

Evaluation of the second national **environmental health** action plan

Summary and
recommendations

Collection
Évaluation

Evaluation of the second national environmental health action plan : summary and recommendations

Using both publicly available and semi-public databases, this report provides information on the trends in the quality of living and work environments, the principal targets adopted for the 2nd national environmental health action plan (NEHAP). Nine areas have been analysed: air quality, both indoors and outdoors, water quality ; exposure to noise and to toxic substances; occupational exposure ; environmental black spots; substandard housing; exposure of the more vulnerable groups of population to toxic and reprotoxic substances and to endocrine disruptors.

The Haut Conseil de la santé publique (HCSP, French High Council for public health) also looked into the contribution of the 2nd NEHAP in reducing the social and territorial inequalities in the exposure to the risks caused by such types of pollution.

Given the length of time required to implement the necessary actions defined in the 2nd NEHAP, and then to have valid assessment of their effects, the results of any of those actions on population exposures remain difficult to evaluate.

The conclusions concerning the trends in the environmental health situation over the past ten years vary according to the environmental media that are analysed (outdoor air, indoor air, water, etc.), the type of pollutant studied (particles, pesticides, metals, etc.) or the nuisances considered (substandard housing, noise, etc.).

The reduction in social or territorial inequalities in exposure to pollutants and nuisances and in their associated risks could not be properly analysed due to insufficient and inadequate available data.

The HCSP highlights the flaws in the information systems concerning the quality of the environment and the population exposure. The environmental health information system is scattered and not suited to these types of analysis and to understanding environmental inequalities.

The HCSP puts forward recommendations for precise objectives when preparing the 3rd NEHAP and the regional environmental health action plans (REHAPs) along with recommendations for the governance and complementarity between the national and regional plans.

This document was endorsed by the Executive Committee of the HCSP on 19th October 2013.

EVALUATION OF THE SECOND NATIONAL ENVIRONMENTAL HEALTH ACTION PLAN

SUMMARY AND RECOMMENDATIONS

October 2013

SUMMARY

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THE WORKING GROUP

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Declaration of interests

Members of the Evaluation Committee completed a declaration of interests and no conflict of interest was notified to the HCSP.

Project Organisation

Mandated by the General Health Directorate (request dated 16th November 2012, APPENDIX 1), the HCSP formed an Evaluation Committee to carry out the evaluation of the 2nd NEHAP. This Evaluation Committee met 18 times (28th September, 17th October, 21st November, the 7th and 20th December, 2012 and then the 1st, 14th and 28th February, the 15th, 20th and 22nd March, the 10th and 12th April, 15th May, the 20th and 27th June, 12th July and 6th September, 2013).

The Evaluation Committee met twice with the Consultative Committee (16th January and 9th July, 2013). The list of institutions and organisations which participated in the Consultative Committee is to be found in APPENDIX 2.

The Evaluation Committee met three times (22nd February, 24th April and 28th May, 2013) with the College of Inspectors (Igas, CGEDD and IGAENR) also charged with aspects of the evaluation.

Auditions

The list of the persons auditioned concerning the 2nd NEHAP in general, as well as on the evaluation of certain REHAPs is to be found in APPENDIX 3.

Proofreaders and correctors for the report

The list of proofreaders for this report is to be found in APPENDIX 4: Proofreading the report.

¹ French High Council for public health

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³ *Commission spécialisée "Risques liés à l'environnement"* : Environmental Risks expert Committee

⁴ Resigned from the Evaluation Committee on 1st July 2013.

⁵ *Agence régionale de santé* : Regional Health Authority

INTRODUCTION & RESULTS

Context

The second national environmental health action plan (2nd NEHAP) will terminate at the end of 2013. According to its mission for assessing public health plans and programmes (Public Health Code, Art. L. 1411-4), the Haut Conseil de la santé publique (HCSP, French High Council for public health) is one of the authorities that have been mandated to evaluate this plan, particularly as to whether the objectives have been met.

The General Health Directorate, in its letter dated 16th November 2012 (APPENDIX 1), requested that the HCSP carry out an evaluation of the 2nd NEHAP. This evaluation is to *"assess the extent to which the objectives fixed for the 2nd NEHAP have been achieved, consistent with the work undertaken [by the HCSP] for meeting the environmental health objectives defined in the 2004 Law on Public Health and the second occupational health plan. Reduction of inequalities being a common thread in the plan, [the HCSP] will pay particular attention to assessing the extent to which the actions undertaken have contributed to such a reduction [...]. The evaluation must indicate the key areas for improvement and in particular make proposals for appropriate indicators⁶*. The evaluation covers essentially the period 2008-2012, or an alternative appropriate period, according to the availability of data.

Materials and methods

In accordance with the request, and in collaboration with the College of Inspectors (Igas⁷, CGEDD⁸, IGAENR⁹) also charged with this evaluation specifically as regards the governance and implementation of the Plan, the HCSP focused on two areas: (1) an assessment of the outcomes of the 2nd NEHAP, understood as the ability of the 2nd NEHAP to reduce the exposure of the population to the environmental pollution and other nuisances defined as priorities in drawing up the Plan, on a national scale (or to reverse the trend before the plan if the trend was unfavourable), and (2) an assessment of the decrease in the level of unequal social or geographic exposure to these threats. Although reducing the exposure will necessarily lower the impact on public health, it is unrealistic to imagine that the outcome can be measured over the life of a five-year plan - the timeframe in the evidence of such effects on the public's health is typically measured in many years and more often in several decades. It is also worth bearing in mind that the simple fact of a reduction in exposure does not mean that we should expect a similar reduction in the level of risk (improvements in knowledge on risks, substitution of products that can modify the nature of the risk, etc.).

At the outset, **the evaluability of the 2nd NEHAP** (feasibility and usefulness of the evaluation) was assessed using the HCSP's reference document¹⁰, in order to define the scope of the evaluation and to develop an appropriate methodology. The logic model of the 2nd NEHAP was built and used to highlight the expected outcome in terms of the population exposure, as well as how the plan was supposed to reduce inequalities. This enabled devising the evaluation questions that correlated with the expected outcomes and the implicit theory of action underlying the Plan.

Thus, six evaluation questions were selected:

- 1) In the first ten years of this century, what has been the trend in the emission/exposure to pollutants/nuisances in the following areas: indoors and outdoors air quality; aquatic

⁶ Extract from the General Health Directorate's request dated 16th November, 2012 in appendix 1.

⁷ General Inspectorate of Social Affairs

⁸ Commission for the Environment and Sustainable Development

⁹ General Inspectorate for Administration, Education and Research

¹⁰ Haut Conseil de la santé publique. "Evaluability of health plans and programs", September 2011.

environments and drinking water quality; emissions and exposure to toxic substances in the environment; occupational exposure; noise; exposure of some vulnerable population groups (children, women of child-bearing age) to dangerous toxic and reprotoxic substances and to endocrine disruptors; environmental black spots; substandard housing.

- 2) Have such nuisances or exposure affected differently different population groups or specific geographic areas?
- 3) To what extent have the actions initiated by the 2nd NEHAP contributed in: improving water quality, both drinking water and aquatic environments; reducing exposure to air pollution, both indoors and outdoors; protecting the population from exposure to the pollutants mentioned, especially the more vulnerable population groups?
- 4) To what extent have these actions contributed to a reduction in social or geographic exposure inequality?
- 5) Have direct or indirect impacts, positive or negative, from the actions or group of actions affecting other areas of the Plan been observed?
- 6) Are the actions implemented in the 2nd NEHAP appropriate to the environmental and health issues considered as the objectives for the plan? Are the actions ambitious enough to reduce exposure to such environmental pollutions addressed by the plan and to reduce the environmental inequalities produced by such pollutions?

Apart from the questions, remain the issues of the availability and of the quality of the information systems relevant to this area.

The strategy adopted for the evaluation dealt with a combination of a detailed analysis of the results of a sample of all the actions of the 2nd NEHAP and an overall evaluation of the plan (relevance of the totality of actions, the roll-out of the NEHAP to the regions, the relationship between the NEHAP and the REHAPs and the information systems).

- 28 actions (from the Plan's full list of 58), considered as representative of the actions and expected outcomes of the 2nd NEHAP, were chosen using the preference modelling method (ELECTRE III¹¹). Grouped under 13 headings, these actions cover the full scope of the plan and the environmental health issues and are associated almost entirely with the indicators laid out in the 2004 Law on Public Health;
- 5 regions representative of the diversity of regional issues in the 2nd REHAPs were submitted to an exhaustive analysis concerning: the ability of the 2nd REHAPs to address the specific regional issues and to develop an appropriate monitoring and evaluation mechanism; the synergy between the various national and regional levels for implementing the NEHAP.

An evaluation framework was established on the basis of the evaluation questions in each area. It spells out the judgement criteria, the indicators chosen (intermediary exposure indicators), the targeted levels, the information sources depending on the area, and the information collection strategy.

Data collection was centred around: research of the available publications (Plan, follow-up reports, thematic reports, surveys and research papers in the concerned areas, published statistics, documents concerning experience in other countries); questioning databases managers; semi-structured qualitative interviews; hearings of those involved in drawing up and implementing the Plan and those managing it in the field.

¹¹ Elimination et choix traduisant la réalité (The truth by elimination and choice); a method of partial preference aggregation, using an appropriate software suite developed by the Lamsade laboratory at the University of Paris-Dauphine.

Maystre L.Y., Pictet J., Simos J.: Méthodes multicritères ELECTRE. (Multi-criteria methods, ELECTRE) Description, practical advice and case studies in environmental management. Presses Polytechniques et Universitaires Romandes, Lausanne, 1994.

Analysing the information was carried out in two stages: (a) the findings concerning the trends in the population exposure to the various environmental pollutants concerned by this evaluation (trends in the quality of different environmental media) and the state of any resulting environmental inequalities; (b) an interpretation of these findings in order to understand the contribution of the plan's actions to the state of each area examined, to the possible direct and indirect impacts on other areas of the plan and an assessment of the relevance of those actions to achieve the expected outcomes. A lack of suitable data, the shortage of time and the absence of a suitably long perspective meant that this part of the evaluation effort was not fully completed. However, a critical analysis of the quality of the relevant information systems was carried out.

The governance of the HCSP's evaluation was overseen by the Evaluation Committee comprising scientific and professional experts from the HCSP's various expert committees and external personalities. A Consultative Committee open to the various stakeholders in the 2nd NEHAP was set up and consulted on two occasions, first to seek its advice concerning the methodology and the evaluation questions, and secondly to share the initial results.

The HCSP coordinated this work with the College of Inspectors (Igas, CGEDD, IGAENR) involved in separate aspects of the evaluation.

Using the HCSP's reference documents concerning assessing health programmes¹² and taking the best practice in other countries, the approach taken has ensured that the 2nd NEHAP evaluation should be particularly useful in guiding public actions. This is all the more the case since the preparation of the 3rd NEHAP will take place after the publication of the assessment of this 2nd NEHAP and will be able to take its findings and recommendations into account. Furthermore the results will be communicated to all the stakeholders such that they can be timely used both at national and regional level. As the 16th November request from the General health directorate states "the challenges, the scale of the resources implemented and the political will to continue the actions in this area fully justify an evaluation of the Plan before the preparatory work on the next national environmental health action plan (3rd NEHAP) gets under way". Environmental health issues that inspired the 2nd NEHAP are significant, particularly when expressed in terms of mortality, morbidity, life expectancy reduction and their direct and indirect costs. Taking a strictly financial view, this plan is part of the strategic plans incorporated in the 2004 Law on Public Health and it has been allocated a budget of some 500 million euros.

Main results

1/ Design and evaluability of the 2nd NEHAP

The fact that two national environmental health action plans have been implemented, including the trends observed from one to the other, illustrates the maturing nature of the process. Over the course of the past ten years, considerable advances have been made concerning the link between environment and health. Nevertheless, there is still ample scope for further progress.

