) and to the decentralized services of the Ministry of Health. It also coordinates some alert and response systems, such as the heat wave health alert system, established in 2004.

### FOCUS

#### CIRE-DSE collaboration for surveillance of polluted sites and soils

The increasing preoccupation of populations and public authorities with polluted industrial and mining sites led the CIRE and the InVS DSE to establish a common programme in 2004. Their objective is to develop specific methods and tools to study the relation between soil pollution and health. This collaboration also mobilizes the competent national authorities and their decentralized departments, as well as public establishments such as AFSSET and the National Institute of Industrial Environment and Risks (Institut national de l'environnement industriel et des risques, INERIS).

Numerous studies began under this surveillance programme in 2008. Moselle and Madon, as well as Viviez, serve as examples below.

#### Natural arsenic pollution: the Moselle and Madon basin

After elevated quantities of natural arsenic were discovered in the soils of the Moselle and Madon basin (54), an epidemiologic study of the local population began. It has 2 objectives: to study population exposure to arsenic by measuring biomarkers, specifically arsenic levels in urine, and to identify the factors that determine urinary arsenic levels. These concentrations do not screen for any disease, but simply reflect arsenic exposure during the preceding days. This study cannot answer questions

about the possible health consequences of exposure, but it will improve knowledge of the factors responsible for the body burden of arsenic.

#### Screening health effects associated with soil pollution in Aveyron

The municipality of Viviez, in Aveyron (12), hosted a heavy industrial activity for nearly 150 years. The production of zinc and of coloring agents from barytes has had important consequences on local soils, water tables, and neighboring rivers. Although zinc production has been replaced by less polluting activities, substantial residual contamination remains.

Following a request for remediation of an industrial site, in 2007 the Midi-Pyrénées CIRE took measurements that confirmed the heavy pollution of soils around both residential and public premises. In particular, they found high levels of arsenic, cadmium, lead, zinc, and barium. This finding led to fear of several different risks: lead poisoning for young children and pregnant women, and renal damage (cadmium), cutaneous damage, and cancer (arsenic) for the entire population. Although no disease attributable to these pollutants was identified, their health impact could not be ruled out. A study of local population exposure was conducted to analyze the environmental factors and assess the population's metal burden with biomarkers. Results will determine whether the inhabitants of Viviez will need to receive medical treatment and special advice on hygiene and diet.

>>> For further information, see the article on page 92



The DSE was reorganized in 2008 to improve its ability to meet its objectives. **Agnès Lefranc**, deputy, and **Georges Salines**, head of department, talk about a year rich in results and new projects.

### What were the changes in your department, in terms of resources and operations?

The DSE was entirely restructured during 2008, with a redeployment of our staff and a reorganization aimed at improving our ability to meet our objectives—both surveillance and intervention on urgent tasks such as health alert management. We went from 3 to 5 units. This reorganization allowed us to improve the quality of internal management, and to clarify our operation in scientific terms, with each unit working on a well-defined theme. Vigilance and efficacy improved a lot!

### What were the highlights in your department in 2008?

One of the highlights this year concerned activities conducted around polluted sites and soils, whether the pollution was of natural or human origin. The air and health surveillance programme (Programme de surveillance air et santé, PSAS) was particularly fruitful in terms of publications and in the production of data, results, and methods for local stakeholders. 2008 also marked the finalization of several asbestos studies that began several years ago and the launching of a large-scale survey on the prevalence of childhood lead poisoning. Finally, our team participated in the organization of a European conference on human biomonitoring, which took place on 4-5 November 2008. This event brought together the analyses and experience acquired in different European countries and gave us a chance to summarize what has already been done in France. It also underlined the interest in developing an organized and consistent national biomonitoring programme in the years to come.

### What have you learned from these highlights?

This year demonstrated the importance of partnership work, both cross-sectionally, within InVS, and with outside collaborators. Our activities could not succeed without the support of dynamic partners such as the authorized air quality surveillance associations (Associations agréées de surveillance et de la qualité de l'air, AASQA), the Poison and Toxicity Monitoring Centres (Centres antipoison et de toxicovigilance, CAPTV), the Scientific and Technical Centre for Building (Centre scientifique et technique du bâtiment, CSTB), hospital staff physicians, and more. We also use substantial amounts of medical and health-economic data, for events such as mortality, hospital admissions, and drug utilization, collected by other groups. Our topics being by definition midway between health and environment, we work simultaneously with partners in the fields of health and environmental studies. We thus benefit from a highly developed network.

**“New organization  
for improved vigilance  
and efficacy”**

### PROFILE

## Department of Environmental Health

### Director

Georges Salines

### Creation

1994

### Number of staff

60

### Organization

Five units:

- **air, water, climate:** air and health, water and health, climate and health
- **toxicity monitoring and biosurveillance:** acute and chronic poisoning, population burden of some contaminants
- **populations and residential environments:** unhealthy housing, polluted sites and soils, population involvement in investigations
- **accidental and physical risks:** preparedness for major industrial accidents and natural disasters, risks associated with physical agents (ionizing and other radiation)
- **statistics and tools:** development of methods and tools (e.g. statistics, geographic information systems, and risk assessment) aimed at ensuring the methodological quality of the department's work

### Contact

dse@invs.sante.fr

## SATURN-Inf: better screening of lead poisoning in children

After the diagnosis of around 20 cases of childhood lead poisoning in France in the 1980s, a surveillance system of blood lead assays was established. Although the national surveillance system for blood lead levels in children (Système national de surveillance des plombémies chez l'enfant, SNSPE) records the diagnosed cases and the screening activities, it does not provide information about the real number of existing cases, because clinical effects are difficult to detect and often late. Accordingly, in 2008, at the request of the DGS, InVS launched a new national survey of the prevalence of lead poisoning in children. The results of this study will provide a necessary update to earlier studies, which date back to the 1990s.

### SNSPE results

#### A tested operation

The SNSPE was first set up in Île-de-France in 1992 and was extended to the national level in 1995. It is currently directed by InVS, in collaboration with the CAPTV. This system is based on the identification by health-care professionals of children at risk — young children, migrant children, living in old and sometimes dilapidated housing. Mapping of the at-risk areas facilitates their selection. Blood lead levels are then tested and surveillance forms, including information about the children and their individual risk factors for lead exposure, are systematically completed and transmitted to CAPTV. Cases of diagnosed lead poisoning (a blood lead level  $>100 \mu\text{g/L}$ ) must also be reported to the DDASS under mandatory reporting rules. All files are then transmitted to InVS.

### Increased activity

The SNSPE regularly produces data about screening activities and results. Since 1995, numerous documents have provided health authorities with screening campaign results. In 2008, InVS published a report on screening activities during 2003 and 2004 and a descriptive note about lead poisoning cases in 2006. The results detailed in these publications show that from 1995 to the mid-2000s, the total number of blood lead assays doubled and the number of children who had a first blood lead assay tripled. These figures show a clear increase in screening activity. Despite this increase, the number of cases of lead poisoning identified during initial screening has globally decreased over this period.

## Operational expert assessment

The results of these screening activities, as well as the information collected by local surveillance system participants, provided a foundation for an operational expert assessment of screening strategies requested by the DGS. This assessment, conducted by a group led jointly by Inserm and InVS, was published in July 2008. It inventoried the activities conducted since 1995 and analyzed their development over time. On this basis, the working group proposed several avenues for exploration of perceptible trends in childhood lead poisoning in France. It stressed especially the imperative need to accompany lead poisoning screening with a reduction in the risk of exposure, especially for the most exposed populations. The expert advisory group therefore recommended using census data to refine the tools for identifying at-risk areas and increasing information and awareness in families. The main information of this expert assessment was synthesized in an article published in the Weekly Epidemiological Bulletin (Bulletin épidémiologique hebdomadaire, BEH) of 18 November 2008.

## Launching a new national survey on the prevalence of childhood lead poisoning

### Two-stage survey

A 2-stage national survey of the prevalence of lead poisoning in children (called SATURN-Inf, Enquête de prévalence du saturnisme infantile) began in September 2008 and will continue through April 2009. The first phase took place in hospitals and the second at children's homes.

The hospital survey concerned approximately 3800 children recruited in 140 hospitals throughout France. Hospital staff completed a questionnaire based on parental responses, which provided data on the children's risk factors for lead exposure, vaccination history, and social and demographic characteristics.

The investigation on lead exposure at home is directed by the CSTB. It involves a subsample of 500 children recruited from those who participated in the hospital survey. The study includes analyses of lead in paint, dust, water, and playground soils.

## Multiple objectives

Studying the prevalence of lead poisoning requires taking and testing blood samples from a large sample of children and thus gave us the opportunity to obtain representative whole blood samples from a large population of children. Although principally motivated by the study of children's blood lead burden, these samples will also allow assessment of their cadmium burden and serology testing for antibodies of some infectious diseases — measles, mumps, rubella, chickenpox, toxoplasmosis, hepatitis A, and herpes virus 1 and 2. The originality of the SATURN-INF study thus lies in the multiplicity of its objectives: it is simultaneously a survey of the prevalence of lead poisoning, of cadmium burden, and of the seroprevalence of infectious diseases (this last component is directed by the InVS DMI). It also constitutes a biobank for future studies in environmental health and in infectious diseases.

## Air and health surveillance programme: health impact of air pollution is documented

French law, specifically L. n° 96-1236 (dated 30 December 1996, on air and rational energy use), grants to all the right to breathe air that does not harm their health. In addition, it foresees that the "State shall ensure [...] surveillance of air quality and its health effects". Accordingly, InVS established an air and health surveillance programme (PSAS) in 1997. Set up in 9 French cities — Bordeaux, Lille, Le Havre, Lyon, Marseille, Paris, Rouen, Strasbourg, and Toulouse — the PSAS relies on air data produced by the local authorized associations for air quality surveillance and on health data from existing information systems — the Inserm Epidemiological Centre on medical causes of death (Centre d'épidémiologie sur les causes médicales de décès, CeperDC) and the national medical informatics programme (Programme de médicalisation des systèmes d'information, PMSI), which records hospitalizations.

Several PSAS analyses have already examined short-term relations between air pollution and health. The study in 2008 marked an important advance in this domain.

## 2008 Study: a specific objective

Conducted from 2000-2004 and published in June 2008, this study examined the health effects associated with different types of particles, specifically, fine particles of a diameter less than 2.5 µm and larger particles, from 2.5 to 10 µm in diameter. More precisely, this analysis sought to quantify the short-term associations that might exist between variations in the levels of some air pollution indicators (nitrogen dioxide, ozone, fine and



coarse particles) and mortality. The variables taken into account for mortality were the number of deaths for all non-accident causes and the number of deaths for cardiovascular and cardiac causes. Excess relative risk, an index of the increased risk of mortality, was calculated for a daily augmentation of 10 µg/m<sup>3</sup> in the level of each pollution indicator considered.

## Convincing results about the association between increased pollution and mortality

Overall, for the 9 cities combined, air pollution was closely associated with mortality. An increase in pollutant levels was significantly associated with an increased risk of death that day and the next day. The greatest impact on mortality

### For further information:

All documents related to lead poisoning produced by InVS, as well as a summary of the SATURN-INF study protocol and additional information are available at the InVS website:

[www.invs.sante.fr/surveillance/saturnisme/default.htm](http://www.invs.sante.fr/surveillance/saturnisme/default.htm)

- Chatelot J, Bretin P, Lecoivre C. Dépistage du saturnisme de l'enfant en France en 2003 et 2004. Saint-Maurice (Fra): Institut de veille sanitaire, avril 2008, 59 p.
- Lecoivre C, Bretin P. Description des cas de saturnisme de l'enfant survenus en France au cours de l'année 2006 – Note technique. Saint-Maurice (Fra): Institut de veille sanitaire, mai 2008. 19 p.
- Saturnisme: quelles stratégies de dépistage chez l'enfant? Expertise opérationnelle. Rapport InVS/ Inserm, juillet 2008, 316 p.
- Bretin P, Cottrelle B, Friedrich D, Kremp O, Etienne J, Salomez JL. Dépistage du saturnisme chez l'enfant en France depuis 1995: pratiques, résultats, évolutions, recommandations. Bull Epidemiol Hebd 2008;44:421-4.



is associated with an increase in particulate levels, especially coarse particles. The most marked results were those observed for mortality from cardiovascular and cardiac causes, especially among those aged 65 years or more.

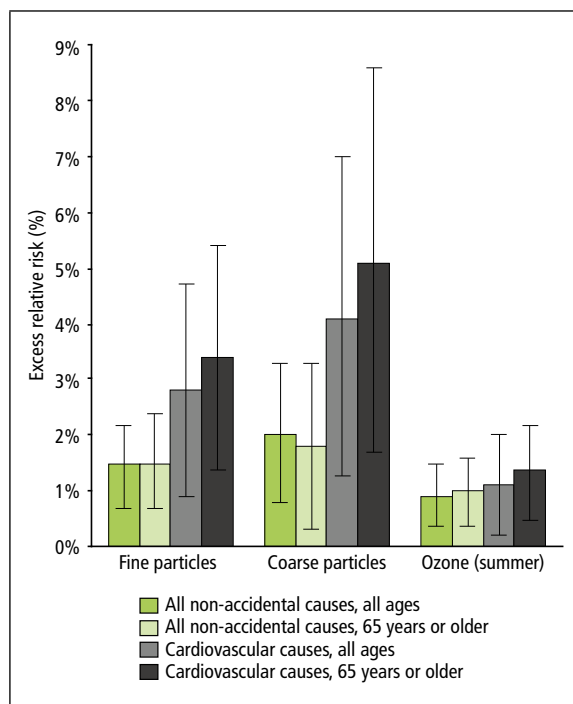
These results are consistent with those of other large-scale studies in North America and Europe. Nonetheless, they differ slightly from the preceding PSAS studies, expressing a slight change in the relation between air pollution and mortality. This evolution underlines the need to maintain routine surveillance of these relations.

### Contributions to the assessment of the impact of urban air pollution on health

The 2008 analysis made it possible to assess, for the first time in France, the relation between the levels of particles of different sizes and the number of deaths. It demonstrates that coarse particles, as much as fine particles, can affect mortality.

At the same time, this analysis enabled the PSAS team to validate an update of its method for conducting health impact assessments (HIA) of urban air pollution. A methodological guide presenting the concepts and methods for quantifying the health effects of air pollution was thus published in March 2008. Health impact assessments aim to quantify, on the scale of a city, the impact of exposure to air pollution on health, by obtaining up-to-date information on the number of deaths and hospital admissions attributable to pollution. Health impact assessments are therefore a relevant tool providing data to inform the population, increase awareness among local policy-makers, and help to develop local and national public policies in this area.

**Excess relative risk (%) associated with a daily increase of  $10 \mu\text{g}/\text{m}^3$  in the level of the air pollution indicator on the day of and the day before death**



Together with this methodological guide, the PSAS team offers a complete set of informatic tools for conducting health impact assessments of urban air pollution. These tools are available on the InVS website devoted to health impact assessments of air pollution: [www.invs.sante.fr/surveillance/psas9/evaluation\\_impact.html](http://www.invs.sante.fr/surveillance/psas9/evaluation_impact.html)

#### For further information:

- Programme de surveillance air et santé. Analyse des liens à court terme entre pollution atmosphérique urbaine et mortalité dans neuf villes françaises. Saint-Maurice (Fra): Institut de veille sanitaire, juin 2008, 41 p. Available at: [www.invs.sante.fr/publications/2008/psas\\_mortalite/index.html](http://www.invs.sante.fr/publications/2008/psas_mortalite/index.html)
- Évaluation de l'impact de la pollution atmosphérique urbaine. Concepts et méthodes. Saint-Maurice: Institut de veille sanitaire (Fra), mars 2008, 35 p. Available at: [www.invs.sante.fr/publications/2008/eis\\_pollution\\_urbaine/index.html](http://www.invs.sante.fr/publications/2008/eis_pollution_urbaine/index.html)

## Health impact of environmental exposure to asbestos: results of two studies

In 2003, DGS asked InVS to estimate the health impact of environmental exposure to asbestos fibers in populations living near former industrial sites where asbestos was mined or processed or near natural outcrops of asbestos rock. InVS, in collaboration with the Office of Geological and Mining Research (Bureau de recherches géologiques et minières, BRGM) and the Laboratory for the Study of Inhaled Particles (Laboratoire d'étude des particules inhalées, LEPI) conducted 2 studies: a case-control survey to compare the risks of mesothelioma according to the population's past environmental exposure and a study to estimate current asbestos exposure among populations living near industrial and natural sites. The feasibility analysis took place in 2004-2005. The limitations revealed at this stage and the resulting recommendations made it possible to extend these studies to the entire country in 2006. 2008 was devoted to finalizing the analyses and validating these reports.

### A better definition of exposure

The first study considered the health impact on populations exposed to asbestos in the past. A case-control survey used data from the national mesothelioma surveillance programme (Programme national de surveillance du mésothéliome, PNSM) and from a census of old industrial and natural sites. It sought to analyze the non-occupational risk factors for mesothelioma in the French population and to estimate the attributable fraction due to residential exposure around old industrial sites and natural outcrop sites.

Although the first analyses did not establish a significant relation between past non-occupational exposure of the subjects to asbestos and mesothelioma, they were nonetheless rich in information. First, they underlined

the difficulty of collecting specific data to estimate the subjects' environmental exposures. Second, they made it possible to develop guidelines for pertinent data to be considered in defining asbestos exposure: duration of industrial activity, type of fiber used, industrial process used, and volume of asbestos produced.

### Classification of sites of natural asbestos outcrops

The second study sought to assess the health impact of current asbestos exposure for populations living near industrial sites and natural outcrops. This work consisted in assessing, for each site considered, the fiber transfer in the air in different population exposure circumstances. The method used was based on a combination of 2 complementary approaches: qualitative assessment of population exposure to asbestos fibers, based on a documentary and cartographic study conducted by the BRGM, and a quantitative approach based on direct measurement of the concentration of asbestos fibers in the air, conducted by the LEPI on the outcrops that seemed likely to emit the most fibers. Because of the difficulty in obtaining authorization for access to industrial sites, this analysis finally covered only natural asbestos sites. The results demonstrate that in conditions of exclusively wind-based erosion, the concentration of asbestos fibers was very low. On the other hand, human activities, such as trips to the outcrops or handling of the rock, produced substantial fiber concentrations in the air.

These results allowed the classification of natural asbestos sites and prioritization of the sites for which management appears necessary in view of the potential risks of population exposure. Accordingly, of 13 sites with asbestos outcrops, measures to reduce access were applied to 2: Girarde, in the municipality of Termignon (73), and Val-de-Péas, in Château-Ville-Vieille (05).

#### For further information:

Daniau C, Cosson J, Dor F. Exposition environnementale à l'amiante chez les personnes riveraines d'affleurements de roches amiantifères en France continentale – Rapport final. Saint-Maurice (Fra) : Institut de veille sanitaire, décembre 2008, 73 p.

## Surveillance system for dietary melamine poisoning

The scandal of melamine in Chinese milk, which produced a massive outbreak of foodborne poisoning in young children, received substantial media attention. Overall, more than 294 000 cases were reported in China from June to November 2008, as well as some 20 cases in the special administrative regions of Hong Kong and Macao. Six deaths were reported. The main effect of this acute poisoning was the formation of urinary lithiases, and these caused severe renal complications in some children.

The European Union has banned importation of Chinese dairy products since 2002. Nonetheless, numerous food preparations from China containing milk derivatives and therefore possibly melamine were still sold in Europe in 2008.

A specific system of epidemiologic surveillance was thus set up in France in September 2008, in collaboration with DGS and the DDASS.

surveillance, the International and Tropical Department (DIT) collected and verified all of the information from China (see p 126 for more detail). As alert coordinator, the DSE developed the definition of suspected and confirmed cases and prepared, with the DMI, a guide for investigation of suspected cases. This guide was distributed to every DDASS and CAPTV. Moreover, a review of the melamine-related health situation in France and abroad was placed on the InVS website and updated regularly throughout the alert period.

## Lifting the alert

A single report of a suspected case was received and managed by this surveillance system. It involved a 10-month-old girl who had been adopted in China by a French couple and arrived in France on 15 June 2008. After testing several urine samples, it was finally concluded that no melamine was present. An AFSSA evaluation subsequently showed that the food of Chinese origin on the French market contained very little melamine, and the alert was lifted on 25 November 2008.

## A collaboratively-managed alert

The objective of the system was to collect the possible cases of foodborne melamine poisoning in France and, where appropriate, identify the food products responsible and if necessary remove them from the French market. A very close collaboration was thus set up between several InVS departments. As part of its mission of international

## Lessons to be learned

Although the health impact of melamine-tainted products in France was minimal, much was learned. This episode underlined the need to reinforce communication between central government departments, as well as the need to develop partnership networks on an international scale, as health alerts become global.

### For further information:

- Le point au 10 octobre 2008 sur les produits alimentaires d'origine chinoise contaminés par de la mélamine. Available on the InVS website: [www.invs.sante.fr/presse/2008/le\\_point\\_sur/melamine\\_101008/index.html](http://www.invs.sante.fr/presse/2008/le_point_sur/melamine_101008/index.html)
- Avis de l'Agence française de sécurité sanitaire des aliments relatif à l'évaluation du risque d'exposition à la mélamine lié à la consommation d'aliments contaminés en provenance de Chine. Available on the AFSSA website: [www.afssa.fr/Documents/AAAT2008sa0301.pdf](http://www.afssa.fr/Documents/AAAT2008sa0301.pdf)

## Surveillance of the adverse effects of energy drinks

After the introduction in France of Red Bull® energy drink, containing taurine, in July 2008, the Minister of Health requested that surveillance be set up for reports of adverse effects associated with these drinks. In response to this referral, InVS in partnership with AFSSA established a surveillance system *via* the CAPTV. A first report of the data collected by this system was submitted to the Ministry in September 2008.

## Reassuring early results

An intermediate assessment listed the reports of patients with adverse effects attributable to energy drinks. It showed

that most of the symptoms collected and associated with drinking Red Bull® were benign and could be explained by the presence of caffeine.

## Surveillance remains appropriate

Several cases with serious neurological symptoms have nonetheless been reported. Although their relation with drinking Red Bull® is doubtful, this discovery nonetheless suggests that prudence is appropriate. Accordingly, the surveillance of reports about the adverse effects of these drinks will continue and a new report will be compiled in 2009.





## Workplace health: assessment and surveillance of occupational risks

The impact of work on health is still insufficiently recognized in France. The Department of Occupational Health (Département santé et travail, DST) was created in 1998 to remedy that situation. Its role is to improve knowledge of the relations between work and health and to identify the occupations and activity sectors most affected. The department has thus set up several programmes for assessing occupational exposure and diverse tools to routinize or automate the surveillance of work-related risks. Moreover, a further task for DST is the centralization of data collected by different participants in the field, coordination of the surveillance activities set up on a regional scale, and provision of information to the population and to policy-makers. Finally it is often asked to respond to questions about workplace health. These requests may be “local” —based on reports of suspected abnormal health phenomena in companies, by employees, employers, the population, occupational physicians, or victims’ associations —or they may come from public authorities.

### FOCUS

#### Launching an epidemiologic programme for surveillance of occupational risks: the COSET cohort

Although the influence of occupational factors on health is quite considerable, it has been insufficiently studied in France. Accordingly, InVS is setting up COSET, a vast cohort for epidemiologic surveillance in the workplace. Conducted in partnership with the principal social insurance funds (CNAM-TS, MSA, RSI) and Inserm, with support from the Ministries of Health and of Labour, this programme will improve our knowledge of the relation between occupational factors and the onset of health problems. It will thus make it possible to identify the occupations and working conditions that present health risks and to develop guidelines for prevention.

#### A vast epidemiologic cohort

The COSET cohort covers multiple industries and sectors and multiple hazards. It covers the entire working population in France, aged 18 to 65 years. Volunteers must be recruited from the principal social insurance funds—the CNAM-TS general fund (for salaried workers), the MSA agricultural fund, and the RSI fund of self-employed workers. Together these groups account for 95% of the French labor force. Those affiliated with the general fund will be included through the CONSTANCES cohort (Consultants des Centres d’examens de santé, or Consultants at Health Screening Centres). This is currently being set up by the mixed

Inserm-CNAM-TS unit 687, which plans to recruit a sample of approximately 200 000 people over five years. A memorandum of partnership has been concluded between InVS and this unit for the use of the data collected in the CONSTANCES cohort.

We plan to recruit approximately 30 000 individuals currently affiliated with the agricultural fund. The recruitment of an equal number of self-employed workers belonging to the RSI is also planned. The last two components will be set up by the InVS DST, in collaboration with these funds.

#### Definition of inclusion protocols

During 2008, in partnership with the MSA, we developed an inclusion protocol for its working members. They will be randomly selected from the MSA pension (old-age insurance) databases. A self-administered questionnaire—to collect data on health status and working conditions, past and present occupational activity, and past and present exposure to some hazards in the workplace—will then be sent *via* the postal service to each subject. A new questionnaire will be sent to them each year to collect health and occupational events that occurred during the year. Moreover, information about their career, health care utilization, and possible workplace accidents or occupational diseases will be collected from the MSA.

Methods of recruitment for self-employed workers are under study.



Created in 1998, the DST is beginning to produce information useful for preventing occupational health risks. **Ellen Imbernon**, director of this department, talks about the work accomplished in 2008.

**“A department whose work is beginning to show results”**

### What were the highlights in your department in 2008?

An important event in 2008 was the publication of the early results of a study on mental health in the working population, from the SAMOTRACE (Santé mentale observatoire travail Rhône-Alpes et Centre, mental health observatory for work in Rhône-Alpes and the Centre) programme. A symposium devoted entirely to this topic will be held in March 2009. The mental health field has been particularly visible in recent years, after the tragic occurrence of several suicides in the workplace. This is an important subject, and the DST has put a great deal of effort into it. The other principal studies conducted in 2008 have involved mainly musculoskeletal diseases and chronic diseases, especially occupational cancers. There were numerous reports of suspected abnormal health phenomena in different companies, with reports of excess rates of all forms of cancer. These reports sometimes lead to investigations that can be quite cumbersome. One such investigation ended in 2008—the study of an excess number of kidney cancers in a plant producing vitamins in Allier. The results have been presented to stakeholders at the factory, through its plant safety committee (comité d'hygiène, de sécurité et des conditions de travail, CHS-CT) and will soon be published. In 2008, InVS also analyzed the number of fatal workplace accidents, for all social insurance funds combined. As required by the public health law, we sought to determine the extent to which data from the different social insurance funds can be centralized to have a global view of this phenomenon. Several programmes are beginning to come to fruition, and more and more results are being produced.

### What new objectives do these findings suggest?

Work-related health problems are taken into account ever more frequently and effectively at the regional level by the interregional epidemiology groups: they are increasingly involved in this area. We help them in their investigations and provide references and information. We must continue to develop an active collaboration with local participants in health surveillance. Similarly, we are going to continue to maintain and solidify networks of occupational physicians. We aim to have an active, effective national network by nurturing their trust to obtain the information we need. Another of our principal objectives is to try to advance the tools that have thus far been developed.

### In terms of activities, what are your principal projects for 2009?

We are going to join forces with partners to try to set up a surveillance system on the potential effects of new technologies, especially nanoparticles. Our department will also begin an analysis of the best use of the laboratory tests performed in occupational medicine to document the body burden of some hazards in the working population. A first stage will analyze the lead burden of the working population, through the blood lead level tests already prescribed by occupational physicians for individual surveillance. Finally, we must carry on with current investigations at DST to improve knowledge of occupational risks in France. Much remains to be done in this field, and our department will continue to meet this challenge!

#### PROFILE

### Department of Occupational Health

**Director**  
Ellen Imbernon

**Creation**  
1998

**Number of staff**  
43

**Organization**  
Three units:

- assessment of occupational exposure
- analysis of national databases and development of indicators for occupational health
- surveillance programmes for occupational health

**Contact**  
dst@invs.sante.fr

## Surveillance of work-related mental health: the SAMOTRACE programme

Mental health disorders are a major public health problem in the industrialized countries. For several years now, studies on the relation between mental health and work have provided strong epidemiologic knowledge. It is now necessary to obtain specific indicators, to be able to make comparisons based on occupational categories and industries and to observe trends over time. This is the objective of the programme named SAMOTRACE, which was defined by InVS in collaboration with the Institute of Occupational Medicine of Val-de-Loire, the regional Direction of Labour, Employment, and Professional Training (Direction régionale du travail, de l'emploi et de la formation professionnelle, DRTEFP) for the Centre region, and the University of Tours.

Launched in 2006, this programme began in two pilot zones: the Centre, including the regions of Centre, Pays de la Loire, and Poitou-Charentes, and Rhône-Alpes, including the districts of Rhône and Isère. Data collection finished in 2008 in the Centre area. It will end at the beginning of 2009 in the Rhône-Alpes area. Final analysis for the Centre has therefore begun and will continue in 2009.

### An innovative programme

The SAMOTRACE programme includes several specific components.

The first includes company-based epidemiologic surveillance, intended to obtain mental health indicators according to occupation and activity field. In this sense, SAMOTRACE is really innovative because, until now, these indicators have existed only for populations covering very limited numbers of occupations and industries.

The second component experimented with the feasibility of using health insurance disability data for epidemiologic follow-up of mental health in the workplace. It relies on a network of consulting physicians for the CNAM-TS.

Finally, the last and more qualitative component consists in the production of clinical monographs analyzing in detail the situations of mental distress or psychological decompensation related to work. These monographs are produced by occupational physicians specially trained in this clinical approach.

## Numerous psychosocial factors

The epidemiologic surveillance in companies relied on volunteer participation by occupational physicians. In the Centre region, 115 physicians participated in the survey and included 6056 employees.

The originality of this survey is based on its analysis of numerous psychosocial factors at work, measured by a self-administered questionnaire and two reference scales: Karasek's model of exposure to high psychological demand, low decision latitude, and low social support, and Siegrist's, which is based on an imbalance between effort and reward. Other psychosocial occupational exposures, including physical violence, discrimination, threats, and humiliation, as well as problems of occupational ethics, were also studied.

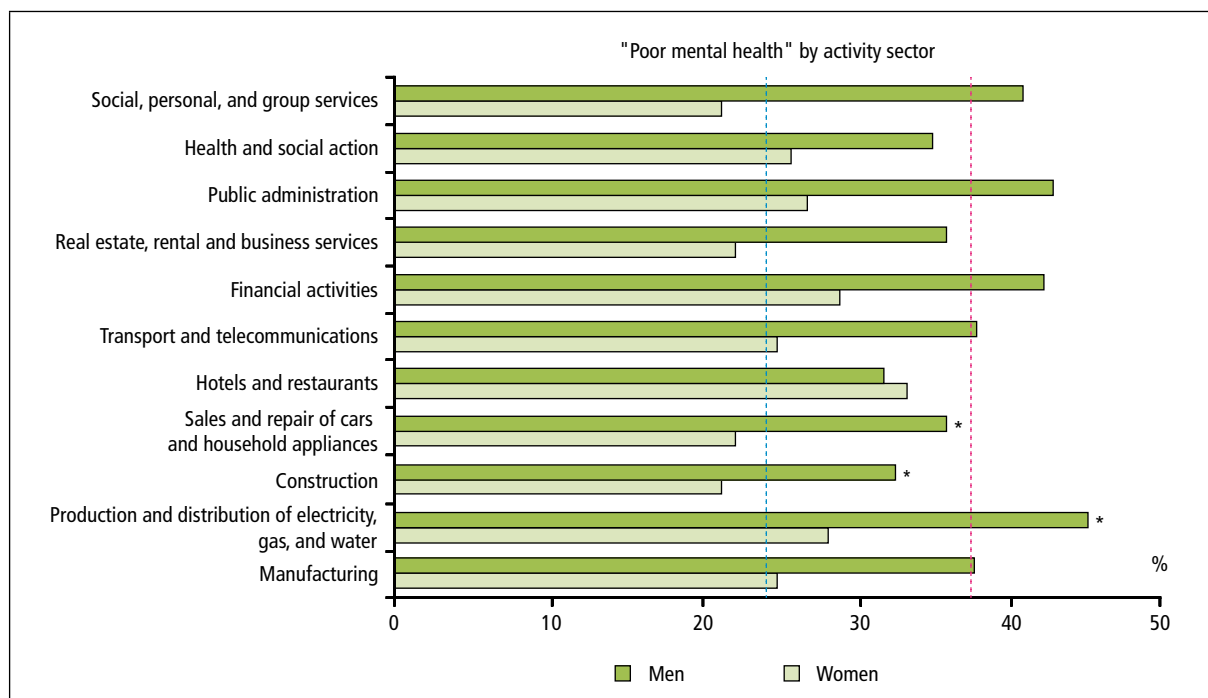
Mental health status was explored with the 28-item version of the General Health Questionnaire (GHQ<sub>28</sub>). The results showed that women have systematically worse GHQ scores, regardless of industry or occupational category considered. According to initial analyses, some sectors appear more affected than others, especially public administration, financial activities, and the production and distribution of electricity, gas, and water.

These studies suggest associations between poor GHQ scores and occupational exposure to the psychosocial factors studied. These analyses should be intensified.

## Occupations and activity sectors at risk

In the medical-administrative component of SAMOTRACE, the occupation of the patient was recorded each time the health insurance consulting physicians awarded disability compensation for a psychiatric disorder. The analysis of data from the Centre shows that, according to the opinion of the consulting physician, work probably played a role in 36% of the disability cases. This percentage was highest among office, sales, and manual (blue-collar) workers. For women, it was highest in the sectors of health, finance, civil service, advertising, and sales. Among men, the sectors most affected were construction, sales, real estate, and business-to-business services. Despite the lack of exhaustiveness of the data collected, these results seem consistent with the preliminary results from the Rhône-Alpes. They underline in particular the usefulness of standardizing the inclusion of information about occupation and activity sector in health insurance databases. This information is not currently collected on a routine basis.

## Assessment of poor mental health by activity sectors, according to the General Health Questionnaire (GHQ<sub>28</sub>)



NB: because there are fewer than 50 subjects for the hotel and food-service sector, results for it must be interpreted carefully.

\* From 50 to 100 subjects.

### For further information:

Cohidon C, Lasfargues G, Arnaudo B, Barsot F, Albou J, Huez D, Dubré JY, Thébaud F, Germanaud J, Goldberg M, Imbernon E, et les médecins du travail et conseils de Samotrace. Mise en place d'un système de surveillance de la santé mentale au travail: le programme Samotrace – Bull Epidemiol Hebd 2006;46-47:368-70.





## Excess of kidney cancers in a vitamin manufacturing plant in the Allier

In January 2003, the Ministries of Health and of Labour asked InVS to explore a possible excess of kidney cancers in a chemical plant in the Allier. A preliminary calculation estimated that for the men working at this company between 1994 and 2002, the risk of kidney cancer was 13 times higher than that of the general French population. Given the size of this risk and the plausibility of an occupational cause, InVS decided to conduct an epidemiological investigation. The results of this work are in press and were provided to the plant safety committee late 2008.

### Suspect product

This company manufactured vitamin A and E and amino acids. It used nearly 600 substances for this process, including chloracetal C5, an intermediary product in the process of vitamin A synthesis introduced at the plant in 1981. Some experts suspect that it is the cause of the kidney cancers observed. Several experimental toxicology studies show the product's mutagenic power. In the 1990s, measures to prevent exposure to this product were introduced, and the workers exposed to chloracetal C5 participate in an abdominal ultrasound screening programme.

### A significant increase in risk

This retrospective study sought to assess overall and cancer mortality, as well as morbidity from kidney cancer, among factory employees. The company's administrative data allowed exhaustive identification of everyone who worked there from 1960 through 2003. Their vital status was obtained from INSEE and the causes of death from Inserm's Cepi-DC. At the same time, a regional census sought to identify all the people with kidney cancer, using data from health-care facilities, pathology laboratories, and the health insurance fund. By cross-referencing this list with the list of past and present company employees, additional cases of kidney cancer in this population could be identified.

The mortality study found no excess of death from all causes or from malignant neoplasms in this population, compared with the general French population. But as we might have expected, analysis by type of job showed a risk gradient based on social or occupational level. Analysis of all of the cases of kidney cancers (living or dead) in this cohort showed that the risk of developing kidney cancer was elevated for factory workers, those with a maintenance or utility job, and for those who worked on vitamin A production with the synthesis process introduced in 1981.

