



# **Expert Opinion of the French High Council for Public Health concerning public health messages to be broadcast during episodes of pollution by particles, ozone, nitrogen dioxide and/or sulphur dioxide**

*17th meeting of the Joint Convention/WHO Task Force on Health Effects  
of Long-range Transboundary Air Pollution, 14-15 May 2014*

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1) The Directive 2008/50/EC on ambient air quality and cleaner air for Europe defines :

**Information threshold** : shall mean a level beyond which there is a risk to human health from brief exposure for particularly sensitive sections of the population and for which immediate and appropriate information is necessary.

**Alert threshold** : shall mean a level beyond which there is a risk to human health from brief exposure for the population as a whole and at which immediate steps are to be taken by the Member States.

ANNEX XII

INFORMATION AND ALERT THRESHOLDS

These thresholds are defined for

- :
- NO<sub>2</sub>,
- SO<sub>2</sub>,
- Ozone.

A. Alert thresholds for pollutants other than ozone

To be measured over three consecutive hours at locations representative of air quality over at least 100 km<sup>2</sup> or an entire zone or agglomeration, whichever is the smaller.

| Pollutant        | Alert threshold       |
|------------------|-----------------------|
| Sulphur dioxide  | 500 µg/m <sup>3</sup> |
| Nitrogen dioxide | 400 µg/m <sup>3</sup> |

B. Information and alert thresholds for ozone

| Purpose | Averaging period | Threshold             |
|---------|------------------|-----------------------|
| }       | }                | 180 µg/m <sup>3</sup> |
|         |                  | 240 µg/m <sup>3</sup> |

should be measured or predicted for three consecutive hours.

2) In addition, the French regulation defines :

| PM10                                   |  |
|--|--|
| Information threshold                  | Alert threshold                        |
| 50 µg/m <sup>3</sup> (24-hour average) | 80 µg/m <sup>3</sup> (24-hour average) |



**In France, in case of exceeding one of these thresholds (exceedance predicted or observed) :**

Local procedures are activated to :

- implement concrete measures to reduce emissions (for example on industries and transport sectors) ;
- disseminate recommendations to promote low-emissions behaviours (e.g. « Choose green transportation rather than using a car ») ;
- **disseminate** information about air quality and **health recommendations** (particularly in direction of the sensitive persons).

In some rare cases (e.g. when several regions are concerned by a threshold exceedance), there is in addition a national management.



The previous public health messages broadcasted during episodes of pollution by PM10, ozone, NO2 and/or SO2 in France were established in 2000.

➔ The Ministry of health asked the High Council for public health (HCSP) to review these messages in the light of the last scientific evidence on the health effects of air pollution.

(It is written in the law that the Ministry of health is in charge of developing health messages to prevent air pollution effects).

➔ The HCSP set up a working group (epidemiologists, air quality specialists, health professionals, communication experts, NGO....).

November 2013 : the High Council for public health (HCSP) has published its **expert opinion**.



High Council for public health

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## EXPERT OPINION

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concerning public health messages to be broadcast during episodes of pollution by particles, ozone, nitrogen dioxide and/or sulphur dioxide

15th November 2013

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(available in French and in English on :  
<http://www.sante.gouv.fr/pollution-de-l-air-recommandations-sanitaires.html>)

As a preamble, the High Commission on Public Health insists on the need to:

- adopt an integrated approach to the messages dissemination. The High Council for public health believes that a simple unique message, irrespective of the pollutant, combined with specific health messages for each of the pollutants (for information, assessment, prevention)



## High Council « Expert Opinion » (1/5) :

As a preamble, the High Commission on Public Health insists on the need to:

- adopt an integrated approach to the messages dissemination. The High Council for public health believes that a simple unique message, irrespective of the pollutant, combined with clarity in the use of criteria for sounding the alarm (aggravation or persistence) are more effective than multiple messages which vary according to the different possible situations. Such a choice is also in line with an approach based on a general index of air quality, such as the ATMO index, the European Citeair index, or those used in Germany (LuQx –LuftQualitätsindex Bade-Wurtemberg<sup>1</sup>) or in Canada (Cote air santé index- CAS, 2008<sup>2</sup>).
- categorize the targeted populations. While it is relatively easy to define those persons at risk (an age range or those suffering from and being treated for a particular pathology), the term 'general public' covers a wide range of situations. Without being aware, certain people may be more sensitive or particularly exposed to risk simply because they are in close proximity to a source of pollution.
- always make the connection between chronic pollution and peak episodes:
  - it is imperative that the messages that circulate on the Internet when any procedure is initiated, and this for each pollutant, are associated with a statement of the number of times the threshold has been exceeded, and the number of days in the past 12 months during which an excess has been observed, as recommended by the High Council for public in its 2012 report "Particulate pollution of the ambient air"<sup>3</sup>;
  - thresholds only correspond to the categories emanating from regulatory texts, which themselves change; thus even below those defined thresholds, the general public, in particular its more fragile segments, can be affected.