Overall, the framework of the 2nd NEHAP can be considered significantly better and more profound than the first exercise of this nature. However, one still has the view that it is more a 'global plan' with a tendency to broach all the subjects with no real prioritisation or structure. In particular, the

¹² HCSP's reference documents:

- Haut Conseil de la santé publique. Evaluability of health plans and programs, September 2011.
- "Éléments pour une stratégie nationale de santé et pour une nouvelle loi de santé publique (Ideas for a national health strategy and a new law on public health)", note from the *Haut Conseil de la santé publique* addressed to the *Comité des sages* on the 17th May, 2013 (unpublished document).
- General Health Directorate. Recommendations for preparing, monitoring and assessing national health plans. December 2009. http://www.sante.gouv.fr/IMG/pdf/recommandation_V_FINALE.pdf
- Perret B. L'évaluation des politiques publiques (Evaluation of public policies), Collection repères, La Découverte, 2008.

actions and priorities are not based on what would be called evidence-based information. But to the extent that it has enabled collaboration, coordination and the commitment of a strong panel of stakeholders, it is reasonable to consider the manner of working of the 2nd NEHAP (and the 2nd REHAPs) as 'good practice'. The exercise has introduced new ideas and working practices as well as a more pragmatic and pertinent approach to environmental health issues, where the key health determinants tend to overlap and where inter- and multi-sectorial actions are the key to having a certain degree of success. Certain issues tackled in the 2nd NEHAP, such as the reduction in environmental inequalities, have been hardly touched on, or even ignored, before. This 'angle of attack' is therefore a welcomed innovation.

There has clearly been a strong desire to have a valid evaluation, and this should be surely acknowledged, but achieving this has been thwarted by the intrinsic weaknesses of the plan.

1. The plan's information system, despite certain improvements since the 1st NEHAP, must be considered as mediocre; data sourcing has been conceived to monitor the implementation of the specific actions which are today recorded in a progress report. However, there is no predetermined protocol for collecting information concerning the results/outcomes of those actions - be that in the area of public health, exposure to risks or reduction of inequalities - and none of this appears in the progress report. It was only during this evaluation that information concerning the effects or outcomes of the plan was collected in a precise and systematic fashion.
2. Qualitatively, in terms of the process, the monitoring of 2nd NEHAP has been good. A group for monitoring the plan's implementation, responsible for overseeing the actions, was set up and has met regularly. This environmental health group (EHG), the steering committee, is itself divided into three entities corresponding to three separate themes: Working group 1 (WG1 ; exposures responsible for pathologies with significant impact on health), WG2 (environmental inequalities), WG3 (emerging risks). An annual review of the indicators concerning implementation or process is carried out by this group. However, this follow-up does not include any of the actions initiated by the REHAPs, and it will be necessary to find a follow-up method that enables these to be incorporated.
As mentioned above, the follow-up provides information, via a progress report, concerning the degree of implementation and on the means employed.
However, no information is provided concerning the expenditure committed neither in the progress report nor in the annual reviews by the EHG. Nor is any information provided about the populations concerned, nor about the opinions of those involved and the populations concerned on the subject of the actions taken or planned.

Positive points and limitations are also to be observed in the structuring of the 2nd NEHAP.

1. A considerable effort concerning the establishment of an initial state of the situation is to be noticed as regards:
 - the situation of public health relative to the questions being handled by the plan (incidence, prevalence, consequences) even though this could have been more precise;
 - the population concerned (always the general population except when the emphasis was on the more vulnerable groups as a result of their specificity - women of child-bearing age, children, people suffering from pre-existing conditions, etc.),
 - the health determinants that influence health status,
 - the potential stakeholders to solicit, the partners already implicated, the practices/organisations concerned by the plan and resources to be committed.However, the analysis of the health determinants and the levers to use is decidedly incomplete. Moreover, this initial picture does not address the issue of inequalities.
2. The objectives set out are consistent with the initial state of affairs presented but are in no way accurate (in terms of time-frame and scope of expected results) and in almost no case

are they quantified. There is also frequent confusion between overall objectives, intermediate objectives, strategies and actions¹³.

The general objectives often correspond to the thematic "sheets" containing the actions, and the specific objectives to the "actions", but are extremely heterogeneous depending on the sheets and actions concerned. The usual way in which objectives are formulated is in terms of the actions or activities to be put in place rather than the expected results. Sometimes the expected results are enunciated in the actions.

In general, there is a complete lack of any logic model for many of the actions (no consistency or clarity between the various objectives, and the assumptions on which the various levels of objective are based are not explicit, etc.), something which is however essential for any assessment of public policies. The Evaluation Committee tried to reconstitute *a posteriori* such a logic model.

Concerning the indicators, several limitations are worth noting. The proportion of specific objectives which have indicators assigned is very low. There is a general lack of indicators and, where they exist, confusion frequently exists between output/outcome indicators and process indicators (also known as input indicators).

Seven out of 16 "sheets" have one or more general outcome indicators, and 6 out of 16 have overall process/input indicators. Eight actions have no indicator. Nine actions (identified as being specific objectives) have only a single result indicator.

Most of the indicators defined did not have any measurement that could serve as a baseline point prior to implementing the 2nd NEHAP, i.e. in 2009 or a year close to that.

The majority of the *monitoring* indicators (the *process or input* indicators) are measurable. However, there is no reliable information system for measuring the plan's expected *output or outcomes* (output/outcomes indicators).

In the 2004 Law on Public Health, there are a certain number of 'environmental' indicators. Some have been incorporated into the 2nd NEHAP, but they represent less than 10% of the overall indicators for the plan (only 7-8 actions have indicators from the 2004 Law on public health; moreover, the actions within the 2nd NEHAP which are focused on reducing noise levels have no indicators, whereas the 2004 Law on Public Health has an indicator in this area).

3. Evaluating the plan was not sufficiently foreseen at the outset, something which does not improve the conditions for making an evaluation. If an evaluation was taken into account at the planning stage, the development of the plan would include the definition of the expected outcomes (the public health situation, the environmental exposure, the reduction in inequalities that the 2nd NEHAP is supposed to achieve), and would then develop strategies and actions designed to achieve those objectives.

2/ Environmental health information systems and access to the information therein

There has been both a qualitative and a quantitative improvement in the area of environmental health information systems. There is more information available in 2013 concerning the state of the various natural environments and the population exposure than there was for the first NEHAP, and the data are largely of a higher quality. Nevertheless, certain limitations remain (such as a lack of information disaggregated by space and over time, problems of information quality, update frequency, absence of data concerning certain pollutants or in certain environmental media, links between regional and national databases, etc.).

Within the framework of this exercise, overall access to the existing information was satisfactory. However, certain information could not be obtained, and where this was the case a note is included

¹³ These concepts are defined in: Haut Conseil de la santé publique. Evaluability of health plans and programs, September 2011.

in the text. The reasons are very varied. The main one was the response time for extracting and manipulating the data (the databases are not designed nor built for this purpose); other causes were the absence of appropriate data, and sometimes, the lack of reactivity to answer from the contacted organisation or institution that owns the data. Thus several situations co-exist. This subject is broached more fully in the following point concerning meeting the NEHAP's objectives. Finally, when the information did exist, it was often in the form of a progress report, and few trends over time were directly accessible, which made it difficult to observe trends.

Generally speaking, there is a scattering of the information and an absence of any centralising body for such data, which significantly hinders using it as part of the results indicators planned for the 2nd NEHAP. It is worth pointing out that the quality of information is here analysed by the HCSP from the viewpoint of the ability of the system to produce information which could be usable in guiding, monitoring and evaluating public actions. From this point of view, the usefulness of the data collected is in no way totally assured. One cannot avoid the conclusion that, in relative terms, too many resources, both financial and human, are devoted to data collection, and too few to their interpretation for help in understanding the phenomena, and for their use in evaluating actions and guiding the actors involved.

In particular, very few links are made between the information concerning environmental impregnation by, or exposure to, substances and the geographic and socio-economic data available. It is thus impossible to describe environmental inequalities. Finally, the transparency of the institutions that hold the data needs to be improved (who holds what information?).

Public access to the information is not guaranteed in all areas. The subject is one of major importance. Although one can perfectly well understand that certain information is very sensitive such that making it publicly available needs to be handled with care (restrictions about the geographic scope concerned, respecting confidential data, warnings about interpretation, etc.), but this should only be the exceptions. Both the spirit and the letter of Directive 2003/4/CE concerning public access to environmental information (from the Aarhus Convention) are designed to facilitate the task of those wishing to use such information to compare the quality of the environment in which they are interested with some reference data (regulatory limits, the situation elsewhere or before, etc.). Implicating civil society is encouraged as this is seen as a concrete sign of progress. Today, one can take this logic even further. The quantity of relevant information available, be that environmental, socio-economic, demographic or public health-related, is such that it is now unrealistic to expect any public authority, however motivated, to be able to distil all the essence from it. Making such data public can give almost unlimited scope for society to analyse, explain and publicise the situation. Of course, this represents a considerable challenge for democracy, as anybody armed with the relevant information can call to order the public authority deemed to be responsible for an unsatisfactory situation. Those in charge of preparing the 3rd NEHAP will need to recommend how to respond to this question in the light of the experience of the HCSP's evaluation of the 2nd NEHAP, which has highlighted the sometimes considerable difficulty in obtaining information and the poor quality of the existing information systems in this area.

3/ Meeting the objectives of the 2nd NEHAP: reduction of environmental exposure and reduction of environmental inequalities

This evaluation has focussed principally on environmental exposure and how it is spread. The two main evaluation questions concern the evolution of the environmental exposure of the populations concerned by the plan, on a national scale, and the trends in geographic and/or social inequalities in exposure to these environmental nuisances or risks. The analysis also looked at the quality of the information systems in the area of environmental health in order to help monitoring and evaluating the 2nd NEHAP.

The major definitions adopted for an appreciation of the main evaluation questions are given in APPENDIX 5.

The principal results are presented in the following table.