### Convergent results

The cohort study was supplemented by a case-control study, intended to examine in more detail the associations between occupational exposure to some hazards and the onset of kidney cancers in the company. Overall, 18 cases and 82 controls were interviewed with a questionnaire intended to collect their complete occupational history. Occupational exposure to specific and non-specific chemical products in the factory was assessed for each subject. Despite the small number of study subjects, the results showed an association between kidney cancer and several substances used at the plant, particularly chloracetal C5.

Several factors provide arguments for a causal link between exposure to chloracetal C5 and the risk of kidney cancer; in particular, the association persists after adjustment for known or strongly suspected personal risk factors and for screening by abdominal ultrasound, and the epidemiologic results are consistent with the toxicological test data.

Nonetheless, the responsibility of chloracetal C5 could not be formally proven. It is difficult to isolate exposure to this substance from that to other possibly mutagenic products also present in the production process. Moreover, because the manufacturing process in question was unique to this company, it is impossible to study other similar populations, which might have reinforced the results.

Since 2003, new cases of kidney cancer are still being reported in present and ex-employees of this plant. InVS recommended continuation of the follow-up of this population.

#### For further information:

Investigations épidémiologiques dans une entreprise de production de vitamines de l'Allier. Rapport intermédiaire. Saint-Maurice (Fra): Institut de veille sanitaire, février 2007, 32 p.

## National centralization of work-related health data: fatal workplace accidents

L. n° 2004-806 (dated 9 August 2004, on public health policy) assigned to InVS the mission of developing a tool to centralize and analyze the statistics on workplace accidents and occupational diseases. To fulfill this task, InVS began work in several directions, aimed, on one hand, at making an inventory of the existing data, and, on the other hand, at defining, based on these data, the indicators necessary for epidemiologic surveillance. In this framework, DST paid particular attention to fatal workplace and commuting accidents.

### The first time in France

Until now, the number and circumstances of fatal work-related accidents were unknown, at least on a national scale. InVS therefore set up a study aimed to determine specific indicators for surveillance.

Collection of data from several different social insurance funds, for which attributability to work is better established, made the census more exhaustive. The first investigations therefore concerned this information source. Nonetheless, because most self-employed workers have no social protection against the risk of workplace or commuting accidents, the mean annual number of fatal work-related accidents had to be estimated from the annual number recognized by employee social insurance funds. For the period 2000-2004, this number

is assessed at from 1500 to 1670, for a total population of 24.4 million workers.

The proportion of fatal accidents attributable to work was then obtained by dividing the mean annual number of fatal workplace accidents by the number of deaths from accidents during the same period among those aged 15-59 years. It was 18 to 20% for men and 8 to 11% for women.

### Differences according to sex, age, and activity sector

The final analysis of the early results finished in 2008. They showed that the overall mortality rate at work was 6.1 per 100 000 employees. Men accounted for 94% of fatal workplace accidents and 78% of commuting accidents.

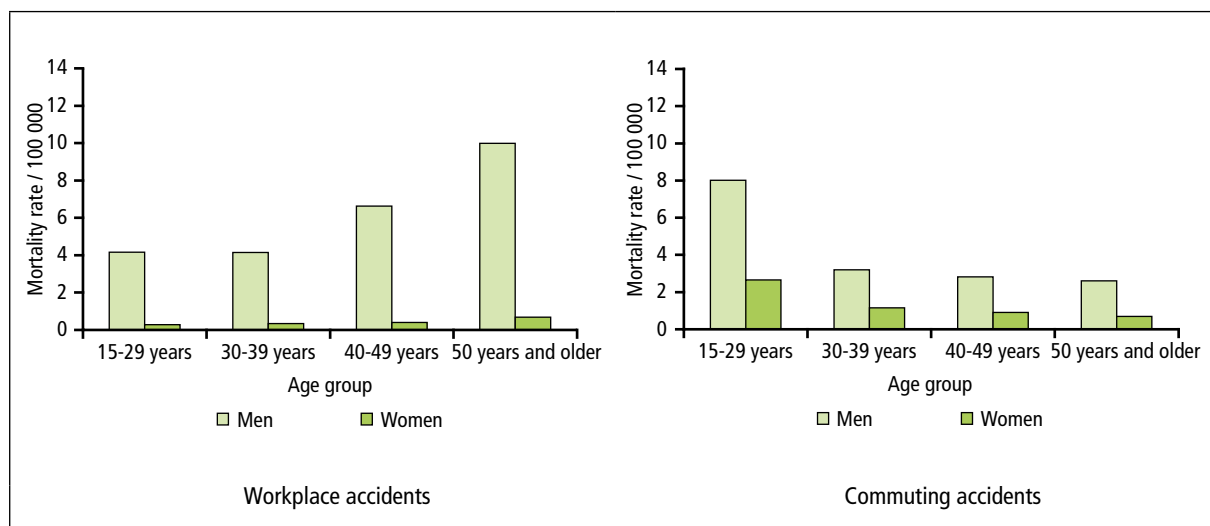
The mortality rate for commuting accidents was especially high among the young. Moreover, although the mortality rate for workplace accidents was constant in women, it increased with age in men: it was 4.2 per 100 000 among those 15-29 years and 10.0 per 100 000 in those aged 50 years or more.

Finally, we examined the distribution by activity. The mortality rate for workplace accidents was highest for men working in agriculture, transport, and construction.

These different surveillance indicators probably underestimate the real number of fatal work-related accidents. Despite these issues, this study made it possible for the first time to study the phenomenon in France and to identify the occupations and activity sectors at risk.



## | Mortality rate for workplace and commuting accidents according to age in the population of employees, 2000-2004 |



### For further information:

Les systèmes d'information des régimes de sécurité sociale relatifs aux accidents de travail et aux maladies professionnelles : vers un entrepôt national de données ? Institut de veille sanitaire, août 2006.

Article L1413-3 – paragraph 6 of the Public Health Code, modified by L. n° 2004-808 dated 9 August 2004, related to Public Health Policy: "to accomplish its missions, the Institute for Public Health Surveillance shall implement, in liaison with the health insurance funds and the statistics departments of the ministerial departments concerned, a tool permitting the centralization and analysis of the statistics on workplace accidents, occupational diseases, diseases presumed to be of occupational origin, and all other data relative to health risks in the workplace, collected in compliance with article L1413-4".

## Chronic diseases and injuries: continuous observation

The mandate of the Department of Chronic Diseases and Injuries (DMCT) is particularly vast: it focuses on all non-transmissible diseases as well as home and leisure accidents. The mission of this InVS department is to provide information about the frequency of these diseases, their determinants, and for some, the complications that may result and their management. To accomplish this mission, the department coordinates several surveillance programmes (for e.g. cancer, nutrition, cardiovascular diseases, diabetes, injuries, respiratory diseases, mental health, and rare diseases), for which it uses either vast population surveys conducted in large samples or available health-related administrative databases (e.g. PMSI hospitalization, demands for coverage for long-term chronic conditions, health insurance reimbursement data, and death certificates from CépIDC). Since 2004, InVS coordinates the FranceCoag network, which ensures the follow-up of persons with haemorrhagic disorders due to a hereditary deficiency in clotting proteins. Jointly with Inserm, it also provides the technical secretariat for the National Committee of Registries and the National Committee for Rare Diseases, the epidemiologic structures that continuously and exhaustively record selected diseases in given geographic zones.

### FOCUS

#### **ENTRED: evaluate the health status and quality of management of persons with diabetes**

Because of the potential complications that uncontrolled diabetes can generate, improvement in its management is an important public health issue. To assess the health of people with diabetes and their medical management, InVS participated from 2001 to 2003 in the first national study on this topic, ENTRED, a representative national sample of people with diabetes. A second ENTRED was launched in 2007 to analyze any changes in the health status of patients with diabetic since 2001 and to improve our epidemiologic knowledge of this disease. It is directed by InVS in association with 2 health insurance funds (CNAM-TS for salaried workers and RSI for the self-employed), HAS, and INPES. It is supported by the Ministry of Health, the National Council of Physicians (Conseil de l'ordre des médecins), and several learned societies and patients' associations. It will extend through the end of 2010. The early results from the data on utilization of medical care and of drugs were made available in February 2008 on the InVS website. The principal results of the mainland ENTRED survey and the children's survey were presented at the ALFÉDIAM (société de langue française pour l'étude du diabète et des maladies métaboliques, French-language Society for the Study of Diabetes and Metabolic Diseases) congress, in March 2009.

#### **Innovations of ENTRED 2007-2010**

The primary objective of the 2007 version of ENTRED is to obtain more detailed results and to describe the health status of persons with diabetes. Nonetheless, compared with ENTRED 2001-2003, the new study has many methodological innovations. First, beyond the continuation of the study of adult patients living in metropolitan France, the investigation has been extended to the overseas districts as well as to children with diabetes. Second, ENTRED 2007 plans to analyze new items, such as the information on diabetes provided to patients, the need for information on diabetes treatment, as expressed by patients and their physicians, the impact of socioeconomic status on complications of diabetes and of its management, the treatment course, and financial cost for the patient. To optimize participation of patients and physicians, this study successfully used more personalized contacts and made more active reminders.

#### **Greater participation**

Overall, 9784 people were randomly selected from health insurance files to participate in the study, including 8929 persons with diabetes in metropolitan France and 855 overseas. The inclusion criterion required that they had been reimbursed at least 3 times during the past 12 months for oral antidiabetic agents or insulin. The participation

>>> Read the rest p. 49



## “Exploit the contents of population surveys”

### | PROFILE |

#### Department of Chronic Diseases and Injuries

##### Director

Juliette Bloch

##### Creation

1999

##### Number of staff

45

##### Organization

Eight principal themes:

- **Cancer:** cancer surveillance and evaluation of screening programmes
- **Nutritional surveillance and epidemiology:** food intake, nutritional status, and physical activity of the French population
- **Injury surveillance:** domestic accidents, related to sports, leisure, etc.
- **Surveillance of cardiovascular diseases:** coronary disease, strokes, sudden death of adults, heart failure, and hypertension
- **Surveillance of diabetes:** frequency, severity, and management
- **Surveillance of chronic respiratory diseases:** asthma and chronic obstructive pulmonary disease
- **Surveillance of mental health:** frequency of different psychiatric diseases and suicides
- **Rare diseases:** collection of public health indicators of rare diseases; FranceCoag network: follow-up of people with bleeding disorders due to hereditary deficiencies in clotting proteins (e.g. haemophilia)

##### Contact

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### | INTERVIEW |



*The fields of actions of the DMCT are especially extensive and diversified, requiring permanent surveillance. Juliette Bloch, department director, reviews the priorities for 2008.*

#### What were the highlights in your department in 2008?

Our department conducted a very large survey of people with diabetes in 2007-2008, in partnership with the health insurance funds, HAS, and INPES. The results will be published in 2009. This study functioned well and demonstrated that surveys can be conducted by establishing very strong partnerships. 2008 also saw the publication of important results on hypertension in metropolitan France (especially as part of our national nutritional health survey from 2006) and in the overseas districts. It allowed us to assess the situation of people with high blood pressure in France and, in particular, in the overseas districts, where hypertension is very common. In the months to come, the national nutritional health survey will provide more information about diabetes and physical exercise. The work on childhood asthma has revealed the insufficiency of treatment and provided useful information to the physicians who manage these children. Another major project was funded by the European Commission and studied mortality from injuries. Its objective is to standardize coding of these deaths to achieve comparable statistics between the different European countries.

#### What are the principal components of your surveillance network and their features?

We work from different databases: death certificates, hospitalizations (PMSI), and health insurance, as well as databases from large population surveys. Because we study numerous diseases, we work with a number of partners who produce data and/or are interested in our work: clinicians specializing in these diseases, as well as other public health stakeholders, including INPES, HAS, Inserm, the health insurance funds, AFSSAPS, and DREES. Moreover, we lead the national committee of registries and with Inserm and INCA (Institut national du cancer, National Cancer Institute) fund the cancer registries whose results we use. Our department encourages feasibility studies for new registries, in the domain of strokes and congenital malformations.

#### What are your projects and trends for 2009?

We plan to carry out two pilot studies for large-scale surveys, one on mental health and nutrition among the elderly in institutions, and the other on children's diets during the first year of life. Three surveys on home and leisure accidents will also be launched: dog bites, fatal home and leisure accidents among those younger than 15 years, and a survey on drowning in 2009, since the last dates back to 2006. 2009 will also be a year of prospective reflection on the feasibility of a national survey with health examinations, together with a biomonitoring study set up by the DSE, and on the methods for deployment of multisource surveillance systems for cancer. In 2009, the organization of the DMCT will be modified to improve

>>> Read the rest p. 48

its management by keeping it local. The department will contain 6 units, consisting of the 3 existing units—cancer, nutrition, and injuries—as well as 3 new units: a rare diseases unit; a unit grouping together the programmes on diabetes, cardiovascular diseases, respiratory disease, and mental health; and a more cross-sectional unit that will be called coordination and prospective, responsible for enlarging the field of diseases covered by our department.



rates in the first 3 ENTRED surveys (see sidebar p 49), which were completed in September 2008, were 47% for the insurance-fund-physicians in metropolitan France and 36% in the overseas departments. The patient survey, by self-administered questionnaires, concerned only patients in metropolitan France and recorded a participation rate of 48%. Finally, the survey of treating physicians provided additional information for patients who responded, covering 28% of the participating patients in metropolitan France and Reunion.

## Better management for persons with diabetes

The analysis of drug consumption monitoring for 2007, from the health insurance databases, was completed in January 2008.

As in 2001, there were a few more men than women with diabetes — 52%. Although the mean age of patients remained approximately 65 years, the number of patients older than 75 years increased.

Compared with 2001, the results in 2007 show important improvements in the quality of medical follow-up, with an increase in the frequency of examinations recommended annually (HbA1c assays, creatinine levels, albuminuria, and lipid levels, as well as cardiology and ophthalmology consultations). Treatment with oral antidiabetic agents and insulin increased slightly and treatment choices developed toward better compliance with good clinical practice recommendations. Anticoagulants, intended to prevent cardiovascular complications, were prescribed more often (39% of patients in 2007 compared with 32% in 2001), as were lipid-lowering agents (55% in 2007 compared with 39% in 2001).

These early results of the drug consumption phase show that important progress has already been made in the quality of medical management, screening, and prevention of diabetes complications. The results of the ENTRED surveys will show whether this progress has already produced improvements in vascular risk, health status, and quality of life in persons with diabetes.

## ENTRED 2007-2010: the successive surveys



**Survey by insurance-fund physicians:** telephone call by an insurance-fund physician to individuals who had agreed to participate, to explain the survey modalities to them, and conduct a telephone interview (one sheet of paper, both sides) about their history of diabetes and any complications.

**Patient survey by self-administered questionnaire:** completion of a self-administered questionnaire sent by postal mail to patients who did not refuse to participate.

**Survey of physician/health-care providers:** telephone call by InVS physicians-investigators to treating physicians of patients participating in the study and mailing of a supplementary questionnaire to complete.

**Monitoring of drug consumption** from health insurance data, for 3 consecutive years.

**Hospital survey** based on data from national medical informatics programme on hospitalizations.

**Mortality survey.**

### For further information:

A complete description of the study and its early results are available at the InVS website: [www.invs.sante.fr/entred](http://www.invs.sante.fr/entred)

## Prevalence and management of hypertension in the French population

Hypertension (high blood pressure) is a major and frequent risk factor for numerous cardiovascular and related diseases (including ischemic heart disease, strokes, heart failure, lower limb arterial diseases, and end-stage kidney failure). A better management of hypertension can reduce their onset. The definition of hypertension reflects a reasoned assessment at a certain moment of the levels for which a treatment is considered desirable; moreover, these thresholds are reduced according to the patient's overall cardiovascular risk level. But there is a continuous relation between both systolic and diastolic blood pressure levels and cardiovascular morbidity. From this perspective, the objective set by L. n° 2004-806 (dated 9 August 2004, on public health policy) and reaffirmed in the National Nutrition-Health Programme (Programme national nutrition santé, PNNS) is to reduce the mean blood pressure in the French population.

To estimate the mean blood pressure and the number of people with hypertension in France and to assess the quality of hypertension management, InVS carried out a specific study of data from the national nutritional health study (Étude nationale nutrition santé, ENNS), during which blood pressure was measured. The results of this study were published in December 2008 in a special issue of the BEH, devoted to the prevalence and management of hypertension in France.

### Study of hypertension from the ENNS data

To assess the impact of PNNS on the nutritional situation in France, USEN, the nutritional surveillance and epidemiology unit (a mixed unit of researchers from InVS, University of Paris XIII, and the Conservatoire national des arts et métiers), in collaboration with the CNAM-TS health screening centres, conducted the ENNS 2006 study. Its early results were published in the fall of 2007. This study provided descriptive data on diet, markers of nutritional condition, and physical activity of a national sample of the population living in metropolitan France in 2006. ENNS is the first survey to measure blood pressure in a national sample of individuals aged 18 to 74 years, living in France. It made it possible to estimate the population's mean blood pressure and describe the prevalence of hypertension in the adult population. The relations between hypertension and educational level were also studied after adjustment

for age, smoking, and risk factors known to be associated with blood pressure (overweight, excessive alcohol consumption, and low physical activity).

### Improve hypertension management

Blood pressure (BP) was measured in 2266 adults aged 18 to 74 years, including 838 men (37.0%) and 1428 women (63.0%). The mean value of systolic BP (SBP) was estimated at 123.6 mm Hg and that of diastolic BP (DBP) at 77.8 mm Hg.

BP was significantly higher in men (SBP=128.7 mm Hg; DBP=79.3 mm Hg) than in women (SBP=118.5 mm Hg; DBP=76.2 mm Hg). The SBP increased continually with age for both sexes, although DBP did not increase significantly after the age of 45 years.

On examination, 77% of the sample had normal BP values (SBP <140 mm Hg and DBP <90 mm Hg) and 23% elevated values. People with elevated BP or taking an antihypertensive drug were considered hypertensive.

Based on this definition, the prevalence of hypertension was estimated 31.0% for those aged 18 to 74 years: 34.1% in men and 27.8% in women. The prevalence of hypertension increased significantly with age and reached 67% in the population aged 65 to 74 years.

The therapeutic management of hypertension has been described. Globally, 50.4% of people with hypertension are treated by antihypertensive drugs. This proportion reached 82.0% among those who reported that they were aware they had hypertension. Of the treated hypertensives, half had a BP that had dropped sufficiently; this control of hypertension was more frequent among women (58.5%) than men (41.8%). Blood pressure control decreased progressively with age, from 46.8% for those aged 45 to 54 years, to 33.9% for those aged 65 to 74 years.

Social disparities were assessed by educational level. We observed an inverse relation between the prevalence of hypertension and educational level: 52.4% of the men who had no more than a certificate of primary studies were hypertensive, compared with 23.7% of those with post-secondary diplomas (after at least 3 years of post-secondary school); for women, these values were respectively 45.6% and 11.4%. In men, the link between hypertension and educational level was no longer significant after adjustment for age, overweight, and alcohol consumption, but the relation persisted in women.

This study nonetheless presents methodological limitations. First, it involves the situation of an epidemiologic survey. Blood pressure was measured only once, although in clinical practice, a diagnosis of hypertension requires the observation of elevated values on several occasions. However,

the study made it possible to assess the prevalence of hypertension for the first time in a representative sample of adults living in metropolitan France. It underlines the insufficiency of hypertension control and shows the need to improve management of this disease.

### | Prevalence of hypertension, treatment and control |

Men	18-34 years	35-44 years	45-54 years	55-64 years	65-74 years	18-74 years	(95% CI)
Measured during the year (%)	68.3	86.4	96.5	92.7	97.5	86.5	(83.1-89.9)
Prevalence of hypertension (%)	4.0	19.5	42.6	62.4	69.9	34.1	(29.8-38.4)
Known hypertension* (%)	21.5	22.9	40.5	55.2	59.9	46.9	(39.4-54.5)
Known hypertension, treated* (%)	**	55.7	60.3	85.5	91.4	77.4	(67.2-87.6)
Hypertension, treated and controlled* (%)	**	**	46.8	43.5	33.9	41.8	(32.3-51.3)
Women	18-34 years	35-44 years	45-54 years	55-64 years	65-74 years	18-74 years	(95% CI)
Measured during the year* (%)	87.5	88.1	89.5	93.6	95.7	90.2	(87.9-92.6)
Prevalence of hypertension* (%)	5.6	13.1	31.4	43.7	65.0	27.8	(24.7-30.8)
Known hypertension* (%)	22.3	55.5	52.9	62.0	68.6	58.8	(52.4-65.2)
Known hypertension, treated* (%)	**	60.8	78.4	91.5	94.9	86.6	(81.1-92.1)
Hypertension, treated and controlled* (%)	**	**	64	59.4	49.6	58.5	(51.1-65.8)

\* Known hypertension = proportion of hypertensives who knew they were hypertensive.

Known hypertension, treated = proportion of hypertensives treated by antihypertensive drugs among the known hypertensives.

Hypertension treated and controlled = proportion of controlled hypertensives among the treated hypertensives.

\*\* Insufficient number.

Field: metropolitan France 18-74 years.

Source: ENNS, 2006-2007.

#### For further information:

- Law n° 2004-806 dated 9 August 2004, on public health policy. "[h]ypertension: to reduce by 2 to 3 mm Hg the mean systolic blood pressure of the French population by 2008."
- Deuxième Programme national nutrition santé – 2006-2010 – Actions et mesures, ministère de la Santé et des Solidarités. Available on the website of Mangerbouger.fr: [www.mangerbouger.fr/menu-secondary/pnns/le-pnns](http://www.mangerbouger.fr/menu-secondary/pnns/le-pnns)
- Surveillance de l'hypertension artérielle en France. Bull Epidemiol Hebd 2008;49-50:477-92.
- Unité de surveillance et d'épidémiologie nutritionnelle. Étude nationale nutrition santé (ENNS, 2006). Situation nutritionnelle en France en 2006 selon les indicateurs d'objectif et les repères du Programme national nutrition santé (PNNS). Saint-Maurice (Fra): Institut de veille sanitaire, Université de Paris 13, Conservatoire national des arts et métiers, décembre 2007, 74 p. Available on the InVS website: [www.invs.sante.fr/surveillance/nutrition](http://www.invs.sante.fr/surveillance/nutrition)



### Evaluation of asthma testing and diagnosis in children

Improvement of the management of people with asthma is a priority for health-care professionals and public authorities. L. n° 2004-806 (dated 9 August 2004, on public health policy) reaffirmed this priority in setting as an objective the reduction of the frequency of asthma attacks requiring hospitalization. The indicators for this objective, especially the number of hospitalizations for asthma, are therefore analyzed regularly. In this framework, InVS determined in 2007 the number of hospital admissions for and deaths from asthma. This assessment showed a reduction in the annual rate of hospitalizations between 1998 and 2005, as well as an overall decrease in mortality from asthma between 1990 and 2005. The analysis by age group nonetheless qualified these results: the hospitalization rate did not fall among children younger than 10 years. InVS therefore launched several studies targeted at this age group in particular. Two of them were completed in 2008.

### Inadequate treatment and control of asthma

The objective of the first study was to estimate the number of children with asthma and the number of children with symptoms suggestive of asthma and to assess asthma control in children. InVS based its analyses on data issues from 2 triennial surveys in schools. Directed by the Ministry of Education and by the DREES of the ministry of health, in collaboration with InVS, these surveys are performed among representative national samples of children in their last year of kindergarten (age 5), in their 5<sup>th</sup> year of primary school (age 11), and their 9<sup>th</sup> year of schooling (age 14).

This study used data from the 2003-2004 survey, conducted among 7284 14-year-olds, and the 2004-2005 survey of 7104 11-year-olds.



The results of this analysis showed that 9% had asthma. The disease was uncontrolled for 38% of them, that is, they had frequent symptoms or often had asthma attacks. The results also showed that treatment is insufficient: more than 29% did not have a causal treatment, that is, a regular anti-inflammatory treatment that reduces the risk of asthma attacks, although their asthma was not controlled.

### A disease still underdiagnosed

The second study completed in 2008 was a survey conducted by InVS in partnership with the society of pediatric pulmonologists, among children hospitalized for an asthma attack. It took place from November 2006 through November 2007, with the cooperation of numerous pediatricians. The analysis covered 727 hospitalizations. The results showed that the existence of asthma was unknown for 27% of the cases before the hospitalization. Of the children whose asthma was already known, more than half had already been hospitalized for their asthma and two-thirds had had at least one attack per quarter during the previous year. For nearly 80% of those with asthma already diagnosed, asthma control in the months preceding hospitalization was judged either unacceptable or partial. Of the children with poorly controlled asthma, 36% were not followed for their asthma, 50% had no causal treatment, and only 13% had a personalized action plan detailing the actions to be taken in the case of an asthma attack.

### Improve asthma management in children

These two studies demonstrate the inadequacy of asthma management in children. Due to its notable impact on health and quality of life (e.g. school absences and activity limitations), these studies underline the need to pursue and improve the activities already set up, most especially those targeted at children.

## | Asthma control in the past 12 months in children with asthma<sup>1</sup>, children aged approximately 11 and 14 years old |

	11-year-olds (N=578)			14-year-olds (N=598)		
	N	Not controlled <sup>2</sup>		N	Not controlled <sup>2</sup>	
		n	%		n	%
<b>Sex</b>						
Boys	323	114	37.8	279	88	29.8
Girls	255	93	37.9	319	155	47.2
<b>Size<sup>3</sup></b>						
Thin/normal	421	156	40.1	451	179	38.4
Overweight	103	32	30.5	89	40	39.1
Obese	42	15	41.9	42	19	40.5
<b>Region<sup>4</sup></b>						
Metropolitan France	527	196	38.8	555	229	38.5
Overseas districts	51	11	23.5	43	14	37.6
<b>ZEP<sup>5</sup></b>						
No	306	115	38.3	296	108	37.6
Yes	272	92	34.3	302	135	44.6
<b>Total</b>	<b>578</b>	<b>207</b>	<b>37.9</b>	<b>596</b>	<b>243</b>	<b>38.5</b>

<sup>1</sup> Wheezing in the past 12 months in a child who had already had asthma attacks or treatment for an attack of wheezing or asthma in the past 12 months.

<sup>2</sup> Defined, in 14-year-olds, by the frequency or severity of asthma symptoms over the past year (at least 4 wheezing attacks, waking up at night at least once a week on average, at least 1 severe attack with difficulty talking), or by frequency of care for a wheezing attack during the past year (at least 4 emergency consultations or at least 1 hospitalization) and, in 11-year-olds, by frequency or severity of symptoms in the past year.

<sup>3</sup> Missing data for 12 11-year-olds and 16 14-year-olds.

<sup>4</sup> Overseas districts.

<sup>5</sup> ZEP: disadvantaged areas receiving priority education funding.

### For further information:

- L'état de santé de la population en France – Indicateurs associés à la loi relative à la politique de santé publique – Rapport 2007. [www.sante.gouv.fr/drees/santepop2007/objectifs/03-obj-74.pdf](http://www.sante.gouv.fr/drees/santepop2007/objectifs/03-obj-74.pdf)
- Asthme. Dossier thématique. Available on the InVS website: [www.invs.sante.fr/surveillance/asthme](http://www.invs.sante.fr/surveillance/asthme)





## Regional activity

“ The interregional epidemiology units:  
a locally-anchored system ”

InVS has 17 regional outposts, the interregional epidemiology units (CIRE), which carry out InVS missions locally, while serving the regional health policy and dealing with its specificities. Codirected by the DRASS (regional health and welfare services) and InVS, they are located within the DRASS: close to the regional health authority. They provide methodological support, expertise, and an analysis of health alert signals to these decentralized departments. The system currently includes 17 CIRE, 15 metropolitan and 2 overseas. There are 9 interregional CIRE and 8 that cover a single region. Today, approximately 130 people work at the CIRE, including 90 epidemiologists in charge for general health surveillance and alerts. The 2008 highlights for each CIRE are detailed in this section.



## Four health surveillance tasks

### Investigate and assess health risks

The investigation of health signals and the assessment of the health threat that they pose account for approximately 50% of the overall activity of the CIRE. Response can vary from a simple opinion given by telephone to a complete investigation of a health situation that might take several days or even weeks. Approximately 25% of the reports require detailed analysis, in association with the DDASS (district health and welfare bureaus), the hygiene department, the veterinary department, the district consumer affairs department, the regional department of industry, research, and the environment (Direction régionale de l'industrie, de la recherche et de l'environnement, DRIRE), or other partners. These reports principally cover problems that are infectious (e.g. meningitis or legionellosis outbreaks) or environmental (e.g. polluted sites, brownfields, old factories, mine outcrops, or accidental pollution).

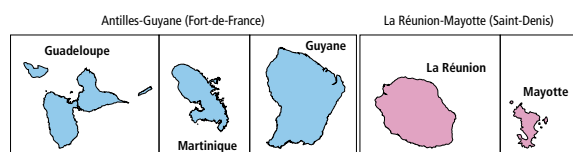
### Coordinate health surveillance at regional level

The mission of the CIRE—as an integral part of InVS's mission—is to organize, lead, and coordinate regional health surveillance continuously and in all the regions. Throughout the year as part of the regional public health plans (Plans régionaux de santé publique, PRSP, and, more specifically, PRAGSUS, the component related to health emergency alerts and management, plan d'action relatif à l'alerte et à la gestion des situations d'urgence sanitaire), they guide work principally intended to strengthen the links and procedures between the participants of the first circle of health surveillance (DDASS/CIRE/DRASS) and to improve both the capacity to detect threats and the functioning of the epidemiologic surveillance systems.

### Analyze and enhance regional data from the national systems

It is the mission of the CIRE to analyze all of the data of the different surveillance systems on a regional scale for the local policy-makers. They lead the SurSaUD® system, established and directed by the InVS Alert Coordinating Committee, and they analyze the data. This national system is based on hospital emergency departments, private practitioners who belong to the SOS Médecins associations (which make emergency house calls), computerized vital records offices, and electronic death certification. The CIRE are responsible principally for

## “17 interregional epidemiology units”



regional analyses (detection of abnormal phenomena, measuring the impact of the events identified, etc.) and feedback of the information to the data producers. The CIRE also produce regional health surveillance bulletins that provide information for the public authorities and local health-care professionals.

### Monitor the risks specific to the region

The CIRE are involved in the surveillance of local problems, whether these relate to infectious diseases (West Nile virus in the south of France, Lyme disease in Alsace, or dengue in the overseas districts) or environmental issues (e.g. natural radioactivity in granitic regions, aerial pesticide spraying in vineyards, or carbon monoxide (CO) poisoning in the north and east of France). They also play a role in monitoring risks related to climate (high and low temperatures) and to air pollution. Most of the CIRE have started developing a surveillance procedure for use in disaster situations, for the rapid detection of epidemic phenomena—whether infectious, environmental, or sociogenic—despite the chaos of the situation.





Director of the Health and Social Development Office (Direction de la santé et du développement social, DSDS) of Martinique, **Christian Ursulet** describes how he collaborates with the West Indies-French Guiana CIRE. More broadly, the

interview gives us his point of view on the stakes of health surveillance in the French districts in America.

### **How does the West Indies-French Guiana CIRE contribute to the DSDS's general mission of health surveillance in Martinique?**

For several years, this CIRE and the DSDS have maintained a very close collaboration in terms of the organization and operation of health surveillance: 1) the DSDS health surveillance committee (Cellule de veille sanitaire, CVS), working with the CIRE, collects and validates health signals; 2) the CIRE is responsible for assessing them and issuing alerts; 3) the DSDS coordinates response management once alerts have been issued, to avoid crisis situations.

In partnership with DSDS, the CIRE also coordinates an epidemiologic surveillance system that includes all of the clinical laboratories and hospitals, as well as 57 sentinel private practitioners.

The health surveillance function is operated jointly by the CIRE and the CVS, through 2 secure Internet platforms: one for the receipt, validation, and follow-up of health signals (Voozalerte); the other, for epidemiologic surveillance of priority conditions in the West Indies, including dengue (Voozanoo).

This collaboration, based on the complementary nature of evaluation and management, proved to be very efficient through the collaboration since 2004 of an epidemic alert, surveillance and management programme for dengue (Programme de surveillance, d'alerte et de gestion épidémique, PSAGE dengue), enriched continuously by the experience of both groups. This type of collaboration was particularly fruitful during the approach and passage of hurricane Dean and in the 2007 earthquake!

### **What are the particularities of the French districts of America in terms of health surveillance?**

Vectorborne diseases such as dengue, malaria, and leptospirosis are a major concern for these districts. The situation for chikungunya is very particular. All of the ingredients for an epidemic are here (climate and mosquito vector present and competent), but fortunately the virus is not (yet). The role of the CIRE and the DSDS is therefore to detect and control as early as possible any new imported cases (3 imported cases were detected in Martinique during the Reunion epidemic in 2006).

From the environmental perspective, the French districts in America are increasingly exposed to natural disasters such as hurricanes, floods, earthquakes, and ocean swell phenomena. To respond as effectively as possible to these extreme emergencies from a health perspective, the CIRE and the DSDS have established specific tools for surveillance and identification of the priorities to be managed.

Globally, enormous progress has been made in these last few years in terms of surveillance and alert management. Nonetheless, although the health situation of the French districts is far better than in any other Caribbean country, their high prevalence of chronic diseases (obesity, cancer, diabetes, and AIDS) requires the rapid development of active prevention policies.

### **Are there any international health surveillance collaborations with the other Caribbean countries?**

Because of the heterogeneity of the health supply in these countries, the French districts are often asked to provide specific collaboration (in health surveillance and training) and assistance, as for the cricket World Cup, which took place in 2007 in 9 Caribbean countries, including St. Lucia and Barbados, or for specific patient management. Moreover, the health epidemic and environmental concerns of our districts are shared with all of our neighboring States. In 2009 and 2010 we will formalize our collaborations with the principal countries: Puerto Rico, Cuba, Trinidad, St. Lucia, Dominica, etc.

### **On 12-13 December 2008, the first Interregional Health Surveillance Meetings of West Indies-French Guiana took place. What is your evaluation?**

This event was of major importance for the West Indies-French Guiana CIRE, the DSDS, and more generally, French health surveillance. More than 150 individuals (from France, the French districts of American, and elsewhere in the Caribbean) participated and presented a large number of subjects; the abstracts are available on the InVS website. This event emphasized exchange and reflection, rather than the consumption of ideas and experience. Numerous perspectives for work and research have flowed from this meeting, including the development of reference plans, modifications in Internet platforms, and the intensification of international cooperation in the Caribbean.

#### **For further information:**

Martinique DSDS website:  
[www.martinique.sante.gouv.fr](http://www.martinique.sante.gouv.fr)

## First West Indies-French Guiana Interregional Health Surveillance Meeting

For the 10<sup>th</sup> anniversary of InVS, the West Indies-French Guiana CIRE, in partnership with the DSDS of Martinique, Guadeloupe, and French Guiana, organized the Interregional Health Surveillance Meeting on 12-13 December 2008 at Fort-de-France (Martinique).

The objectives of this meeting, cochaired by Françoise Weber, the InVS executive director, and Christian Urselet, the director of the DSDS of Martinique, were to reinforce and structure the interregional network in West Indies-French Guiana and to improve the positioning of the French districts in America in terms of health surveillance in the Caribbean.

The agenda covered 2 principal themes. **The first was the role of general practitioners in the health surveillance system of these districts**, for they have historically on the front lines of epidemiologic surveillance, responsible for collecting health signals from and disseminating health messages to the population. **The second concerned the role of the French districts of America in health surveillance**, especially in the framework of collaboration with other Caribbean nations. For this reason, invitees included the states of St. Lucia, Sint-Maarten, and Dominica,



as well as the international institutions working in the area — the WHO, the Pan American Health Organization, and the Caribbean Epidemiology Centre.

Overall, more than 150 people participated in the event: public services, local governments, health-care facilities, hospital departments, networks of health-care professionals, associations, etc.

This meeting has led to numerous ideas for work and research. They include the development of reference plans, modifications in Internet platforms for surveillance and signal treatment, and the intensification of international cooperation in the Caribbean. The summaries of the debates, focused on exchange and analysis, are available on the InVS website.