## High Council « Expert Opinion » (2/5) :

- make the connection between (a) the general measures taken to lower the emissions that contribute to pollution, (b) the measures aimed at reducing the population's exposure and (c) the associated public health measures. Associating public health messages with messages that aim to change people's behaviour with an encouragement to participate, at the individual level, in the reduction of emissions, could prove interesting since health could become a behaviour-changing vector.
- disseminate information and recommendations at various times of the year and not just when there is a pollution episode. These messages should not only be issued through the usual media channels, but also to the medical profession and to the directors of establishments that host elderly people and children, with clear indications of the physiological and medical factors which render certain people particularly sensitive to air pollution. The aim is to enable every one to identify oneself, when concerned, as particularly sensitive to air pollution, or to be identified as such by others (relatives and health-workers), and thus become more attentive to the messages which are issued when there is a pollution episode.
- always bear in mind that taking on board such messages requires an effective communication strategy (communication that is an incitement to act<sup>4</sup>) with key messages understood by all, involving all the appropriate stakeholders (public authorities, experts in air quality, the medical profession, environmental and social organisations, the media, caring personnel, etc.).
- ensure full assessment of communication campaigns, the effectiveness of which is heavily dependent on the tools, the criteria and the multitude of targets and contexts. The HCSP regrets that it has not been able to consult any quantified assessment of the relevance of messages that have been issued since 2000.



## High Council « Expert Opinion » (3/5) :

### Different targeted populations for the health messages :

#### - Vulnerable populations :

pregnant women, babies and children under the age of 5, people suffering from asthma, cardiovascular disorders, cardiac or respiratory deficiencies.

#### - Sensitive populations :

People considered as sensitive during pollution peaks and/or whose symptoms are aggravated during such peaks, e.g. diabetics, immunocompromised subjects, people suffering from neurological afflictions or at risk from infection or from respiratory or cardiac deficiencies.

#### - General public

*(wide range of situations : without being aware, certain people may be more sensitive or particularly exposed to risk simply because they are in close proximity to a source of pollution).*



## High Council « Expert Opinion » (4/5) :

### 1) Messages when the information threshold is exceeded :

| The message targets   | Information and recommendation messages  |
|---|--|
| <p>- <u>Vulnerable populations</u> and their immediate entourage (helpers)<br/>pregnant women, babies and children under the age of five, people suffering from asthma, cardiovascular disorders, cardiac or respiratory deficiencies.</p> <p>- <u>Sensitive populations*</u></p> | <p>Reduce, or even avoid, intense physical or sport activities** (including competition), both indoors and outdoors.</p> <p>If you become aware of the symptoms and they are less pronounced when you remain indoors, decide to take shorter excursions which require less effort than usual.</p> <p>Avoid going out early in the morning or at the end of the day, and keep clear of main arterial roads (seek information from your local authority organisation responsible for monitoring air quality concerning the most polluted areas in your neighbourhood)</p> <p>In case of symptoms or should you worry, seek advice from your doctor or local pharmacist.</p> <p><u>Messages specific to episodes of ozone pollution:</u><br/>"Intense physical and sport activities can be continued indoors. Avoid going out between midday and 4 pm."</p> |
| <p><u>General public</u></p>  | <p>No modification to your usual activities is required.</p> <p>However, if you feel some form of unusual discomfort (e.g. tiredness, sore throat, blocked nose, cough, breathlessness, wheezing, palpitations), seek advice from your doctor or local pharmacist.</p>   |

\* People considered as sensitive during pollution peaks and/or whose symptoms are aggravated during such peaks, e.g. diabetics, immunocompromised subjects, people suffering from neurological afflictions or at risk from infection or from respiratory or cardiac deficiencies.