Table 1: Assessment of the level of achievement of the 2nd NEHAP's objectives in terms of reduction of environmental exposure and inequalities to such exposure

Area examined	2 nd NEHAP actions covered	Trends in exposure	Trends in inequalities	Information systems quality
Ambient outdoor air	Sheet 1, actions 1 to 4, sheet 2, actions 5 and 6, sheet 5, actions 13 to 16 Actions covered by the evaluation: 1, 2, 6 and 14	No clear trend observed, stability in urban ambient concentrations despite a decrease in emissions on a national scale	Overall conclusion impossible given the state of available information	Information available, collected, accessible and usable, certain limitations (especially the range of pollutants covered) (NB: data concerning ambient concentrations processed by the HCSP)
Indoor air	Sheet 3, actions 7 to 10, sheet 6, action 19 and sheet 12, action 40 Actions covered by the evaluation: 7, 8, 9, 10, 19, 40	No conclusion possible, impossible to decide on trends in the absence of historical data (except for CO and radon: stable)	No conclusion possible with the current state of data, impossible to decide on trends	Data collection organised, but problems in disaggregating the information territorially and over time and in terms of quality (wide range of pollutants covered but still limited), and also in accessibility and usability.
Pollen	Sheet 7, action 22	General worsening trend	No conclusion possible with the current state of data, impossible to decide on trends Environmental inequality unavoidable depending on the region and the species concerned	Information available, collected, accessible and usable, with certain limitations concerning the spatial coverage
Noise	Sheet 11, actions 37 to 39 Actions covered by the evaluation: 37 and 39	No conclusion possible with the current state of information, which is principally at a local level, impossible to decide on a trend	No conclusion possible with the current state of data, impossible to decide on trends	Data collection organised, but failure to systematically meet obligations to publish noise maps, in spatial resolution and over time, in quality, and particularly in public access and usability
Drinking water	Sheet 2, actions 5 to 6, sheet 9, action 28 to 31 and sheet 13, action 47 Actions covered by the evaluation: 5, 6, 28, 29, 47	General improving trend	No conclusion possible with the current state of data, impossible to decide on trends	Information available, collected, accessible and usable (but not publicly accessible), possibly certain limitations (NB: data concerning emissions structured by the HCSP)

Aquatic environment	Sheet 2, actions 5 to 6, sheet 9, action 28 to 31 and sheet 13, action 47 Actions covered by the evaluation: 5, 6, 28, 29, 47	No conclusion possible, impossible to decide on trends	No conclusion possible, impossible to decide on trends	Data collection organised, but problems in disaggregating the information territorially and over time and in terms of quality, and also in accessibility and usability. NB: the HCSP only gained access to the data very late (difficulties in identifying the owner or the manager of the appropriate databases)
Occupational exposure	Sheet 4, actions 11 and 12 Actions covered by the evaluation: 11 and 12	Disparate trends (depending on the nuisance or the population exposed)	Significant inequalities depending on the sector or the profession, no conclusion possible with the current state of data, impossible to decide on trends with current state of data	Data collection organised, but problems in disaggregating the information territorially and over time and in terms of quality (low number of systematic surveys concerning the prevalence of exposure), and also in accessibility and usability.
Substandard housing	Sheet 8, actions 25 to 27 Actions covered by the evaluation: action 25	Difficult to have a general trend for such a heterogeneous subject, but clear improvement in exposure to lead at home.	No conclusion possible with the current state of data, impossible to decide on trends	Collection of data performed but insufficiently organised, and problems in disaggregating the information territorially and over time and in terms of quality, and also in accessibility and usability.
Environmental black spots	Sheet 10, actions 32 to 36 Actions covered by the evaluation: 32, 34, 35	No conclusion possible with the current state of data, impossible to decide on trends, especially as the definition of 'black spot' is variable NB: reduction of atmospheric pollutant emissions at a national level	No conclusion possible with the current state of data, impossible to decide on trends	No existing information or information very partial, no organised collection; some information available from surveys
Toxic substances	Sheet 6, actions 17, 18, 19, 20 Actions covered by the evaluation: 17, 18, 20	No conclusion possible with the current state of data, impossible to decide on trends	No conclusion possible with the current state of data, impossible to decide on trends	No existing information or information very partial, no organised collection; some information available from surveys

In general, for those areas for which information is available, it is difficult to establish meaningful trends from the observations, mainly due to the gaps in the current information systems concerning the quality of the particular environmental media concerned and any associated exposures.

4/ Relationship with the objectives contained in the 2004 Law on Public Health

The 2004 Law on Public Health set out certain 'environmental' and 'occupational' objectives as guidelines for driving public health actions and the results to be obtained in reducing environmental pollution and occupational exposure. The General health directorate requested the HCSP to "assess the extent to which the objectives fixed for the 2nd NEHAP have been achieved, consistent with the work [by the HCSP] undertaken for meeting the health and environmental objectives in the 2004 Law on Public Health (...)".

These objectives are briefly analyzed to see to what extent they have been achieved at the time of the 2nd NEHAP.

Occupational health indicators from the 2004 Law on Public Health (nos. 14 to17)

014 Reduce the number of work-related fatal road accidents (not assessed by the HCSP)

015 Reduce by 20% the number of workers who spend more than 20 hours a week in physically constrained positions (concerning their joints) compared with the estimated prevalence in the Sumer 2003 survey

Very limited achievement. The reduction between Sumer 1994 or 2003 and 2010 was only of 5% in the proportion of people for whom the occupational doctor had declared being submitted to at least one intense physically constrained activity)

016 Reduce the number of workers who experience noise levels in excess of 85 dB for more than 20 hours a week without any form of hearing protection compared with the estimated prevalence in the Sumer 2003 survey

Not achieved. An increase between Sumer 1994, 2003 and 2010 was observed in the proportion of people for whom the occupational doctor had declared being exposed to noise levels greater than 85 dB)

017 Reduce the effects of carcinogenic substances (cat. 1 and 2) on the health of workers by reducing the levels of exposure.

In the absence of a quantifiable objective, it is not possible to establish the reduction observed between 2003 and 2010 in the SUMER surveys concerning the proportion of people for whom the occupational doctor had declared having been exposed to at least one CMR substance

"Environmental health" indicators from the 2004 Law on Public Health (nos. 18 to 25)

018 Housing: reduce by 50% the number of children with blood lead level > 100 µg/l; move from 2% in 1996 to 1% in 2008

Achieved. The reduction reported by the Saturn'inf survey run by the InVS is much greater.

019 Public buildings: reduce the exposure to radon in all teaching establishments and all healthcare and social services buildings to below 400 Bq/m³ (the EU guidance value)

Not achieved. In 2011-2012 more than 20% of school buildings had been measured with radon concentrations greater than 400 Bq/m³.

020 Reduce the population's exposure to atmospheric pollutants: meet the 2010 European limits (for pollutants regulated at the European level, NO_x, ozone and particulates in particular) in urban areas (- 20% compared with 2002)

Not achieved. For NO₂, the level of air emissions has remained stable over the period 2000-2010, with even an increase in areas of dense traffic. For PM₁₀, PM_{2.5} and ozone there is also no improvement, but rather a stabilisation. Proceedings are currently ongoing against France for non-respect of the EU directive on air quality regarding PM₁₀ particles; further proceedings could well be undertaken shortly concerning NO₂.

021 Reduce the population's exposure to atmospheric pollutants: reduce emissions into the atmosphere: - 40% for volatile organic compounds (of which benzene) between 2002 and 2010; reduce by a factor of ten the emissions of dioxins from incineration and the metallurgical industry between 1997 and 2008; - 50% for toxic metals between 2000 and 2008.

Almost achieved. The objective has been met for most of the pollutants concerned (non-methane volatile organic compounds, arsenic, mercury, cadmium, lead and chromium). It is more difficult to give an opinion on the reduction of dioxins between 1997 and 2008 because emission data are not available for the period 1995 to 2000 (reduction of emissions by a factor of 2.7 in 2008 compared with 2000, and by a factor of 11.5 compared with 1995).

022 Quality of drinking water: by 2008 cut by half the percentage of the population connected to public water supplies where the quality limits for microbiological parameters and pesticides are not

achieved.

Partially achieved. Only a marginal reduction has been observed in the percentage of the population connected to public water supplies not compliant with microbiological parameters. A halving (at least) of the percentage of the population connected to public water supplies not compliant for pesticides has been achieved for five out of the eight pesticides investigated by the HCSP.

023 Housing: reduce the mortality rate from carbon monoxide (CO) poisoning by 30%

Not achieved. The mortality rate from carbon monoxide poisoning has remained stable during the first ten years of the 21st century. Annually, between 900 and 1,200 cases of such poisoning are reported, with on average some 100 fatalities recorded.

024 Noise: reduce noise levels considered as noise pollution from whatever source (traffic, neighbours, very loud music) compared with the levels measured in 2002 by various entities (Ecology Ministry, IFSTTAR)

Given the level of the existing information systems and the absence of a quantifiable objective, it is impossible to say whether this objective has been met. This aspect is discussed in detail in the thematic section on noise.

025 Quality of the aquatic environment: reduce by 50% the incidence of Legionnaires' disease.

The Evaluation Committee has not studied the Legionnaires' disease situation and therefore cannot give an opinion.

5/ Contribution of the 2nd NEHAP to the observed trends

The HCSP is aware that it has not been able, due to time constraints, to fully complete the task which required analysing the degree to which the actions in the plan have contributed to the trends observed in all the areas studied. Understanding what has been the 2nd NEHAP's real contribution to the trends observed in environments studied is a fairly complex issue, and this for several reasons.

First, when the assessment tasks were split among the various authorities, it was the College of Inspectors that was charged with analysing the extent to which the "actions" of the 2nd NEHAP had been implemented. At the time when the final conclusions from the HCSP were being drafted, the findings of these inspectorates were not known. It is therefore important to refer to the conclusions from these other authorities (CGEDD, Igas, and IGAENR) to have their view of the 2nd NEHAP.

In addition, public actions in the environmental media concerned by the plan often take time to have effect. In the space of just four years, there is a real difficulty in being able to perceive the effects of the actions undertaken. The time required to measure trends is significant since the situation is beset by numerous delays (decisional, technical, sociological and those inherent in the diffusion process of pollutants and other nuisances, etc.). It would appear more reasonable to attribute the trends observed in 2013 (basing these on previous data, the most recent being from 2011-2012) to the effects of the previous plan and/or the general economic situation (for example the changes in the national industrial landscape) rather than of the current plan, hence the importance of assessing such plans over the long term. However, a large part of the actions described in the 2nd NEHAP were already set in motion during the 1st NEHAP or, at least, the objectives in the 2nd NEHAP had already been similarly laid out in the 1st NEHAP (see APPENDIX 6).

Moreover, a significant number of strategies and actions contained in the 2nd NEHAP need to work within the European context, hence the importance of understanding the split of responsibilities between the European Union and the national and regional authorities. The NEHAPs could serve as a catalyst in these areas with the European Union.

Many of the determining factors in a large section of the actions in the 2nd NEHAP go well beyond the confines of the plan and the actors involved in it. Many of the planned actions can only be effected with the cooperation of other sectors, hence the importance of coordination with all the other actors, institutions and organisations.

Besides the other actions of the 2nd NEHAP themselves, the effects of the majority of the actions are also dependent on a number of external factors. They may depend on general economic or social determinants, such as the state of the economy and/or climatic conditions during the periods concerned (for atmospheric pollution for example).

Finally, it needs to be said that, in this evaluation, it has not been possible to evaluate any impact from the 2nd NEHAP, positive or negative, on other areas of the plan and/or other public policies or on any possible longer-term impacts that the plan might have had.

6/ Results from an assessment of five regional environmental health action plans (REHAPs)

Five regions with differing profiles (Bretagne, French Guiana, Ile-de-France, Languedoc-Roussillon and Nord-Pas-de-Calais) were chosen with regard to examining their respective regional environmental health action plans (REHAPs): scope of the programmes, strategy for reducing inequalities, means for integrating with the national plan, information systems and monitoring methods.

The investigated REHAPs are largely based on specific regional issues even if the objectives from the 2nd NEHAP have clearly influenced them too. These programmes have been built after wide-ranging local discussions, a situation which has meant excellent collaboration between the local stakeholders (including civil society), and considerable synergy in the actions undertaken. This was done to ensure a level of coherence and transparency between this and other programmes operating in similar areas. However, environmental health does not occupy a prominent position in the public health planning tools (regional health project, local programmes, local health contracts, etc.) even though links do exist between the various regional health schemes. The main reasons for this are the lack of perception of the challenges facing environmental health and the fact that these local programmes have been designed and implemented over different time-frames.

The fight against environmental health inequalities is clearly stated as a priority, but the regions struggle to develop an implementation strategy. This is largely due to a lack of a shared concept of inequality, and of any formalised methods with appropriate information available.

Each region has drawn up its own plan without any involvement or help at a national level. Without any guidance and with no common framework, working in isolation has meant that the implementation of the programmes has been uneven and the actions heterogeneous, with no real information systems available to help. Data and information gathered in the regions are not always compatible from one region to another and it would seem very difficult to use the regional results at a national level.

In general terms, the regional stakeholders lacked a framework encapsulating the concept and methodology, and interchange between regions would have been facilitated by advice and guidance and other practical support at a national level. In the same way, the regions would have liked to have had much greater visibility of the available funding and the financial support from the regional health authorities (*Agence Régionale de santé, ARS*).