### For further information:

Journées interrégionales de veille sanitaire des Antilles-Guyane. Summaries available at:  
[www.invs.sante.fr/publications/2008/jirvs\\_antilles\\_guyane/resumes\\_jirvs\\_antilles\\_guyane.pdf](http://www.invs.sante.fr/publications/2008/jirvs_antilles_guyane/resumes_jirvs_antilles_guyane.pdf)

## West Indies-French Guiana

Among the topics of epidemiologic surveillance in the West Indies and French Guiana, vectorborne diseases are particularly important: dengue, leptospirosis, and malaria. Although the mosquito vector for chikungunya is present and competent, surveillance has detected only several very rare imported cases, and vector-control measures were rapidly implemented by the department of mosquito eradication. Nonetheless, the risk of an epidemic exists, especially in view of the close economic ties between the French districts in America and some endemic territories in the Indian Ocean.

From the environmental perspective, the CIRE, in collaboration with the DSDS, is developing an epidemiologic surveillance programme for natural disasters (Programme de surveillance épidémiologique des catastrophes naturelles, PSECAN) intended to reduce the health impact of natural disasters. It is based especially on prioritization of health events to be monitored in case of an earthquake, volcanic activity, hurricane, or flood. Moreover, the CIRE has begun several research and risk assessment programmes to respond to the population's questions about the human health risks associated with soil pollution by pesticides (such as chlordecone in the West Indies) and by residues of other economic activities (such as methylmercury in gold miners in French Guiana).

The geographic situation of the West Indies and French Guiana, as well as the recognition of the quality of its health-care system, have strongly contributed to establishing collaborations with other Caribbean countries; these must still be consolidated. In 2009 particular focus will be placed on formalizing, organizing, and perpetuating these collaborations. Moreover, the Pan American Health Organization has asked for support from the West Indies-French Guiana CIRE for the implementation of the international health regulation in the region. The CIRE will therefore participate in assessing the surveillance and alert systems in the Caribbean countries, to provide a basis on which recommendations can be developed.

Finally, the West Indies-French Guiana CIRE, with the DSDS, has been chosen as one of the pilot sites selected in 2009 for proposing ways of organizing health surveillance with the future regional health agencies.

### PROFILE

#### West Indies-French Guiana CIRE

**Coordinator**  
Philippe Quénel

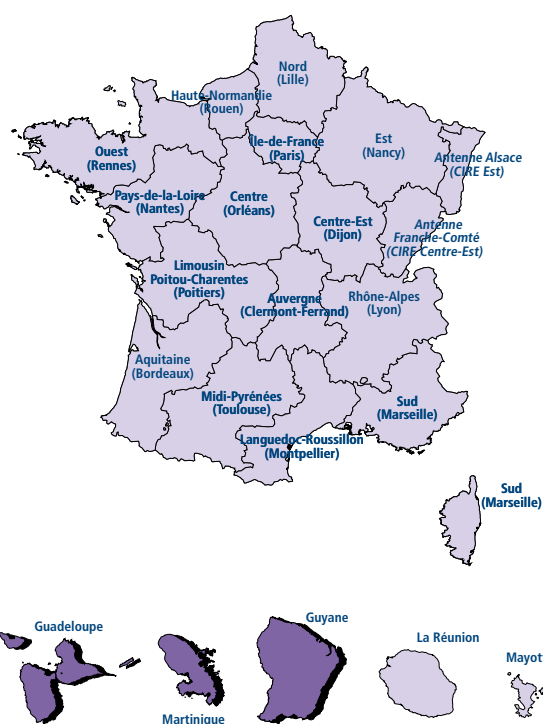
**Location**  
Fort-de-France

**Date of creation**  
1996

**Districts covered**  
Guadeloupe, French Guiana, Martinique

**Number of staff**  
11

**Contact**  
dsds972-cire@sante.gouv.fr



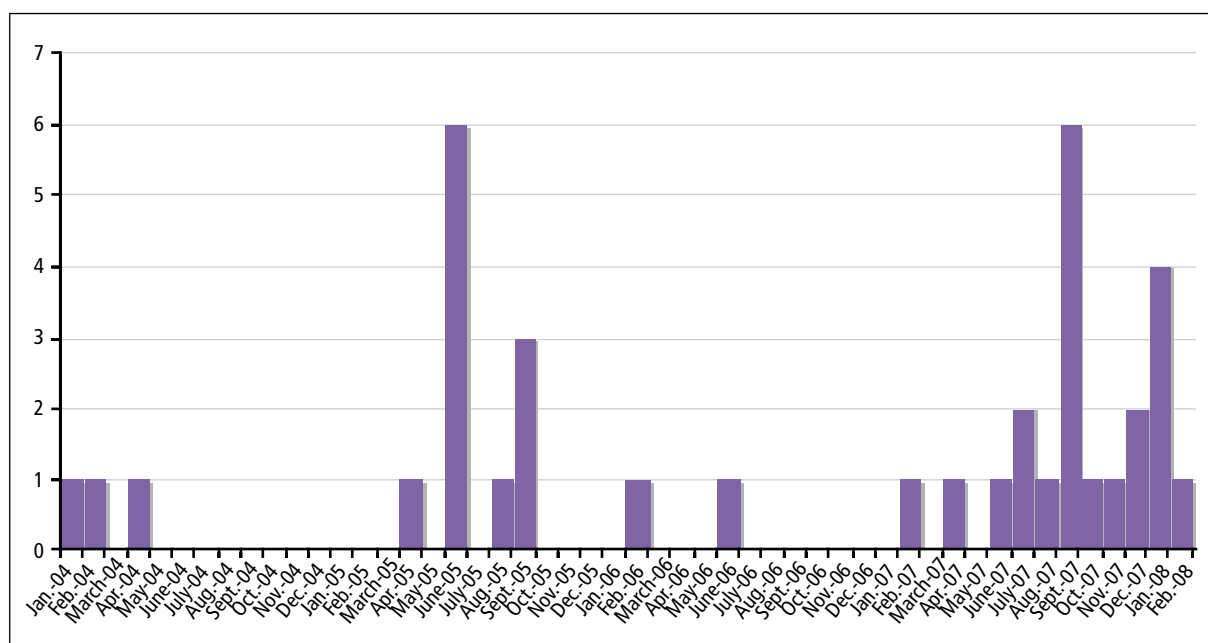
## Syphilis in Martinique

A 2-wave epidemic, in 2004 and 2007, announced the re-emergence of syphilis in Martinique. No epidemic phenomenon had previously been observed.

Analysis of 55 recent cases of syphilis identified by the Fort-de-France University Hospital Centre showed a rapid

evolution of the patients' epidemiologic profile. In 2005, the epidemic appeared limited to people with HIV and/or homosexual men; in 2007-2008 most of the cases were observed in particularly vulnerable groups, most often crack cocaine addicts. Specific activities must therefore be organized to control this epidemic, particularly among the vulnerable.

| Number of recent cases of syphilis diagnosed monthly at the Fort-de-France University Hospital Centre, 2004-2008 |



## Dengue in Saint Martin

Between early November 2007 and the end of February 2008, a dengue outbreak spread through the island of Saint Martin (Guadeloupe, 35 692 inhabitants), with nearly 1900 cases estimated overall, and 290 confirmed in the laboratory. During this outbreak, 22 people were hospitalized, 9 of them severely ill. No death was reported.

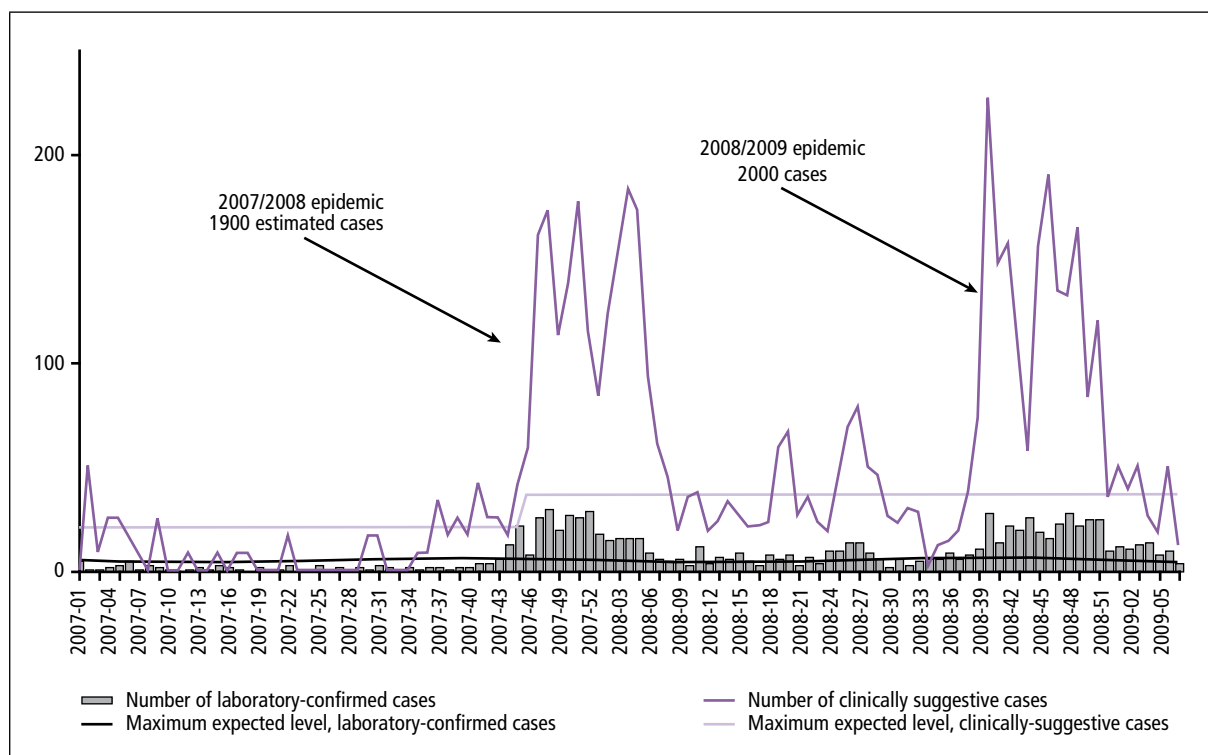
Accordingly, surveillance of this vectorborne disease was reinforced during 2008, in particular by:

- development and consolidation of biological surveillance systems, in particular of the circulating dengue virus serotypes;

- reinforcement of joint surveillance data analysis by a committee of Leeward Island experts; new videoconferencing tools enabled the committee to meet 11 times in 2008;
- publication of 35 epidemiologic bulletins distributed to partners, including an English version;
- development of international cooperation with Sint-Maarten, the Dutch part of the island, in particular through the adoption of common criteria for declaration of epidemics, as well as for aspects of management (vector control, communication).

These developments were particularly useful when a new epidemic began in the last week of September 2008 and lasted until early February 2009.

## | Weekly dengue surveillance data Saint Martin, January 2007-March 2009 |



### National Action Plan for chlordecone 2008-2010

Chlordecone is an organochlorine pesticide, a persistent organic pollutant that can become concentrated in living organisms; it may be carcinogenic and is a potential endocrine disrupter in humans. Because of its persistence in soils, chlordecone can be found in some foodstuffs, in water, and in the food chain. The contaminated soils are mainly devoted to banana plantations or to subsistence crops.

An interministerial national Action Plan for chlordecone was formulated in 2007 and implemented in 2008, under the direction of the Director-General of Health. InVS is an active participant. This plan, which follows the lines of the national environmental health plan, is intended to identify the activities to be reinforced or implemented and to improve the coordination of all stakeholders and communication on activities carried out.

The 5 activities managed by InVS are:

- **activity 13:** reinforce the Martinique cancer registry and create a cancer registry in Guadeloupe;
- **activity 14:** create a congenital malformations registry in the West Indies;
- **activity 15:** set up a toxicity monitoring system in both districts;
- **activity 16:** set up an international scientific committee to suggest additional research, reinforcement of health surveillance, and surveillance of the health impact of pesticides;
- **activity 23:** issue recommendations for useful activities to be conducted among the population of former and current involved workers.



## The interregional Plan for epidemiologic surveillance of disasters and its application during Hurricane Omar and during the Richter exercise

The French districts of America face the risk of natural disasters. It is essential for them to have an appropriate epidemiologic surveillance system that would enable after a disaster:

- to assess the immediate health consequences;
- to identify as early as possible the development of health problems linked directly or indirectly to the disaster;
- to assess and monitor potential long-term health consequences.

In addition, this epidemiologic surveillance must be able to function in situations where the usual data sources are no longer able to deliver information on a daily or even a weekly basis.

The West Indies-French Guiana CIRE is therefore developing an epidemiologic surveillance programme for natural disasters. As part of this programme, the CIRE has developed a decision-making tool aimed at prioritizing the health events to monitor as a function of the environmental and societal dysfunction engendered by a disaster. This tool was tested in 2008 after Hurricane Omar passed near the islands of Saint Martin and Saint Barthélemy, as well as during the Richter exercise that simulated a major earthquake on 18-19 November 2008.

The data collected suggest that the health impact of Hurricane Omar was very limited. The only effect was a reinforcement of the circulation of the dengue virus, already intense, 3 to 4 weeks after the passage of the hurricane. No upsurge was observed in cases of gastroenteritis or of leptospirosis.

The programme is continuing in 2009, especially for the formalization of data transmission circuits.



## Aquitaine

The first CIRE to initiate a regional collaboration with SOS Médecins, the Aquitaine CIRE remains very involved in syndromic surveillance and, more particularly, in surveillance systems based on monitoring data from emergency departments and from INSEE. In this spirit, in 2009 it will analyze the possibility of extending this surveillance to other data sources, especially through a network of schools: absence data may be an early signal for the detection of health events.

The development of specific surveillance systems is also on this CIRE's agenda for 2009, with continuation of its participation in surveillance systems for psittacosis, CO poisoning, acute respiratory infections in nursing homes, and reinforcement of STD surveillance. Surveillance of Lyme disease is implemented: its prevalence is likely to be as important as that in eastern France.

Finally, health signals—both their reception and appropriate responses to them—remain one of the CIRE's priority activities in 2009. It receives very diverse requests; appropriate response often requires a very reactive investigation in collaboration with different health surveillance stakeholders, especially the DDASS.

### | PROFILE |

#### Aquitaine CIRE

**Coordinator**  
Laurent Filleul

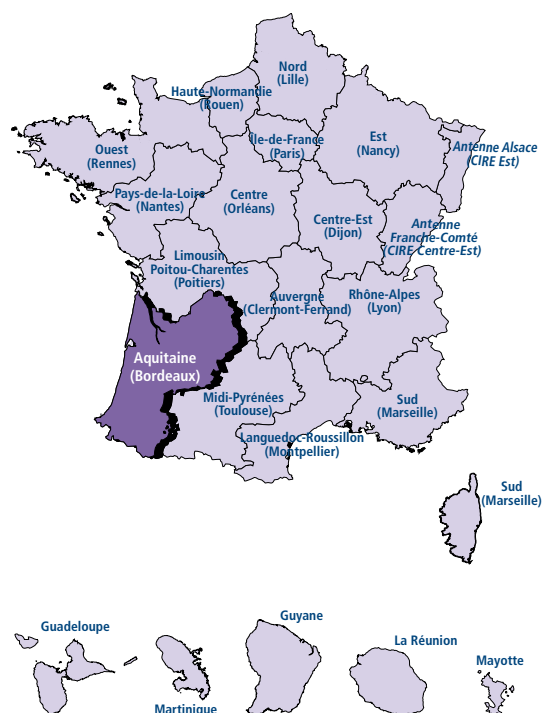
**Location**  
Bordeaux

**Date of creation**  
2002

**Districts covered**  
Dordogne, Gironde, Landes, Lot-et-Garonne, Pyrénées-Atlantique

**Number of staff**  
9

**Contact**  
dr33-cire-aquitaine@sante.gouv.fr



## Regional syndromic surveillance

Regional syndromic surveillance is based on several systems:

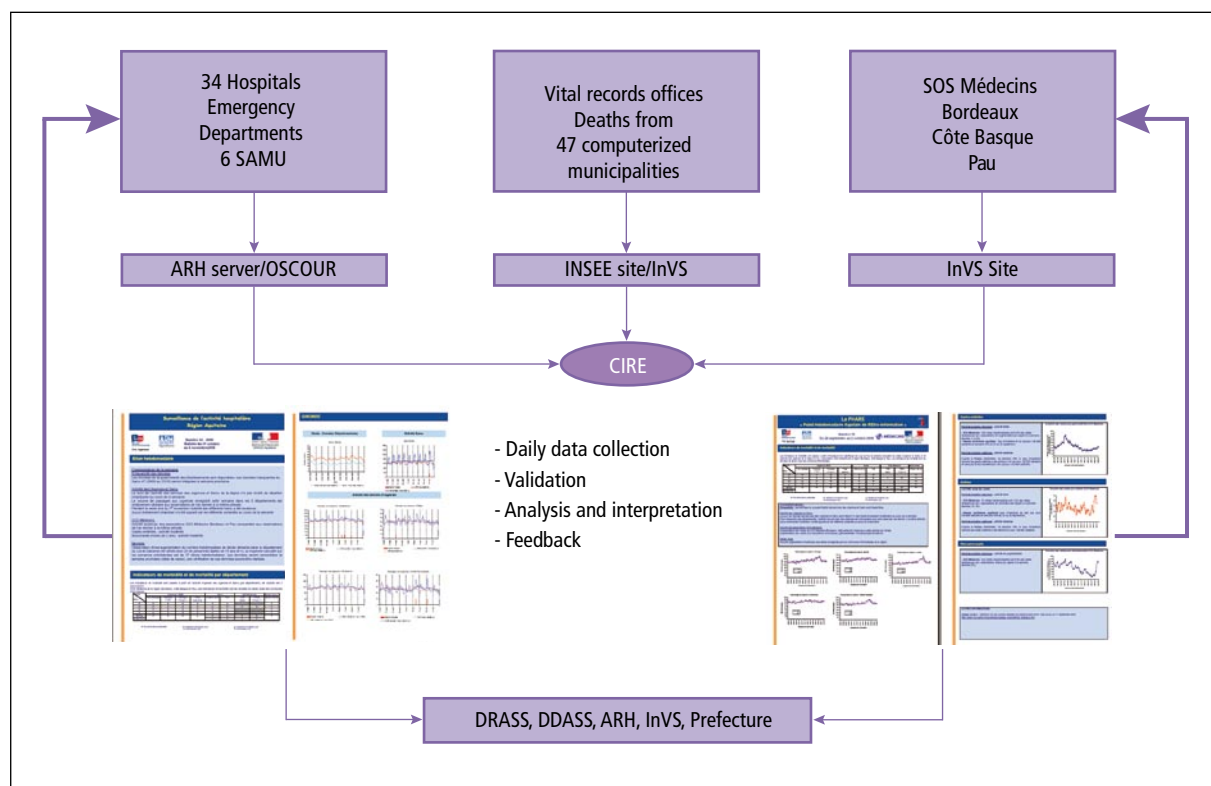
- the regional hospital surveillance system, which in collaboration with the regional hospital admission agency (Agence régionale de l'hospitalisation, ARH) routinely collects activity data each day from hospitals with an emergency department and from the district emergency medical assistance service (SAMU, service d'aide médicale d'urgences, including call service and mobile intensive care unit ambulance): the number of SAMU calls and the number of first visits to the emergency department;
- the OSCOUR network (organization of coordinated emergency department surveillance), which transmits daily summaries of emergency department visits; the Mont-de-Marsan Hospital Centre joined this network in April 2008;

- the SOS Médecins surveillance system, based on the daily collection of the network's emergency house call activity;
- surveillance of mortality data from the vital records offices of 47 computerized municipalities.

Since its creation, the data from this system has proved useful in several domains: the detection and follow-up of seasonal epidemics (influenza, gastroenteritis, and bronchiolitis), the identification of unusual health situations (aberrations), and the production of information that may help in managing health crises.

For example, on several occasions in 2008, the CIRE was asked to assess the health impact of the massive arrival of Asian hornets in Aquitaine. Data from SOS Médecins Bordeaux concerning visits for insect bites showed no unusual increase in this indicator in comparison with preceding years.

### | Regional surveillance system – Aquitaine CIRE |

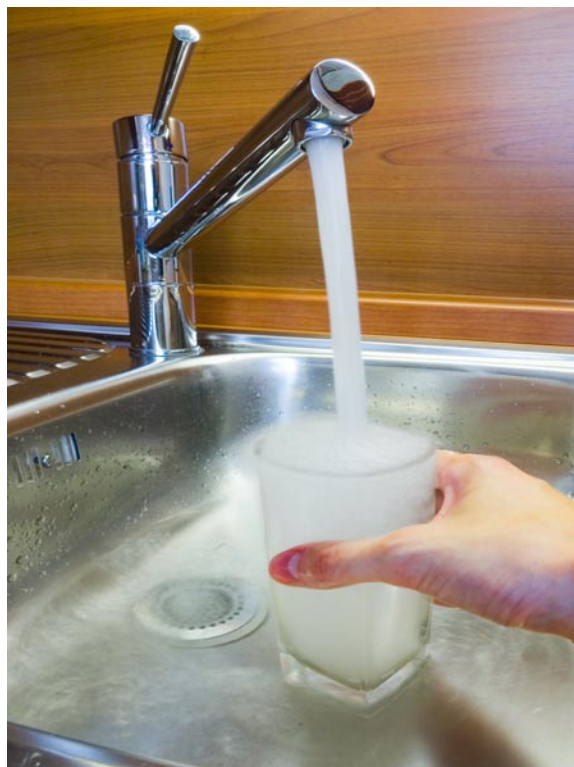


## Outbreak of gastrointestinal diseases following contamination of a drinking water system

On 13 May 2008, the Gironde DDASS informed the Aquitaine CIRE that wastewater had accidentally been dumped into the drinking water supply in a local town on 30 April. During the same period, the local hospital reported an outbreak of foodborne infections in the municipality's inhabitants, probably related to the drinking water. The possible association between these two events and the potential public health threat led the CIRE and the DDASS to set up an epidemiologic investigation (telephone survey, census of emergency department visits, drug utilization, and biological and environmental samples).

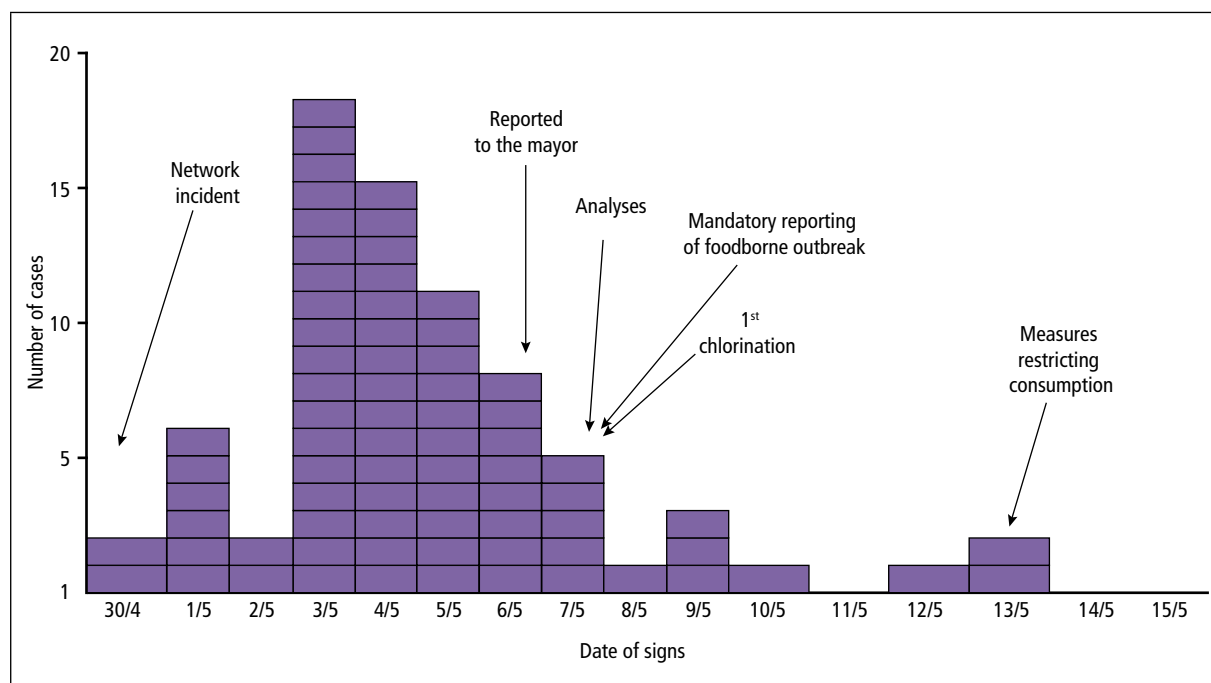
Of 140 persons questioned, 77 had had a gastrointestinal disorder, for an attack rate of 54%, peaking 3 days after the wastewater incident. Stool cultures identified the presence of *Norovirus*, *Sapovirus*, and *virus Aichi*, and bacteriological contamination was found in the water network (*E. coli* and enterococci).

The results of the survey made it possible to quantify the health impact and to demonstrate the association between the incident, relatively rare in France, and the health events observed. The use of multiple information



sources (case surveys, pharmacy activity, and hospital emergency departments) proved particularly useful in this type of event.

### | The epidemic curve following the contamination of the drinking water network in a municipality of Gironde, 2008 |



## Foodborne infection outbreak affecting 300 students in a Gironde high school

In January 2008, the Aquitaine CIRE was informed of an epidemic of gastroenteritis in a Gironde high school with 800 students and staff. The onset of symptoms (vomiting, diarrhea, and abdominal pain) began several hours after the meal for nearly all the cases, although some of them had not eaten at the school canteen.

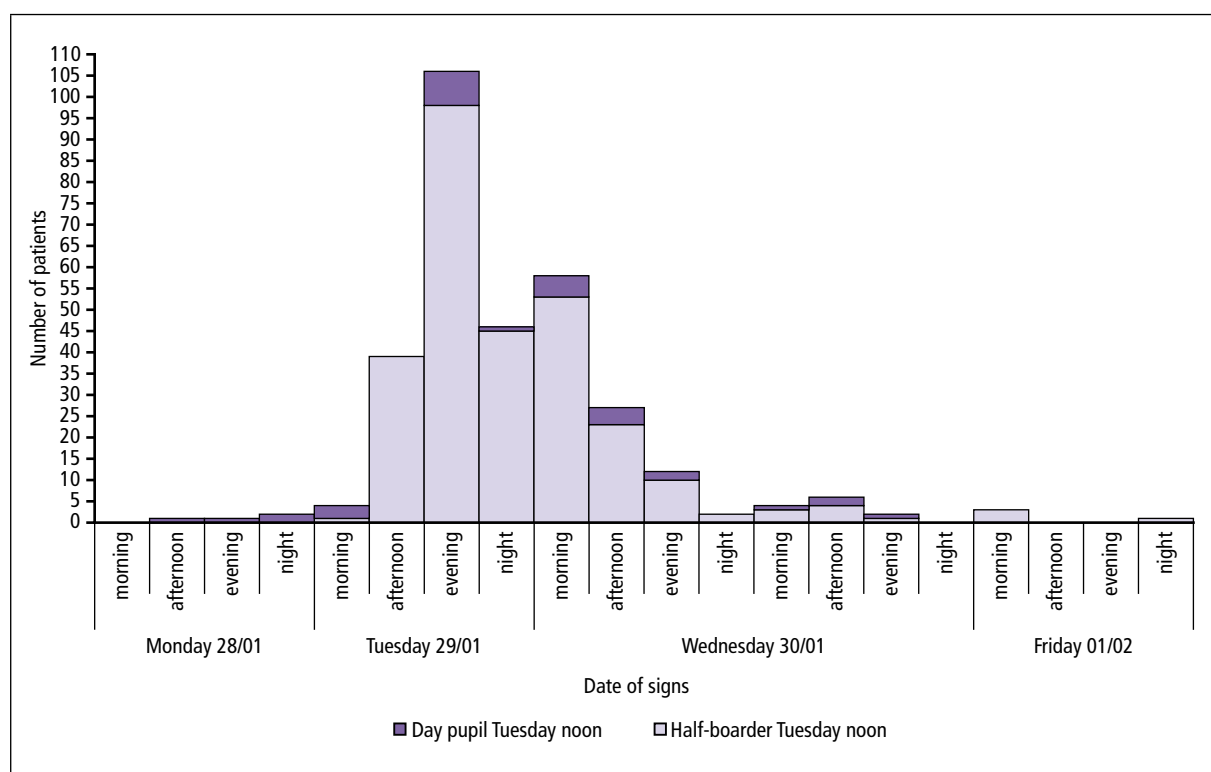
The investigation conducted by the CIRE, in collaboration with the district veterinary department and the DDASS, revealed an attack rate of 54% (with 341 patients) and a temporal distribution of the cases in 2 epidemic waves, characterized by vomiting (66%) and diarrhea (33%).

The veterinary survey showed *Bacillus cereus* in the semolina that 82% of the patients had eaten in the cafeteria at noon.

Given that winter is the period for epidemic gastroenteritis, the students who became sick without eating at the canteen undoubtedly represented the usual background level at this time of year, probably accentuated by poor basic hygiene in the school toilets (which had no soap or hand towels).

This event caused some concern at the school, relayed by the media, because of the large number of cases and the number of patients who had not eaten lunch. It underlines the importance of communication from the onset of the report.

### | Temporal distribution of gastroenteritis cases, 2008 |





## Auvergne

The Auvergne CIRE has worked since its creation in close collaboration with the Rhône-Alpes CIRE, because of the historic ties that link these two CIRE, both located in a single defense zone. This joint initiative includes the development of a guide for good practices in the treatment of health signals and the planned implementation of an Internet health surveillance portal. This cooperation will continue in 2009.

The Auvergne CIRE has implemented the heat wave and health alert system (Système d'alerte canicule et santé, SACS) every summer since 2004. Since the end of 2008, it has extended this non-specific surveillance, based on analysis of data from the Auvergne ARH, activity data from SOS Médecins, and mortality data, to other periods of the year (extreme cold spells). It plans to extend this surveillance to the entire year in 2009.

The environmental question raised most frequently involves drinking water quality. In rural areas, the distribution networks are small and managed by municipalities or associations. Earlier studies showed that these small units are more likely to have microbiological quality problems. Natural arsenic pollution was also observed several years ago. InVS therefore set up an epidemiologic study to determine the health impact of water quality in these networks. The results should be made public in 2009.

In 2009, the CIRE will also be responsible for the monthly distribution of an epidemiologic bulletin for the DDASS offices and other surveillance network partners, as part of the implementation of a health surveillance portal in collaboration with the Rhône-Alpes CIRE, and the publication of a good practices guide for signal treatment, intended for training DDASS duty staff.

### PROFILE

#### Auvergne CIRE

##### Coordinator

Marie-Françoise Stachowski (acting)

##### Location

Clermont-Ferrand

##### Date of creation

2003

##### Districts covered

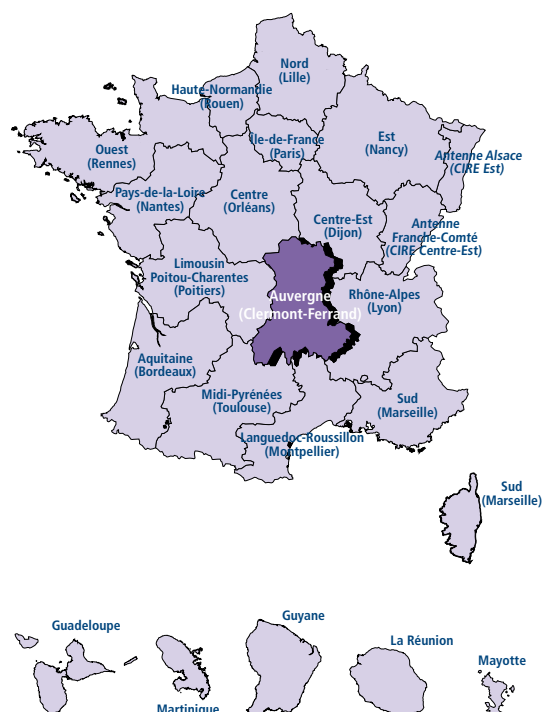
Allier, Cantal, Haute-Loire, Puy-de-Dôme

##### Number of staff

3

##### Contact

dr63-cire@sante.gouv.fr



## Investigation of a foodborne infection outbreak in Puy-de-Dôme

On 11 February 2008, the Puy-de-Dôme DDASS informed the Auvergne CIRE of a probable foodborne infection outbreak onset at a village fair.

The investigation conducted by the Auvergne CIRE (with questionnaires) revealed that 85 of the 171 persons present had one or more signs of gastrointestinal disease (nausea, vomiting, diarrhea, abdominal pain, or fever). All had eaten a meal delivered by a local caterer.

The results of the bacteriological analyses by the veterinary department of the leftovers of the food served were satisfactory, although the fruit pastries were slightly contaminated with *S. aureus*. In view of the symptoms and the incubation period, however, these bacteria could not have caused this epidemic. The epidemiologic and veterinary investigation were thus unable to determine the food that caused this outbreak.

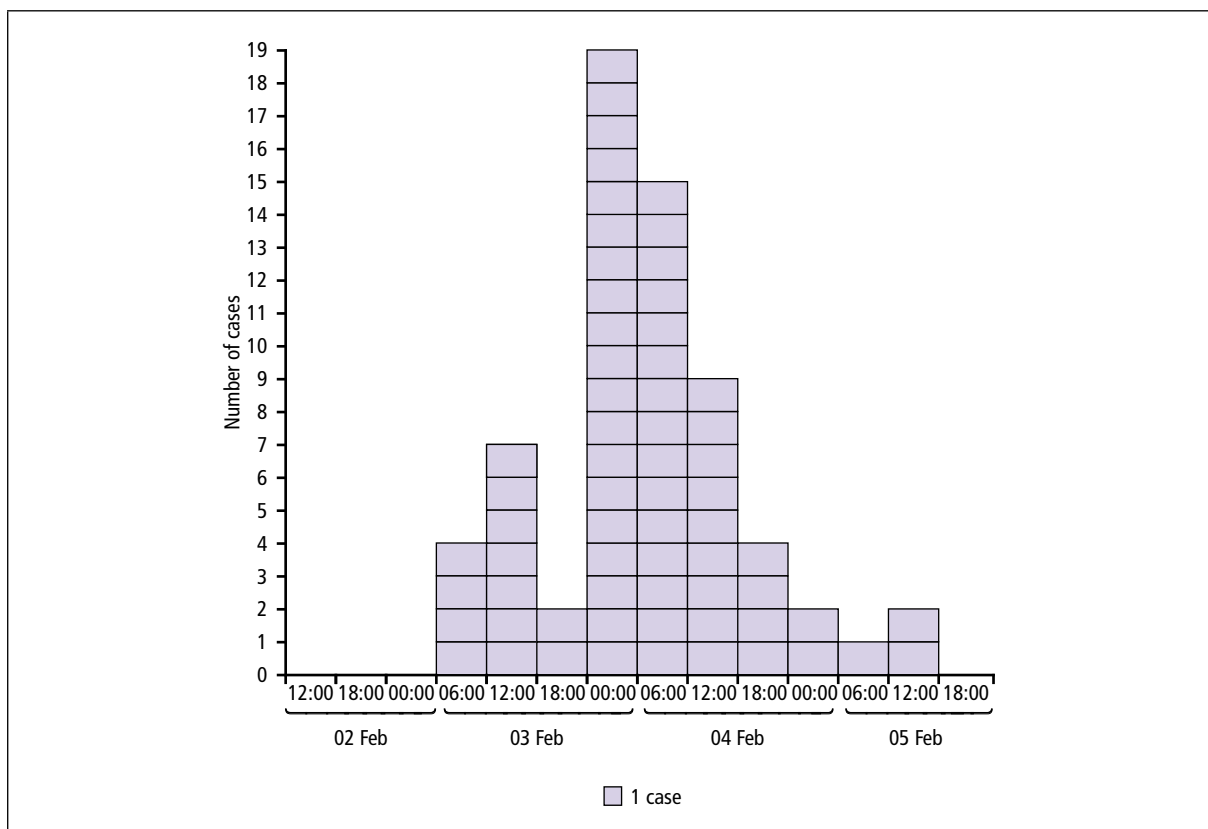
The epidemiologic study (epidemic curve, incubation period, symptoms, and attack rate) suggested viral food poisoning, by the calicivirus family (genus *norovirus* or *sapovirus*).

Moreover, inspection of the caterer's premises found no fault with the premises, the food-handling hygiene, or the staff hygiene. The most likely hypothesis remains viral contamination of several food items during food preparation or service by a person who was ill or an asymptomatic carrier.