\*\* Intense physical and sporting activities: exercise which necessitates breathing through the mouth.



## High Council « Expert Opinion » (5/5) :

### 2) Messages when the alert threshold is exceeded :

| The message targets  | Alert messages   |
|--|--|
| <p>- <u>Vulnerable populations</u> and their immediate entourage (helpers)</p> <p>pregnant women, babies and children under the age of five, people suffering from asthma, cardiovascular disorders, cardiac or respiratory deficiencies.</p> <p>- <u>Sensitive populations*</u></p> | <p>Avoid intense physical or sport activities, both indoors and outdoors.</p> <p>If you feel any unusual respiratory or heart-related problems seek advice from your doctor or local pharmacist or from the 'air and health' emergency number***. The website of your local air quality monitoring organisation contains more information.</p> <p>Take your doctor's advice to know whether your treatment needs to be modified.</p> <p>If you believe that the symptoms are less pronounced when you remain indoors, decide to take shorter excursions than usual. Avoid going out early in the morning or at the end of the day, and keep clear of main arterial roads. Postpone those activities which require the most effort.</p> <p><u>Messages specific to episodes of ozone pollution:</u> "Light physical and sporting activities can be continued indoors. Avoid going out between midday and 4 pm."</p> |
| <p><u>General public</u></p>   | <p>If certain symptoms appear (e.g. unusual tiredness, sore throat, blocked nose, cough, breathlessness, wheezing, palpitations), reduce or postpone intense physical and sporting activities both indoors and outdoors until the pollution episode is over, and seek advice from your doctor or local pharmacist or from the 'air and health' emergency number***.</p>  |

\* People considered as sensitive during pollution peaks and/or whose symptoms are aggravated during such peaks, e.g. diabetics, immunocompromised subjects, people suffering from neurological afflictions or at risk from infection or from respiratory or cardiac deficiencies.

\*\* Intense physical and sporting activities: exercise which necessitates breathing through the mouth.

\*\*\* This is a permanently available public health contact service for which implementation details are still being discussed (Internet or telephone); such permanent hot-line services are already available in certain regions.



## PM peak in March 2014 (1/6)

These public health messages were broadcasted during the PM peak in March 2014 in France, in particular by the Ministry of health (MoH) and its local services.

MoH website :

The screenshot shows a web browser window with the URL <http://www.sante.gouv.fr/pollution-de-l-air-recommandations-sanitaires.html>. The page header includes the French Republic logo and the text "Le site santé du Ministère des Affaires sociales et de la Santé" and "sante.gouv.fr". A navigation bar contains "LE MINISTÈRE", "LES CAMPAGNES", "LES DOSSIERS", and "LA PRESSE". The main content area is titled "Pollution de l'air : recommandations sanitaires" with a date of "7 mars 2014". A blue box contains the text: "En période de pics de pollution de l'air, le ministère des Affaires sociales et de la santé rappelle les recommandations sanitaires suivantes, notamment pour les populations vulnérables." Below this is a section titled "Recommandations sanitaires en cas d'épisodes de pollution" and a table with the following content:

| Messages pour le seuil d'information et de recommandation |  |
|---|--|
| Cibles des messages                                       | Message d'information et de recommandation   |
|   | - Réduisez, voire évitez, les activités physiques et sportives intenses** (dont les compétitions), autant en plein air qu'à l'intérieur. |

Press release :

The press release is titled "COMMUNIQUE DE PRESSE" and is dated "Paris, le 14 mars 2014". The main heading is "Épisode de pollution aux particules fines : le ministère des Affaires sociales et de la Santé rappelle les recommandations sanitaires". The text states: "La France connaît depuis plusieurs jours un épisode de pollution aux particules fines avec dépassement dans plusieurs régions des seuils d'information puis des seuils d'alerte. Face à ce phénomène, le ministère des Affaires sociales et de la Santé rappelle les recommandations du Haut conseil de santé publique (HCSP) à l'ensemble de la population et, en particulier, aux personnes les plus vulnérables. Ces recommandations sont actuellement relayées sur le site Internet du ministère et par les Agences régionales de santé (ARS). Le ministère des Affaires sociales et de la Santé a demandé aux ARS des régions concernées par cet épisode de pollution et à l'Institut de veille sanitaire (InVS) de communiquer de façon quotidienne les résultats de la surveillance effectuée par les urgences hospitalières et la médecine d'urgence de ville, notamment pour les enfants et les personnes âgées." A box at the bottom is titled "Rappel des recommandations du HCSP" and contains the text: "Cet épisode de pollution ne justifie pas de mesure de confinement. Il convient donc de ne pas modifier les pratiques habituelles d'aération et de ventilation."