In terms of governance, each region formed an Environmental Health Regional Group and a steering committee. In most cases, the REHAP was jointly run by the regional health authority and the regional service for the environment, facilities and housing (*Direction régionale de l'environnement, de l'aménagement et du logement, DREAL*). However, the involvement of other nationally-organised institutions was often limited. The Regional Assemblies were very often the signatories of the REHAPs whereas the departmental and local authorities were not heavily involved, except in certain regional capitals.

The REHAPs nevertheless created a certain local dynamic and galvanised the local civil society representatives.

RECOMMENDATIONS

Recommendations for improving the future NEHAP and REHAPs are presented below. They result from the analysis of trends in the environmental factors targeted by the 2nd NEHAP and their unequal social and environmental effects observed during the past decade.

1/ Concerning the design, implementation and evaluation of the future 3rd NEHAP

Concerning the design and scope of the future NEHAP (recommendations No. 1)

- Structure the design of the plan around a logic model and an initial set of data which needs to be justified by supporting documentation giving factual and verifiable information concerning the source of pollutants and their impact on health and on the environment. The logic model should explain the theory of the action to be implemented and describe the totality of coherent measures to achieve one or more explicit objectives, the allocation of the resources necessary for implementation, and finally the public health objectives to which the actions contribute. This will enable carrying out an evaluation ex-ante of the impact of the planned actions on the objectives sought (recommendation no. 1-1);
- Integrate additional stakeholders (in particular those ministries least implicated to date in the NEHAP: Research, Agriculture, Labour, Housing, etc.) who exercise considerable discretion over certain major determinants, particularly industrial and socio-economic, since the planned actions of the NEHAP go far beyond just the boundaries of the plan and the stakeholders who are currently involved (recommendation no. 1-2);
- Carry out a survey of best practices in environmental health from other countries to take advantage of their experiences (either before designing the 3rd NEHAP, or during its implementation)(recommendation no. 1-3);
- Take account of the needs and expectations expressed by the regions by involving representatives from the REHAPs in the design of the 3rd NEHAP (recommendation no. 1-4);
- Clarify the existing relationships between the various national plans which also have consequences in the environmental health arena (energy-climate, transport, housing, water, etc.) (recommendation no. 1-5); in particular, the logic model of the various plans should enable understanding how best to achieve common or interdependent objectives and to avoid inconsistencies and redundancy;
- Widen the scope of the NEHAP to include the potential impact on environmental health of other areas such as food, and create the links to the public health plans concerning those areas where they exist (recommendation no. 1-6);
- Strengthen the synergy with the national and European levels when building the 3rd NEHAP, by identifying those subjects for which, although appearing to be priority items, the levers to pull exist at the EU level, and conversely use certain national topics to encourage the European Union to act (recommendation no. 1-7);
- Take account of the positive, negative and/or long-term impact (direct and indirect) of the planned actions on population exposure and on the unequal social and territorial distribution of such exposure, including the cases where there is a change or substitution of the pollutant or nuisance (recommendation no. 1-8).

Concerning the NEHAP's monitoring and evaluation (recommendations no. 2)

- Constitute a team to drive the 3rd NEHAP which includes regional representatives and which should be charged with centralising the information and know-how required for building the plan and for its subsequent monitoring and evaluation (recommendation no. 2-1); this

recommendation goes hand in hand with recommendation 5-4 concerning national involvement in the REHAPs;

- Give the 3rd NEHAP precise and quantified objectives, showing the results/outcomes to be achieved in a given time-frame, and a small number of relevant indicators that can be updated from existing and usable databases, and that are 'SMART' i.e. specific¹⁴, measurable¹⁵, achievable¹⁶, realistic and time-bound¹⁷ - and therefore capable of being evaluated (recommendation no. 2-2);
- Provide the 3rd NEHAP with both process/input indicators and outcome indicators for each general and intermediate objective¹⁸, and for each action (recommendation no. 2-3);
- Create a limited set of indicators for the 3rd NEHAP, suitable for monitoring implementation progress and checking the expected outcomes on the various environmental media and on the consequences for public health, by taking as examples the evaluation indicators used by the HCSP (such as the 'environment' indicators from the 2004 Law on Public Health) in those areas that will be retained in the next NEHAP (see APPENDIX 7) (recommendation no. 2-4);
- Centralise and coordinate information gathering that will be able to feed these indicators (for example using the NEHAP steering group) and carry out this data collection on a regular basis (including collecting information on public perceptions and the trends in their knowledge about environmental health) (recommendation no. 2-5);
- Develop a monitoring tool common to both the NEHAP and the REHAPs (recommendation no. 2-6). For example, the reporting system developed in Bretagne¹⁹ could be extended to other regions and thereby enable consolidating regional indicators at the national level. This recommendation goes together with those concerning a better coordination between national and regional levels (recommendation 5), and in particular concerns the setting up of common indicators and sharing data or sources of information. In this way, updating a common list of indicators at both national and regional levels would facilitate the regional/national cooperation and allow other indicators only to be fed into regional systems based on their specific regional attributes.

Concerning environmental health information systems (recommendations no. 3)

- Build and maintain information systems capable of showing the evolution in exposure for the general population, or for particular (population) groups, and in environmental inequalities, using the appropriate level of detail regarding time and geographic scale according to the pollutant or nuisance considered (recommendation 3-1);
- Increase effective access to public environmental information. As far as possible, this should be in a form that is usable such that it can be matched with benchmark information, which should be provided as often as possible, so that such information can be interpreted with regard to any potential associated risks (recommendation 3-2);
- Whenever possible and appropriate, include a socio-economic dimension in the environmental health indicators allowing, in particular, geo-localisation of the areas concerned (recommendation 3-3);

¹⁴ Not general and vague, but practical and concrete.

¹⁵ Answering the questions: How much? How many? To what extent?

¹⁶ Which means one has the necessary resources - material, financial and human - to achieve the objective.

¹⁷ They must be given a time frame, a starting date, a target completion date, and maybe some intermediate target dates.

¹⁸ These indicators must be built following the sequence of events and show the expected short, medium and long term effects.

¹⁹ http://www.prse-bretagne.fr/page_attachments/0000/0450/120604_TBSE_Vd_f.pdf

- Improve the knowledge and understanding of public behaviour in the area of environmental health re-establishing, for example, the environmental health barometer (recommendation 3-4);
- Ensure that information from environmental databases is available and easy to share by the authorities and research teams. This approach is to be preferred to the idea of creating additional information systems which risk being costly, inflexible (for example if they are built for regulatory reporting - French or European) and not easily accessible. Thus, innovation and creativity should be encouraged in order to assemble, cross-reference, visualise and share large quantities of data and information (recommendation 3-5).

Concerning the strategies to be adopted for tackling the environmental inequalities that affect public health (recommendations no. 4)

- Develop a common approach to environmental health inequalities through training and seminars, especially for those charged with running the REHAPs (recommendation no. 4-1);
- Wherever appropriate in the NEHAP and REHAPs, make systematic use of indicators that show the existence of environmental inequalities and that can trace the effort expended for reducing them (recommendation no. 4-2); this recommendation is to be taken together with recommendation 3-5 concerning geo-localisation of environmental information;
- Develop a tool in order to capitalise knowledge, experiences and innovations in the field of environmental health inequalities (recommendation no. 4-3);
- Undertake systematic impacts studies^{20,21} (here meaning all the indirect effects) of public policies and actions that are designed to tackle the socio-territorial unequal exposure to pollution of all kinds when appropriate (urban development, policies concerning industry, housing, transport, etc.) (recommendation no. 4-4).

Concerning the desired synergy between national and regional levels and between regions (recommendations no. 5)

- Clarify the coordination between the NEHAP and the REHAPs in favour of a shared understanding by all the stakeholders of which actions should be driven by the regions and those that should be promoted at a national level (recommendation no. 5-1);
- Organise the coordination between the REHAPs and other local regional adjacent programmes, in particular the Regional Program on occupational health (PRST) and the regional health projects and their downstream actions (prevention schemes, local health programmes, local health contracts) so as to improve consistency and a better appreciation of environmental health challenges (recommendation no. 5-2);
- Give the regions wide-ranging discretion in how to build their REHAPs (recommendation no. 5-3); this recommendation in no way invalidates recommendation 2-6 the objective of which is the creation of a tracking tool common to both the NEHAP and the REHAPs;
- Provide support to the REHAPs in the form of advice and guidance on the methodology on the following three subjects: design and construction of the programme, creation of

²⁰ Institutional act no. 2009-403 dated 15th April 2009 - Article 8; Link consulted 9th September 2013: <http://www.legifrance.gouv.fr/affichTexteArticle.do?idArticle=JORFARTI000020521885&cidTexte=JORFTEXT000020521873&dateTexte=29990101&categorieLien=id>

²¹ Prime Ministerial circular dated 15th April 2009 concerning the implementation of a constitutional revision (legislative procedure); NOR: PRMX0908734, Paris, 15th April 2009; Link consulted 9th September 2013: <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000020522151>

indicators, evaluation. This function could be conferred on the french Agency for food, environmental and occupational health & safety (*Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail, ANSES*, in collaboration with the french Institute for industrial environment and risks (*Institut national de l'environnement industriel et des risques, Ineris*) and the REHAPs steering groups. The regions could then identify and select the local stakeholders to be involved (university teams, survey companies, etc.) in field assistance following the common reference guidelines (recommendation no. 5-4).

- Involve regional representatives in the steering groups for managing and monitoring the 3rd NEHAP (link to recommendation 3-5).
- Strengthen the national direction of the REHAPs by creating a dedicated team with, in addition to developing reference documents on methodology under recommendation 5-3, the following objectives:
 - Maintaining the relationships between the REHAPs and the NEHAP;
 - Organising regular inter-regional meetings, with national representation, with a view to sharing experiences and ensuring a link between the NEHAP's and REHAPs' steering groups.
 - Develop a common taxonomy and methodological tools to identify and understand environmental inequalities and to implement the appropriate actions; Describe the environmental health status in the regions; Develop and feed an indicator monitoring system;
 - Develop a shared tool for creating an experience asset base;
 - Organise the monitoring of expenditure by the two ministries involved in financing the actions in the REHAPs.

Concerning the evaluation of the NEHAP (recommendations no. 6)

- Anticipate the 3rd NEHAP's evaluation when creating the plan (recommendation no. 6-1); this evaluation, which is distinct from monitoring²² the Plan currently in operation, must be carried out by an independent external body. This body will use inter-professional skills of experts having had no formal involvement in either the creation or the monitoring of the Plan, and according to established international standards for evaluating public policy implementation, and taking into account the socio-economic dimension of the impact of the Plan and the level of local implementation (REHAP). Given the importance for guiding public policy decisions and understanding their relevance and their effectiveness, it is essential that the evaluation be of the highest quality which means that appropriate resources must be allocated to the authority charged with leading the evaluation.
- Evaluate the 3rd NEHAP's outcome²³ and if possible its impacts²⁴ and analyse the extent to which the plan's intended actions have contributed to the observed trends in all the

²² Monitoring the implementation of planned actions or measures in a plan is the domain of standard tools put in place by the administration; this activity drives the project and can even re-direct it. It is not an evaluation. An evaluation is based around measuring the effects of the plan's actions and if possible understanding the impact the plan has had on the objectives for public health as defined by the law. This approach can be taken in tandem with other evaluation means by determining more directly the effectiveness of the actions carried out, notably at a regional level, depending on the specific context.

²³ The expected outcome from the plan, according to the logic model that led to the choice of the various actions and sub-actions; depending on the specific situation, these outcome can be expressed in terms of the modifications observed in the quality of the environment studied or in the state of health of the population(s) concerned.

areas under study. To achieve this, the Plan must ensure that data exist to enable such an assessment to be carried out (recommendation no. 6-2);

- Take into account the results from the REHAPs evaluations that have been carried out during the development of the 3rd NEHAP (recommendation no. 6-3).