## Organization of the interCIRE seminar

This seminar, intended to promote the exchange and pooling of practices and of operational feedback, took place at Clermont-Ferrand in June 2008. It was attended by 70 staff members from different CIRE offices and from InVS.

### | Epidemic curve of the reported cases of the foodborne illness outbreak February 2008 |



## Centre

The Centre CIRE was created in April 2008 as part of the reorganization of the Centre-Ouest CIRE. Its priorities in 2008 were responding to requests for the investigation of health alerts and risk assessments, re-establishing collaboration with the DRASS and the 6 DDASS, participating in the organization of health surveillance in the region, especially the preparation of the health emergency action plan (PRAGSUS), and the local implementation of various specific and non-specific surveillance programmes (e.g. SurSaUD®, SACS, and CO poisoning).

The Centre region has 3 main geographic features that have an impact on the CIRE's activities: the concentration of industrial activity along the axis of the Loire (soil and air pollution), intensive cereal growing (pesticide pollution) in the Beauce, and finally, an overall lack of health-care providers, especially in rural areas.

In 2009, the Centre CIRE will develop a regional analysis of surveillance data and feedback, especially for the priority diseases identified in the regional public health plan (some mandatory reporting diseases, STDs, CO poisoning, and syndromic analysis of emergency department visits). Finally, together with the DRASS and the DDASS it will set up a shared daybook for notifications.

### PROFILE

#### Centre CIRE

##### Coordinator

Dominique Jeannel

##### Location

Orléans

##### Date of creation

2008

##### Districts covered

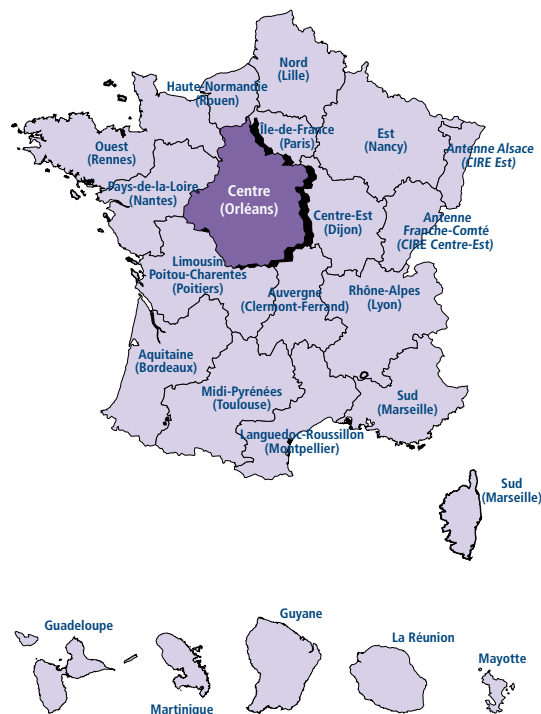
Cher, Eure-et-Loir, Indre, Indre-et-Loire, Loir-et-Cher, and Loiret

##### Number of staff

5

##### Contact

dr45-cire@sante.gouv.fr



### Investigation of a community outbreak of *Salmonella* typhimurium in 3 regions including the Centre

In June and July 2008, InVS, the CIRE, and the DDASS, in collaboration with the CNR for salmonella investigated several spontaneous reports from laboratories of salmonellosis due to *Salmonella* typhimurium.

The CIRE managed the case census in the Centre region, working with the DDASS, clinicians, and laboratories. It used the exploratory questionnaire established by the InVS DMI to investigate foodborne infection outbreaks of unknown origin.

Of the 20 cases identified in Eure-et-Loir and in the Loiret, 14 belonged to the same serogroup *Salmonella* typhimurium, identified as the epidemic strain.

Generally, the food products most frequently consumed by the people who became sick in the 3 days preceding the onset of symptoms were UHT long-life milk (86%), yogurt (84%), and ground beef (83%). The different origin of these products was inconsistent with the interregional distribution of cases, which indicated a single source of contamination. The food responsible for this epidemic could not be identified.

### Health impact of air pollution in Orléans and Tours (Second 5-year analysis)

The health impact assessment of air pollution in Orléans and Tours was part of the regional air quality plan. This plan sets the priorities for preventing or reducing the effects of this pollution.

The Centre CIRE, in collaboration with Lig'Air and the DRASS environmental health office, conducted an assessment based on hospital admissions and premature mortality between 1 January 2007 and 30 September 2008. Analysis shows that the concentration of nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>) in the air had a substantial health impact. Over the study period, these 2 gases appear to have caused a short-term excess of premature mortality, assessed at 15 and 14 deaths, respectively, in Orléans, and 23 and 19 in Tours; this accounts for around 5% of summer

deaths not due to accidents. The long term impact on premature mortality is still greater. Moreover, these same gases, as well as fine particles, also affect respiratory and cardiovascular morbidity in the elderly.

Globally, these results enable the evaluation of the potential health impact of different scenarios for reducing air pollution. Human health appears to improve significantly at a daily diminution of 5 µg/m<sup>3</sup> in NO<sub>2</sub> and O<sub>3</sub> concentrations in the air. Considering the uncertainties and limitations of the method, the results must nonetheless be interpreted carefully.

### Investigation of a foodborne infection outbreak in a daycare centre in the Eure-et-Loir

On 29 July 2008, the DDASS of Eure-et-Loir asked the Centre CIRE to investigate on 9 sick children in a daycare centre with 18 children.

The diversity of the symptoms—vomiting (3 cases), abdominal pain (3 cases), nausea (one case), headaches (9 cases), fever (2 cases)—as well as the attack rate (41%, excluding the isolated headaches), the type of activities organized, and finally, the air measurements taken ruled out the hypotheses of CO poisoning or sunstroke. The study concluded that a food poisoning outbreak was responsible, with *B. cereus* as the possible causal agent.

A food survey conducted by the CIRE did not identify any food at-risk on the menu, and no positive bacteriological results were obtained.



## Risk assessment associated with lead shot fallout on private and public property bordering a shooting range

The Centre CIRE, in collaboration with the DDASS and the DRASS, was asked to assess the environmental impact of a shooting range in a residential area in the Indre district. The neighbours regularly complained about the noise and the large number of small pieces of lead shot falling on local roads and on their properties.

Tests of water samples did not reveal any particular lead pollution in the river. However, in view of the great quantity of lead generated by this activity (about 50 000 shots/m<sup>2</sup> in a shooting range) and the large toxicological risk linked to its accidental ingestion near the shooting range (by children and animals), the Centre CIRE helped increase the awareness of the health authorities (DDASS, sub-prefecture) and the public about the importance of local regulatory measures when there are no specific legislative provisions, in particular covering soil remediation for this type of activity. The toxic risk is now being assessed, on the basis of the results of soil sample analyses.

### For further information:

Grandesso F *et al.* Excess of infections due to a multi-drug sensitive *Salmonella enterica* sérotype Typhimurium in France in June 2008. *Eurosurveillance* 2008;13(44):8, volume 13, issue 44 – page 8;2008.





## Centre-Est

The Centre-Est CIRE in Dijon and its branch office in Besançon carry out health surveillance for the regions of Bourgogne and Franche-Comté. The work carried out in 2008 included surveillance of sports accidents, outbreaks in nursing homes, and 2 activities related to surveillance of CO poisoning: a regional adaptation of the national operating system (jointly with the Ouest CIRE) and a test of the use of SurSaUD® for surveillance of CO poisoning.

In 2008, the CIRE received several requests to investigate infectious diseases (including measles, anthrax, legionellosis, petechiae, and meningitis) and environmental problems (chemicals, pesticides, and toxic products). Several schools called upon the CIRE and the DDASS to investigate air quality problems, but no really worrisome situations have been revealed. The management of alerts from Franche-Comté has been facilitated by the office at Besançon.

In 2009 the Centre-Est CIRE will focus on 2 priorities: implementation of the regional health emergency plan (PRAGSUS) and management of alerts.

### PROFILE

#### Centre-Est CIRE

##### Coordinator

Claude Tillier

##### Location

Dijon (and a branch office in Besançon)

##### Date of creation

1998

##### Districts covered

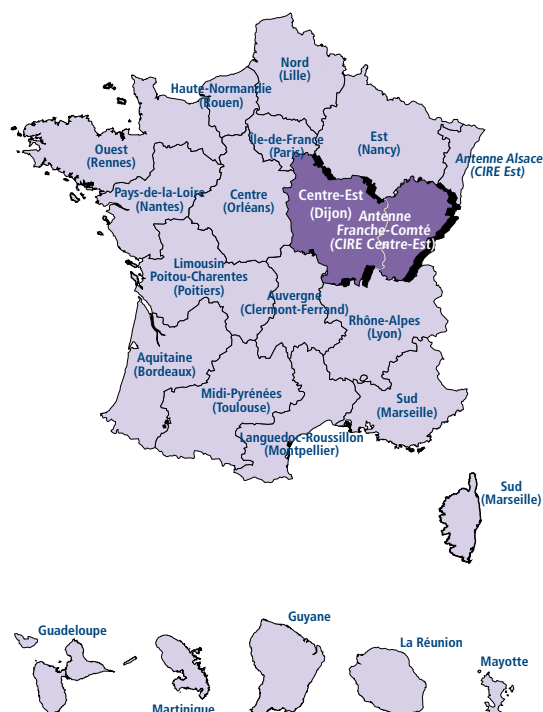
Bourgogne: Côte-d'Or, Nièvre, Saône-et-Loire, Yonne  
Franche-Comté: Doubs, Jura, Haute-Saône, Territoire de Belfort

##### Number of staff

8

##### Contact

dr21-cire@sante.gouv.fr



## HIGHLIGHTS OF 2008

**Measles outbreak in a school in Côte-d'Or**

On 25 June 2008, 3 cases of measles in a school in Côte-d'Or and one case in the North region were reported to the relevant regional CIRE. The case in the North was in fact the brother of the 3 young girls attending a school in Bourgogne, all had measles during June.

A retrospective and prospective survey was conducted among the family and friends of the cases by the DDASS and CIRE concerned, to describe the outbreak. The families of the pupils were questioned. At the same time, active case-finding was conducted among the general practitioners.

The very late diagnosis and reporting complicated implementation of prevention measures, the measles spread: 111 cases were finally reported. The survey revealed a poor vaccination coverage in the children at the schools concerned (45% in Côte-d'Or and 31% in the North) and still lower within their families (26%). By comparison, 94% of children and adolescents in France have received at least one dose of measles vaccine.

This epidemic, from Austria (strain D5), probably contributed to the re-emergence in measles in France in 2008. Although no epidemiological link was found, the populations concerned had one point in common: they belong to communities where the need for the non-mandatory measles vaccination is not understood.

**Surveillance of outbreaks in nursing homes**

In 2008 in Bourgogne, the DDASS, the DRASS, the regional office (ARLIN) of the East nosocomial infection control coordination centre, and the CIRE launched a programme to evaluate the preparedness of nursing homes in the region for disease outbreaks (such as influenza, acute lower respiratory infections, acute gastroenteritis, and scabies). A retrospective survey was implemented during the winter of 2007-2008. Its principal objective was to optimize the coordination with the nursing homes in terms of surveillance systems, preparedness, and control of infectious disease outbreaks, to reduce morbidity and mortality in these institutions.

The survey showed that:

- there is room for improvement in the preparedness of nursing homes in Bourgogne for infectious disease outbreaks;

- the influenza vaccination coverage for residents is satisfactory, but that for staff is too low (mean=34%);
- surveillance of acute respiratory infections is not yet implemented in two-thirds of the nursing homes;
- the capacity of the nursing homes to diagnose flu rapidly (with a rapid diagnosis test) is insufficient (only 15% had the test available in-house);
- support of a network of nosocomial infection control is effective for only 29% of the nursing homes.

The survey shows the need to strengthen support for nursing homes in Bourgogne in terms of surveillance and control of infectious disease outbreaks.

The nursing homes were informed about these findings and conclusions, and these meetings provided an opportunity to recall the need to reinforce hygiene in the case of any infectious outbreak. They also allowed an evaluation of the reporting networks and the organization of surveillance. The survey will be repeated in the spring 2009, to assess the trends in these nursing homes during the year.



## Surveillance of sports accidents in Côte-d'Or for alert purposes

A decree dated 3 September 1993 requires operators of physical activity and athletic facilities to inform the authority of any serious accident occurring at the facility. This measure was never implemented, for various reasons: lack of a definition of accident, lack of reporting tools and procedures, etc.

Therefore, the regional youth and sports department of Bourgogne therefore requested the CIRE to consider another more effective surveillance system as part of the regional health emergency action plan.

On an experimental basis, the district system is currently collecting all cases of serious sports accidents (hospitalization or death) reported by the district emergency departments, occurring in organized or recreational athletic

activities. In 41 weeks of surveillance, 366 cases of serious sport accidents were reported. Half concerned patients younger than 20 years of age, with a M/F sex ratio of 2.4. Most accidents involved roller or wheel sports (42.9%), team sports (16.9%), and equestrian sports (13.4%).

Of these accidents, 38 were considered very serious (intensive care, cardiology intensive care, neurosurgery, or death). There were 5 deaths, at a median age of 39 years, and wheel/roller sports, especially cycling, were overrepresented.

The results of this study will serve as the basis for a reporting system for very serious accidents that will allow the regional and interdepartmental youth and sports department (Direction régionale et départementale de la jeunesse et des sports) to fulfill its administrative alert function and should also help improve epidemiological surveillance and prevention of these accidents.

| The 38 very serious sports accidents that led to reports to the Côte-d'Or youth and sports department, from 4 March 2008 to 9 January 2009 |

Severity	Short-term death: 5	Hospitalization in intensive care, cardiology intensive care or neurosurgery: 33	
Principal diagnoses in the emergency department	Injuries: 30	Disease: 8 including 7 of cardiac origin	
Sports concerned	Roller/wheel sports: 16	Team sports: 4	Other (13 sports or different physical activities): 18
Possession of a permit/ membership card for the sport	Cards: 14	No cards: 15	Unknown: 9



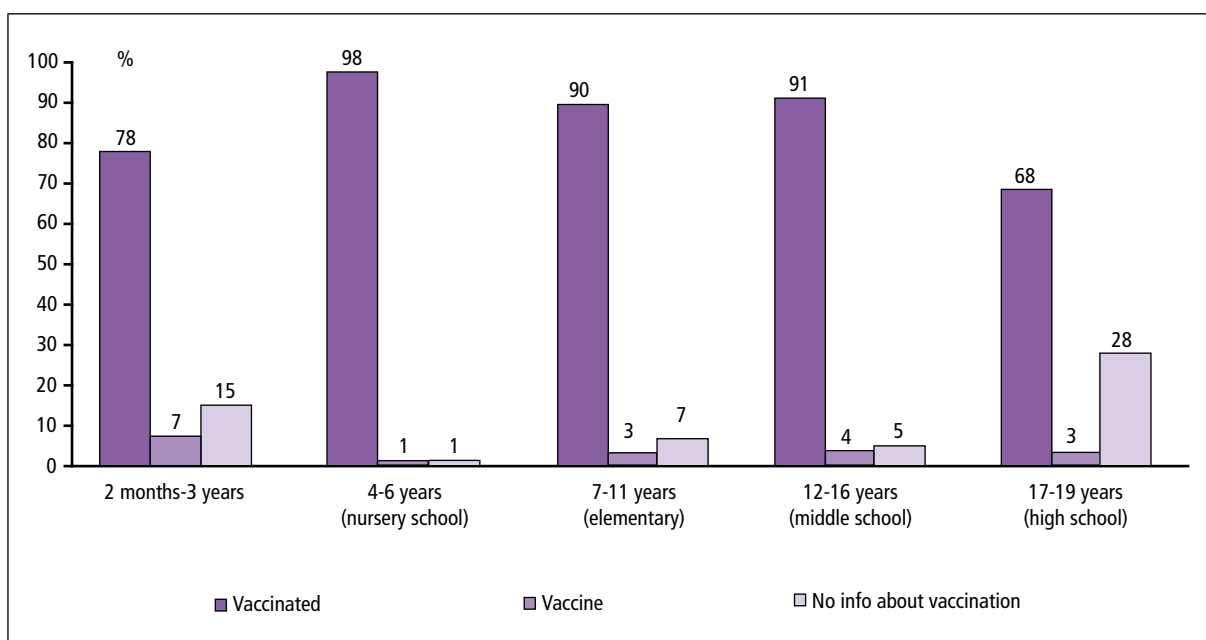
## Evaluation of the meningococcal C vaccination campaign in four municipalities of Doubs

In 2008, 2 cases of invasive meningococcus C infections, one of whom died, were reported to the Doubs DDASS, 8 weeks apart. After identification of the same strain, with characteristics of particular transmissibility and virulence, the Director General of Health asked the district authority to organize an extensive vaccination campaign against meningococcus C, targeting the children and young adults in 4 municipalities, aged from 2 months to 19 years (989 people). The CIRE was assigned to evaluate the campaign.

At the end of the campaign, 86% of the target population had been vaccinated, ie. a vaccination coverage of 91% (taking into account subjects vaccinated earlier). The best vaccinated groups were school children, from nursery school through middle school (99 to 95%). On the other hand, the group aged 17-19 years was more difficult to reach, with a probable vaccination coverage of 71%.

This evaluation was facilitated by the implementation of a vaccination register established previously by the DDASS, in collaboration with the CIRE.

### | Distribution of the target population at the end of the vaccination campaign by age group and according to vaccination status |



The CIRE Est and its Strasbourg branch office coordinate health surveillance for ten districts in Alsace, Champagne-Ardenne, and Lorraine. The geographic characteristics (mountainous and industrial corridors) of these districts result in demographic disparities (including sparsely populated areas with inadequate access to health care).

Because of the region's industrial history and over-exploitation of underground resources, CIRE Est is regularly asked to carry out environmental investigations or provide expert assessment concerning the health impact of soil and groundwater pollution (e.g. lead poisoning and natural arsenic exposure). A cancer mortality and incidence study began in 2008 around a landfill site containing low and medium levels of radioactivity in the Aube district.

In 2009, the CIRE Est programme will cover 2 main topics: the continuation of the implementation of the regional health emergency plan for Champagne-Ardenne, Lorraine, and Alsace (PRAGSUS, requiring reports, expert assessments, response follow-up, and participation in the development of shared tools for signal assessment), and the continuation and development of regional surveillance (health surveillance of emergency departments and deaths, surveillance of acute respiratory infections and acute gastroenteritis in nursing homes, surveillance of STDs, and surveillance of CO poisoning).

## PROFILE

### CIRE Est

#### Coordinator

Christine Meffre

#### Location

Nancy (and a branch office in Strasbourg)

#### Date of creation

1996

#### Districts covered

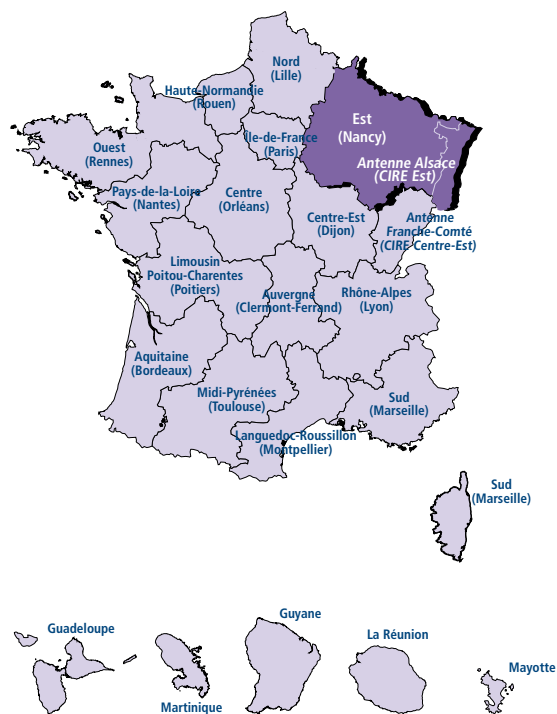
Ardennes, Aube, Marne, Haute-Marne, Meurthe-et-Moselle, Meuse, Moselle, Bas-Rhin, Haut-Rhin, Vosges

#### Number of staff

9

#### Contact

dr54-cire@sante.gouv.fr





## HIGHLIGHTS OF 2008

## Legionellosis: Case description and case clusters in Alsace

The incidence of legionellosis in Alsace has been rising since 2004. To develop recommendations for prevention and management, CIRE Est, in collaboration with the DDASS, the DRIRE, and InVS, conducted a descriptive study (2004-2008).

The results confirmed a crude regional incidence higher than the national average with, for example, 83 cases in 2007, twice the national incidence rate. For approximately 71% of cases, no at-risk exposure was reported (compared with 63% for France as a whole).

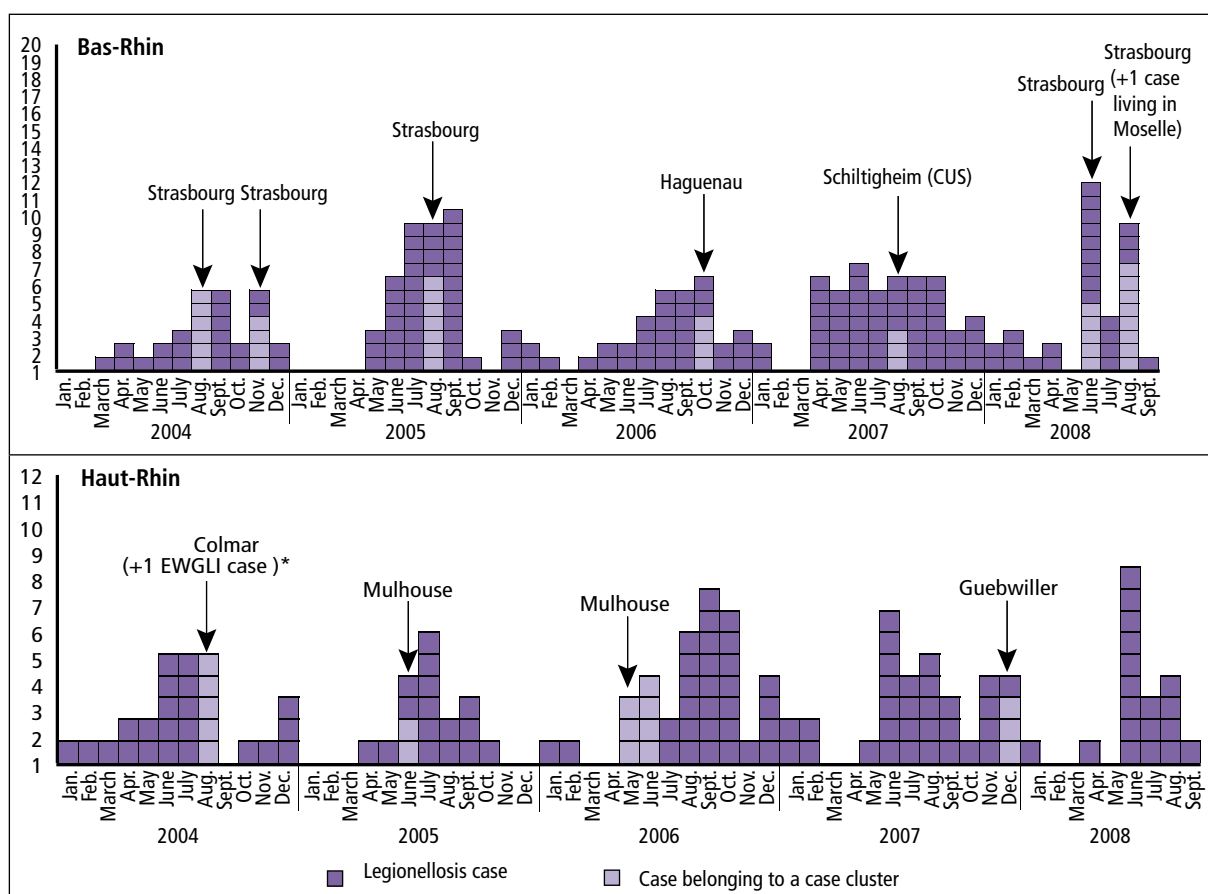
The survey showed that in a 5-year period, there were 11 case clusters in Alsace: 7 in the Bas-Rhin (6 of them in

or around the Strasbourg metropolitan area) and 4 in Haut-Rhin. Although exposure to a cooling tower was the final hypothesis for each episode, the comparison of clinical and environmental bacterial strains did not lead to the identification of any common source of contamination.

In conclusion, to improve future investigations, CIRE Est recommends action to:

- rise the awareness of physicians to have *Legionella* cultured at the CNR for each case with a positive antigenic response to *Legionella*;
- continue the close collaboration between health surveillance services to identify case clusters as early as possible and set up a joint prevention strategy;
- reinforce the surveillance of the cooling towers, especially in the Strasbourg metropolitan area, while consolidating and improving the collaboration between partners.

### | Epidemiologic curve of legionellosis cases reported in Bas-Rhin and Haut-Rhin (2004-2008) |



CUS: Strasbourg metropolitan area (Communauté urbaine de Strasbourg).  
EWGLI: European Working Group for Legionella Infections.

## Investigation of case clusters of measles with nosocomial transmission

On 11 February 2008, 3 cases of measles in Reims were reported, setting off an investigation to document the episode, assess its scale, and set up appropriate control measures. Active case-finding was undertaken among all physicians practicing in Reims (e.g. private practice, schools, hospitals, and SAMU). Saliva sample kits were placed in the city laboratories to enable rapid detection of specific IgM (at the Caen CNR) and then determination of the viral genotype (at the Lyon CNR).

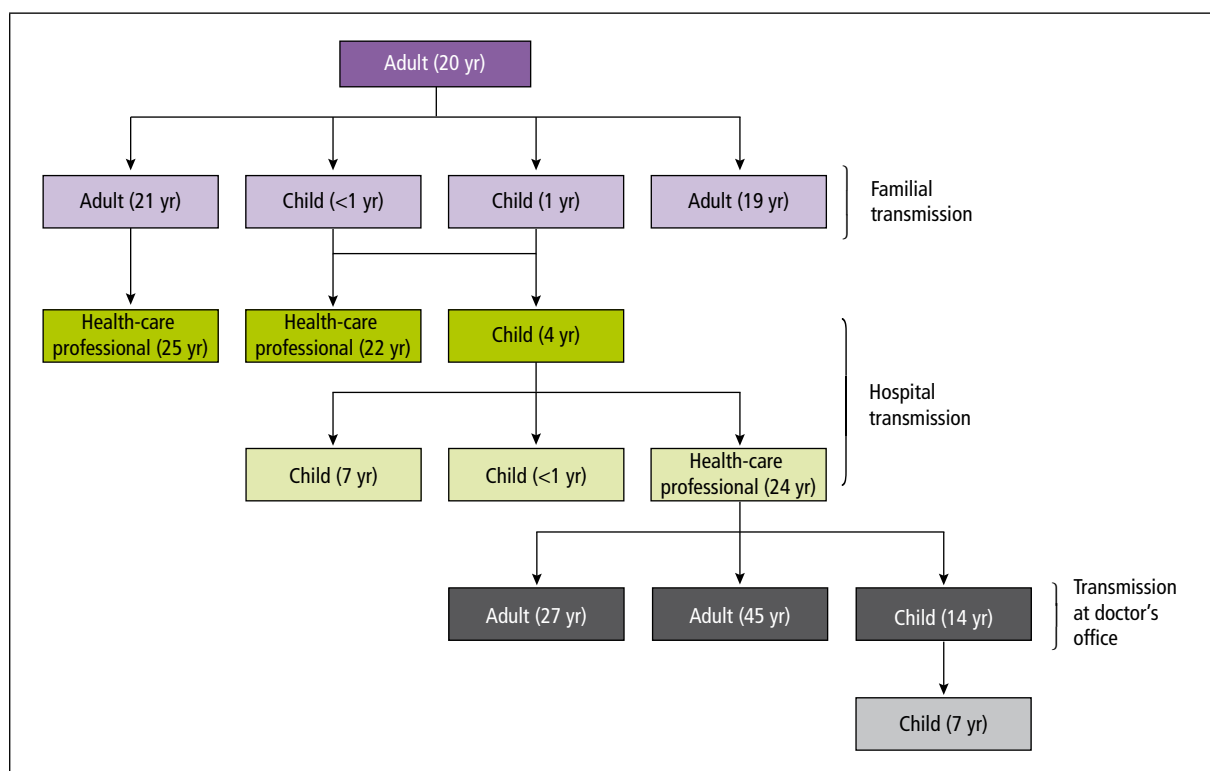
The investigation identified 19 cases of measles including 8 children and 11 adults (mean age respectively, 4.5 years and 26 years). Sixteen cases were confirmed by laboratory testing of serum or saliva samples. The vaccination coverage of most patients was incomplete or non-existent.

This outbreak was characterized by a long chain of transmission including 15 confirmed cases, 6 in hospital settings (3 patients contaminated at the University Hospital Centre and 3 medical students) and 3 more contaminated in the waiting room of a private practitioner.

The rapid action of the investigation and the good vaccination coverage in the Marne district (91.7% in children aged 2 years) allowed to limit the outbreak.

This epidemic episode demonstrates the persistent circulation of imported strains of the measles virus in France and the continuing risk of epidemic in groups of individuals either unvaccinated or incompletely vaccinated. The nosocomial transmission chain points out the need for health-care personnel, including medical and paramedical students, to comply with the vaccination schedule.

### Links between 15 confirmed measles cases in Reims, 21 January – 25 March 2008



## Haute-Normandie

The region of Haute-Normandie is characterized by high industrial density along the banks of the Seine, with 2 international ports (Le Havre and Rouen), at the heart of a large area of agricultural and livestock production. Compared with the national mean, the region has an excess mortality rate, linked in particular to cancer (at-risk behavior and occupational exposure) and excessive alcohol consumption.

Since 2003, the district of Seine-Maritime has been faced with hyperendemic invasive meningococcal infections (IMI) of serogroup B. A vaccination campaign unique in France was launched in 2006, among those aged 1 to 19 years in the district; in September 2008 it was extended to babies aged 3 months to one year.

The CIRE of Haute-Normandie investigated these events. It has thus developed a recognized expertise in IMI and more precisely in the follow-up and definition of populations eligible for vaccination. This knowledge is currently being shared with the CIRE for the northern region, because this hyperendemic arrived there in mid-2008.

In 2009 the CIRE of Haute-Normandie will set up a secure website with health watch and health alerts for Haute-Normandie (RIVAS-HN) to develop the culture of disease reporting and to make a communication tool available to health-care professionals.

### | PROFILE |

#### CIRE Haute-Normandie

##### Coordinator

Nathalie Lucas (acting)

##### Location

Rouen

##### Date of creation

2002

##### Districts covered

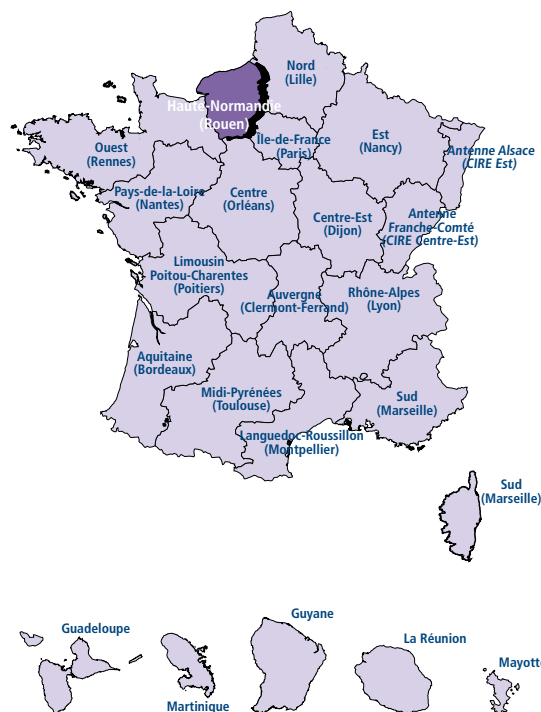
Seine-Maritime, Eure

##### Number of staff

6

##### Contact

drd76-cire@sante.gouv.fr



### Reinforced health surveillance for the Armada in Rouen, July 2008

For the 3<sup>rd</sup> time, InVS and the CIRE of Haute-Normandie organized epidemiologic surveillance of the Armada in 2008. This event gathers almost 9 million tourists over a 10-day period in Rouen and along the Seine.

The system brought together a health surveillance network composed of the CIRE, the Seine-Maritime DDASS, emergency teams, including those of Rouen, Le Havre, and Evreux, emergency room doctors involved in surveillance, SOS Médecins, private practitioners at after-hour clinics in Rouen and Le Havre, Météo-France, Air Normand, and the interdepartmental food safety task force (Mission interservice de sécurité alimentaire) of Seine-Maritime.

The objectives were to prevent and detect all unusual health events, to carry out investigations as quickly as possible, to assess the health risks that might lead to a disease epidemic, and finally, to provide decision support for the health authorities in case of an outbreak. Each day, the CIRE was responsible for collecting and analyzing epidemiologic surveillance indicators and providing a daily feedback bulletin to the health surveillance network.



No alert for any of the targeted diseases linked directly to the event was identified:

- 1707 patients were seen at the first aid station, including 877 for diseases under specific surveillance: accidental injuries (86%) and heat-related health problems (7%);
- The SAMU recorded 5033 calls and the emergency departments 5358 first visits, none above normal activity levels;
- The after-hours clinics saw 273 patients, 11 for target diseases.

This system contributed to strengthen CIRE's collaboration with its partners in the health surveillance network.

### Investigation of an outbreak of eruptive pseudoangiomatosis in a home for disabled persons in Seine-Maritime

On 16 April 2008, the Seine-Maritime DDASS received information about the onset of an abnormally high number of dermatologic disorders (eruptive angiomatosis) among the staff and residents of a home for disabled adults. Because of the lack of documentation about eruptive pseudoangiomatosis epidemics in group settings, the investigation by the CIRE of Haute-Normandie had a dual objective: to describe and limit the epidemic phenomenon and to improve knowledge of the topic.

All cases recovered spontaneously in all of the people affected; 118 cases were diagnosed with this pseudoangiomatosis, for a global attack rate of 90%. The viral hypothesis appears the most plausible, although it could not be validated by the laboratory results.

This epidemic episode made possible to implement the needed management measures in a context of high social demand. It also allowed to pool skills for the clinical, laboratory, and epidemiologic components: the Rouen University Hospital Centre (dermatologist and virologists), the group home itself (nurse and referring physician), the nosocomial infection control coordination centre (CClin), occupational physicians, InVS, the DDASS, and the CIRE.

## Assessing the benefit of health follow-up after finding high benzene concentrations in homes (Seine-Maritime)

Historical soil pollution by hydrocarbons is responsible today for high levels of pollutant emissions indoor some homes in a town in Seine-Maritime. The source, identified in 1990, is a continuous leak (between 15 000 and 20 000 m<sup>3</sup>) from a buried network of pipes from a neighboring refinery.

Measurement campaigns in 2008 identified relatively large indoor concentrations of benzene, a substance known to be dangerous. In addition to the immediate management measures (e.g. a remediation plan and building work), questions arose about the appropriate health follow-up for the population. Beyond the characteristics inherent in the situation, reconstructing past exposure was not possible, the choice for follow-up was based on an analysis of its pertinence and feasibility.

To respond proportionately to the prefect's question about the type of health management to be offered to the exposed populations, the CIRE of Haute-Normandie and the InVS DSE helped create and lead a committee of local and national multidisciplinary experts (occupational physicians and hematologists).

This committee agreed that assessing the health impact linked to this exposure was impossible and that individual health follow-up would be useful. The specifics remain to be defined.





## Île-de-France

The Île-de-France region, with its very urbanized centre, has multiple points of entry (including international airports and railway stations) and a surrounding metropolitan area that generates more than 4 million trips daily. Because of its size (11 500 000 inhabitants) and the complexity of its economic and social fabric the Île-de-France CIRE has to deal with a great number of requests. Its activity has a large environmental component (e.g. health risk assessments, polluted soils, and surveillance of the health impact of international airports). Moreover, its population density and mixing put the region at the top of the list for the incidence of infectious diseases such as AIDS and tuberculosis.

The CIRE benefits from the excellent regional network of emergency departments, which reinforces the efficacy of its investigation and surveillance systems. It also collaborates closely with the principal regional health stakeholders, and especially the DRASS of Île-de-France, the DRASS department of environmental health (Île-de-France Airparif and Bruitparif) for the surveillance of the health and environmental impact of the Paris airports, the regional emergency surveillance and action centre (Centre régional de veille et d'action sur les urgences, CERVEAU) for monitoring emergency department data, and other partners, as for the cancer registry tested in 2008 in Val-de-Marne.