## PM peak in March 2014 (2/6)

Early Spring is traditionally a 'PM peak period' because of the combination of different factors (sunlight, fertilizer application, mild temperatures...) with generally high concentrations of ammonium nitrate (> agriculture, combustion for example from motor vehicles...)

But the episode of March 2014 was exceptional because of :

- its size : a large part of the metropolitan territory ;
- its duration: more than a week (from 6 to 18 March) ;
- its intensity : exceedance of the PM10 alert threshold ( $80 \mu\text{g}/\text{m}^3$  on 24-hour average) in several locations of the territory (with maximal hour-peaks of  $227 \mu\text{g}/\text{m}^3$  close to the motorway A1 and  $186 \mu\text{g}/\text{m}^3$  on the Champs Élysées).

↳ Different measures were implemented during this episode as alternate traffic circulation and free public transports in Paris.



## PM peak in March 2014 (3/6)

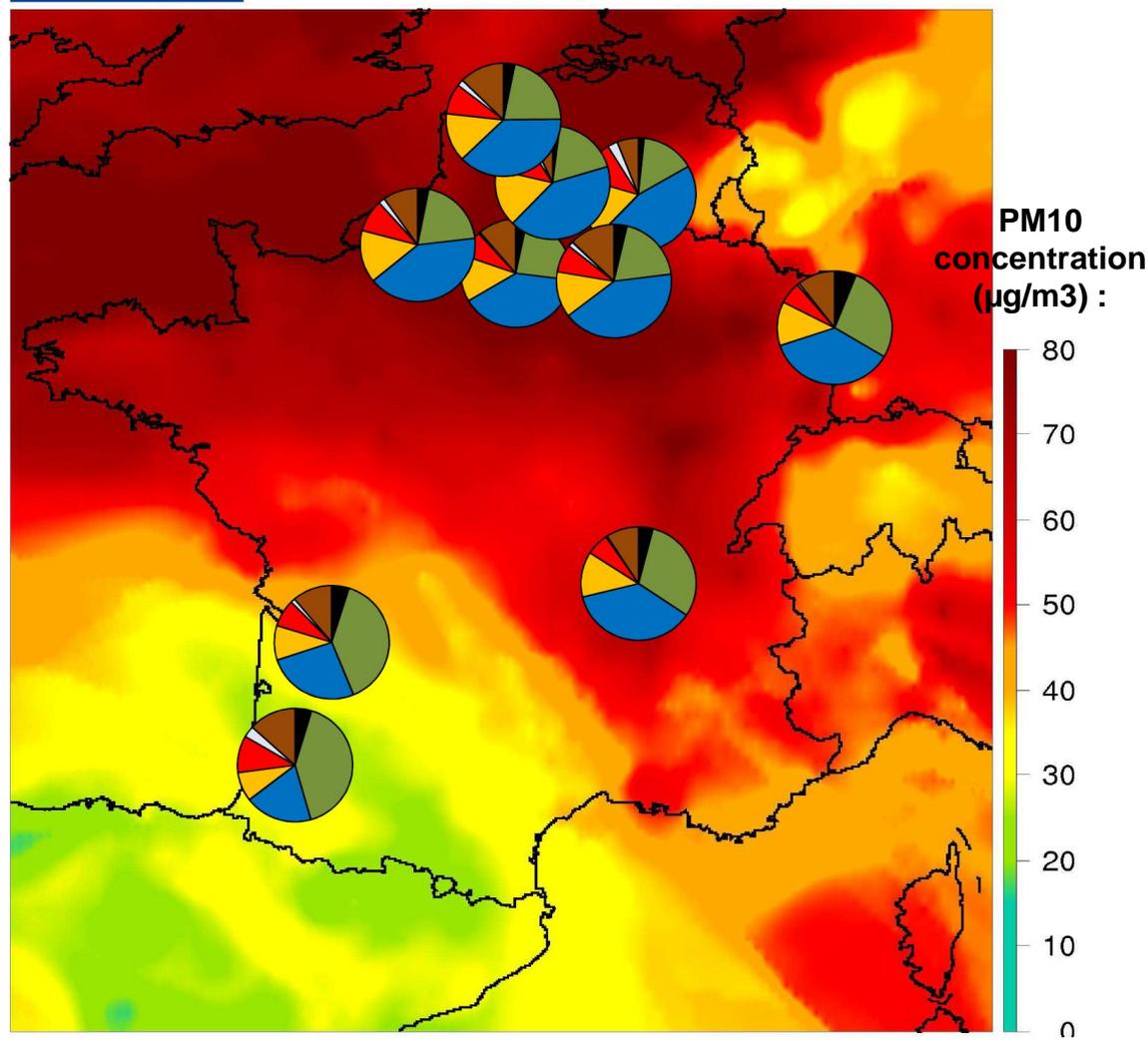
### 13 March 2014 : Concentrations in PM<sub>10</sub> and characterization of the composition :