2/ Concerning the NEHAP's issues

Concerning the issues to be dealt with in the 3rd NEHAP (recommendations no.7)

- Take into consideration in the 3rd NEHAP issues which were not part of the 2nd NEHAP, such as food (from the point of view of exposure through this mechanism) (recommendation no. 7-1);
- Ensure that the 3rd NEHAP has a strong focus on occupational health, justified by the need for consistency in public policies concerning the fight against harmful exposure to pollutants and other aggressions, the protection of vulnerable populations and the fight to tackle health inequalities. This involves a closer coordination between the actions of the 3rd NEHAP in this area and those of the future occupational health plan, both in the plans' elaboration and in their monitoring, which implies thinking about common indicators for monitoring and evaluating this area (recommendation no. 7-2).

Concerning research and emerging risks (recommendations no. 8)

- Deepen the knowledge about emerging risks and the consequences of cumulative exposure and, more generally, strengthen multi-discipline research on environmental health, along the lines of the recent recommendations emanating from the french Initiative for research on environmental health (*Initiative française de recherche en santé environnement, IFRES*)²⁵ and the multi-organisational thematic Institute (*Institut thématique multi-organismes, ITMO*) for public health from Aviesan within the framework of the national research strategy (recommendation no. 8-1);
- Emerging risks should not be treated just from the academic point of view, but they rather should be an integral part of the NEHAP's actions when it appears justified to undertake risk management actions in a precautionary perspective (recommendation no. 8-2).

Concerning the issues addressed in the 2nd NEHAP (recommendations no.9)

The HCSP proposes a set of recommendations for those in charge of preparing the 3rd NEHAP resulting directly from this evaluation exercise. The headings are rather general, which leaves room for the designers of the 3rd NEHAP to be more precise if they find the subjects appropriate.

Area examined	Actions of the 2 nd NEHAP covered	Recommendations
Ambient outdoor air	Sheet 1, actions 1 to 4, sheet 2, actions 5 and 6, sheet 5, actions 13 to 16	<ul style="list-style-type: none"> • Maintain and update the objectives in terms of reducing pollution levels and the geographical disparities; • Continue and update the actions aimed at reducing emissions from the housing sector, transport, industry and other sources

²⁴ The consequences of the plan, direct or indirect, expected or not, prejudicial or favourable, on the population targeted by the plan or other populations, different from the specific results of the actions carried out.

²⁵ <http://wordpress-prod.cemagref.fr/allenvinew/wp-content/uploads/2013/07/Rapport-IFRES.pdf>

	<p>Actions covered by the evaluation: 1, 2 and 14</p>	<p>(agriculture, etc.), in line with the 38 measures of the emergency plan for air quality ²⁶;</p> <ul style="list-style-type: none"> • Assist all the Accredited association for monitoring air quality (<i>Associations Agréées de Surveillance de la Qualité de l’Air, AASQAs</i>) in developing the ability to perform very detailed spatio-temporal analyses of the pollutants involved in their area; • Continue the work to produce consistent tools at both regional and national levels designed to create an inventory of emissions, and continue to improve them; • Develop a better methodological way to describe aerial contamination by pesticides which would enable assessment of trends over time and a region by region comparison; • Set up a database concerning the spreading of pesticides by professional use (farms, municipal parks, roadside verges, railway embankments, hotel grounds, sports fields, etc.) which should be updated whenever spreading is carried out, or at least once a year, with the quantity, the name of the product, the frequency (dates) and the type of spreading, as has been done in California since 1990²⁷.
Indoor air	<p>Sheet 3, actions 7 to 10, sheet 6, action 19 and sheet 12, action 40</p> <p>Actions covered by the evaluation: 7, 8, 9, 10, 19, 40</p>	<ul style="list-style-type: none"> • Reiterate the national survey measuring the indoor air quality in dwellings by the end of 2015; • Within this survey, collect socio-economic data concerning the households and/or data that would enable identifying the geographic district (<i>statistical system for defining different sizes of habitation concentration</i>), so as to be able to identify any unequal exposure by social groups; • Assess the consequences on indoor air quality of the efforts to reduce energy consumption in buildings; • Develop the measurement of pesticides and semi-volatile organic compounds in the air and in the dust of the various enclosed areas frequented by the public; • Propose new measures for reducing domestic intoxication by carbon monoxide, the incidence of which has not diminished for several years; • Create a common database containing the following: the data held by the Institute for radiation protection and nuclear safety concerning measurements obtained in the 1990s (the radon map); the results of controls carried out by authorised bodies in buildings open to the public (Appliradon); the results obtained in the work environments (results currently centralised by the Institute for radiation protection and nuclear safety at the request of the General labour directorate); results obtained in apartment blocks; • Keep track of the crude radon concentrations (in Bq/m³) collected by the authorised bodies in the basic data held in the Information system for exposure surveillance - Buildings open to the public, and not just in reference to the regulatory threshold values which may (and should) change; the objectives of the

²⁶ Incorporated by the government into the national plan at the beginning of 2013 under the guidance of the ministries responsible for the interior and for sustainable development.

²⁷ <http://www.cdpr.ca.gov/docs/pur/purmain.htm>

		<p>radon database should be redefined (assessment of the average exposure, evaluation of public policies, public information, epidemiology, etc.) as well as the authorities in charge of its strategic directions, and operator(s);</p> <ul style="list-style-type: none"> • Relaunch the regulatory procedure concerning housing at risk of radon contamination, as defined by law no. 2009-879 dated 21st July 2009 on reforming the hospital, particularly concerning patients, health and the local environment²⁸.
Pollen	Sheet 7, action 22	<ul style="list-style-type: none"> • Continue and strengthen public action to reduce allergenic pollen emissions and strengthen the stakeholders' involvement. These actions should aim at any pollen that poses a potentially severe allergic risk and not just the ambrosia plant; • Define reference stations to be representative of specific regions on the basis of their characteristics; • Develop research and higher education training in aerobiology and palynology, as has been done in some of France's country neighbours (e.g. Spain and Italy), by strengthening the cooperation between the aerobiological observance networks and the universities; • Facilitate better training for volunteers involved in collecting information with a view to standardising data collection by the french National aero-biological surveillance network, which will provide more precise and much higher quality raw data; • Characterise the health effects of the combination of pollen (and other allergenic substances such as mould and mildew) and particulate matter in ambient air.
Noise	Sheet 11, actions 37 to 39 Actions covered by the evaluation: 37 and 39	<ul style="list-style-type: none"> • Ensure the publication and systematic availability of noise maps, and the raw data that were used to produce them, in all conurbations; • Make sure that data from noise maps can be analysed to give a view of social and spatial differences in exposure; • Train local authority officers and building professionals involved in rehabilitation schemes, in the area of noise prevention.
Drinking water and aquatic environments	Sheet 2, actions 5, sheet 9, action 28 to 31 and sheet 13, action 47 Actions covered by the evaluation: 5, 28, 29, 47	<ul style="list-style-type: none"> • Following the Water Framework Directive on water policy, construct inventories of substances emissions which will enable analysing trends both on a national level and by catchment area, taking all sources of discharge (particularly diffuse ones) into account; • Publishing information concerning the quality of drinking water and the aquatic environment should be complemented by educating the public on the environmental and health issues involved; • In particular, within the framework of the Water Information System, make the basic data available to the public and to all those involved in the water sector (beyond the simple indicators developed by the Water Information System). This data should

²⁸ This law completed the legislative arrangements in the public health code concerning the radon risk, by extending to certain categories of building defined by decree the obligation to measure the volumetric activity of radon and its derivatives, specifically so as to extend this mechanism to apartment buildings and other dwellings.

		<p>be easily accessible and understandable, allowing interpretation of the state of, and the trends in, the quality of drinking water and of the aquatic environment, and should also include information about specific investigations;</p> <ul style="list-style-type: none"> • Every three years, publish a report at a national level on the quality of both drinking water and aquatic environments; • Use the existing measurements of PCBs in sediments and in fish to understand the spatio-temporal trends in the level of contamination and the effectiveness of the actions to eliminate sources of PCBs.
Occupational exposure	<p>Sheet 4, actions 11 and 12</p> <p>Actions covered by the evaluation: 11 and 12</p>	<ul style="list-style-type: none"> • Make the battle against intrusive noise levels, and especially noise at work, a national priority²⁹; reduce the proportion of workers who experience noise levels in excess of 85 dB for more than 20 hours a week without any form of hearing protection, compared with the estimated prevalence in the Sumer 2003 survey; • Support the programme to create job-exposure matrices (the Matgéné programme) and encourage its development; • Improve accident prevention in the workplace and, in the building, civil engineering, agriculture and transport sectors, reduce the annual rates of work-related fatal accidents and accidents producing permanent partial disability ; • Improve the prevention of occupational diseases, in particular in the following areas: <ul style="list-style-type: none"> - work-related periarticular risks (reduce the incident rate of the following work-related pathologies: rotator cuff syndrome, canal tunnel syndrome and lateral humerus epicondyle syndrome; reduce the proportion of workers who spend more than 20 hours a week in physically constrained positions (concerning their joints) compared with the estimated prevalence in the Sumer 2003 survey); - exposure to carcinogenic substances (continue and improve the reduction in occupational exposure to carcinogenic substances (EU categories 1 and 2); focus more on, and assess the exposure to, carcinogenic drugs and medicines at work; set in place long-term monitoring of occupational exposure to carcinogenic substances; improve the information systems concerning work-related cancers); • Improve the preventative measures against psycho-social risks at work (reduce the numbers of people exposed to high levels of psycho-social factors in the workplace); • Improve the compensation for occupational diseases by reducing the difference between the estimated number of work-related cancer cases and the number of such cases that received compensation, especially for leukaemia and cancers of the lungs and bladder; and by reducing the number of estimated work-related repetitive strain injuries cases and the number of such cases that received compensation as work-related afflictions; Implement proactive mechanisms to ensure the regulatory sphere takes account of new knowledge concerning toxic

²⁹ Recommendation already made in 2010 during the update of the objectives for the 2004 public health law.