### PROFILE

#### CIRE Île-de-France

##### Coordinator

Hubert Isnard

##### Location

Paris

##### Date of creation

2002

##### Districts covered

Paris, Seine-et-Marne, Yvelines, Essonne, Hauts-de-Seine, Seine-Saint-Denis, Val-de-Marne, Val-d'Oise

##### Number of staff

11

##### Contact

dr75-cire@sante.gouv.fr



## HIGHLIGHTS OF 2008

### Surveillance of infections with Pantone-Valentine leukocidin-producing *Staphylococcus aureus*

*S. aureus* producing Pantone Valentine necrotizing leukocidin (PVL) is a community microorganism that has been emerging since 1999. It often provokes recurrent cutaneous abscesses or, less often, severe lung diseases. Transmission of the microorganism occurs essentially by direct contact with an infected wound, but colonization of the nasal pathway in an asymptomatic subject also contributes to its distribution in the population.

After the onset of a large epidemic episode in an elementary school of a village in Val-d'Oise in 2005-2006 (in a population of 346, there were 22 cases of cutaneous infection and 9 of asymptomatic nasal colonization), the Île-de-France CIRE conducted a study in partnership with the DDASS, to describe the cases and estimate the risk of transmission in family and school settings. Published in 2008, this study shows that screening in school settings has to be limited to patients with cutaneous infections and their friends and family, even though the attack rate in schools is high. National recommendations to investigate clusters of *S. aureus* PVL+ are being drafted. A surveillance system was established in the reference emergency departments of hospital centres in the neighbourhood to assess the dynamics of the distribution of *S. aureus* PVL+ in the community: routine bacteriological samples are taken from people seeking care for cutaneous infections that require surgical drainage (abscesses or boils).

This project is being conducted in collaboration with 3 hospitals, the DDASS of Val-d'Oise, the InVS Infectious Disease Department, and the CNR for *Staphylococcus* in Lyon.

### SurSaUD® in Île-de-France

SurSaUD® is a syndromic or non-specific surveillance system of morbidity and mortality that has been in operation since November 2004. The system is based essentially on data transmitted by emergency services (SAMU, hospital emergency departments, SOS Médecins, etc), rescue services (firefighters), private practitioners (in the Île-de-France bronchiolitis network), and registry offices, for mortality. Numerous partners, policy-makers, and health-care professionals are involved in SurSaUD®.

SurSaUD® collects and analyzes morbidity and mortality data every day to detect unusual or seasonal health events as early as possible, to assess their scale and characteristics (severity and populations affected), and to assess the impact of the health measures.

This surveillance system has made much more effective regional monitoring possible, as seen in the follow-up of seasonal epidemics, assessment of the impact of events such as the heat wave of July 2006, the description of events such as the 2 peaks for health-care utilization for asthma reported by emergency departments in the summer 2006 (population affected, geographic distribution, age, and severity) or, more recently, the monitoring of case clusters of overdoses in Seine-Saint-Denis and Val-d'Oise in January 2009.

In 2009, the SurSaUD® application, set up at the national level by InVS, will be used for a centralized data analysis at the national level and for the publication of health surveillance bulletins by the CIRE. This application will make it possible to conduct analyses at the district level. The extension of the surveillance network to new hospital emergency departments to increase coverage, in particular in some districts of the region is foreseen.

#### For further information:

Carré N, Sillam F, Herbreteau N *et al.* Colonisation nasale et infections cutanées *Staphylococcus aureus* porteur du gène codant la leucocidine de Pantone Valentine : quel dépistage lors d'une épidémie en milieu scolaire ? *Med Mal Inf* 2008;38:483-8.

## Clusters of legionellosis: LEGEO, a geographic information system to facilitate investigations

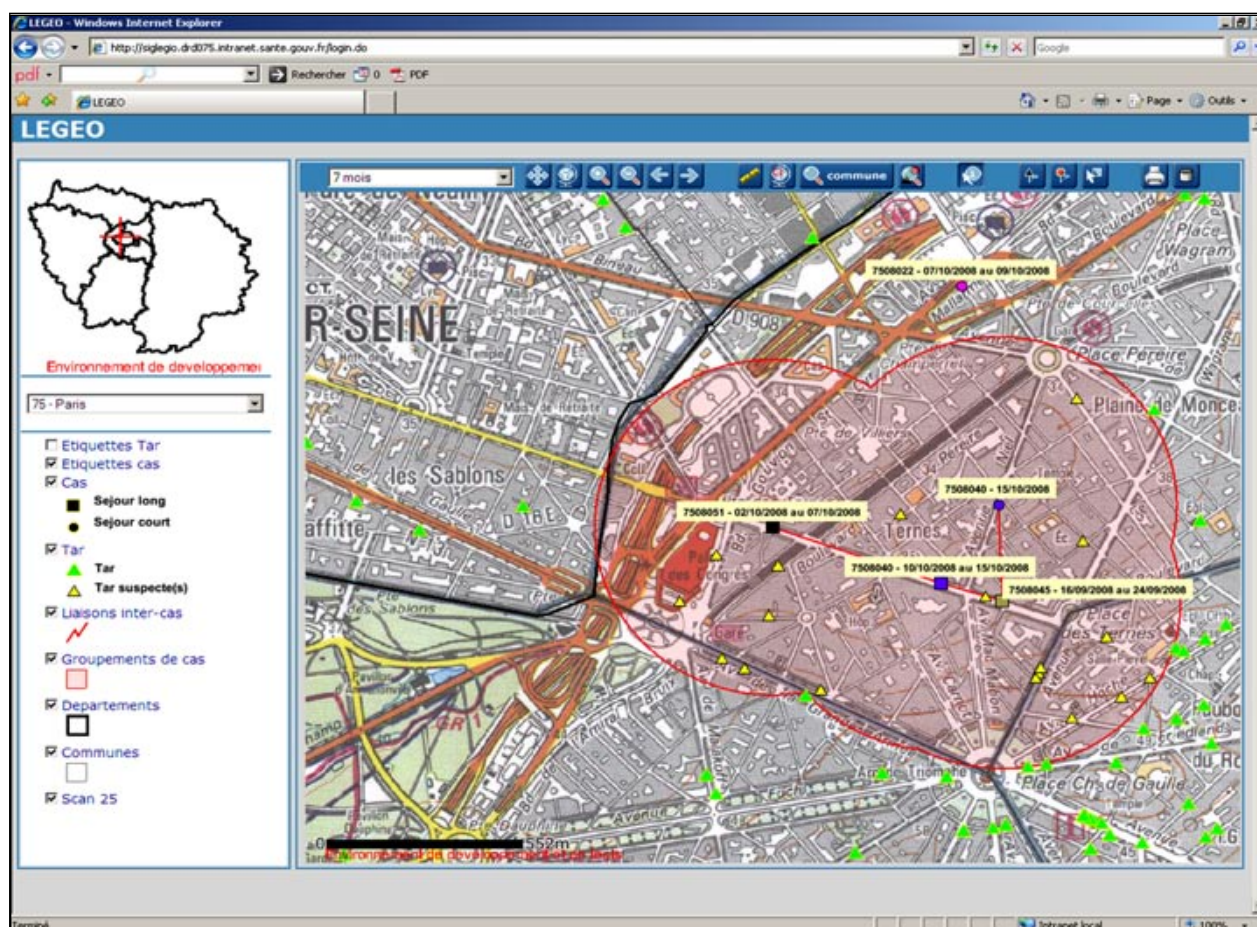
Clusters of legionellosis result from the exposure to sources of environmental contamination and, more particularly, to cooling towers. To facilitate the investigation of such clusters, the CIRE of Île-de-France, with the IT department of InVS and the Île-de-France DDASS, has set up LEGEO, a geographic information system accessible *via* the Ministry of Health intranet.

LEGEO allows the optimal georeferencing of cases (home and traveling during incubation periods) and cooling towers (registered by the interdistrict inspection

of classified industrial installations and the regional authority for industry DRIRE), as well as the identification of suspicious cooling towers near the clusters under investigation. Besides centralizing the data, harmonizing practices, and improving communication in investigatory situations, LEGEO is above all an effective ergonomic tool that facilitates the investigation of suspected case clusters, especially when several districts are concerned. LEGEO allows shared access and real-time data use by all stakeholders (DDASS, CIRE, and DRASS) responsible for investigating legionellosis cases in the region.

Users' guidelines have been developed for all stakeholders.

### LEGEO geographic information system Representation of hypothetical scenarios and cooling towers included in LEGEO



## Languedoc-Roussillon

Now well integrated in the regional health surveillance network, the Languedoc-Roussillon CIRE saw a general increase in its activity in 2008. Of 81 signals or requests for expertise handled in 2008, 39 required an investment greater than one day of work, compared with 20 in 2007, and 14 involved the CIRE for a duration that lasted from a week to several months. Most signals were reports of communicable diseases in groups of children or of elderly people.

The main diseases reported were whooping cough, measles, legionellosis, tuberculosis, invasive meningococcal infections, and foodborne diseases outbreaks. The CIRE was also involved in environmental health topics, most often for its advice on situations involving environmental risk at polluted sites.

Syndromic surveillance is an important proportion of the activity of the Languedoc-Roussillon CIRE, which is responsible for regular analysis and feedback of morbidity and mortality data and of data related to emergency department admissions (SurSaUD® system). Specific surveillance of the health impact of heat waves also mobilizes the Languedoc-Roussillon CIRE during the summer season, when it distributes periodic information bulletins.

The south of France is an area at risk for some arboviroses (dengue, chikungunya, and West Nile virus). The Languedoc-Roussillon CIRE provides health surveillance jointly with the CIRE Sud on this topic.

### | PROFILE |

#### Languedoc-Roussillon CIRE

##### Coordinator

Franck Golliot

##### Location

Montpellier

##### Date of creation

2003

##### Districts covered

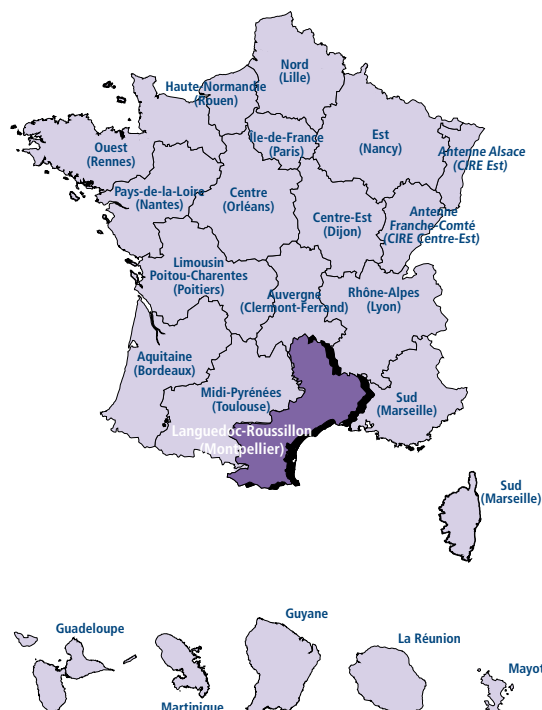
Aude, Gard, Hérault, Lozère, Pyrénées-Orientales

##### Number of staff

6

##### Contact

dr34-cire@sante.gouv.fr



### Health and environmental surveillance during site remediation of the Raffineries du Midi at Balaruc-les-Bains, Hérault

Further to an initial remediation project in 2004, neighbors reported nuisances. The Hérault DDASS requested the CIRE to provide an opinion on "the screening and the inclusion of affected populations" further to an NGO's request (Vigilance Depollution) in view of a new depollution project in 2008.

The CIRE, working with the neighbors, proposed to reinforce a health surveillance protocol:

- to verify that health-care professionals observed no health effect and to respond to any health-related requests by the neighbors;
- to analyze the environmental data collected continuously during the remediation project, according to vigilance thresholds defined by the CIRE;
- to provide CIRE duty officer/on-call responder services to support those of the DDASS environmental health department.

During a public meeting organized by the municipality, with representatives of the relevant local authorities, the operator, and the CIRE present, the objective of the procedure was explained to the neighbors: to make it possible, at any moment, to interrupt or redirect the work if the DDASS or the CIRE perceived any abnormalities, with the operational objective of limiting population exposure.

After 10 days of work, the enlargement of a pit generated the beginning of a panic, setting off a wave of calls from the neighbourhood. The CIRE and DDASS recommendations lead to immediate modifications of the remediation project and therefore to get back to a normal situation. The project ended without any further particular difficulties.

### Study of mortality around a polyurethane foam manufacturing plant in Aude

In September 2006, the regional inspector of labor asked the CIRE to investigate a report of 3 cases of cancer among workers of a company in the Aude district specializing in the production of polyurethane foam. The investigation of this report identified 10 cases of cancer among former employees, including 5 cancers of the urinary tract, and suggested a possible association between bladder cancer and occupational exposure. Medical follow-up was recommended for former employees. The CIRE also recommended that this information be provided

to the safety committees at other company's factories producing similar products.

In February 2007, the DDASS asked the CIRE to assess the potential impact of the factory's activity on the health of neighboring residents. An ecological study of mortality began, intended to identify and quantify any excess mortality from cancer and from other non-cancer respiratory diseases within the population. The results of this study, concluded in 2008, did not identify a statistically significant excess mortality rate over the period 1975-2005 in the study area compared with metropolitan France or with the Languedoc-Roussillon region.

### Case cluster of whooping cough in a local hospital

On 18 July 2008, the southeast Cclin sought support from the Languedoc-Roussillon CIRE for the investigation of a cluster of whooping cough cases in a local hospital. On 24 July the CIRE, DDASS, and Cclin inspected the facility to assess the episode and verify the implementation of barrier measures.

An epidemiological evaluation classified the cases as suspected cases, laboratory-confirmed cases, epidemiologically-confirmed cases, and excluded cases (that is, not cases). Simultaneously, the Cclin issued a reminder of the precautionary measures necessary, and an epidemiologic follow-up was set up, involving the hospital's management and hygiene team, to report any new cases in the weeks that followed. This episode showed the importance of local support to health-care facilities during a case cluster of whooping cough, both for an epidemiological evaluation of the situation and for the implementation of adequate hygiene measures.

### Foodborne infection outbreak in a camp for adolescents, Lozère

On 17 July 2008, a general practitioner informed the Lozère public health nurse of gastrointestinal symptoms in some 20 children at a vacation camp in Lozère. The DDASS referred this case to the Languedoc-Roussillon CIRE for investigation, to assess its importance and identify the causal or promoting factors. The retrospective cohort study was performed on-site by the DDASS public health nurse and 2 CIRE epidemiologists.

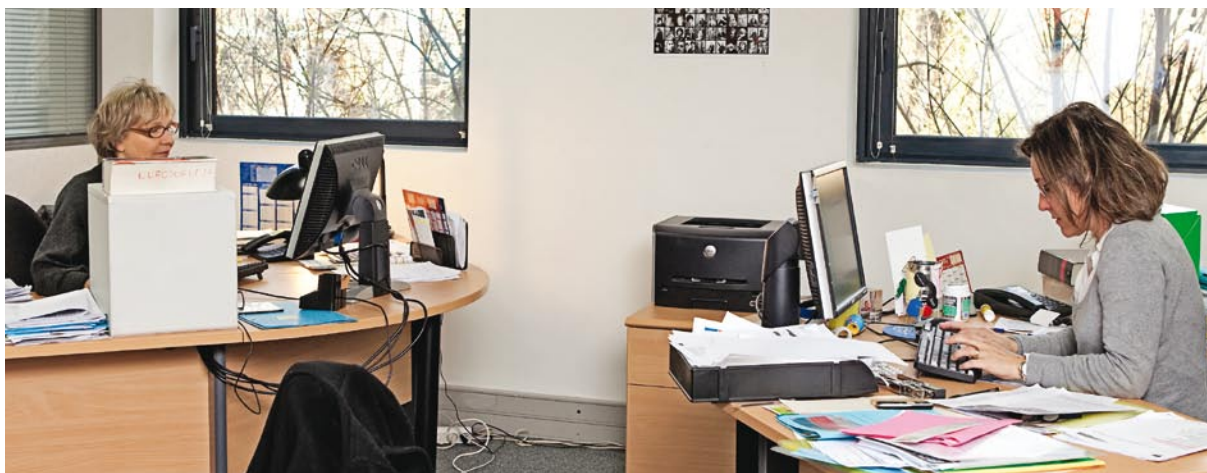
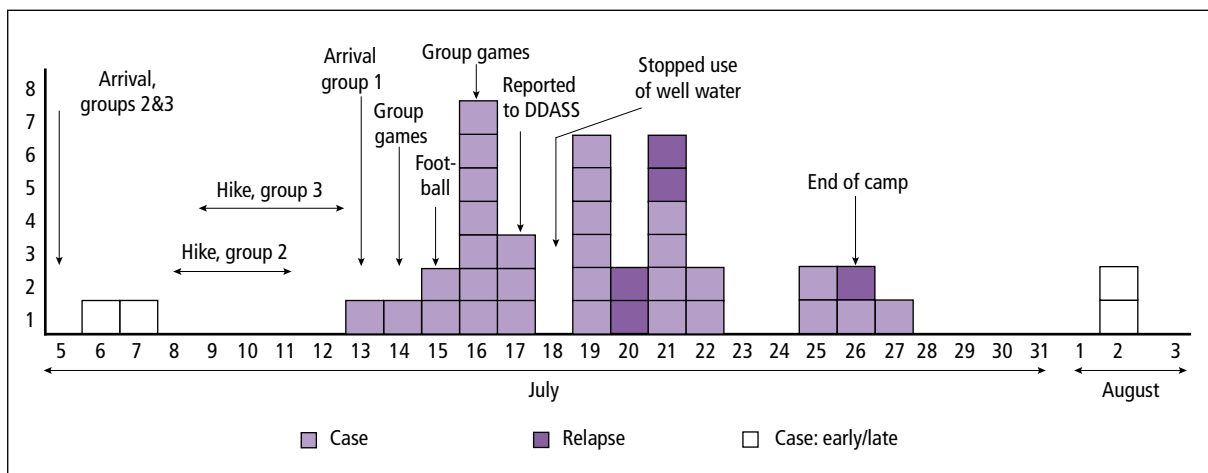
The results showed that this episode lasted 4 weeks and affected 34 children, for an attack rate of 83% (number of cases/number of people present). The outbreak began progressively, affecting first the oldest campers, and then



all the groups, regardless of age. The bimodal shape of the epidemic curve (2 peaks) and the duration of the episode are compatible with the hypothesis of a persistent common source of contamination. Because the dietary investigations did not show any risk associated with the consumption of any food, the hypothesis of a waterborne infection was

adopted. It was supported by the results of water analyses showing an excess level of fecal contamination in an overflow outlet used by the children. The continuation of the episode after measures forbidding the consumption of water from that source suggests person-to-person transmission was also associated with this episode.

### | Epidemic curve – Foodborne infection outbreak in a camp for adolescents, Lozère, July 2008 |



## Limousin Poitou-Charentes

The CIRE of Limousin Poitou-Charentes covers 2 regions and 7 departments. Because it was just created in 2008, its main objective that year was to take its place within the regional health surveillance network, developing the standard systems of surveillance and health alert (OSCOUR® system, ARH server, DDASS).

Initial efforts by this CIRE showed the need for surveillance of the infectious risks associated with livestock production in rural regions. Zoonoses of concern include tularemia, psittacosis, leptospirosis, and Q fever.

Attention must also be paid to surveillance of the effects of natural risks related to the coastline (storms in Poitou-Charentes), the mountain area of Limousin (severe cold) and the granitic ground of Limousin and Deux-Sèvres (radon risk).

In 2009, the CIRE will seek to become better known to other public health stakeholders, as a partner and coordinator of health surveillance (PRAGSUS, preparation for implementation of the regional health agencies).

### | PROFILE |

#### CIRE Limousin Poitou-Charentes

**Coordinator**

Philippe Germonneau

**Location**

Poitiers

**Date of creation**

2008

**Districts covered**

Charente, Charente-Maritime, Corrèze, Creuse, Deux-Sèvres, Vienne, Haute-Vienne

**Number of staff**

3

**Contact**

dr86-cire@sante.gouv.fr



## HIGHLIGHTS OF 2008

### Suspected case cluster of psittacosis in Charente

On 2 June 2008, 3 cases of suspected psittacosis were reported in a poultry slaughterhouse by the Charente DDASS. A radiologist reported two others in poultry farms in the same geographic area.

According to the protocol of the national study on psittacosis incidence (see box), the CIRE investigation showed that people concerned had no exposure factors other than their workplace and that no cases had been reported in their families.

Moreover, analyses of animal samples performed by veterinary departments in one of the facilities were positive for *Chlamydophila*, but negative for *Psittaci*. This result suggests that other species of *Chlamydophila* in poultry may be responsible for psittacosis-like lung diseases.

In conclusion, the CIRE recommended that preventive and surveillance measures be taken by occupational physicians and companies, that local surveillance of human cases continue, and that Charente be included in the national incidence study.



### Descriptive study of human psittacosis in southwestern and western France, 2008-2009

InVS and 5 CIRE, in partnership with the CNR for *Chlamydiae* and the French Food Safety Agency, have set up a descriptive study of human psittacosis in southwestern and western France. The incidence of this zoonosis (communicable disease from animals to humans under natural conditions) is poorly known and its epidemiologic associations with avian disease or with the asymptomatic carriage of the bacteria by birds should be better described so that appropriate prevention can be developed.

The study will consider patients older than 15 years, admitted in 2008 or 2009 to a participating hospital, with respiratory symptoms suggestive of psittacosis. They will be asked to describe any direct exposure occupational or in other settings, to birds, to their droppings or their feathers, regardless of the species, during the month before symptoms began. Fifteen study districts will be studied: Ile-et-Vilaine, Côtes-d'Armor, Finistère, Morbihan, Loire-Atlantique, Mayenne, Sarthe, Maine-et-Loire, Vendée, Deux-Sèvres, Dordogne, Landes, Pyrénées-Atlantiques, Gers, and Hautes-Pyrénées.

This study aims at improving knowledge of both human and animal epidemiology. The human component will estimate the incidence of hospitalized cases of human psittacosis, identify case clusters, and describe the exposure of cases. It will improve our knowledge of the strains genotypes present and responsible for severe cases, in humans and in animals. It will enable experts in human and animal health, working together, to develop a plan for the control of human psittacosis cases and to assess patients' compliance with prevention measures. Finally, the study should help determine whether a surveillance system (medical and/or veterinary) should be established and if so, in what form. The animal and environmental components are intended to describe the characteristics of the livestock farms associated with severe human cases, to identify the strains present in animals associated with severe human cases, to assess animal excretion level, and to help identify the epidemiologic associations between the human cases.

## Midi-Pyrénées

The Midi-Pyrénées, covering 8 districts in southwestern France, is characterised by a wide variety of geographical areas, with mountains, agricultural areas, and urban areas. The health situation is relatively diverse. The region has a high proportion of people older than 65 years and good public health indicators, including the lowest premature mortality rate in France. On the other hand, its vaccination coverage is particularly low. The CIRE is the core element of the organisation of the regional surveillance system (hospital emergency departments, private practitioners, SOS Médecins) and of the management of alerts (DDASS and DRASS).

The CIRE is strongly involved in syndromic surveillance; the development of sentinel networks, of emergency departments (10 included in 2008, of the 38 in the region) and of SAMU is among its priorities for 2009. It will also develop surveillance projects specific to the region. For example, it shares with the CIRE of Aquitaine, Limousin Poitou-Charentes, the West, and Pays de la Loire, data on surveillance of psittacosis, a zoonosis associated with poultry production. It is currently conducting a feasibility study for the establishment of a network of hospital pulmonary specialists and medical laboratories.

The first regional health surveillance seminar, bringing together the main regional stakeholders for surveillance and alert management in the region will be held in 2009.

### | PROFILE |

#### CIRE Midi-Pyrénées

##### Coordinator

Valérie Schwœbel

##### Location

Toulouse

##### Date of creation

1996

##### Districts covered

Ariège, Aveyron, Haute-Garonne, Hautes-Pyrénées, Gers, Lot, Tarn, Tarn-et-Garonne

##### Number of staff

6

##### Contact

dr31-cire@sante.gouv.fr



## HIGHLIGHTS OF 2008

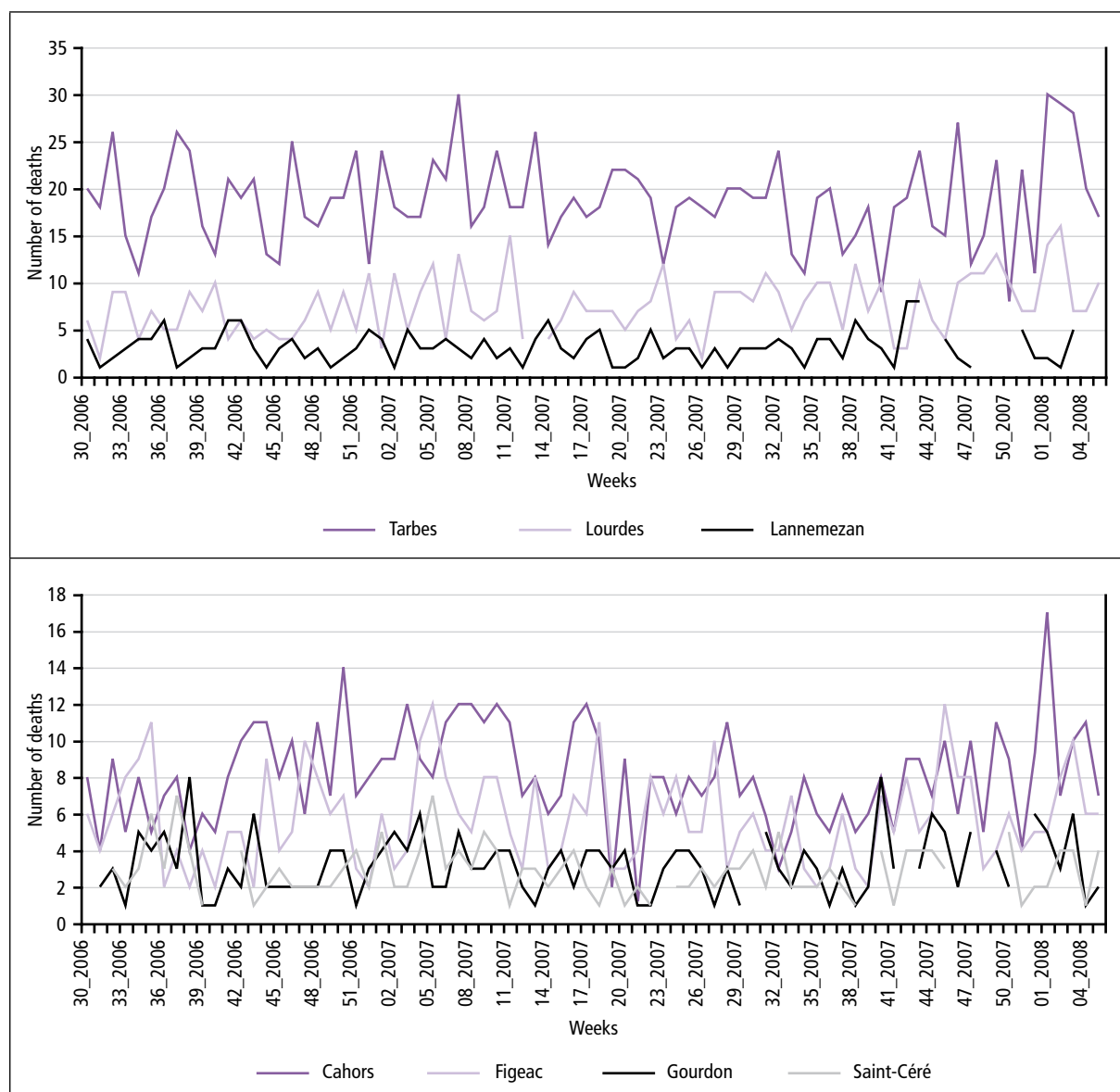
## Investigation of notifications about increased emergency department admissions and increased hospital mortality in Lot and Hautes-Pyrénées

In January 2008, the DDASS offices of Lot and of Hautes-Pyrénées informed the Midi-Pyrénées CIRE of unusually high number of visits of the emergency department at the Tarbes Hospital Centre (Hautes-Pyrénées) for cases of cardiorespiratory decompensation in elderly patients and, at the same time, of an increase in SAMU activity in Lot and excess mortality at Cahors Hospital (Lot).

In response to these reports, the CIRE was able to analyze in real time the daily transmitted information, including activity data of the emergency departments and the SAMU, mortality data, and more specific data for emergency department patients diagnosis. For the latter, as some hospitals are not able yet to automatically compile and send complete daily diagnostic data to the regional emergency observatory (which forwards them daily to InVS and the CIRE), a quick survey was conducted among emergency specialists.

The analysis rapidly showed that the initial alert required qualification. The excess activity of emergency

### | Deaths reported by hospitals and the principal vital registry offices of Lot and Hautes-Pyrénées from late 2006 to early 2008 |





departments is not unusual in the Hautes-Pyrénées given the reporting period (end of year holidays). On the other hand, the slight excess mortality, especially among the elderly, was validated, but it was not possible to link this excess to a specific cause. Moreover, this excess mortality was seen in other regions over the Christmas holidays of 2008-2009 and was attributed to cold weather.

## Study of lead, cadmium, and arsenic exposure from polluted soils in Aveyron

Important industrial activity lasted over 150 years in Viviez (Aveyron). The production of zinc and of coloring agents from barytes had important consequences on local soils, water tables, and neighboring rivers. Although zinc production has been replaced by less polluting activities, substantial residual contamination remains.

In 2007, further to a request related to the remediation of an industrial site, sample measurements were taken by the CIRE in homes and around public premises. In particular, high levels of arsenic, cadmium, lead, zinc, and barium were found. This finding suggested the possibility of various risks: lead poisoning for young children and pregnant women, and renal damage (cadmium), cutaneous damage, and cancer (arsenic) for the entire population. Although no disease attributable to these pollutants was identified, their health impact could not be ruled out. A study of local population exposure was conducted to analyze the environmental factors and assess the population's metal burden with biomarkers. Depending

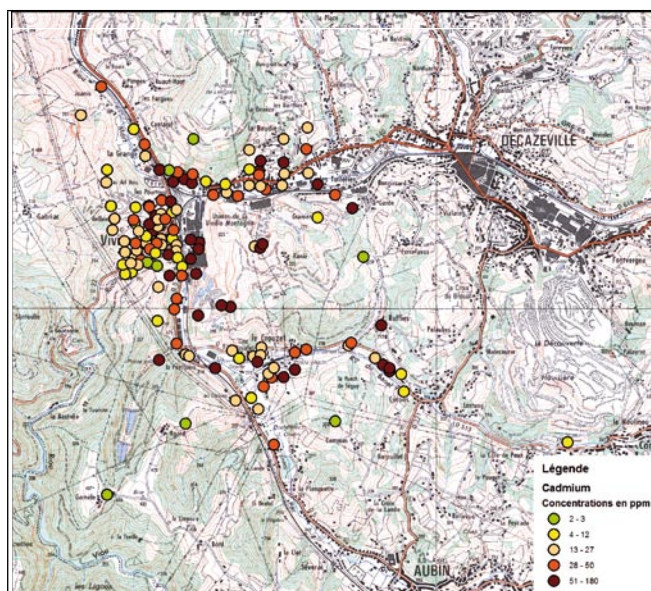
on their results, the inhabitants of Viviez might receive medical treatment and advice on hygiene and diet.

In 2008, at the request of the Aveyron DDASS and the Midi-Pyrénées DRASS, the Midi-Pyrénées CIRE investigated lead, cadmium, and arsenic exposure in a population living on land in Viviez contaminated by the past zinc smelting. This study had 4 components: screening for lead poisoning in young children and pregnant women, followed by medical management of identified cases; screening for cadmium-related renal damage among the population of Viviez, followed by medical management of identified cases; measurement of arsenic exposure of the population, and study of the environmental determinants of cadmium and arsenic exposure.

This was an exceptional intervention, both from the environmental perspective, because of the very high levels of cadmium pollution, in particular, recorded in the village soil and in the vegetables grown there, and from a procedural point of view, because of the large population involved (15 investigators from the CIRE, 692 participants among 1400 inhabitants of the exposed area, and 371 people selected from an unexposed area).

Despite some reluctance by the population to participate, especially among the elderly, the study recorded a participation rate of 50% after multiple joint communication campaigns by the DDASS, the CIRE, and the prefecture (press releases, individual letters, public meetings, pamphlets, meetings with local stakeholders, and a steering committee). Many local professionals and organisations joined the study, becoming members of the

### | Cadmium concentrations in the soils of Viviez |



	Cadmium (mg/kg) laboratory
Number of values	101
Min	2.4
Max	180
50% values>	27
Reference value	1.25

steering committee in April 2008: mayors, physicians, pharmacists, the local hospital, district representatives of the Ministry of Education, the General Council of Aveyron (department of mother-child protection), the Toulouse Poison and Toxicity Monitoring Centre, InVS, and regional governmental departments. The study results will be analyzed and made public in 2009.

## Investigation of foodborne infections in schools in Haute-Garonne and Tarn

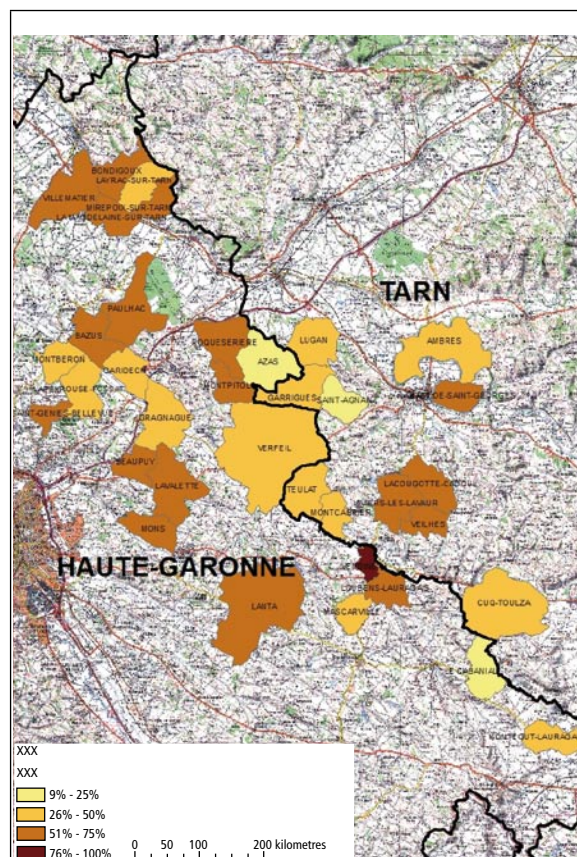
Several elementary school directors in Haute-Garonne and Tarn simultaneously informed the health authorities of mild gastrointestinal disorders among their pupils. An investigation was launched to confirm a foodborne infection outbreak and to identify its origin.

The retrospective cohort study (individual self-administered questionnaires) conducted by the Midi-Pyrénées CIRE, simultaneously with a veterinary investigation, concerned nearly 3000 students and teachers who had eaten 2 meals in the 36 schools concerned. The study found an attack rate of 50%, demonstrating a large-scale foodborne infection outbreak, the largest investigated in France since 1996. This survey required substantial human resources for data entry and confirmed the benefits of the collaboration with regional partners.

The analysis of the results confirmed, on the one hand, the suspected contamination of the meals distributed to students and, on the other hand, the importance of compliance with good hygiene practices in institutional food services, especially for vulnerable populations, such as children. The study revealed poor food preparation and organization practices of the catering company. As a result one sick worker who should have been put on sick leave was able to cause the contamination of nearly 3000 people.

In this large-scale outbreak, the early alert handled immediately by the Midi-Pyrénées CIRE prevented the dissemination of contaminated food products to a still larger population.