Répartition des espèces chimiques majeures au sein des PM<sub>10</sub> , moyenne du 11 au 15 mars 2014

-  poussières minérales
-  sels marins
-  sulfate
-  ammonium
-  nitrate
-  matière organique
-  carbone suie

PREV'AIR

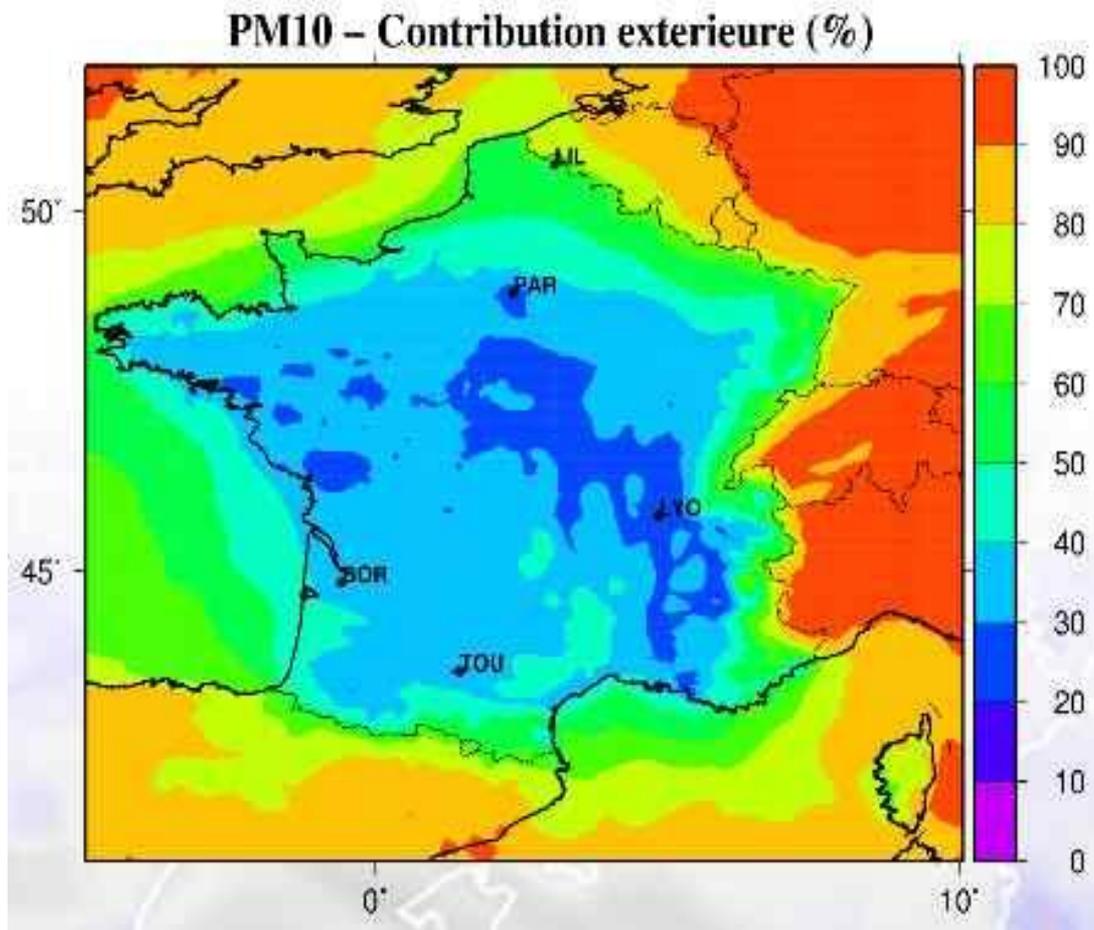
Fond: carte analysée PM<sub>10</sub> Prev'Air du 13 mars 2014