		<p>products and substances, particularly those that are carcinogenic, mutagenic, reprotoxic or allergenic; implement a mechanism for taking account of, or of examining, carcinogenic substances that are classified as category 1 and 2A by the IARC, but do not appear as such in European legislation; carry out systematic examination in France of any substances classified or newly classified as carcinogenic by the IARC;</p> <ul style="list-style-type: none"> • Examine the possibility of grouping specific "environmental medicine" consultations with the current Centre for occupational pathology consultations in university hospitals; set up an "occupational and environmental toxico-vigilance" group which could take advantage of the presence of occupational and environmental pathology departments and become a link to the anti-poison centres; • Increase the monitoring of occupational exposure to non-ionising electromagnetic fields, particularly in those sectors where potential exposure is highest (maintenance operators in industries and services in the telecommunications sector; certain industrial applications: dielectric soldering, induction heating, etc.; or in the healthcare sector); • Strengthen training in occupational risks in medical schools syllabuses; • Enhance research on occupational health by supporting the creation of a national multi-disciplinary network (life sciences, engineering sciences, human and social sciences) based on accredited research units, which will help to attract young scientists to this area and improve its image (Direction no. 1 on the Occupational Health Plan).
Substandard housing	<p>Sheet 8, actions 25 to 27</p> <p>Actions covered by the evaluation: action 25</p>	<ul style="list-style-type: none"> • Strengthen the multisectorial nature of the actions concerning substandard housing (dampness, air quality, ventilation, noise, social support, training, among other items); • Evaluate the conditions which would allow a better synergy between the departmental health regulations and the "decency" decree concerning housing, and incorporate the concept of fuel poverty; • Strengthen ties with the law courts and analyse and encourage implementing the concept of property confiscation in case of offense; • Prevent insalubrity by reviewing building permits and the declarations of public works in town halls; • Strengthen the training of employees and local elected representatives in all local authorities, especially the smaller ones; • Organise the attribution of the overall decentralisation budget for the local health departments in order to counteract substandard housing; • Strengthen and make systematic social support by a social worker for all households whose residence has been closed for insalubrity ; • Strengthen the partnership between the social, health and housing sectors, in particular when facing critical situations that pose a health or safety hazard for substandard houses occupants

		or neighbours.
Environmental black spots	Sheet 10, actions 32 to 36 Actions covered by the evaluation: 32, 34, 35	<ul style="list-style-type: none"> • Base the definition of environmental “black spots” on common national criteria that incorporate the concepts of environmental inequalities, taking into account social, regional and health considerations; • Structure the environmental information system in such a way that facilitates detection and geo-localisation of such black spots and makes it available to the public; • Develop a concerted action plan for environmental black spots involving all the stakeholders (local authorities, companies, neighbouring residents, etc.); • Create an authority at the national level charged with tracking these objectives, and with "scaling up" and sharing the expectations, tools and levers by involving the ministries responsible for health and the environment as well as the competent public bodies (Anses, InVS, Ineris, etc.); • Develop an observatory on environmental inequalities; • Encourage production and allow cross-analysis of environmental, social and health data; • Develop tools to handle and process data that is heterogeneous both in nature and quality; • Establish an inventory of locally-developed tools for managing these environmental black spots with the aim of passing on the experience and the more interesting ideas; • Create an indicator which can be used to track the reduction in the contamination in those polluted sites already identified; • Add an 'environmental black spot' section to the national biomonitoring survey; • Organise communication concerning environmental black spots for those members of the public directly concerned.
Toxic substances	Sheet 6, actions 17, 18, 20	<ul style="list-style-type: none"> • Define and implement a strategy for sustainable and consistent collection, and dissemination to the public, of information concerning pesticides in the air, both indoors and outdoors, and in the soil; • Set up a database concerning the spreading by professionals of pesticides as mentioned in the section on Outdoor air; • Build an information system which will enable having an understanding of the population total exposure³⁰ and to monitor this at regular intervals, continuing exposure monitoring of any particular chemical, at least until the desired effect of the risk management actions implemented have been observed and confirmed; • Study the possibility of having a tool, in this information system, that calculates the spatial distribution of exposures linking the

³⁰ On this point, the HCSP agrees with the Inserm which, in the pesticide arena, recommends in its recent 'expertise collective' (Inserm, "Pesticides- Effects on health", expertise collective, 2013), that exposure assessments concern more systematically the whole population, and that they be performed regularly so as to have a view of the exposure over time. The Inserm 'expertise collective' "Reproduction and environment" of 2011 already highlighted the benefits of biomonitoring.

		<p>contamination of the environmental media and the population contamination, so as to be able to have an integrated monitoring of environmental exposures and an assessment of trends in spatial and socio-economic exposure inequalities;</p> <ul style="list-style-type: none"> • Conduct regular biomonitoring studies to describe trends, within the framework of the national biomonitoring programme; • Promote European projects in this domain, become more involved in them and use their results for making international comparisons; • Create indicators for assessing, and carry out long-term monitoring of, exposure differences between children and adults; • Recognise the importance of the European actions concerning toxic substances and spell out the relationship of these to the national efforts, in order to focus resources in the areas not being handled on an international scale and to improve the effectiveness of the NEHAP and the REHAPs; • Every time a risk assessment for a particular chemical substance suggests a substitution should be considered (e.g. for pesticides, substances toxic for the general population or in the occupational environment), ensure a better assessment of the alternatives (in terms of hazards, exposures and risk difference compared with the chemical to be replaced) in order to understand the possible hazard transfers; • Within the REACH framework, integrate as quickly as possible tests concerning possible neurotoxic effects, especially for substances to which pregnant women and children might be exposed.
Emerging risks		<ul style="list-style-type: none"> • Nanoparticles: (i) integrate, in an appropriate manner, an assessment of their hazardous potency into the REACH framework; (ii) consider a stable long-term method for funding research and development of methodologies concerning exposure and identification of their hazardous potency in the same way as has been done for radiofrequency electromagnetic fields; • Integrate as rapidly as possible into the REACH framework tests concerning the endocrine disruptor potency of chemicals. • For the 3rd NEHAP, integrate the potential health impacts of climate change into mainstream research and as a transversal element in public policies.

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APPENDICES

APPENDIX 1: REQUEST



MINISTÈRE DES AFFAIRES SOCIALES ET DE LA SANTÉ

Direction générale de la Santé
Sous direction Prévention des risques
liés à l'environnement et l'alimentation
DGS/EA - N° 37.

Personne chargée du dossier :
Docteur Mireille FONTAINE
Tel : 01 40 56 89 44
mireille.fontaine@sante.gouv.fr



Paris, le 16 NOV. 2012

Le Directeur général de la santé

A

Monsieur le Président
du Haut Conseil de la santé publique
18, place des cinq martyrs du lycée Buffon
75014 Paris

Objet : Saisine pour l'évaluation du PNSE2

Monsieur le Président,

La conférence environnementale des 14 et 15 septembre 2012 comportait une table ronde consacrée à la prévention des risques sanitaires environnementaux. La feuille de route gouvernementale pour la transition écologique élaborée à la suite de cette table ronde prévoit de confier d'évaluation du Plan national santé environnement 2 (PNSE2), et de ses déclinaisons en région à l'inspection générale des affaires sociales (IGAS), à l'inspection générale de l'administration de l'éducation nationale et de la recherche (IGAENR), au conseil général du développement durable (CGDD) ainsi qu'à votre instance.

Une évaluation par l'Office parlementaire d'évaluation des choix scientifiques et technologiques (OPECST) qui doit être saisi par des parlementaires est également prévu.

La loi du 9 août 2004 relative à la politique de santé publique a introduit l'élaboration d'un plan national de prévention des risques liés à l'environnement et sa révision tous les cinq ans. En juin 2009 le Gouvernement a présenté un deuxième Plan National Santé-Environnement, conformément aux engagements pris lors du Grenelle de l'environnement. Ce deuxième PNSE s'est appuyé sur les conclusions d'un groupe de travail constitué d'élus, de représentants associatifs, des salariés et des entreprises, ainsi que d'experts et de l'Etat. Ce groupe était présidé par le Professeur Marc Gentilini, Président honoraire de l'Académie de Médecine.

Le suivi de ce plan interministériel est assuré par un comité de pilotage appelé groupe santé environnement (GSE), présidé par Mme Bérengère Poletti, députée de la première circonscription des Ardennes. Le GSE réunit des membres des 5 collèges du Grenelle de l'environnement auxquels s'ajoutent des personnalités qualifiées. Trois sous-groupes de travail ont été mis en place dans le cadre du GSE :

- un groupe chargé des « Expositions responsables de pathologies à fort impact sur la santé », présidé par M. Guespereau (Afsset) puis par B. Lesaffre (Vice président de l'Université Paris Est) ;
- un groupe chargé des « Inégalités environnementales », présidé par G. Bapt (député) et A. Cicolella (Réseau environnement santé) ;
- un groupe chargé des « risques émergents » (nanotechnologies, ondes électromagnétiques, perturbateurs endocriniens...), présidé par F. Marano (Université Paris Diderot) et J. Cambou (FNE).

Le GSE a publié en janvier 2011 et en février 2012 un bilan annuel de l'avancée des actions du PNSE2 qui comprend également de nombreuses recommandations émises par les sous-groupes.

14, avenue Duquesne – 75350 Paris 07 SP – Tél. 01 40 56 60 00

La majorité des plans régionaux santé et environnement (PRSE2) sont finalisés et en cours de mise en œuvre (6 adoptés fin 2010, 19 adoptés mi 2012).

Les enjeux, l'ampleur des moyens engagés et la volonté de poursuivre les actions recensées justifient l'évaluation du dispositif mis en place, avant de lancer les travaux préparatoires du prochain plan national santé environnement (PNSE3).

Conformément au programme de travail de la feuille de route gouvernementale, vous voudrez bien procéder à la réalisation de cette évaluation.

Celle-ci devra permettre d'apprécier le degré d'atteinte des objectifs fixés par le PNSE2 en cohérence avec vos travaux sur l'atteinte des objectifs santé-environnement de la loi relative à la politique de santé publique de 2004 et du deuxième plan santé travail notamment. La réduction des inégalités étant un axe transversal du plan, vous vous attacherez particulièrement à évaluer dans quelle mesure les actions du plan y ont contribué.

Enfin, l'évaluation devra proposer des axes d'amélioration et formuler des propositions notamment en termes d'indicateurs.

Vous coordonnerez vos travaux avec ceux des inspections saisies pour cette évaluation dont les travaux devraient permettre d'apprécier l'atteinte des objectifs fixés par le PNSE2, la cohérence du PNSE2, son périmètre et son articulation avec les autres plans de santé publique et les autres plans nationaux (plans PCB, chlordécone, résidus de médicaments). L'évaluation conduite par les inspections concernées portera également sur sa gouvernance, sur la pertinence de décliner le plan au niveau régional et comprendra un volet financier ainsi qu'une comparaison avec d'autres programmes d'actions développés au niveau européen.

Je vous remercie de bien vouloir me faire parvenir un rapport intermédiaire avec les premiers résultats de votre évaluation début 2013 et un rapport complet à la fin du premier semestre 2013 afin de respecter le calendrier des travaux des inspections sollicitées pour cette évaluation.

Vous voudrez bien m'informer des modalités de travail que vous envisagez pour répondre à cette saisine, mes services sont à votre disposition pour apporter tous compléments d'information que vous jugeriez utiles.

Je vous prie de croire, Monsieur le Président, à l'assurance de ma considération distinguée.

Le Directeur Général de la Santé.

Dr Jean-Yves GRALL

APPENDIX 2: COMPOSITION OF THE CONSULTATIVE COMMITTEE

Table A.1: Composition of the Consultative Committee

College	Entity (organisation, institution, etc.) invited to be a member of the Consultative Committee	Accepted
Deciders and operators	General Health Directorate, Ministry of Health	X
	General Directorate for Risk Prevention, Ministry for Ecology and Sustainable Development	X
	Water and Biodiversity Directorate, General Directorate, Ministry for Ecology and Sustainable Development	X
	Directorate for Land Planning, Housing and Nature, Ministry for Ecology and Sustainable Development	
	Directorate General for Infrastructures, Transport and the Sea, Ministry for Ecology and Sustainable Development	X
	Delegation for shelter and access to housing, Centre against substandard Housing	X
	General Food Directorate, Ministry of Agriculture	X
	General Directorate for Teaching in Schools, Ministry of National Education	
	General Labour Directorate, Ministry of Labour	X
	Ministry for Research and Higher Education	
	General Directorate for Competitiveness, Industry and Services, Ministry for Industry	X
	Anses (French Agency for Food, Environmental and Occupational Health & Safety)	X
	Ineris (French National Institute for industrial environment and risks)	X
	Ademe (French agency for Environment and energy management)	X
	InVS (French Institute for public health surveillance)	X
	INPES (French National institute for prevention and health education)	
Regional Health Agencies (Representative of the General Directorate of the ARS)		
Elected representatives: National Assembly and Senate representatives	National Assembly - Sustainable Development and National and Regional Development Committee	
	National Assembly - Social Affairs Committee	
	Senate - Sustainable Development, Infrastructure, Facilities and National and Regional Development Committee, competent in the areas of environmental impact and energy policy.	
	Senate: Social Affairs Committee	
Elected representatives: Local and Regional Authorities	AMF: French Mayors' Association	
	ARF: Association of French Regions	
	ADF: Association of French 'Départements'	