### Geographic distribution of the attack rates of the foodborne infection outbreak in 2008



## Nord

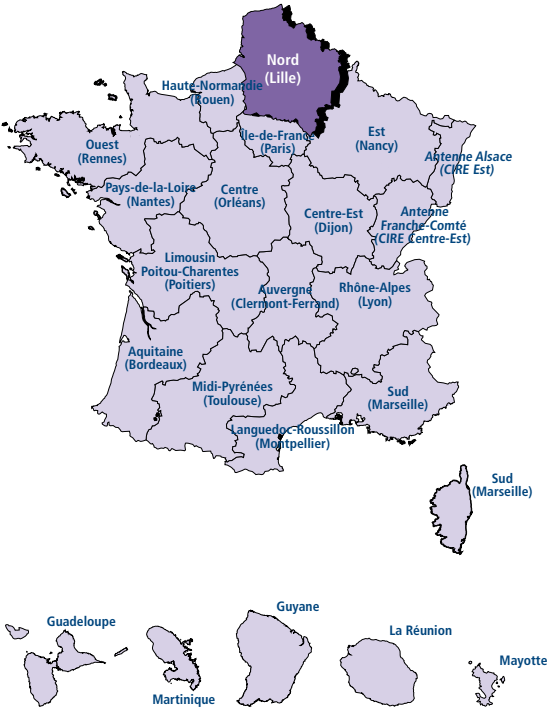
The Nord-Pas-de-Calais region, one of the densest in France (324 inhabitants/km<sup>2</sup>), has a heavily industrial past (mines, textiles, and chemicals), which explains its debased environment (polluted soils), health, and economy. Nonetheless, although the health indicators remain worrisome (e.g. life expectancy, prevalence of cancer, alcohol, and smoking), the region has made clear progress in the past 10 years thanks to progressive improvement of its health-care system and the intensification of health surveillance.

In Nord-Pas-de-Calais, CO poisoning is 5-10 higher than in other French regions. This particularity is to be considered in light of its widespread use of coal heating, which occurs in conditions highly sensitive to local climate variations (milder temperatures, fog). In this context, since autumn 2008, a pre-alert tool in collaboration with Météo-France is tested by the CIRE Nord, in addition to the alert system based on emergency departments, civil security, and the SAMU.

In 2008, the CIRE and InVS completed the feasibility study begun in September 2004 for a regional cancer registry and simultaneously created a general cancer registry for Lille and its region. The registry was approved and authorized on 18 November 2008 by the national committee of registers. Its management was assigned to a health cooperative group, the regional reference centre for oncology, which unites the Lille University Hospital Centre and the Cancer Centre (Centre Oscar Lambret) for three years.

Among the projects planned for 2009, the CIRE Nord will continue setting up a pilot automatic surveillance and alert system for the most common health events in nursing homes. Other priorities are surveillance of the hyperendemic invasive meningococcus infection due to the B14:P1.7.16 strain, which has recently spread west to the Somme district, and monitoring the vaccination campaign planned for March 2009.

Finally, the use of computerized tools for the follow-up and sharing of information about health signals will be tested in 2009 with the health surveillance partners in Picardie and Nord-Pas-de-Calais.

<p><b>PROFILE</b></p> <p><b>CIRE Nord</b></p> <p><b>Coordinator</b> Pascal Chaud</p> <p><b>Location</b> Lille</p> <p><b>Date of creation</b> 1996</p> <p><b>Districts covered</b> Aisne, Nord, Oise, Pas-de-Calais, Somme</p> <p><b>Number of staff</b> 8 full-time and 1 half-time</p> <p><b>Contact</b> dr59-cire-nord@sante.gouv.fr</p>	
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## HIGHLIGHTS OF 2008

## Community outbreak of acute hepatitis A

In March 2008, a large community epidemic of acute hepatitis first struck the Lille suburbs; it later reached the area of Denain. It initially involved schoolchildren and then the children of families of travelers, many attending school in the towns concerned.

More than 140 cases were reported, most of them younger than 15 years old. The results of the investigation indicate active person-to-person transmission in the groups and communities to which these children belonged: schools, families, and travelers' sites.

In response to this event, the DDASS and school health services relayed the recommendations for reinforcing hygiene rules to groups, and the maternal and child protection programmes (PMI) to families. A vaccination campaign was implemented for asymptomatic children at travelers' sites, regardless of whether the outbreak had appeared there. This measure probably avoided the onset of secondary outbreaks.

The characteristics of this epidemic episode support the subsequent decision of the Vaccination Advisory

Committee to recommend vaccination as early as possible when hepatitis A appears in communities living in questionable health conditions.

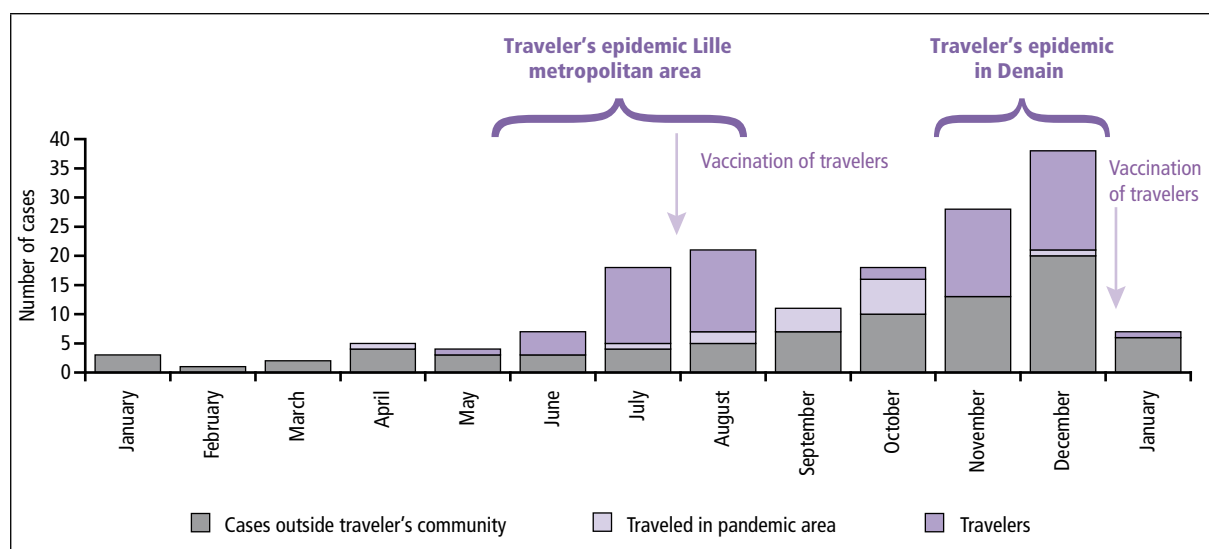
## Case clusters of measles in the schools of a religious community

On 25 June 2008, a general practitioner in Pas-de-Calais reported a suspected case of measles in a high school student. The investigation conducted by the DDASS and the CIRE Nord made it possible to link it to another much larger cluster of cases (more than 100 cases) in a boarding school on the Côte-d'Or.

In the Pas-de-Calais, 9 cases of measles were counted among the boarders, none of whom had been vaccinated. Four of them lived in Great Britain and Quebec, and information about this epidemic was transmitted by InVS and the DGS to the relevant health authorities.

This outbreak occurred in the context of an upsurge in measles nationally and Europe-wide, affecting the communities and institutions where vaccination coverage is poor.

### | Monthly distribution of cases of acute hepatitis A reported in the North in 2008 and 2009 |





## Screening for infection after endocavitary ultrasound procedures without protection or disinfection of the probes between patients

Inspection of 5 medical imaging centres demonstrated defective hygiene in their use of endocavitary ultrasound. The CIRE Nord was thus asked to analyze the infectious risks and to monitor the screening of the exposed patients.

More than 3000 patients received letters inviting them to visit their general practitioner to assess the relevance of screening for HBV, HCV, HIV, *Chlamydia trachomatis*, and syphilis. The global participation rate in screening was 14%. Infection was reported for only 3 patients, who had visited the centres at different periods and screened positive for different infections (HBV, HCV, and syphilis).

The assessment of the screening campaign showed no evidence of an increase in the targeted infections among the patients screened. These results are consistent with the conclusions of the risk analysis.

## Study of risk factors for syphilis transmission combined with a prevention programme and incentives for screening

The monitoring of syphilis surveillance data by the network of volunteer physicians in Nord-Pas-de-Calais showed a regular increase in the number of cases in the Nord, although a decline was observed in other regions. The number of cases reported each year thus increased from 28 cases in 2003 to 83 in 2006 and 86 in 2007.

Following this alert, in May 2008, HIV associations set up a prevention programme and screening incentives, which were combined with a study of risk factors for transmission, coordinated by the CIRE and the Tourcoing department of infectious diseases.

## Investigation of an episode of an outbreak of irritating skin symptoms among the staff of a psychiatric hospital in Oise

CIRE Nord coordinated the epidemiologic investigation of irritating skin symptoms among the staff at a psychiatric ward in Oise in late 2007. Because case reporting continued into 2008, and especially after 2 severe cases of dermatosis appeared, an expert clinical assessment was conducted jointly with the dermatology department of Amiens University Hospital.

The study results showed that:

- the symptoms described for most of the 42 cases reported were benign, non-specific, and fleeting;
- the 2 most severely affected people had 2 different dermatoses, none related to the irritating symptoms reported by other staff members;
- no hospital patient was affected.

The results of the investigation suggest more probably a sick building syndrome (of multifactorial etiology, combining defective indoor air quality and personal and psychosocial factors), especially since the emotional reactions further to the 2 severe cases that occurred in the same unit may have amplified this phenomenon.

### For further information:

Chaud P, Heyman C, Annah-Tchoutchoui K. Investigation suite à la survenue d'un épisode de manifestations irritatives collectives parmi le personnel du Centre psychothérapique Henri-Theillou dans l'Oise – octobre 2007-mai 2008. Saint-Maurice (Fra) : Institut de veille sanitaire, August 2008, 42 p.



## Ouest

Population movement in the regions of Brittany and Lower Normandy is substantial, associated with tourism and leisure activities such as fishing. These can increase health risks (hepatitis A, gastroenteritis, etc.) in sensitive populations. Because of the substantial poultry production in the region, the CIRE Ouest participates in a descriptive study of occupational psittacosis (poultry production), in collaboration with the CIRE for Pays de la Loire, Limousin Poitou-Charentes, and Aquitaine.

In 2009, CIRE Ouest plans to improve information feedbacks to different partners (weekly bulletins, discussion groups on occupational practices, and meetings for operational feedback). It will also collect and analyze regional syndromic data from the SurSaUD® system (health surveillance of emergency departments and deaths), which will make it possible to involve new partners (SOS Médecins) in health surveillance. The CIRE will also experiment the feasibility of a shared daybook with different health surveillance participants.

### PROFILE | CIRE Ouest

**Coordinator**  
Rémi Demillac

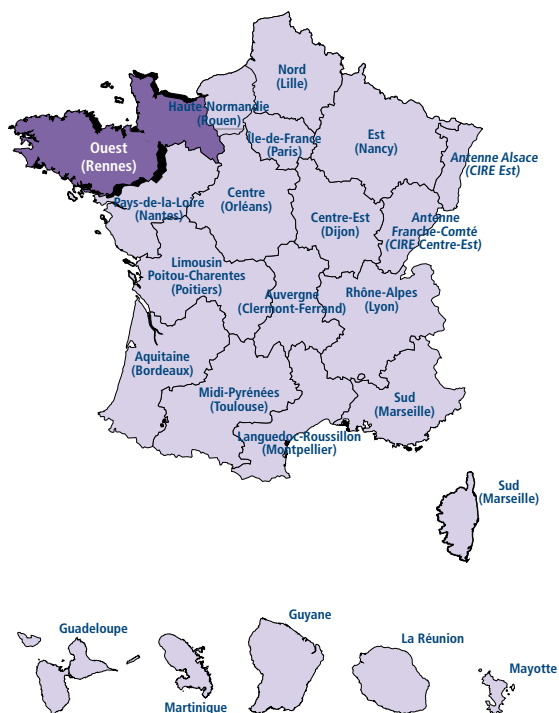
**Location**  
Rennes

**Date of creation**  
1995

**Districts covered**  
Calvados, Côtes-d'Armor, Finistère, Ille-et-Vilaine, Manche, Morbihan, and Orne

**Number of staff**  
7

**Contact**  
dr35-cire-ouest@sante.gouv.fr



## *Salmonella* Putten salmonellosis in northwestern France

On 29 August 2008, the CNR for *Salmonella* alerted InVS about 4 cases of *Salmonella* Putten salmonellosis, a serovar rarely isolated in France. CIRE Ouest was immediately asked to investigate these cases and to look for a common source of contamination. The district veterinary departments implemented traceability surveys, looked at the self-inspection data from food-processing plants, and conduct bacteriological analyses.

The epidemiologic survey identified 9 cases (aged 9 to 81 years); 8 of them lived in Calvados, Ille-et-Vilaine, Loire-Atlantique, and Manche; the 9<sup>th</sup> case had been in Brittany for the 7 days before the onset of clinical signs. All had eaten ground beef in the days before symptoms began: 6 reported eating the beef raw or very rare, and 6 reported that they had purchased meat from the same supermarket chain, supplied by the same meat processing plant. The internal checks at this plant showed that the serovar Putten was in ground steaks produced on 24 July and in ground meat produced on 6 August and sold in bulk.



## Geographic distribution of *Salmonella* Putten salmonellosis cases, July-August 2008



Plant management reminded staff of hygiene requirements and reinforced cleaning and disinfection.

Once again this episode demonstrates the risk linked to the consumption of insufficiently cooked ground beef in salmonellosis.

### For further information:

Guillois-Bécel Y, Louri P, Le Mao A, Briand A, Jourdan-Da Silva N, Vaillant V. Regroupement de cas de salmonellose à *Salmonella* Putten dans le Nord-Ouest de la France – Juillet-Août 2008. Saint-Maurice (Fra) : Institut de veille sanitaire, février 2009, 20 p.

## Incidence of childhood cancer in Finistère and around Brest Harbour from 1991 through 2005

In March 2006, the prefect of Finistère referred to CIRE Ouest queries about the health impact of the nuclear submarines stationed in the harbor of Brest. In the absence of reports or suspicion of a specific disease, the CIRE proposed a descriptive study of the variations in the incidence of childhood cancer (0 to 14 years) around Brest harbor, based on data collected by the Breton registry of children's tumors from 1991 to 2005.

The statistical analyses carried out by the CIRE, in collaboration with the regional health observatory, showed an excess incidence of leukemia in children for all of

Finistère, with a peak at Brest in 2000-2001. Nonetheless, no parental occupational exposure to military nuclear defense activities was observed.

Except for leukemia, the incidence of all cancers increased in Finistère between 1999 and 2004, except in Brest harbor and in Brest. The figures decreased in 2005 and came closer to the national incidence rate.

The peak observed in Brest in 2000-2001 seems isolated in time and does not support the existence of a persistent environmental cause. CIRE Ouest therefore proposed to follow up the cases associated to this incidence peak and is considering an extension of the survey to whole Brittany in 2009.



### For further information:

Gagnière B. Incidence des cancers de l'enfant dans le Finistère et autour de la rade de Brest entre 1991 et 2005. Saint-Maurice (Fra) : Institut de veille sanitaire, décembre 2008, 12 p.

## Pays de la Loire

Significant demographic changes, including that associated with summer tourism and harbor operations, takes place in the Pays de la Loire region. These risk factors are especially relevant to emerging and imported diseases (e.g. from travelers or foodstuffs).

The CIRE of Pays de la Loire therefore conducts active surveillance together with a large number of health partners, including emergency departments, vital records departments, clinical laboratories, labor department inspectors, and private practitioners.

### | PROFILE |

#### CIRE of Pays de la Loire

**Coordinator**  
Bruno Hubert

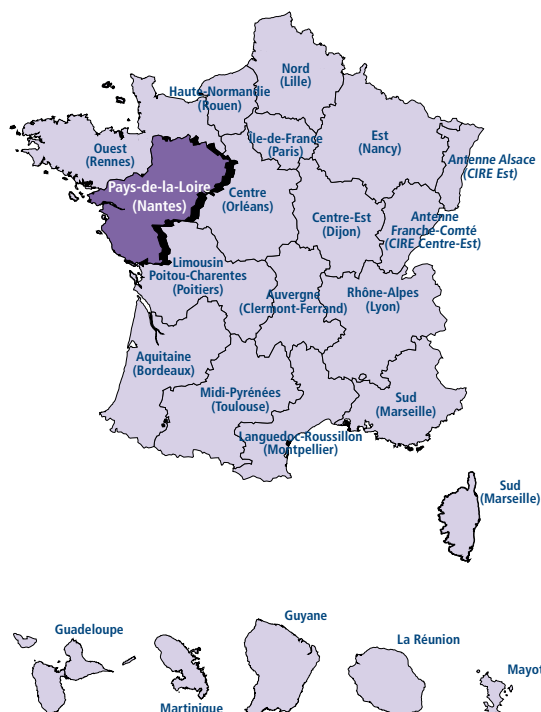
**Location**  
Nantes

**Date of creation**  
2003

**Districts covered**  
Loire-Atlantique, Maine-et-Loire, Mayenne, Sarthe, Vendée

**Number of staff**  
7

**Contact**  
dr44-cire@sante.gouv.fr



## HIGHLIGHTS OF 2008

## Winter surveillance in Pays de la Loire

Since January 2008, the CIRE of Pays de la Loire has conducted permanent non-specific surveillance to detect unusual events, as well as to have information available to assess identified health events.

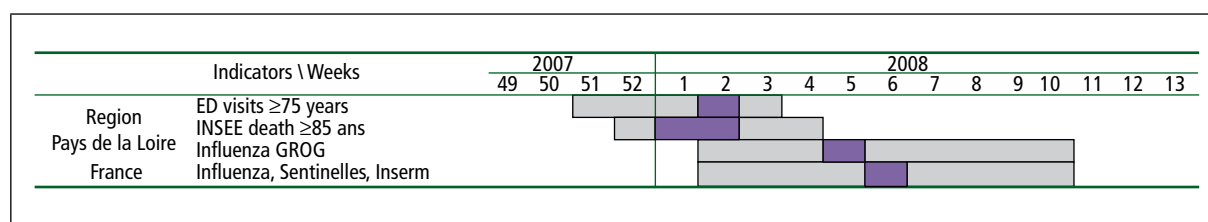
This surveillance simultaneously covers:

- emergency department visits in 7 sentinel hospitals *via* the ARH server;
- mortality data from 21 sentinel municipalities *via* the INSEE server;

- activity of the GROG (Groupes régionaux d'observation de la grippe, regional influenza observation groups) and Sentinelles networks;
- winter epidemics of acute respiratory infections in nursing homes.

This first year of wintertime surveillance was marked by several events, including a gastroenteritis epidemic of unusual scale and duration, a bronchiolitis epidemic, an influenza epidemic rated as moderate by the general practitioners, and finally, a peak in the emergency department visits of old (>75 years) and very old (>85 years) people, before the influenza epidemic.

### Epidemics observed by surveillance systems during winter 2008 (emergency department visits of people older than 75 years, deaths of people older than 85 years, influenza)



*In grey: weeks the epidemics began and ended.*

*In purple: epidemic peak.*

*GROG: regional influenza observation groups.*

*ED: emergency department.*

## Investigation of measles cases in a summer camp in Faye d'Anjou

On 14 August 2008, a general practitioner reported 4 cases of measles to the DDASS of Ille-et-Vilaine, all in one family, one of whose children had gone to a summer camp in Anjou.

Contact between the Ille-et-Vilaine DDASS and the camp director identified 2 other cases. The CIRE of Pays de la Loire coordinated an investigation to measure the rate of transmission of the measles virus among campers and to document its circulation from the beginning of June among the families of children who went to that camp.

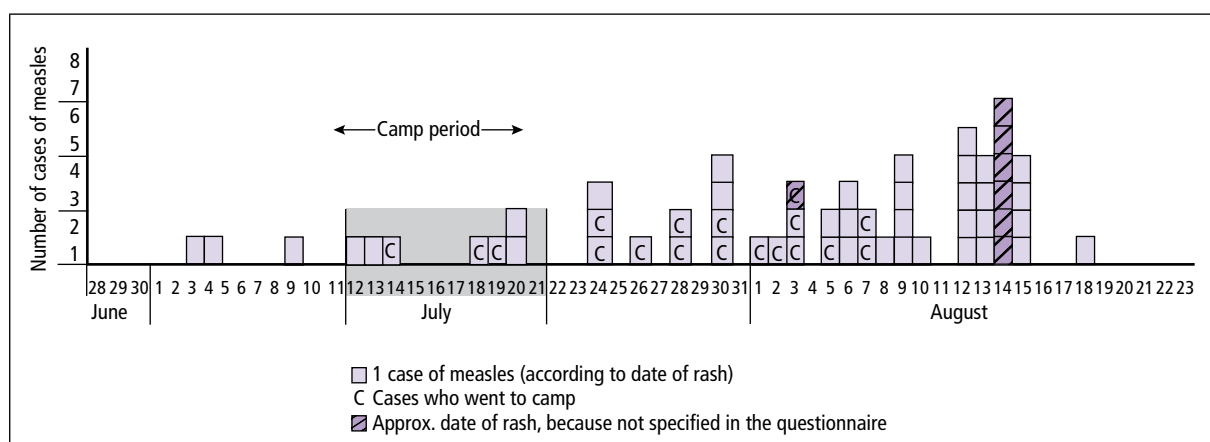
A retrospective cohort study included 258 people, including 58 with measles: 18 in campers and 40 in their family

members. 43% of these children had not seen a general practitioner.

The survey also showed that the vaccination coverage was 81% in the families without cases and 19% in the families with at least one case of measles. None of the case children had been vaccinated, and the attack rate in susceptible children (not vaccinated and no history of measles) was 92%.

This investigation illustrates the very substantial risk of measles virus transmission in an insufficiently vaccinated population. It also confirms the upsurge in circulation of this virus, already demonstrated by several epidemic episodes since the beginning of 2008 in France.





## Investigation of sick building syndrome in a research laboratory at Nantes University Hospital Centre

On 20 December 2007, the CIRE of Pays de la Loire was asked by the Nantes University Hospital, the University of Nantes, Inserm, and the CNRS (Centre national de la recherche scientifique, National Centre for Scientific Research) to conduct an epidemiologic study of persistent health problems reported since January 2006 among personnel of Inserm Unit 601 (renumbered U892 on its subsequent renewal), housed at the hospital centre. The objectives of the study were to describe and characterize the symptoms that occurred in the workplace and the individual and collective factors that might have promoted them.

Of the 183 (87%) staff members who responded to the self-administered questionnaire, 71% reported symptoms

of general (ear, nose, throat, eyes, or skin), gastrointestinal, or respiratory irritation at their workplace. The frequency of symptoms was significantly higher in women, engineers and technicians, people using disinfectant, and those with a negative perception of the humidity, temperature, or ventilation rate at their work station.

The environmental studies confirmed the poor quality of the ventilation, temperature, and humidity, without finding excessive concentrations of any volatile organic compounds. According to the expert toxicologists consulted, the hypothesis of a toxic substance is therefore implausible.

These results should be compared with events described in the literature under the term of "sick building syndrome". All the studies on this topic are consistent in demonstrating multifactorial causes combining defective indoor air quality with personal and psychosocial factors.

### For further information:

- Fortin N, Barataud D, Hubert B, Dorel E, Hérault T, Méteyer D. Surveillance hivernale en Pays de la Loire – Bilan 2007-2008. Saint-Maurice (Fra): Institut de veille sanitaire, juillet 2008, 23 p.
- Barataud D, Hubert B. Investigation des cas de rougeole parmi les participants à un camp de vacances et leurs familles, Faye d'Anjou (49). Rapport final. Saint-Maurice (Fra): Institut de veille sanitaire, juillet 2008, 14 p.
- Barataud D, Hubert B, Leftah-Marie N. Investigation d'un syndrome des bâtiments malsains dans les laboratoires du rez-de-jardin de l'Institut de biologie du CHU de Nantes, 2006-2008. Saint-Maurice (Fra): Institut de veille sanitaire, janvier 2009, 52 p.

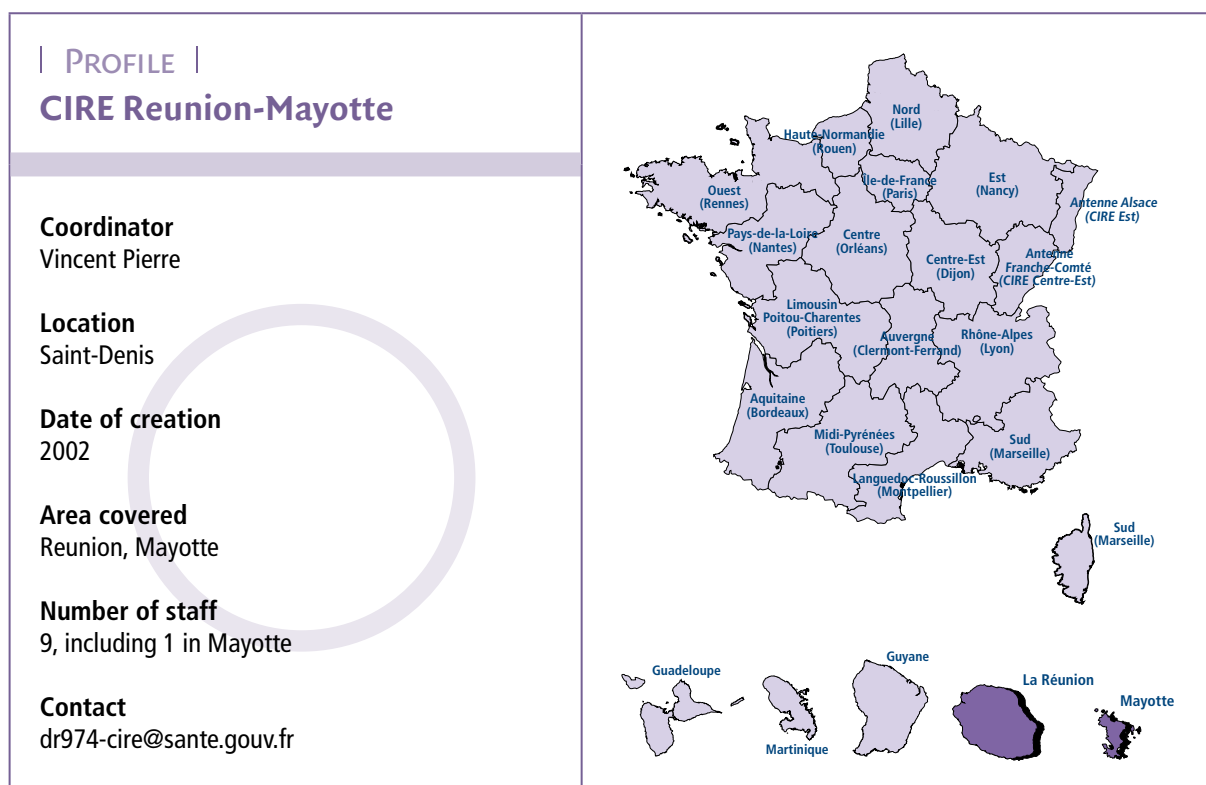
## Reunion-Mayotte

The health indicators for Reunion and Mayotte are characteristic of a tropical region where the biological risks are substantially more significant than in temperate climates. Because of climate, socioeconomic, and cultural differences and the influence of exchanges with neighboring countries (Comoros, Madagascar, and the countries of east Africa), Reunion and Mayotte are faced with specific risks. In particular, infectious risks are latent there (vectorborne diseases, leptospirosis, enteric diseases, and intestinal parasitoses) because they are due to weather conditions but also by infrastructure underdevelopment, especially for water treatment (drinking water plant, wastewater plant), in comparison with metropolitan France.

Because Reunion and Mayotte are 2 hours away by airplane, the Reunion-Mayotte CIRE opened a branch office in Mayotte in November 2008. Surveillance of so-called tropical infectious diseases is a priority on both islands. This area is particularly exposed to infections circulating in countries along the east coast of Africa, because of the substantial exchanges, both legal and illegal. The permanence of these population flows and the strong probability that the microbial agents introduced will remain, lead to major challenges for the local health stakeholders.

In this framework, in 2008 the CIRE continued to reinforce its partnerships with local hospitals, the DRASS of Reunion (Health surveillance and vector control committee), the health and welfare office of Mayotte (Direction des affaires sanitaires et sociales, DASS, health surveillance committee), the regional health observatory, the sentinel physician network, the Ministry of Education, local and metropolitan laboratories of the veterinary services, the CNR for arboviruses, the ARH, etc.

The priorities for 2009 include continuing to respond to health alerts, setting up specific and non-specific surveillance systems for Mayotte, launching an epidemiologic study of joint sequelae 3 years after the chikungunya epidemic in Reunion, and developing non-specific surveillance there.



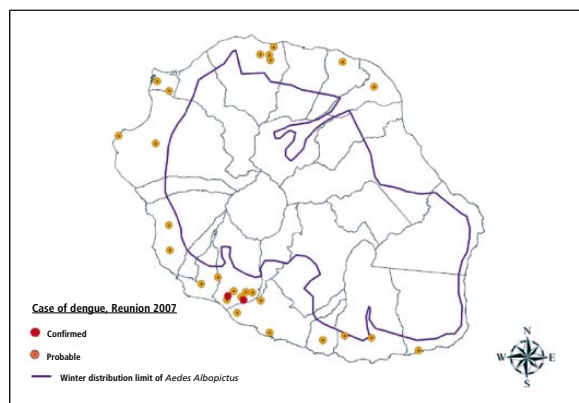
## Epidemiologic surveillance of dengue and chikungunya in Reunion

The Reunion-Mayotte CIRE and the health surveillance committee of the Reunion DRASS have established a reinforced laboratory surveillance system for dengue and chikungunya during their interepidemic phase. The objective is to detect case clusters as early as possible to prevent a resumption of the outbreak.

In practice, surveillance is based on the detection of biological indicators by the laboratories (IgM antibodies, RT-PCR, or virus isolation). When a laboratory finding is compatible with dengue or chikungunya, the vector control teams collect epidemiologic data, perform active searching for other patients with suggestive symptoms, and apply targeted vector control measures.

In 2008, this system enabled to detect 28 probable cases and 2 confirmed cases of dengue in Reunion. A source of dengue transmission was investigated in April 2008, when 2 confirmed cases were reported to the DRASS. During this episode, the CIRE proposed reinforcing epidemiologic surveillance by asking the physicians in the municipality concerned to report all cases of dengue-like illness.

### Geographic distribution of probable and confirmed cases of dengue in Reunion in 2008



The chikungunya epidemic in Reunion — from April 2005 through April 2006 — affected more than 260 000 people, that is, 38% of the population. The last laboratory-confirmed case was reported in December 2006. Since the implementation of laboratory surveillance, 215 reports showing chikungunya IgM have been transmitted to the DRASS. The investigations conducted by the CIRE classified these reports: only 6 of 123 cases retained (4.9%) met the probable case definition and there was no confirmation of recent infection or any case cluster in Reunion during this interepidemic year. These results do not support a hypothesis that the chikungunya virus is currently circulating on the island. Nonetheless, sporadic low level transmission cannot be ruled out.

## Surveillance and alert system for the health effects of pesticides and insect repellents in Reunion

During the chikungunya outbreak in 2006, the Reunion-Mayotte CIRE set up a toxicity monitoring to monitor the health effects of exposure to the mosquito pesticides. This surveillance was extended in October 2007 to all pesticides and to the insect repellents used by islanders. This toxicity monitoring aims at increasing knowledge on the characteristics of human poisoning by pesticides and adverse effects associated with repellents.

The principle consists in gathering and analyzing data from different health-care providers (private practitioners, clinics and hospitals, and emergency departments) and then having the cases investigated by a toxicologist *via* standardized questionnaires.

From 1 October 2007 through 30 September 2008, the system compiled 101 reports of pesticide poisoning, 93 of which were investigated by the toxicologist. Of the 44 probable or possible cases, 13 (29.5%) followed accidental exposure by inhalation during pesticide application. The principal clinical signs reported are ear, nose, throat, and eye irritation, gastrointestinal symptoms, headaches, and skin irritations. No case was classified as serious. The other 31 probable or suspicious cases involved suicide attempts by pesticide ingestion.

## Study of the prevalence and characteristics of diabetes in Mayotte

InVS and the Mayotte Hospital Centre conducted a general population survey of the prevalence and characteristics of diabetes in Mayotte. It included 1200 people between 24 January and 14 August 2008. The objective of this survey was to help guide public health activities by making it possible for public authorities to adjust prevention activities, screening, and health-care supply to needs.

The study, coordinated by the Reunion-Mayotte CIRE, received technical and financial support from the Ministry responsible for overseas departments and territories, the Mayotte Hospital Centre, the DASS, local authorities, and the Mayotte Social Insurance Fund.

Data entry, basic adjustments, and data analysis were performed in the last quarter of 2008 and the report will be drafted during the first quarter of 2009. Early results highlight a prevalence rate of approximately 10%, twice as high as that in metropolitan France.

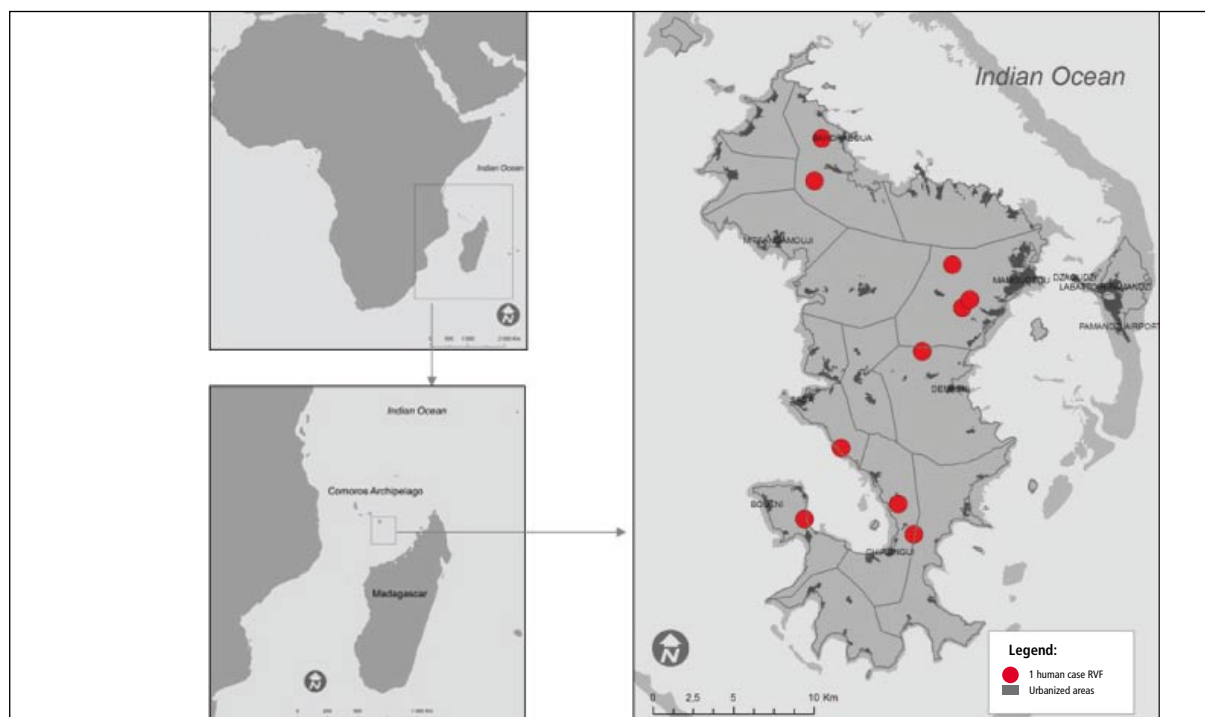
## Emergence of Rift Valley fever in Mayotte

Laboratory testing for surveillance of animals for the Rift Valley fever (RVF) was set up in Mayotte after the recent outbreaks in east Africa and the indigenous transmission of this virus in the Comoros. In July 2007, a case of acute infection by the RVF virus was detected in a 12-year-old Comorian boy who had been transferred to Mayotte for treatment. This sentinel event as well as the laboratory confirmation of the circulation of this virus in Mayotte herds led to the implementation of epidemiologic, clinical, and laboratory investigations for humans by the CIRE of Reunion-Mayotte.

Between September 2007 and May 2008, 10 serum samples of 220 tested (4.5%) showed markers of recent RVF infection (viral genome or IgM antibodies). The cases were distributed over the entire island.