	AdCF: Association of French Small Communities	
	AMRF: French Rural Mayors' Association	
Civil Society: Environmental and other NGOs	FNE: France Nature Environment	X
	RES: Environmental Health Network	X
	ASEF: French Environmental Health Association	X
	WWF: World Wildlife Fund	
	The Nicolas Hulot Foundation for Nature and Mankind	
	CLCV: French National Consumer Protection Association	
	UFC-Que choisir	
	FNARS: National Federation of Associations for Care and Social Reinsertion	
	UNIOPSS: National Inter-federal Union of non Profit-Making Health and Social Organisations	
	FCPE: Federation of Parents' Associations	X
	WECE : Women in Europe for a common future	X (contacted later)
Social partners: Trade Unions	CGT: Confédération générale du travail	X
	FO: Force ouvrière	X
	CFTC: Confédération française des travailleurs chrétiens	X (contacted later)
	CFE CGC: Confédération française de l'encadrement - Confédération générale des cadres	
	CFDT: Confédération française démocratique du travail	X
Social partners: Employers' Associations	Medef: Mouvement des entreprises de France	X (contacted later)
	EPE: Entreprises pour l'Environnement	X
	CG PME: Confédération générale du patronat des petites et moyennes entreprises	
Others	National Health Conference	X
	Chairman WG1 for monitoring the 2 nd NEHAP	X
	Chairman WG2 for monitoring the 2 nd NEHAP	X
	Chairman WG3 for monitoring the 2 nd NEHAP	X

APPENDIX 3: AUDITIONS

For the overall 2nd NEHAP, the following were auditioned:

- Benoît Lesaffre, University of Paris Est, Chairman of 2nd NEHAP steering group WG1, "Exposures responsible for pathologies with significant impact on health"
- Francelyne Marano, Chairman of 2nd NEHAP steering group WG3, "Emerging Risks".

Table A.2: Auditioning of people responsible for implementing REHAPs, and interviews concerning substandard housing

Organisations represented	Date of audition or interview	
Bretagne Regional health authority	22 nd March 2013	
Bretagne Regional service for the environment, facilities and housing		
Bretagne Regional Council		
Bretagne General secretariat for regional affairs		
The City of Rennes		
Nord-Pas-de-Calais Regional health authority		
Nord-Pas-de-Calais Regional service for the environment, facilities and housing		
Nord-Pas de Calais Regional Council		
Nord-Pas-de-Calais General secretariat for regional affairs		
French Guiana Regional health authority		10 th April 2013
French Guiana Regional service for the environment, facilities and housing		
French Guiana Regional Council		
Ile-de-France Regional health authority		
Ile-de-France Regional and Inter-regional department for the environment and energy		
Ile-de-France Regional Council		
Urban Ecology Agency, City of Paris		
Languedoc-Roussillon Regional health authority		
Languedoc-Roussillon Regional service for the environment, facilities and housing		
Languedoc-Roussillon Regional Council		
Languedoc-Roussillon General secretariat for regional affairs		
The Consulting Firm INEA		
General health directorate	Interview concerning substandard housing on 23 rd March 2013	
National Centre against Substandard Housing		
The Abbé Pierre Foundation	Interview concerning substandard housing on 10 th April 2013	

APPENDIX 4: PROOFREADING THE REPORT

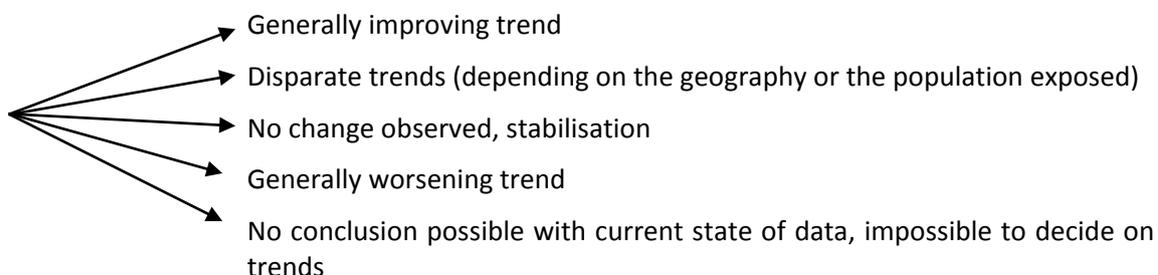
List of proofreaders (with the parts that each person has read in parentheses)

- Francis Allard, Laboratoire des Sciences de l'Ingénieur pour l'Environnement (Environmental Engineering Science Laboratory), CNRS, University of La Rochelle, HCSP - CSRE (indoor air)
- Gilles Aymoz, Ademe (outdoor air)
- Marie-José Battesti, Pascal Paoli University in Corsica, Faculty of Science and Technology (allergies)
- Frédéric Bois, Ineris (dangerously toxic substances)
- Céline Boudet, Ineris (environmental black spots)
- Claude Casellas, UMR Hydrosociétés, faculty of pharmacy– University of Montpellier 1, HCSP - CSRE (Drinking water and aquatic environments)
- Yves Cazals, Adaptive and Integrating Neuro-sciences Laboratory, University of Aix-Marseille (noise)
- Christian Cochet, CSTB (indoor air)
- Aline Coftier, BRGM (environmental black spots)
- Marie-Christine Delmas, InVS (allergies)
- Paul Frimat, Occupational Health Laboratory, University of Lille 2 - Lille Regional Teaching Hospital (occupational exposures)
- Marcel Goldberg, Centre for research into Epidemiology and Population Health – Inserm (occupational exposures)
- Jean-Marie Haguenoer, Centre for research into Health-Workplace-Ergonomics, University Occupational Medicine Laboratory, University of Lille 2 (dangerously toxic substances)
- Séverine Kirchner, CSTB (indoor air)
- Joseph Kleinpeter, ASPA - Monitoring and Studies of Atmospheric Pollution in Alsace (outdoor air)
- Corinne Le Goaster, SG-HCSP (allergies)
- Yves Levi, Systemic Ecology and Evolution Laboratory, University of Paris Sud 11 - Faculty of Pharmacy (Drinking water and aquatic environments)
- Mathilde Pascal, InVS (allergies)
- Laurence Rouil, Ineris (outdoor air)
- Hélène Schützenberger, Yvelines Departmental Council (substandard housing)
- Pierre-Francois Staub, Onema (Drinking water and aquatic environments)

**APPENDIX 5: METHODOLOGY USED TO REACH A CONCLUSION CONCERNING THE
PRINCIPAL THEMES IN THE EVALUATION QUESTIONING**

- **Was there a reduction in the level of exposure experienced by the targeted population at the national level?**

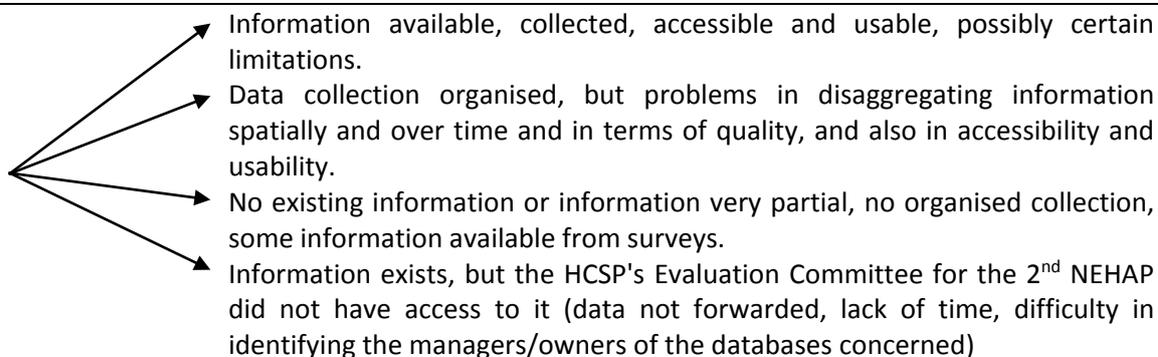
To describe the trend in exposure judged by the quality of the particular environment and of inequalities, each box in the summary table will be completed in the following manner:



- **Was there a reduction in the level of unequal exposure to environmental pollution and its attendant risks depending on geography and/or social category?**

The same considerations as above are used

- **The quality of information systems will be graded using the following criteria:**



APPENDIX 6: ACTIONS ALREADY IMPLEMENTED IN NEHAP 1

- 2.1.1. ACTION 4: Reduce diesel particle emissions from vehicular sources
- 2.1.2. ACTION 5: Promote alternative transport means
- 2.2.1. ACTION 7: Reduce industrial emissions of toxic substances into the air
- 2.2.2. ACTION 8: Reduce the industrial emissions of NO_x
- 2.2.3. ACTION 9: Reduce the polluting emissions from domestic heating
- 2.3.1. ACTION 10: Improve the quality of drinking water by protecting drinking water catchment areas from both occasional and diffuse contamination
- 2.3.3. ACTION 12: Prevent and reduce the risks from mercury exposure in French Guiana, and from pesticides in Guadeloupe and Martinique
- 3.1. ACTION 14: Understand better the determining factors for indoor air quality and strengthen the appropriate regulations
- 3.2. ACTION 15: Implement a labelling mechanism for building materials concerning their health-related characteristics
- 3.4. ACTION 17: Reduce exposure to radon in housing and apartment blocks, and ensure a better assessment of the risks
- 3.5. ACTION 18: Limit the exposure of the population to artificial mineral fibres
- 4.1. ACTION 20: Improve the capability to assess the health risks from dangerous chemicals
- 4.2. ACTION 21: Develop tools for a better assessment of the health risks from chemical or biological substances
- 4.3. ACTION 22: Strengthen the monitoring of the market in particular by carrying out targeted checking campaigns.
- 4.4. ACTION 23: Reduce occupational exposure to substances that are carcinogenic, mutagenic or toxic to reproduction (CMRs), especially concerning wood dust, benzene, lead and refractory ceramic fibres, by modernising and strengthening the oversight mechanisms and the health and safety at work departments.
- 5.2. ACTION 25: Improve the prevention of lead intoxication, and the detection and treatment of children affected
- 5.5. ACTION 28: Protect adolescents from the effects of very loud music
- 5.6. ACTION 29: Oversee the quality of buildings frequented by children
- 6.1 ACTION 30: Strengthen the coordination of research in the area of environmental health
- 6.2. ACTION 31: Support the creation of a major international scientific programme and improve the involvement of French research in European and international programmes.
- 6.3. ACTION 32: Train both teaching and student researchers in environmental health and develop the human potential.
- 6.4. ACTION 33: Action to support research into strategic subjects
- 7.1. ACTION 35: Improve the performance and level of integration of information systems concerning environmental health
- 7.2. ACTION 36: Devise a method of processing existing information to provide an estimate of the exposure of the population to pesticides
- 7.4. ACTION 38: Obtain a better understanding of workers' health and of occupational exposures in order to reduce the number of work-related diseases
- 7.5. ACTION 39: Develop warning systems and increase the coverage of the national toxicovigilance scheme
- 8.2. ACTION 42: Integrate environmental health into the post-diploma training of doctors and other healthcare personnel
- 8.4. ACTION 44: Facilitate access to environmental health information and encourage public debate.

**APPENDIX 7: INDICATORS BY THEME RETAINED BY THE HCSP FOR DATA COLLECTION WITH
A VIEW TO ASSESSING THE TRENDS IN EXPOSURE AND THE QUALITY OF VARIOUS
ENVIRONMENTAL MEDIA**

Theme	Indicator(s)
AMBIENT OUTDOOR AIR	
Emissions	Emissions into the atmosphere of the following pollutants, by region and by activity sector: PM ₁₀ , PM _{2.5} , PM ₁ , NO _x , non-methane VOCs, benzene, dioxins, PCBs, toxic metals (arsenic, mercury, lead, cadmium, nickel), PAHs, of which benzo(a)pyrene (BaP), chlorinated solvents, pesticides
Immissions	Immissions into the atmosphere of the following pollutants, by zone type ('background urban' zone, 'traffic-dominated' urban zone, 'industrial proximity' zone, urban or not): <i>Regulated pollutants:</i> PM ₁₀ , PM _{2.5} , PM ₁ , NO _x and NO ₂ , benzene, toxic metals (arsenic, lead, cadmium, nickel), PAH, of which BaP Ozone <i>Other pollutants</i> (measured only in a few networks): PM ₁ , non-methane VOCs, dioxins, mercury, pesticides, PCBs
Threshold violations	The total number of stations for measuring the air quality for which daily or annual figures exceeded the thresholds (upper limits or target values) defined by the European directive: 1) by site type, 2) by region: PM ₁₀ , PM _{2.5} , NO ₂ , benzene, PAH, of which BaP, lead, arsenic, nickel, cadmium, O ₃ , SO ₂ , CO
Inequalities	Differences in average concentrations of NO ₂ and PM between IRIS communities in the 80 th percentile in the deprivation index (the most disadvantaged according to the composite index) and the IRIS communities in the 20 th percentile with a calculation of the ratio between the concentrations P80/P20 Concentrations of NO ₂ between the first and latest available periods with a calculation, for each zone, of the % evolution between T1 and T2 respectively for the IRIS communities in P80 and P20 in the deprivation index
Public perception	Pollution in outdoor air and particles
INDOOR AIR	
Pollution of the indoor air in human dwellings	Average annual concentrations of the following pollutants in buildings for human habitation: Particles PM _{2.5} and PM ₁₀ , formaldehyde, acetaldehyde, benzene, naphthalene, trichloroethylene, tetrachloroethylene, 1,4-dichlorobenzene, glycol ethers (the compounds that are measured), carbon monoxide, carbon dioxide, mite and tick allergens, radon (national data and those from the 31 priority departments), damp and mould And this for: <ul style="list-style-type: none"> • France as a whole (if possible disaggregating the results according to the major classes of socio-professional categories of the household); • the average annual concentrations recorded at each measuring site according to the IRIS code for the dwellings involved during the OQAI survey or other available information

Pollution of the indoor air in buildings open to the public	The average annual concentrations of the following pollutants found in establishments open to the public, by type of establishment (schools/other types) Particles PM2.5 and PM10, PM1, formaldehyde, acetaldehyde, benzene, naphthalene, trichloroethylene, tetrachloroethylene, 1,4-dichlorobenzene, glycol ethers (the compounds that are measured), carbon monoxide, carbon dioxide, mite and tick allergens, radon (national data and those from the 31 priority departments)
Split of the principal sources of pollutant for indoor air	Split of the principal sources of pollutant for indoor air for the following pollutants: Particles PM2.5 and PM10, formaldehyde, acetaldehyde, benzene, naphthalene, trichloroethylene, tetrachloroethylene, 1,4-dichlorobenzene, glycol ethers (the compounds that are measured), carbon monoxide, carbon dioxide
Radon	Average concentration of radon by type of establishment (for housing, schools/other establishments open to the public) for the 31 priority departments
	Percentage of establishments measured (respectively for housing, schools/other establishments open to the public) in which the concentrations of radon are > 100, 200 and respectively 300 Bq/m ³ for the 31 priority departments
Asbestos in tower blocks and buildings open to the public	Average annual concentrations of asbestos fibre in tower blocks and buildings open to the public, by type of establishment, for France as a whole and by region
Carbon monoxide	Incidence of carbon monoxide poisoning (including fatalities): 1) for France as a whole, 2) by region, 3) specifically for the five priority regions (Nord-Pas de Calais, Midi-Pyrénées, Rhône-Alpes, Ile-de-France, Provence-Alpes-Côte d'Azur)
Public perception	Quality of indoor air
POLLEN	
Pollen	From the monitoring mechanism produce average daily concentrations of pollen in number of grains/m ³ of air, by town, with a split between the various types of allergen, especially for the ambrosia plant
Public perception	On respiratory allergies
NOISE	
Noise maps	The noise levels in dB of both environmental noise and transport-related noise with respectively 1) the day-time levels (Lden index), 2) the night-time levels (Ln index) with a description of the environmental noise black spots.
Noise black spots	Noise black spots by department or region, by type of noise pollution
Public perception	Environmental noise, industrial noise and/or transport-related noise
Drinking water and aquatic environments	
Tap water	Percentages of limit values and quality references exceeded or non-compliance situations noted in tap water for the following pollutants, by region, by department and by the category of distribution unit (< 500 inhabitants connected, 500 to 5,000 inhabitants connected, > 5,000 inhabitants connected) Benzene, PAHs, mercury, lead, arsenic, chlorinated solvents: tetrachloroethylene, trichloroethylene, THMs, microbiological parameters (only for the % of failure to meet quality criteria), cadmium, chromium, nitrates, pesticides (to be defined according to the level of national sales and regional usage) Annual concentrations of these substances in tap water in non-compliant zones, by region and by department
Water sources destined for domestic use	Frequency with which upper thresholds and quality reference values are exceeded in sources of water destined for domestic use at a national level, by region and by department using these same parameters
Lead	By department, the frequency with which a concentration of 10 µg/L of lead in the water has been exceeded

Concentrations of pollutants in aquatic environments	Average annual concentrations: 1) of the following pollutants in aquatic environments using representative points according to the hydro-ecological context of the catchment areas (in metropolitan France and the overseas territories) 2) in sediments for the pollutants concerned (particularly metals and PCBs): benzene (and associated volatile organic compounds), PAHs, mercury Lead, arsenic, cadmium, chromium, chlorinated solvents: tetrachloroethylene, trichloroethylene, nitrates, pesticides (glyphosate (and/or AMPA), mancozeb, 2,4-D, imazalil, atrazine desethyl, atrazine, bentazone, 2,6 dichlorobenzamide, simazine and the most frequently encountered products representative of the catchment area), PCBs, pharmaceutical residues
Emissions/ discharge of pollutants into aquatic environments	Average annual quantities in aquatic environments for France as a whole, by region or catchment area, using the same parameters
Public perception	Quality of drinking water and of aquatic environments
OCCUPATIONAL EXPOSURE	
CMRs	Prevalence of occupational exposure to CMR classified chemicals, highly toxic (T+), toxic (T) or harmful (Xn), by type of activity, by company size, by occupation/by job and/or profession
Noise	Prevalence of occupational exposure to noise levels greater than 85 dB A and 80 dB A, by type of activity, by company size, by occupation/by job and/or profession
Intense physical constraint	Prevalence of occupational exposure to at least one intense physical constraint, by type of activity, by company size, by occupation/by job and/or profession
Pesticides	Exposure of agricultural workers to pesticides according to the crops under cultivation
Other occupational exposures	Cumulative professional lifetime exposure for the adult (or active) population to asbestos, solvents, silica (data from the Matgéné programme), by activity sector and job category
Asbestos	Frequency of exposure of workers to material potentially containing asbestos, by job category and by company size
SUBSTANDARD HOUSING	
Number of dwellings that are substandard or in fuel poverty status	Number of dwellings classified as 'substandard' for France as a whole, by region and by department
	Number of children under 15 living in insalubrious/substandard housing
	Number of dwellings classified as in fuel poverty for France as a whole, by region and by department
Treating substandard housing	The annual rate of 'treated ' dwellings (i.e. those which have been made good or rehabilitated and/or have received a grant from the National housing improvement agency for the purpose) for France as a whole, by region , by department, and by type of remedy used
	Overall situation concerning inducement and constraining (particularly enforcement orders) actions for combating substandard housing, for France as a whole and by region: - number of each type of enforcement order - number of re-housings Number of compulsory works
	Number of dwellings treated and/or helped due to being in a fuel poverty situation, for France as a whole, by region and by department

Lead and saturnism	Incidence of infantile saturnism (blood lead level greater than 100 µg/L), according to the socio-economic status and the nationality of the parents, for France as whole, by region and by department
	Average blood lead level nationally by socio-economic status (the major categories defined by Insee) and the nationality of the parents (French, European, non-European)
	Prevalence, at a national level, of infantile blood lead levels greater than respectively 30, 40 and 50 µg/L
	Number of dwellings presenting a lead-related risk, for France as a whole, by region and by department
	Proportions of the various methods and sources of exposure associated with blood lead levels greater than 30, 40, 50 and 100 µg/L in France
ENVIRONMENTAL BLACK SPOTS	
Quantification	Number of zones identified as 'environmental black spots' (excluding noise black spots) in France and by region
Contaminated sites and land areas	<i>Proxy</i> : total number of contaminated sites and land areas registered and new contaminated sites and land areas registered, in France, by region and by department
	Number of identified 'contaminated sites and land area' zones treated, in France and by region, and their 'technical situation' by region
	By region, the number of sensitive establishments built on sites that are potentially contaminated
Sites with absent owners	Number of sites where the responsible company is no longer in business or otherwise uncontactable, in France and by region
Chlordecone	Concentration of chlordecone in the water, soil and vegetation of the French West Indies
Mercury	Concentration of mercury in the soil and vegetation in French Guiana, Local population's level of contamination.
PCBs	Concentration of PCBs in the sediments, National population's level of contamination (ENNS).
TOXIC SUBSTANCES	
CMRs	Exposure for the population as a whole, of women of child-bearing age and of children to certain substances classified as CMR (using exposure data, sales volumes of CMR substances or the level of the population's contamination)
Endocrine disruptors	Exposure 1) of the French population 2) of women of child-bearing age and of children to certain endocrine disruptors (using contamination data, sales volumes of consumable articles containing endocrine disruptors used by such populations, or other 'proxy' type indicators).
EMERGING RISKS	
	This subject has been left to the College of Inspectors to deal with

GLOSSARY

AASQA	Accredited association for monitoring air quality
Ademe	French agency for environment and energy management
Anses	French agency for food, environmental and occupational health & safety
ARS	Regional health authorities
BRGM	Bureau of geological and mining research
CGEDD	General Commission on the environment and sustainable development
CMR	Chemicals classified as carcinogenic, mutagenic or toxic to reproduction
CNRS	National centre for scientific research
CSTB	Scientific and technical centre for building
CSESP	The HCSP's special commission on evaluation, strategy and planning.
CSRE	The HCSP's special commission on environmental risks
DREAL	Regional services for the environment, facilities and housing
EU	European Union
ELECTRE	Elimination et choix traduisant la réalité (Truth by elimination and choice)
ENNS	National survey on nutrition and health
HCSP	High Council for public health
IFSTTAR	French Institute for science and technologies in transport, facilities and networks
IFRES	French Initiative on research in environmental health
IGAENR	General Inspectorate for administration, education and research
Igas	General Inspectorate of social affairs
INPES	French national institute for prevention and health education
INSEE	French national institute for statistics and economic studies
IRIS	Statistical system for defining different sizes of habitation concentration
Ineris	French national Institute for industrial environment and risks
Inserm	French national Institute for health and medical research
InVS	French Institute for public health surveillance
IRSN	French Institute for radiation protection and nuclear safety
ITMO	Multi-Organisation Institute for public health
NEHAP	National environment and health action plan
NO _x	Nitrogen oxide
NO ₂	Nitrogen dioxide
NOR	French numbering system for official texts
Onema	National office for water and aquatic environments

OQAI	Observatory for indoor air quality
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorobiphenyl
PM ₁	Particulate matter with an aerodynamic diameter less than or equal to 1 µm
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to 2.5 µm
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to 10 µm
PRST	Regional plan for health at work
REACH	Registration, evaluation and authorisation of chemicals
RNSA	National aero-biological surveillance network
SG-HCSP	General secretariat for the High Council for public health
THM	Trihalomethanes
VOC	Volatile organic compounds