The RVF situation in Mayotte currently corresponds to a pre-epidemic level. The objectives of early detection of the start of an epidemic and effective response thus require the rapid implementation of lasting and effective surveillance systems (for humans, animals, and vectors) and the strengthening of local laboratory capacity.

| Site of Mayotte and geographic distribution of recent cases of Rift Valley fever, September 2007 – May 2008, Mayotte |



# Rhône-Alpes

The Rhône-Alpes region is a large region, bordered by the foothills of the Massif Central to the west, the Alps to the east, and the corridor of the Rhone, which crosses its 8 departments. A prosperous region with no specific health issues, it is nonetheless marked by major territorial disparities that are also found in the main socioeconomic and health indicators; the northeast of the region is globally more favoured than the southwest.

The Lyon metropolitan area, the upper Rhone valley, the basins of Grenoble and Saint Etienne, as well as the Alpine Arc are the seat of intense environmental alert activity because of the long history of industrial activity (chemicals and nuclear power): pollution of the soil, water, and air, exposure of dense populations, etc.

As far as infectious diseases are concerned, this region—like every other—has no specificity, apart from some zoonoses such as Lyme disease (transmitted by ticks, the presence of which is promoted by the numerous mid-mountain areas), and episodes of Q fever (transmitted by herds of sheep and goats).

The Rhône-Alpes region (and in particular northern Isère) is the starting point for the dissemination of ragweed in France. This opportunistic and highly allergenic plant grows along large construction sites, roads, and land abandoned by the native vegetation.

In 2009, the Rhône-Alpes CIRE, well recognized by the DDASS and the DRASS, will continue its missions of response to alerts and coordination and organization of the regional health surveillance network, in particular by developing health surveillance tools. In this framework, the "ORAGES" health surveillance portal online will be finalized. This portal is intended to optimize sharing of reports and interventions between the DDASS and the CIRE.

<p><b>PROFILE</b></p> <p><b>CIRE Rhône-Alpes</b></p> <p><b>Coordinator</b> Bruno Fabres</p> <p><b>Location</b> Lyon</p> <p><b>Date of creation</b> 1995</p> <p><b>Districts covered</b> Ain, Ardèche, Drôme, Isère, Loire, Rhône, Savoie, Haute-Savoie</p> <p><b>Number of staff</b> 5</p> <p><b>Contact</b> dr69-cire@sante.gouv.fr</p>	
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## HIGHLIGHTS OF 2008

### Investigation of an outbreak of *Salmonella typhimurium* salmonellosis associated with eating dry salami

In late January 2008, several laboratories, mainly in the Rhône-Alpes region, reported to their local DDASS a high number of cases of salmonellosis due to *Salmonella typhimurium*. Because these multiple reports suggested an outbreak with a common source, CIRE Rhône-Alpes launched an epidemiologic investigation to assess its extent, identify the source, and propose appropriate prevention and control measures. This national investigation (covering Île-de-France, Poitou-Charentes, and Rhône-Alpes) was conducted in collaboration with the InVS DMI, the CIRE and DDASS concerned, the salmonella CNR, and the veterinary services of the districts concerned.

Overall, 80 cases were identified in the Rhône-Alpes region, 41 of which were investigated. The epidemiologic survey of cases showed the consumption of "rosette", salami, or dry sausage in 71% of the cases, purchased in 92% of the cases in one of 2 different supermarket chains. The traceability study by the veterinary services showed that these supermarkets used the same supplier for this product. These epidemiologic data led to the withdrawal of the product on 15 February 2008, although the results of the tests were not yet known.

The monitoring of reports of foodborne infection outbreaks by *Salmonella typhimurium* and the absence of new cases of salmonellosis associated with the consumption of this sausage, together with its isolation by the CNR, confirmed that the absence of new cases of salmonellosis associated to the consumption of rosette could be attributed to the withdrawal and recall of the products, resulting from the epidemiologic survey.

### Investigation of an outbreak of gastroenteritis associated with drinking water from an campground in Ardèche

On 11 August 2008, following numerous telephone complaints from tourists with gastroenteritis in the same campground, the Ardèche DDASS alerted the Rhône-Alpes CIRE of the onset of an outbreak.

The investigation conducted by the CIRE and the DDASS (retrospective cohort study, environmental survey) confirmed the existence of a gastroenteritis epidemic with an attack rate of 51.5% (142 cases among 276 persons

questioned), pointing to consumption of water at the campground as a potential source. Although the campground was connected to a public water network, this water came from a private, unauthorized, and non-potable well.

The documentation of such episodes of water contamination is very rare because the symptoms, relatively mild, disappear rapidly, the affected persons do not see a doctor, and no report is made. Only the initiative of several campers who contacted the DDASS has launched a rapid, appropriate, and effective reaction by the CIRE and health authorities. The outbreak was stopped by the corrective measures taken as soon as the illegal water connection was suspected.

### Health risk assessment of the inhalation of volatile organic compounds, heavy metals, and polycyclic aromatic hydrocarbons in 3 multiple-emission areas in Rhône-Alpes

An important industrial activity is based in some areas of the Rhône-Alpes region, together with very intense road traffic, and dense population. As a result the question of the health impact of atmospheric emissions arises. At the request of the DDASS and to provide information for local stakeholders and help prioritize actions with regard to emission reduction activities, the CIRE selected 3 areas where chemical industry is present.

The aim was to measure chronic inhalation exposure to volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals emitted by outdoor pollution sources in the most exposed neighborhoods and to assess their potential health risks associated with them. Four measurement campaigns (one each season) were conducted by Atmo Rhône-Alpes for the selected pollutants, which included 11 chlorinated VOCs, 5 ozone-precursor VOCs, 2 aldehydes, 4 heavy metals, and 15 PAHs. For most of them, the concentrations measured at different locations in the same area were fairly close, showing the homogeneity of exposure in the neighborhoods surrounding these measure points.

The risk assessment did not identify the expected systemic effect in the study area for the exposures studied, but found that exposure by inhalation to some VOCs could engender carcinogenic risks: vinyl chloride monomer, 1,3-butadiene, tetrachloroethylene, acetaldehyde, formaldehyde, 1,2-dichloroethane, and benzene. These VOCs

therefore were identified as priorities for emission reduction actions.

The potential number of excess cancer cases in the study area likely to occur due to the exposures studied remained

very low, in relation to the total number of expected cases. The Rhône-Alpes CIRE concluded that the situation was not worrisome from a public health point of view, but that efforts were needed in terms of reduction of pollutant emissions.

#### For further information:

Schmitt M. Évaluation des risques sanitaires associés à l'inhalation de composés organiques volatiles, métaux lourds et hydrocarbures aromatiques polycycliques autour de trois zones multi-émettrices en Rhône-Alpes. Saint-Maurice (Fra) : Institut de veille sanitaire, décembre 2008, 88 p.



## Sud

As they are major international tourist destinations with important industrial centres, in the regions of Provence-Alpes-Côte d'Azur (PACA) and Corsica there are frequent alerts related to air pollution and a need for reinforced surveillance of vectorborne diseases (chikungunya, dengue, and West Nile virus).

Activities in 2008 by the CIRE Sud covered response to health signals and alerts, the coordination of the health emergency alert and management programme (PRAGSUS), the leadership of surveillance systems in the region, and the environmental health impact studies.

In 2008, the CIRE dealt with 80 signals, 34 of which might have been potential threats to the population. Among the investigations conducted, we note those performed at the onset of a measles outbreak among hospital personnel, outbreaks of acute respiratory infections in 2 nursing homes in Bouches-du-Rhône, and gastroenteritis in a local hospital in Var and a nursing home in Alpes-Maritimes.

Increasingly involved in regional surveillance activities, the CIRE Sud has seen its role reinforced in the coordination of systems of a network of partners (e.g. for non-specific surveillance, surveillance of acute respiratory infections in nursing homes, and surveillance of West Nile virus infections), and the design or adaptation of new systems for regional specificities (e.g. surveillance of chikungunya, dengue, and the health effects linked to *Ostreopsis ovata* algae in the Mediterranean).

The CIRE Sud has also launched studies to assess the health effects of pollution in highly industrialized areas (petrochemicals and cement) and participates in health impact studies. Finally, the study to estimate the incidence of thyroid cancer in Corsica for 2002-2006 has been continued, completing the study for the 1998-2001 period.

### PROFILE | CIRE Sud

**Coordinator**  
Philippe Malfait

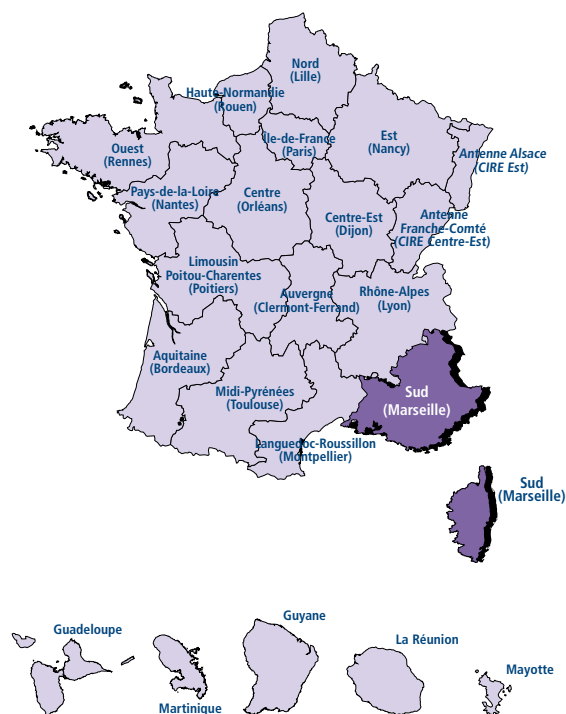
**Location**  
Marseille

**Date of creation**  
1996

**Districts covered**  
Alpes-de-Haute-Provence, Alpes-Maritimes, Bouches-du-Rhône, Hautes-Alpes, Var, Vaucluse, Corse-du-Sud, Haute-Corse

**Number of staff**  
10

**Contact**  
dr13-cire-sud@sante.gouv.fr



## Case clusters of acute respiratory infections in 2 nursing homes

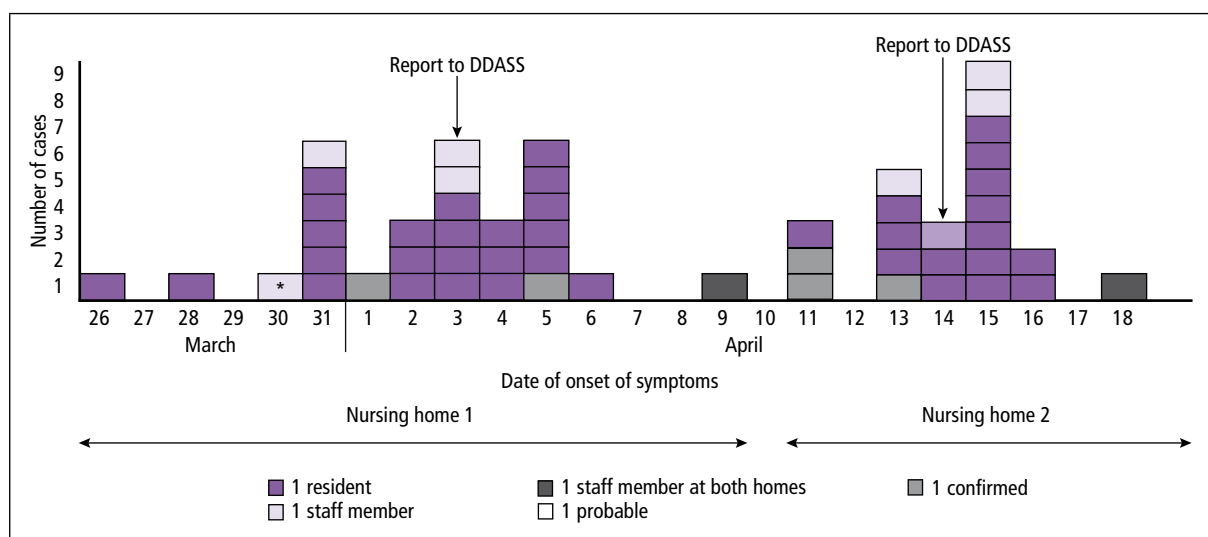
On 3 April 2008, the Bouches-du-Rhône DDASS was informed of the existence of 31 cases of acute respiratory infection in a nursing home (25 residents, including 1 death, and 6 staff members). On 14 April 2008, a second episode of acute respiratory infection was reported in another nursing home, several kilometers away (18 residents, with 1 death, and 5 staff members).

The investigation showed that the influenza virus was present in both nursing homes. Both belonged to the same management group and shared personnel (physicians, speech therapists, nursing auxiliaries, and

psychologists). The survey showed the transmission of a viral strain from one home to the other by staff and revealed the inadequacy of staff vaccination coverage (17%). Nonetheless, the experience in the first home resulted in faster reporting and more effective management in the second.

Following this investigation, beyond recommendations on the preparedness required for winter epidemics of acute respiratory infections in nursing homes—most important, vaccination of health care personnel in the nursing homes and requirements that staff should stay home when they have flu symptoms—it appears that the management of personnel working in more than one nursing home must be adapted when an outbreak occurs.

| Epidemic curve of acute respiratory infections in two nursing homes of Bouches-du-Rhône, March-April 2008 |



\* 1 staff member of nursing home 2.

## Outbreak of nosocomial measles

On 28 April 2008, several cases of measles were reported in the infectious disease department of a hospital on the Côte d'Azur. The CIRE Sud launched a descriptive study, accompanied by a microbiological study in the PACA region and the Principality of Monaco, between 1 March and 31 May 2008.

During this period, 36 cases of measles were identified, 50% in patients older than 20 years, 3 younger than 1 year; 18 cases had never been vaccinated, and 10 insufficiently (a single dose).

The microbiological study showed that 3 different genotypic strains were involved in this epidemic. Five cases affected health-care providers working at the hospital. The investigation demonstrated that these professionals were contaminated not only by the patients they treated, but also between one another.

An operational feedback meeting, bringing together health-care professionals and national, regional, and district health authorities, showed that this nosocomial transmission was promoted by multiple factors, especially the delay in the clinical and laboratory diagnosis, inadequate communication within and between departments about the occurrence of a case of measles, and disregard for mandatory reporting to the health authorities.

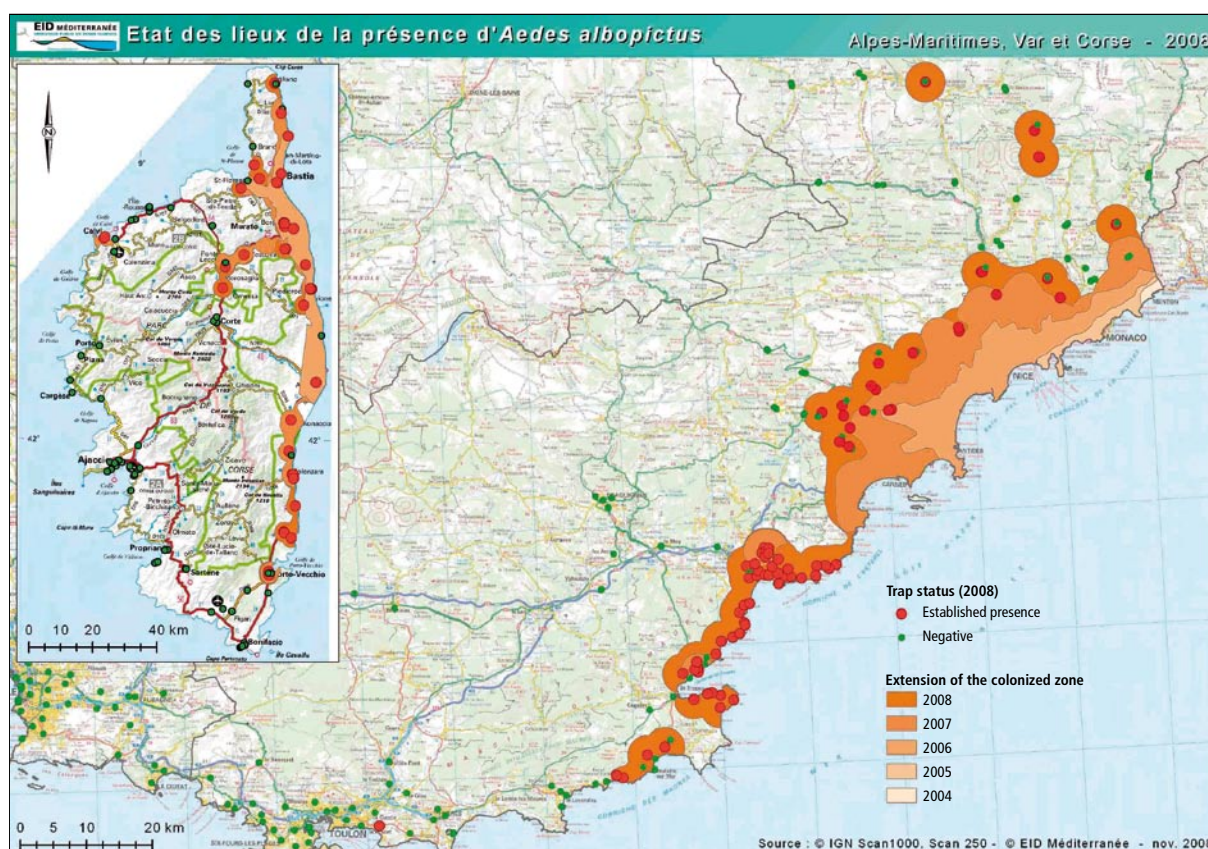


## Surveillance of dengue and chikungunya

Since April 2006, confirmed infections of chikungunya virus and dengue are mandatory notifiable diseases in metropolitan France. This surveillance system is adapted to the now established vector risk in the region. Upstream from the mandatory-reporting process, a system of early identification of suspected cases combined with entomological intervention was established locally in the districts of Alpes-Maritimes, Var, Haute-Corse, and Corse-Sud, where the vector, *Aedes albopictus*, is known to be present.

In 2008, out of 98 samples from suspected cases in PACA and in Corsica, 11 were confirmed, all were imported: one of chikungunya and 10 of dengue. The DDASS started 17 entomological interventions (mosquito eradication) around suspected cases (7 in Alpes-Maritimes and 10 in Var). The completeness of reporting has improved (38 suspected cases reported in 2007), as well as the procedure of confirmation/exclusion of cases and the coordination of different surveillance participants. This surveillance will be renewed in 2009, with particular analysis of the consequences of the potential introduction of *Aedes albopictus* in the Bouches-du-Rhône.

### | *Aedes albopictus* in Alpes-Maritimes, Var, and Corsica, 2004-2008 |



Source: Entente interdépartementale méditerranée.

## Surveillance of the tropical *Ostreopsis ovata* microalgae: Utility of operational feedback for adapting the systems

Very favorable climate conditions have allowed a toxic tropical microalgae, *Ostreopsis ovata*, to develop in the Mediterranean sea. The inhalation of contaminated sea aerosols was responsible for the spectacular poisoning of approximately 200 persons at Genoa in 2005 (influenza-like illnesses) and of several people on the islands off Marseille in 2006.

Since 2007, the DGS has set up a system combining epidemiological and environmental surveillance by using vigilance and alert thresholds combined with a visual examination of sites and the activation of a decision support task force (cellule d'aide à la décision) if this threshold is exceeded. This system covers the Mediterranean perimeter and involves the French Research Institute for the Exploitation of the Sea, the Marseille Poison and Toxicity Monitoring Centre, the DDASS and the South and Languedoc-Roussillon CIRE.



This exploratory surveillance system, while tested successfully in 2007, was difficult to implement in 2008. During the summer of 2008, the thresholds were often exceeded, requiring risk assessment and very complicated management measures, including 16 national meetings of the decision support task force.

In September 2008, operational feedback involving the partners involved in this research, surveillance, and management assessed the situation and made proposals for further surveillance for 2009. Proposals involved: reinforcing the network of reference sampling points for *Ostreopsis*, including follow-up of marine fauna, enlarging the surveillance of bathing water by developing rapid detection tests, and drafting procedures to prevent potential risks and make the management of the *Ostreopsis* risk easier.



## Contact information for the interregional epidemiology units

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**CIRE Rhône-Alpes** – Drass Rhône-Alpes  
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**CIRE Sud** – Drass Paca  
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## European and international activities

### “ Globalization of surveillance, alert, and prevention ”

Public health problems are no longer restricted to one region or one country. The intensification of the circulation of people and goods contributes to the dissemination of pathogenic agents across the world. Moreover, pollution, such as air pollution, knows no borders, nor do extreme weather conditions.

The current extension of exchanges between countries leads to the globalization of epidemic risks. The outbreak of severe acute respiratory syndrome (SARS) and the threat of an influenza pandemic both illustrate the nature and possible dimensions of such new threats.

To fulfill its public health duties, InVS must not only monitor the health status of the French population but also detect any emerging health threat across the planet that may affect France. The strengthening of European and international cooperation in the areas of health surveillance, alert, and prevention constitute a major priority for InVS and a privileged field that can generate decisive synergies in the fight against health threats.

## Europe and the French presidency of the European Union

Since InVS was created in 1998, its commitment to Europe has been constant. Persuaded of the need to consolidate and extend the partnership between European health surveillance actors, it maintains close relations with its European counterparts and with the European Centre for Disease Prevention and Control (ECDC). This partnership involves regular exchanges of information as well as joint projects. InVS participates actively in the European networks for the surveillance, alert, and control of infectious and environmental diseases. In the field of chronic diseases and injuries, InVS provides a significant contribution to the development of European health indicators.

Health security was one of the priorities of the French presidency of the European Union Council during the second half of 2008. This offered InVS a framework of choice to show its European commitment to the Ministry of Health and its European partners.

Events organized or hosted by InVS was to promote health surveillance on a European scale: the European workshop on syndromic surveillance (2-3 October 2008); the European conference on human biomonitoring (4-5 November 2008); and hosting the ECDC Management Board meeting (13-14 November 2008).

InVS also participated in different events and analyses organized by the Ministry of Health for the French presidency, including the "Euro-grippe" (Euro-flu) seminar and the European Antibiotic Awareness Day.

Beyond these events, the publication of the results of an analysis of mortality from injuries in Europe was the conclusion of the ANAMORT project, a European project coordinated by InVS for 3 years.

### HIGHLIGHTS

#### **13-14 November 2008: The ECDC Management Board in Paris**

The ECDC, created in 2005 and based in Stockholm, is responsible at the European level for providing surveillance, alert, and scientific advice on the risks associated with infectious and emerging diseases.

The ECDC works in partnership with the national bodies that are responsible for various public health functions (surveillance, scientific opinion, preparedness, and response). InVS participates, as a competent body of ECDC in the fields of surveillance, threat detection, scientific advice, training, and communication, to different activities.

#### **InVS and its European guests**

During the meeting of 13-14 November, Françoise Weber, after welcoming the Board, described the missions and activities of InVS, stressing the similarities in the operation of these 2 agencies. Didier Houssin, Director-General of Health, highlighted the importance of cooperation at the Community level to deal more effectively with health threats.

Management Board meetings held outside Stockholm, the ECDC seat, are an opportunity for the Board and the ECDC to learn more about the organization of health security and the national institutions in the host country. InVS organised a visit of the Institute with a detailed presentation of its priorities, organization, and functions as coordinator of alert and surveillance networks in all fields of public health.

>>> Read the rest p. 118





The mission of the European Centre for Disease Prevention and Control (ECDC) is to help reinforce the protection of Europe against infectious diseases such as influenza, SARS, and HIV.

Its director, **Zsuzsanna**

**Jakab**, talks about its links with InVS. She also gives us her view of the activities set up in the public health domain under the French presidency of the European Union.

**France presided over the Council of the European Union during the second half of 2008. What was your perception of this, as ECDC director?**

The French presidency of the EU in terms of health issues was very well perceived across Europe. The French Minister of Health, Roselyne Bachelot-Narquin, and her whole team, did excellent work in advancing the health-related issues. Health security was one of the principal health priorities of the French presidency.

European technical experts on influenza met in a "Euro-flu" workshop in Angers in early September 2008. The ECDC participated in the informal meeting of the Ministers of Health on 8-9 September 2008. During this meeting, the Ministers focused on the need to improve the coordination and speed of measures at the European level to effectively protect the public from major crises associated with contagious diseases, such as avian influenza, yellow fever, and SARS.

The French presidency in the domain of health, represented by Pr Didier Houssin, Director-General of Health, participated in the first European Antibiotic Awareness Day, to increase awareness of the appropriate use of antibiotics on 18 September 2008. Moreover, the Council of Ministers of Health adopted its conclusions on the European health security strategy during the December 2008 meeting in Brussels.

Finally, the priorities of the French presidency were represented during the annual meeting of the international association of national public health institutes.

In summary, in the field of health the French presidency of the Council of the EU was a real success.

**What is the relation between the ECDC and InVS? How do these 2 organizations collaborate?**

InVS representatives sit at the Management Board and the Advisory Forum of the ECDC. They play an active role in these meetings and make an important contribution to the decisions, debates, and discussions held at the European level. The Executive Director of InVS, Dr Françoise Weber, is a member of the ECDC Management Board, our chief governing body.

Moreover, InVS has been officially designated as a "competent body" in relation to the ECDC, which means that it is recognized by the authorities of the Member States of the European Union as an independent body providing scientific and technical advice or capacity for action in the field of prevention and control of infectious diseases.

**In November 2008, the ECDC Management Board met in Paris. What did you think of this event?**

The ECDC Management Board met on 13-14 November 2008 in Paris, which is one of the most beautiful cities in Europe. Important decisions were made in this extremely pleasant setting. The welcoming speeches of Dr Françoise Weber, the Executive Director of InVS, and of Prof. Didier Houssin, the Director-General of Health, addressing the Management Board on behalf of the Minister of Health, recalled the importance of the construction of a European health surveillance system. During this meeting, the Management Board elected its new president and vice-president. It adopted the Centre's work programme and projected budget for 2009. It also elected a new audit committee and approved its new mandate. The Board approved the new financial rules, the dates of forthcoming meetings, and the site of the ECDC field epidemiology training course. A press conference was organized to allow journalists to ask questions about ECDC's activities.

Further information on ECDC: <http://ecdc.europa.eu>

## The election of the new president and vice-president of the Management Board

Following the reelection of all members of the Management Board, a new president, Prof. Hubert Hrabcik (Austria), and a new vice-president, Prof. Jacques Scheres (representative of the European Parliament) were elected. The Management Board expressed its gratitude to the outgoing president, Dr Marc Sprenger (Netherlands), and vice president, Dr Minerva-Melpomeni Malliori, representative of the European Parliament, for their contribution since September 2004.



*From left to right: Dr Marc Sprenger, Dr Françoise Weber, Prof. Hubert Hrabcik, Dr Zsuzsanna Jakab, Dr Minerva Melpomeni-Mallior, Prof. Jacques Scheres.*

## European workshop on syndromic surveillance to define a European strategy

The 2003 heat wave underlined the need to develop (in addition to, but not instead of, specific surveillance programmes for some diseases) a new system adapted to unforeseen events, integrating the health actors involved earliest in the event and taking into account such non-specific indicators as the number of patients visiting emergency departments. Accordingly, since the summer of 2004, InVS has been experimenting with an information network involving various emergency services participants and has thus helped to create a syndromic surveillance system that is among the most complete in Europe and beyond. The French presidency of the European Union in the second half of 2008 was a unique occasion to demonstrate this work and stimulate the development of syndromic surveillance among our European partners. InVS therefore organized a European workshop in October 2008 that was devoted entirely to this topic.

## Syndromic surveillance systems in Europe

The concept of syndromic surveillance (also called non-specific surveillance) first appeared in the United

States around the year 2000. Its aim is to identify as early as possible any threat to public health, natural or intentional (biological, chemical, or nuclear attacks). It allows great reactivity based on simple data routinely available and analyzed daily.

Similar systems were set up several years ago in Europe. England collects surveillance data from a medical assistance telephone line (NHS). This system is used for rapid alert in the surveillance of infectious diseases (such as influenza or gastroenteritis) and for health surveillance of environmental alerts. The Netherlands studied the capacity to detect unexpected outbreaks with a syndromic surveillance system, with very positive results. In France, a real-time surveillance system has been developed since 2004. It is based on daily monitoring of emergency departments (115 across the country), of SOS Médecins associations that provide emergency house calls (50 participating groups), and on mortality data from more than 1000 municipalities. Such a system makes possible to monitor trends of numerous diseases — expected and unexpected epidemics, as well as the health impact of other phenomena (environmental or societal). It was used for daily monitoring of the impact of the 2006 heat wave on the population and of mortality during the chikungunya epidemic in Reunion.

## Objectives and outcome of the European workshop

Sixty participants including WHO, ECDC, and DG SANCO representatives gathered at InVS on 2 and 3 October. So far the different European health agencies had developed only an informal network of syndromic surveillance. The objectives of this meeting were to compare approaches and practices between European countries, to develop methods for evaluating these systems, to propose an approach to the problem that is more than the direct application of North American practices, but is adapted to European requirements, to define the research priorities, and to consider the implementation of a formal European network. This workshop allowed to share the results of the various projects currently underway in Europe and promoted the creation of a learned society and a European syndromic surveillance network.

## European conference on human biomonitoring

Biomonitoring is a tool that allows assessment of population exposure to chemical agents in the environment and, in some cases, their health effects. In view of the increasing exposure to chemical agents and strong societal concerns about environmental health, the development of biomonitoring programmes to complement tools for surveillance of environmental quality and of diseases appears to be an increasingly valuable approach for

orienting and evaluating some environmental and public health policies.

Several countries in and beyond the EU are developing biomonitoring on a national or subnational level. A recent European study showed that harmonization of approaches and methods is essential to compare chemical exposures, and their health effects, between different countries of the European Union. Moreover, countries have developed strategies to communicate results of national or local programmes and to involve the civil society that should be reviewed before transposing them from one country to another.

Considering the development of national programmes, including the United States, Canada, and in European countries, InVS has made biomonitoring a strategic priority for the years to come.

### A first inventory...

The main objective of this event, under the aegis of the French presidency of the European Union, was to describe French and European perspectives in human biomonitoring.

The conference was targeted at all the regional, national, and European stakeholders involved in environmental health and focused on 5 themes:

- the basics and concepts of biomonitoring, with consideration of the definition of reference values for comparing population exposure and risks;
- the role of human biomonitoring in national health and environmental policies, and an overview of the activities implemented in different European countries;
- the added value of human biomonitoring in environmental health, with considerations on its limitations — especially cost — and its advantages;
- contribution of scientific research to biomonitoring, especially for the development and validation of new biomarkers;
- the sustainable organization of human biomonitoring, the need to exchange and harmonize practices, to allow the comparison of data across Europe.

This conference made possible to review different European programmes and discuss the potential perspectives at the national and European level.

### ... toward a national programme of biomonitoring...

The organization of a solid biomonitoring system requires that the missions attributed to Europe and to the Member States be clearly defined. The conference raised awareness on the value of developing, with well organized and coherent national programmes priorities specific to each country. Based on these conclusions and recommendations, InVS defined the activities that it will conduct in the years to come, as part of its mandate of health surveillance and alert. Therefore the feasibility of a national programme will be studied in 2009, in particular with the possibility of coupling biomonitoring studies with health examination surveys, as has already been done in the United States, Canada, and several European countries.

### ... and a coordinated approach to biomonitoring in Europe

This conference pinpointed the urgent need to coordinate biomonitoring on a European scale. It showed the diversity of existing programmes. Some have existed for more than 20 years, while others are much more recent. Other countries are considering the need for and feasibility of such programmes.

Harmonization of study protocols, pollutants to be analyzed, interpretation, communication, and feedback of the results to the populations concerned and to risk managers is needed, to make optimal use of the data obtained. ESBIO, the European network of experts to support biomonitoring, produced scientific and technical recommendations particularly useful for countries planning national biomonitoring programmes and for the preparation of a pilot European study aimed at testing the feasibility of common protocols and methods to document and compare population exposure to a limited number of pollutants in different countries. These recommendations were issued at the conference.

The conference conclusions were presented to the European Commission and the Member States in December 2008 improving links between international, European, and national strategies, with the implementation of some projects in the field.

#### For further information:

- Topic file on biomonitoring available at the InVS site: [www.invs.sante.fr/surveillance/biosurveillance/](http://www.invs.sante.fr/surveillance/biosurveillance/)
- European site on biomonitoring: [www.eu-humanbiomonitoring.org/](http://www.eu-humanbiomonitoring.org/)
- European Commission site on biomonitoring: <http://ec.europa.eu/environment/health/biomonitoring.htm>

## Analysis of mortality from injuries in Europe

Fatal injuries are a major public health problem. They are the main cause of death for people younger than 45 years. It is estimated that better prevention would make it possible to reduce this mortality by two thirds. To improve our understanding of the health impact of injuries on the European population, comparable statistics must be available. Statistical production processes, however, are not always homogeneous. For these reasons, the ANAMORT (Analysis of mortality from injury in Europe) project began in 2005, coordinated by InVS and co-funded by the European Commission. This project was conducted in partnership with 36 European countries (see sidebar) and Eurostat, the statistical office of the European Communities. The principal objectives of this project were to describe mortality from injuries in Europe, assess the impact of the different modalities of statistical production on the comparability of data between countries, and issue recommendations about statistical production that would facilitate better comparability in the future. This analysis produced abundant results, a great number of which were published in 2008, as was the final ANAMORT report, which summarized deaths from injuries in 2005. Nine monographs on the main causes of death from injuries in Europe were also published.

### Suicide: first cause of death from injury

ANAMORT looked at intentional injuries (such as suicides and homicides), not intentional (home and leisure accidents or those associated with transportation), as well as those for which intention could not be determined.

This study found suicide to be the first cause of mortality from injury in the European Union (25 countries) with more than 56 000 deaths in 2005, almost one quarter of all deaths from injury. Next came traffic accidents and accidental falls, each of which accounted for almost 20% of injury deaths, with approximately 47 000 each. Death by accidental poisoning accounted for 4%, with almost 10 000 deaths. Deaths from suffocation and drowning, available for 26 countries of the EU, accounted respectively for 5% and 3% of these deaths from injury.

### Important geographic disparities

The results show important disparities according to country. Accordingly, with rates of less than 7/100 000 inhabitants, the southern European countries (Cyprus, Greece, Malta, Albania, Italy, and Spain) had clearly lower rates than the countries of eastern Europe (especially the Baltic countries—Estonia, Lithuania, and Latvia). These disparities may be partly explained by substantial underreporting for cultural or religious reasons. In western Europe, France, with a rate of 15.9/100 000 inhabitants, is one of the countries with the

highest suicide rates, along with Belgium and Switzerland. Homicide rates vary sharply according to country, from 0.2/100 000 inhabitants per year in Malta to almost 10.0 in the Baltic. Finally, for deaths due to accidental falls, an increasing gradient was observed from west to east, with the highest rates in Croatia, Slovenia, Hungary, Lithuania, and Finland.

### Important inequalities by sex and age

Men died from injuries more often than women, regardless of cause or age. They accounted for 3 times more suicides, drownings, accidental poisonings and transportation accidents. Those aged 65 years or older accounted for more than 30% of the victims of suicide, suffocation, and falls; in particular, their risk of death from accidental falls is 60 times higher than in those aged 15-24 years. Inversely, the youth in the 20-24-year-old category were the most frequent victims of transportation accidents, with a mortality rate of 19.2/100 000 in 2005.

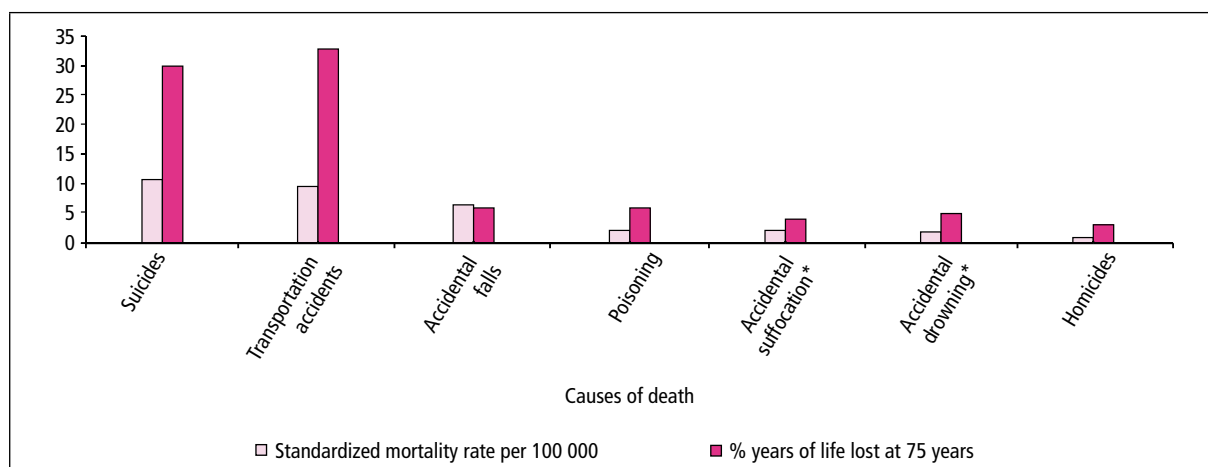
### Recommendations to improve data comparison

The ANAMORT project described the limitations in the comparability of data between different European countries. It developed a series of 200 operational recommendations aimed at improving the comparability and usefulness of data and therefore the focus of national and international health policies. These recommendations concern, for example, the level of detail and type of information reported on death certificates and improved consideration of deaths that occur abroad. It also proposed solutions for harmonizing the production of death statistics, such as the use of an automatic death coding system, as already existing in several European countries.

#### Countries participating in ANAMORT

- 15 Member States of the European Union in 1995: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom;
- The 10 Member States that joined the European Union in 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic, and Slovenia;
- The 2 Member States that joined the European Union in 2007: Bulgaria and Romania;
- Other European countries: Albania, Bosnia-Herzegovina, Croatia, Iceland, the former Yugoslav republic of Macedonia, Norway, Serbia, Switzerland, and Turkey.

## | Mortality and percentage of years of potential life lost from injury in Europe (EU-25), 2005 |



\* Rate calculated for 26 European countries.

### For further information:

- Belanger F, Ung AB *et al.* Analyse de la mortalité par traumatisme en Europe. Projet ANAMORT, rapport final, Saint-Maurice (Fra): Institut de veille sanitaire, octobre 2008, 16 p. Available at: [www.invs.sante.fr/publications/2008/anamort/](http://www.invs.sante.fr/publications/2008/anamort/)
- Belanger F, Ung AB, Therre H *et al.* Décès par traumatisme en Europe: situation en 2005 et perspectives. Saint-Maurice (Fra): Institut de veille sanitaire, octobre 2008, 6 p. Available at: [www.invs.sante.fr/publications/2008/anamort/](http://www.invs.sante.fr/publications/2008/anamort/)
- The monographs are available at: [www.invs.sante.fr/surveillance/anamort](http://www.invs.sante.fr/surveillance/anamort)



# International epidemic intelligence and tropical health surveillance: detect, alert, and prepare for any international health crisis

In an international context where epidemic risks tend to become globalized, InVS must be capable of detecting health phenomena that may occur internationally and affect the populations in France or French nationals abroad. This international epidemic intelligence programme complements existing epidemiologic surveillance systems in the French population and their alert mechanisms, making it possible to anticipate necessary measures of prevention and control. To fulfill this mission, InVS created the International and Tropical Department (DIT). One of its missions is to monitor tropical diseases that do not have an established transmission cycle in metropolitan France.<sup>1</sup> Another is to implement InVS policy towards partner countries and international bodies involved in public health. Finally, it is responsible for conducting epidemic intelligence.

## HIGHLIGHTS

### Chikungunya and dengue control programme in metropolitan France

The transmission of diseases such as dengue and chikungunya in metropolitan France requires the presence of people in a viremic phase of the disease (returning from a pandemic zone), a competent vector (*Aedes albopictus*, the Asian tiger mosquito), and climate conditions favorable to an indigenous transmission cycle. The occurrence in summer 2007 of clusters of chikungunya cases in Italy secondary to a case returning from India testifies to the reality of the risk, especially because the *Aedes albopictus* mosquito—a potential vector for both dengue and chikungunya viruses—is known to be present in several metropolitan districts: Alpes-Maritimes, Haute-Corse, Var, and Corse-Sud. In March 2006 the Ministry of Health set up a national plan to control the spread of chikungunya and dengue to limit this risk. In 2008 relevant data from clinical laboratories continued to be collected and analyzed by InVS.



### A reactive system

The plan to prevent the dissemination of chikungunya and dengue in metropolitan France is based on entomological and epidemiologic surveillance. It aims to monitor the expansion of their area of implantation and detect potentially viremic patients. This system requires cases to be rapidly detected, and for vector control measures to be rapid and coordinated to better protect populations.

The surveillance system requires reporting of confirmed infections by chikungunya or dengue virus progressing for fewer than 7 days in all metropolitan districts. Furthermore, in the districts where vector implantation is known, immediate reporting of suspect cases has been before laboratory confirmation from May to November (ie, during the mosquito activity period) has been mandatory for the past three years. An accelerated diagnosis confirmation procedure has been established by the National Reference Centre (CNR) for arboviruses. This programme has several operational objectives. It makes it possible, on the one hand, to monitor imported cases, thus being able to set up appropriate individual and collective measures of prevention and vector control. Furthermore, indigenous cases can be detected early, in order to guide vector control measures.

### Surveillance by the network of metropolitan laboratories

In addition to the mandatory reporting of suspected cases in high-risk areas where the vector is present, surveillance of imported cases is based on a network of

<sup>1</sup> But which may be found in overseas territories zones or countries.

## “Continuous vigilance against all threats occurring abroad”

### | PROFILE |

#### Department of international and tropical diseases

##### Director

Marc Gastellu-Etchegorry

##### Creation

2002

##### Number of staff

11

##### Contact

dit@invs.sante.fr

### | INTERVIEW |



Chikungunya, dengue, malaria, viral hemorrhagic fevers, epidemic typhus, cholera, yellow fever—all are diseases that DIT keeps under a close watch. **Marc Gastellu-Etchegorry**, head of department told us how this health surveillance is organized. He also discusses other tasks of the department and presents the highlights of 2008.

#### How is epidemic intelligence conducted at InVS?

International epidemic intelligence unlike surveillance at the national or the international level does not need to be exhaustive. We usually work using information available from media sources posted on the Internet. There is a lot of information, and it is relatively accessible, but its quality and reliability vary greatly. We must therefore first sort it according to its interest. Our selection criteria include the country of occurrence: we are mandated to monitor threats to the French population, therefore we keep a special focus on countries bordering France, both in Europe of course, but also in the overseas (DOM-POM), as well as areas with close ties to France such as North Africa, West Africa, and other countries often visited by French tourists. Our selection is also based on specific diseases, when it is a threat because of its frequency, severity, virulence, or recent emergence. If information from media sources seems of interest, we must confirm it, validate it, and then document it—that is, collect the maximum amount of data about the number of cases and deaths, the date the epidemic began, its potential geographic spread the potential evolution of the health situation compared with the past. We are continually on the alert, to inform French health authorities as fast as possible regarding actual threats to the population, while setting the others aside.

#### What are your main international cooperation and technical assistance projects?

Our mission of international surveillance allows our team to develop real expertise on transmissible diseases, especially tropical diseases, which we are eager to share. Our department thus naturally participates in various international cooperation projects developed by InVS and the interregional epidemiology teams nationwide (CIRE), through various health surveillance and alert networks. We also participate in the EpiSouth network, which strives to control communicable diseases in the countries of southern Europe and the Mediterranean basin; we are responsible its international epidemic intelligence component. Our department is also involved in bilateral technical assistance programmes with other countries in the field of epidemiology, health surveillance, and influenza pandemic preparedness. We have cooperation projects with several countries in the Indian Ocean and the West Indies, to help them set up surveillance networks and evaluate their epidemic intelligence and public health systems. In Morocco, we participate in a project to develop a national public health institute. Similarly, we work jointly with Tunisia, hosting one of their health-care professionals in PROFET, a field epidemiology training programme. We maintain a close partnership with European and international health security networks and especially with the ECDC and WHO. We are members of the steering committee of the Global Outbreak Alert and Response Network (GOARN) and InVS personnel participate to GOARN missions. Finally, we are involved in various public health activities set up by the Ministry of Foreign and European Affairs.

>>> Read the rest p. 124

### **What were the highlights of 2008 for your department?**

We maintained constant surveillance of avian influenza, because we consider that it remains a strong threat, although the number of cases has fortunately remained limited. Our department also monitored a large yellow fever epidemic in South America and conducted a risk assessment, in collaboration with the French Ministry of Foreign and European Affairs. The DIT has paid particular attention to the emergence in the Pacific of an epidemic wave associated with a type of dengue that has not been seen there for a long time; its concurrence with other types of dengue is a cause for concern. We also very closely monitored the substantial increase in Crimean-Congo hemorrhagic fever, which is circulating in countries neighbouring the European Union, in the Caucasus and in Iran and we helped to document the emergence of a new hemorrhagic fever virus in Zambia. The DIT also helped set up a surveillance system for surveillance of very large gatherings during the Olympic Games in Beijing. It appears to have served its function well and confirmed the feasibility of this type of system, although its pertinence and dimensions for other equally large gatherings remains a debated issue. During the Games, this system detected the first signals of the melamine alert, on which we worked together with the DSE.

During the year, other alerts were monitored and investigated, including cases of airport malaria, imported cholera, and imported dengue, especially from West Africa. We have continued surveillance programmes for some infectious diseases not endemic in metropolitan France, but which can be imported here, or which are present in some overseas districts, such as dengue and chikungunya, as well as leprosy and leishmaniasis. The expertise developed by the DIT epidemiologists in these tropical diseases, epidemic intelligence, and our international activities are mutually enriching and result in synergy in our activities and recognition for InVS in all three domains.

laboratories set up in 2006; these laboratories conduct screening for dengue and chikungunya. The laboratories participating in this network are the arbovirus CNR of the Institut Pasteur, the private Pasteur-Cerba and Biomnis laboratories, the Institute of Tropical Medicine of the Army Health Service (Institut de médecine tropicale du service de santé des armées), Timone Hospital in Marseille, and Avicenne Hospital in Bobigny. In addition to this reinforced surveillance from May through November in areas at risk, the main objective of this year-round surveillance is to monitor the trends for these two imported diseases (at the district, regional, and national level, by sex, age group, possible place of contamination, etc.), in order to document imported cases in metropolitan France. In 2008, data from this network were compared to mandatory surveillance data to improve the exhaustiveness of identification of potentially viremic cases in the areas where the vector is present.

Between 1 January and 31 December 2008, 316 cases of dengue and 31 cases of chikungunya were diagnosed, all imported; among these, 11 cases of dengue and a single case of chikungunya were detected from May through November in the 4 areas where the vector is present. The numbers of case for both diseases were lower in 2008 than in 2007. This decline is explained to a large extent by the fact that chikungunya virus circulation in Reunion came to an end in 2008 and because neither Guadeloupe nor Martinique suffered a dengue epidemic.

### **Epidemiologic surveillance of yellow fever in Latin America**

From 1 December 2007 through 9 January 2008, reports of yellow fever in monkeys increased significantly in several Brazilian states and in neighbouring countries. During the same period, several suspected human cases were reported. As a consequence, control measures for yellow fever were reinforced in Brazil with intensification of vector control and vaccination campaigns.

As it occurred in an area very popular with French tourists and because of its proximity to urban areas and the continuity of this ecosystem with French Guiana, the DIT monitored this phenomenon very closely.

### **Monitoring information from South America**

From December 2007 through February 2008, 38 human cases of sylvatic yellow fever, including 20 deaths, were reported in Brazil, as well as 24 cases, including 8 deaths, in Paraguay, and 5 cases, including 1 death, in Argentina.

Starting 9 January the DIT published a regular update on the situation in Latin America in its weekly international bulletin on the Internet, along with an analysis of the risk associated with it. This bulletin provided information to health-care professionals, national authorities, and InVS's international partners about the health situation in these countries and disseminated appropriate and adequately proportioned advice on prevention (especially, a strong recommendation for anti-yellow fever vaccination for travelers to some areas of these countries). A factsheet summarizing the human and animal cases of yellow fever in Brazil, Paraguay, and Argentina was also made available online in February 2008.

## Review of the countries where yellow fever is endemic

In February 2008, the DIT also wrote an informational note summarizing the epidemiologic situation of countries in South America likely to be affected by yellow fever. This publication, intended for the same stakeholders, reviewed the basics of the disease (vector responsible, reservoir, transmission cycles, clinical forms, curative treatment, and vaccine) and summed up the general health situation of the countries of Latin America. This note was also distributed in English to the countries of the EpiSouth network.

### For further information:

- Dossier Chikungunya du site Internet de l'InVS: [www.invs.sante.fr/surveillance/chikungunya/default.htm](http://www.invs.sante.fr/surveillance/chikungunya/default.htm)
- Dossier Dengue du site Internet de l'InVS: [www.invs.sante.fr/surveillance/dengue/default.htm](http://www.invs.sante.fr/surveillance/dengue/default.htm)
- Bulletins hebdomadaires internationaux n° 120, 124, 126, 128, 130. Département international et tropical, InVS.
- Épidémiologie de la fièvre jaune, Brésil - Paraguay - Argentine, 18 février 2008, Département international et tropical, InVS.
- Épidémiologie de la fièvre jaune, Amérique du Sud, 19 février 2008, Département international et tropical, InVS.

All of these documents are available under the heading Actualités internationales on the InVS site: [www.invs.sante.fr/international/index.htm](http://www.invs.sante.fr/international/index.htm)

## Surveillance of the Beijing 2008 Olympic Games

The 2008 Olympic Games took place in China during August and the Paralympic Games during September. In collaboration with participants from the French health security system and international surveillance agencies, InVS set up a specific surveillance system. Its objective was to detect significant health threats for French nationals present in China during the games and the importation of unusual and severe diseases to France.

## Consolidated chinese-speaking epidemic intelligence

Such a system is based on the sorting, analysis, and verification of a very substantial quantity of information, especially in Chinese. The DIT staff was thus reinforced by assignment of an epidemiologist and an epidemic intelligence staff. Furthermore substantial amounts of information were exchanged with institutional partners such as WHO and the ECDC. Other sources of information were contacted such as the French embassy in China and the French Olympic Committee.

## Reinforced surveillance of imported diseases

A specific health surveillance system was set up to detect diseases imported by French nationals returning from China. InVS addressed a document to all emergency departments, all SOS Médecins networks, and Poison and toxicity monitoring centres, asking them to report any serious or unusual health event in France between 4 August and 19 September 2008 in any person who had traveled in China or had had close contact with someone who had traveled in China during this period. A dedicated hotline was set up for transmitting these reports to the DIT. InVS also asked the epidemiologists in the interregional epidemiology centres and the InVS DMI and DSE, as well as the Alert Coordinating Committee, to report any such event occurring in France. An online, Voozanoo® interactive information data collection platform was made available to these partners. Cases imported from China in countries other than France were also monitored in collaboration with European and international surveillance networks.

## Intensive information dissemination

In July 2008, the DIT published an information sheet on the epidemiologic situation in China, summarizing the principal chronic and infectious diseases in the country and assessing the expected health risks in the Chinese regions hosting sports events as part of the Olympics. This information sheet was also distributed in English to the countries of the EpiSouth network. Moreover, a weekly bulletin — on the Beijing Olympic Games — was published every Thursday from 24 July 2008 through the end of the Paralympic Games. This bulletin summarized the health events related to the Games and likely to affect the French populations.

Generally, these publications made it possible to draw attention to several health events that occurred in China

during the games: 799 cases of Japanese encephalitis, 149 cases of food poisoning from consumption of oysters in Macao, a cholera epidemic in a Vietnamese region bordering China, and the first signs of the epidemic of urinary lithiases associated with the consumption of melamine-tainted powdered milk. These health events had no direct link with the Olympic or Paralympic Games and did not appear to affect any of the French nationals present in China during this period. No case of disease imported from China was reported in France.

The reinforcement of international surveillance during the Olympics of 2008 provided an opportunity to assess the pertinence and efficacy of such a system and consider possible improvements. This evaluation will be the object of a report to be published soon.

### For further information:

- Situation épidémiologique de la Chine et Jeux Olympiques, 8 juillet 2008, Département international et tropical, InVS. Available under the topic Actualités internationales on the InVS website: [www.invs.sante.fr/international/index.htm](http://www.invs.sante.fr/international/index.htm)
- Jeux Olympiques de Pékin – Bulletins hebdomadaires, Département international et tropical, InVS. All of these bulletins can be found on the InVS website at the following URL: [www.invs.sante.fr/display/?doc=international/bh\\_jo\\_2008.htm](http://www.invs.sante.fr/display/?doc=international/bh_jo_2008.htm)

## Health surveillance of the cases of urinary lithiases in China

In March 2008, the massive delivery on the Chinese market of food containing milk adulterated with melamine caused a large epidemic of poisoning manifested mainly by the appearance of urinary stones in young children. In consequence, beginning on 11 September 2008, the Chinese health authorities set up a national detection system for cases of urinary lithiases associated with melamine.

## Immediate detection of the alert signal

From 12 September 2008, the DIT detected this alert signal and prepared to conduct regular monitoring, in close collaboration with the European health and safety agencies and especially the ECDC. The data collected were frequently reported in the weekly international

bulletin (bulletin hebdomadaire international — BHI) and in a joint scientific publication in November 2008, to provide information to the national authorities and to national and international partners.

## Continuing monitoring throughout the alert period

Despite the European Union ban on the importation of Chinese dairy products, in effect since 2002, other food products with milk derivatives of Chinese origin were on the European market in 2008. In view of this potential threat to the French population, InVS set up a surveillance system, in collaboration with the DGS and the DDASS (for more details see p. 37).

The help from a Chinese-speaking epidemiologist at InVS made it possible to identify important information available only in Chinese and to conduct, throughout the alert, a daily follow-up of the health situation in



China, including regular updating of the list of products identified as contaminated by melamine. This information was also regularly forwarded to French overseas territories

(New Caledonia and Polynesia) and in English for the EpiSouth network countries.

#### For further information:

Données disponibles sur l'épidémie de lithiases urinaires chez l'enfant en Chine, septembre-novembre 2008, point au 5 novembre 2008, InVS, Département international et tropical. Available under the heading Actualités international on the InVS site: [www.invs.sante.fr/international/index.htm](http://www.invs.sante.fr/international/index.htm)

## Alert: a severe viral syndrome in South Africa

On 5 October 2008, the health authorities in South Africa announced three deaths linked to an infectious and highly pathogenic disease of unidentified origin. In view of the severity of this emerging phenomenon and the virulence of the pathogenic agent, the event was considered serious by the DIT epidemiologists.

### Immediate reaction

Immediately after confirmation of the alert, the DIT worked with South African health authorities to collect information on the phenomenon in Johannesburg: epidemiologic context, number of cases, number of deaths, description of signs, etc. DIT epidemiologists also conducted a long-distance investigation to collect the fragmentary information available in Zambia. The first case was a woman living in Lusaka, Zambia, who had

influenza symptoms that began on 4 September 2008; she was evacuated to South Africa for health reasons on 12 September. The other four cases were caregivers in contact with this first patient affected or the first secondary cases. On 12 October 2008, South African teams identified the causative agent, a new arenavirus (since named LuJo).

### Rapid dissemination of information

After verification and analysis, information about this South African viral syndrome was disseminated by the DIT to national and international public health networks, as well as hospital staff physicians and clinicians likely to give advice to travelers, to inform them of the risks of this disease. In particular, three documents were published, including a synthesis of the available data drafted together with the CNR for viral hemorrhagic fever. These documents were disseminated in English to countries participating in the EpiSouth network.

#### For further information:

Syndrome viral dû à un nouvel arénavirus, Zambie/Afrique du Sud. 14 novembre 2008, InVS, Département international et tropical. Available under the heading Actualités international on the InVS site: [www.invs.sante.fr/international/index.htm](http://www.invs.sante.fr/international/index.htm)



# 05

## Appendices

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## InVS in figures

### InVS activities

Number of alerts covered in the daily alert bulletins in 2008: 27

Number of European programmes: 12

Cooperation activities conducted abroad: 19 missions and 5 foreign delegations

Reports/leaflets published: 133

Weekly Epidemiologic Bulletin (BEH):

147 articles,  
19 editorials,  
13 thematic issues

Weekly International Bulletin (BHI): 53 issues

Influenza surveillance bulletins published: 29 issues

Posters for conferences: 134

Press releases issued: 24

InVS website ([www.invs.sante.fr](http://www.invs.sante.fr)):

1 051 134 individual visitors  
3 631 439 page views

**All InVS publications are available online: [www.invs.sante.fr](http://www.invs.sante.fr)**

- Scientific reports, leaflets, and methodological guides: [www.invs.sante.fr/publications/default.htm](http://www.invs.sante.fr/publications/default.htm)
- Weekly Epidemiologic Bulletin BEH: [www.invs.sante.fr/beh/default.htm](http://www.invs.sante.fr/beh/default.htm)
- Extrapol: [www.invs.sante.fr/extrapol/](http://www.invs.sante.fr/extrapol/)
- Health surveillance bulletins, epidemiologic updates from the interregional epidemiology groups: [www.invs.sante.fr/regions/cire\\_publications.htm](http://www.invs.sante.fr/regions/cire_publications.htm)
- Weekly International Bulletin: [www.invs.sante.fr/display/?doc=international/bhi.htm](http://www.invs.sante.fr/display/?doc=international/bhi.htm)



## InVS human resources

Staff (full-time equivalents on December 31, 2008): 394

Distribution by occupation:

- scientists (epidemiologists, statisticians...): 228
- managers: 48
- administrative and support personnel (computer, communication...): 118

## InVS material resources

InVS operating budget in 2008: €55 323 027.53

InVS investment budget in 2008: €3 446 549.08

Increase in operating budget 2007-2008: +7.3%

Increase in investment budget 2008-2007: +200%

## Networks and partners

Number of national reference centres: 48 (with 31 associated laboratories)

Budgetary resources allocated to CNRs: €10 316 587

Number of morbidity registries: 48

Budgetary resources allocated to all registries: €5 165 110

Number of emergency departments participating in the OSCOUR network: 120

Number of SOS Médecins associations in the SOS network: 50

Number of collaboration agreements with partners: 309





## | Distribution of budget by type of expense/2008 |

Expense categories	Total budget
Personnel <sup>1</sup>	25 952 672.92
Partnerships <sup>2</sup>	23 094 088.65
Travel expenses <sup>3</sup>	727 099.03
Other operating expenses <sup>4</sup>	5 549 166.93
<b>Total</b>	<b>55 323 027.53</b>

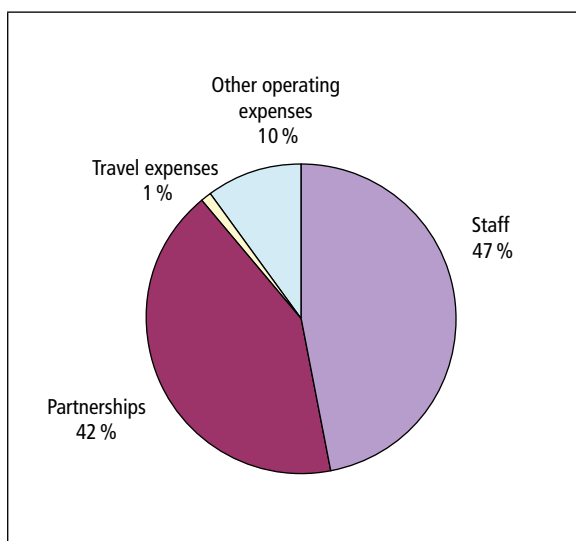
<sup>1</sup> **Personnel:** remuneration, taxes on remuneration, social charges.

<sup>2</sup> **Partnerships contracts:** partnership contracts, subsidies to partners, financial support of registries, financial support of CNRs, subcontracting services associated with scientific projects.

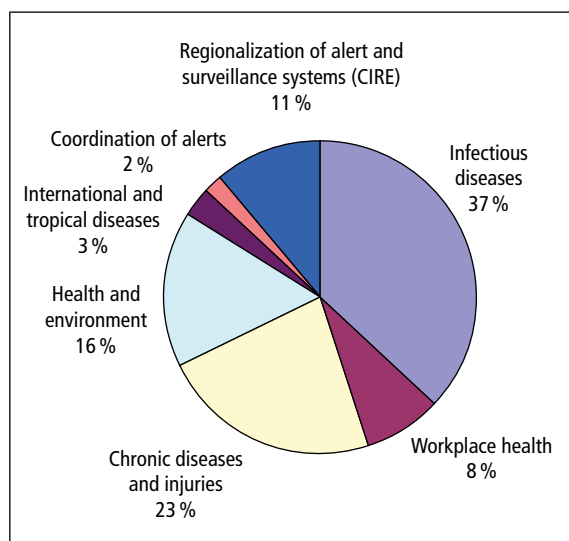
<sup>3</sup> **Travel expenses:** transportation, expenses, conference registration fees.

<sup>4</sup> **Other operating expenses:** printing and distribution of reports, expenses for organization of conferences, rent, maintenance of buildings and vehicles, telecommunications, staff training, recruitment costs, supplies, documentation.

## | Distribution of budget by type of expense/2008 |



## | Distribution of budget by type of expense/2008 |



## | Distribution of budget by type of expense/2008 (including oversight and support) |

Topics	Total expenses
Infectious diseases	20 769 070.46
Workplace health	4 587 393.63
Chronic diseases and injuries	12 699 676.57
Health and environment	8 591 577.41
International and tropical diseases	1 467 856.27
Coordination of alerts	1 173 007.53
Regionalization of alert and surveillance systems (CIRE)	6 034 444.70
<b>Total</b>	<b>55 323 026.57</b>

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## Abbreviations & Acronyms

### A

<b>AASQA</b>	Authorized associations of air quality surveillance (Associations agréées de surveillance et de la qualité de l'air)
<b>ACTIV</b>	Association of tradespeople, shop-owners and independent workers of Veynois (Association des artisans, commerçants et travailleurs indépendants veynois)
<b>AFSSA</b>	French Food Safety Agency (Agence française de sécurité sanitaire des aliments)
<b>AFSSAPS</b>	French Drug and Medical Products Agency (Agence française de sécurité sanitaire des produits de santé)
<b>AFSSET</b>	French Agency for Environmental and Occupational Safety (Agence française de sécurité sanitaire de l'environnement et du travail)
<b>ALFÉDIAM</b>	French-language Society for the Study of Diabetes and Metabolic Diseases (Société de langue française pour l'étude du diabète et des maladies métaboliques)
<b>ANAMORT</b>	Analysis of mortality from injuries in Europe (Analyse de la mortalité par traumatisme en Europe)
<b>AP-HP</b>	Paris Public Hospital System (Assistance publique – Hôpitaux de Paris)
<b>ARH</b>	Regional Hospitals Agency (Agence régionale de l'hospitalisation)
<b>ARS</b>	Regional Health Agency (Agence régionale de santé)
<b>ASN</b>	Nuclear Safety Authority (Autorité de sûreté nucléaire)

### B

<b>BCG</b>	Bacillus Calmette-Guérin
<b>BEH</b>	Weekly Epidemiologic Bulletin (Bulletin épidémiologique hebdomadaire)
<b>BHI</b>	Weekly International Bulletin (Bulletin hebdomadaire international)
<b>BMR-RAISIN</b>	Alert network for nosocomial infection investigation and surveillance of multiple-drug resistant bacteria (Réseau d'alerte, d'investigation et de surveillance des infections nosocomiales pour des bactéries multi-résistantes)
<b>BP</b>	Blood pressure
<b>BQA</b>	Daily alert bulletin (Bulletin quotidien des alertes)
<b>BRGM</b>	Bureau of Geological and Mining Research (Bureau de recherches géologiques et minières)

### C

<b>CAD</b>	Decision support committee (Cellule d'aide à la décision)
<b>CAPTV</b>	Poison and toxicity monitoring centre (Centre antipoison et de toxicovigilance)
<b>CASA</b>	Agency system leadership committee (Comité d'animation du système d'agences)
<b>CCA</b>	Alert Coordinating Committee InVS (Cellule de coordination des alertes)

<b>CClin</b>	Nosocomial infection control coordinating centre (Centre de coordination de la lutte contre les infections nosocomiales)
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CepiDC</b>	National centre for death statistics and epidemiology (Centre d'épidémiologie sur les causes médicales de décès)
<b>CERVEAU</b>	Regional emergency surveillance and action centre (Centre régional de veille et d'action sur les urgences)
<b>CHS-CT</b>	Plant safety committee (Comité d'hygiène, de sécurité et des conditions de travail)
<b>CIRE</b>	Interregional epidemiology group (Cellule interrégionale d'épidémiologie)
<b>CNAM-TS</b>	National health Insurance Fund for Salaried Workers (Caisse nationale d'assurance maladie des travailleurs salariés)
<b>CNR</b>	National Reference Centre (Centre national de référence)
<b>CO</b>	Carbon monoxide
<b>CONSTANCES</b>	Cohort of consultants of health screening centres (Consultants des Centres d'exams de santé, cohorte)
<b>COSET</b>	Cohort for epidemiologic surveillance in the workplace (Cohorte pour la surveillance épidémiologique en milieu de travail)
<b>CSTB</b>	Scientific and Technical Centre for Building (Centre scientifique et technique du bâtiment)
<b>CTV</b>	Vaccination Advisory Committee (Comité technique des vaccinations)



<b>DBP</b>	Diastolic blood pressure
<b>DDASS</b>	District Health and Welfare Bureau (Direction départementale des affaires sanitaires et sociales)
<b>DGCCRF</b>	Directorate-General of Competition, Consumer Affairs, and Fraud Prevention (Direction générale de la concurrence, de la consommation et de la répression des fraudes)
<b>DGS</b>	Directorate-General of Health (Direction générale de la santé)
<b>DIT</b>	International and Tropical Department, InVS (Département international et tropical de l'InVS)
<b>DMCT</b>	Department of Chronic Diseases and Injuries, InVS (Département des maladies chroniques et des traumatismes de l'InVS)
<b>DMI</b>	Department of Infectious Diseases, InVS (Département des maladies infectieuses de l'InVS)
<b>DOM-TOM</b>	Overseas districts and territories (Départements et territoires d'outre-mer)
<b>DRASS</b>	Regional Health and Welfare Bureau (Direction régionale des affaires sanitaires et sociales)
<b>DREES</b>	Department of Research, Studies, Evaluation, and Statistics (Direction de la recherche, des études, de l'évaluation et des statistiques)
<b>DRIRE</b>	Regional Department of Industry, Research, and the Environment (Direction régionale de l'industrie, de la recherche et de l'environnement)
<b>DRTEFP</b>	Regional Direction of Labor, Employment, and Professional Training (Direction régionale du travail, de l'emploi et de la formation professionnelle)

<b>DSDS</b>	Department of Health and Social Development (Direction de la santé et du développement social)
<b>DSE</b>	Department of Environmental Health, InVS (Département santé environnement de l'InVS)
<b>DST</b>	Department of Occupational Health, InVS (Département santé travail de l'InVS)

## E

<b>EARSS</b>	European Antimicrobial Resistance Surveillance System
<b>ECDC</b>	European Centre for Disease Prevention and Control
<b>EFS</b>	French Blood Agency (Établissement français du sang)
<b>ENNS</b>	National nutritional health study (Étude nationale nutrition santé)
<b>ENTRED</b>	National representative sample of people with diabetes (Échantillon national témoin représentatif des personnes diabétiques)
<b>EWGLI</b>	European Working Group for Legionella Infections,
<b>ESBIO</b>	Expert Team to Support Biomonitoring
<b>EU</b>	European Union
<b>EUROSTAT</b>	Statistical Office of the European Communities

## G

<b>GHQ 28</b>	General Health Questionnaire, 28 item version
<b>GIS</b>	Geographic information system
<b>GOARN</b>	Global Outbreak Alert and Response Network
<b>GROG</b>	Regional influenza observation groups (Groupes régionaux d'observation de la grippe)

## H

<b>HAS</b>	French Authority for Health (Haute autorité de santé)
<b>HBV</b>	Hepatitis B virus
<b>HCSP</b>	High Council of Public Health (Haut conseil de la santé publique)
<b>HCV</b>	Hepatitis C virus
<b>HIA</b>	Health impact assessment
<b>HIV</b>	Human immunodeficiency virus
<b>HVA</b>	Hepatitis A virus

## I

<b>IMI</b>	Invasive meningococcal infections
<b>INCA</b>	National Cancer Institute (Institut national du cancer)
<b>INERIS</b>	National Institute for the Industrial Environment and Risks (Institut national de l'environnement industriel et des risques)
<b>INPES</b>	National Institute for Health Prevention and Education (Institut national de prévention et d'éducation pour la santé)
<b>INSEE</b>	National Institute for Statistics and Economic Studies (Institut national des statistiques et des études économiques)
<b>Inserm</b>	National Institute for Health and Medical Research (Institut national de la santé et de la recherche médicale)
<b>InVS</b>	French Institute of Public Health Surveillance (Institut de veille sanitaire)
<b>IRSN</b>	Institute of Radioprotection and Nuclear Safety (Institut de radioprotection et de sûreté nucléaire)
<b>ISPED</b>	Institute of Public Health, Epidemiology and Development (Institut de santé publique, épidémiologie et développement)

## L

<b>LABM</b>	Biomedicine Agency (Agence de la biomédecine)
<b>LEPI</b>	Laboratory for the Study of Inhaled Particles (Laboratoire d'étude des particules inhalées)

## M

<b>MRSA</b>	Methicillin-resistant <i>Staphylococcus aureus</i>
<b>MSA</b>	Agricultural workers' social insurance fund (Mutualité sociale agricole)

## O

<b>OSCOUR®</b>	Organization of coordinated surveillance of emergency departments (Organisation de la surveillance coordonnée des urgences)
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## P

<b>PACA</b>	Provence-Alpes-Côte d'Azur (region)
<b>PAH</b>	Polycyclic aromatic hydrocarbons
<b>PMI</b>	Mother-Child Protection Agency (Protection maternelle infantile)
<b>PMSI</b>	National Medical Information Programme (Programme de médicalisation des systèmes d'information)

<b>PNNS</b>	National Nutrition Health Programme (Programme national nutrition santé)
<b>PNSM</b>	National Mesothelioma Surveillance Programme (Programme national de surveillance du mésothéliome)
<b>PRAGSUS</b>	Regional Health Emergency Action Plan (Plan d'action relatif à l'alerte et la gestion des situations d'urgence sanitaire)
<b>PRSP</b>	Regional Public Health Plan (Plan régional de santé publique)
<b>PSAGE-Dengue</b>	Epidemic alert, surveillance, and management programme for dengue (Programme de surveillance, d'alerte et de gestion épidémique)
<b>PSAS</b>	Air and Health Surveillance Programme (Programme de surveillance air et santé)
<b>PSECAN</b>	Epidemiologic Surveillance Programme for Natural Disasters (Programme de surveillance épidémiologique des catastrophes naturelles)
<b>PVL</b>	Panton-Valentine leukocidin

## R

<b>RAISIN</b>	Alert network for nosocomial infection investigation and surveillance (Réseau d'alerte, d'investigation et de surveillance des infections nosocomiales)
<b>RNSP</b>	National public health network (Réseau national de santé publique)
<b>RSI</b>	Social insurance fund for self-employed workers (Régime social des indépendants)
<b>RT-PCR</b>	Reverse transcription polymerase chain reaction

## S

<b>SACS</b>	Heat wave and health alert system (Système d'alerte canicule et santé)
<b>SAMOTRACE</b>	Rhone-Alpes workplace mental health observatory (Santé mentale observatoire travail Rhône-Alpes)
<b>SAMU</b>	Emergency medical assistance service (Service d'aide médicale urgente)
<b>SARS</b>	Severe acute respiratory syndrome
<b>SATURN-INF</b>	Prevalence survey of lead poisoning in children (Enquête de prévalence du saturnisme infantile)
<b>SBP</b>	Systolic blood pressure
<b>SNSPE</b>	National surveillance system for childhood lead poisoning (Système national de surveillance des plombémies chez l'enfant)
<b>SSI</b>	Surgical site infection
<b>STD</b>	Sexually transmitted disease
<b>SurSaUD®</b>	Health surveillance of emergency departments and deaths (Système de surveillance sanitaire des urgences et des décès)

## U

<b>USEN</b>	Nutritional epidemiology surveillance unit (Unité de surveillance et d'épidémiologie nutritionnelle)
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**VOC**

Volatile organic compounds



**WHO**

World Health Organization



**ZEP**

Disadvantaged areas receiving priority education funding (Zone d'éducation prioritaire)

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