## PM peak in March 2014 (4/6)

- ✓ This PM peak was mainly due to fine PM (PM2.5) ;
- ✓ Mean contribution of emissions from out of France (7-17 March) : from 20% to 80%





## PM peak in March 2014 (5/6)

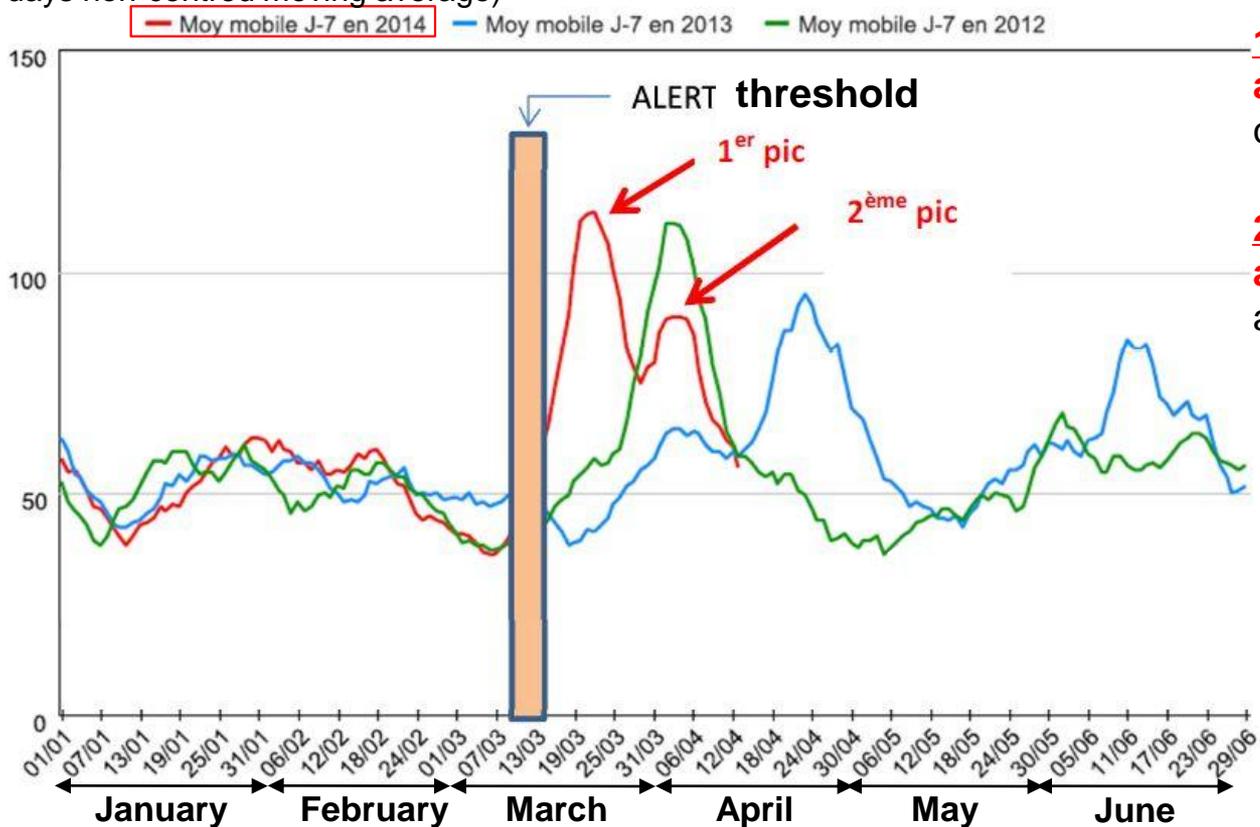
### Increase in the number of emergency department visits for asthma in the Paris region :

**Figure 1 :** Comparaison aux 2 années antérieures de la moyenne mobile 7 jours (non centrée) du nombre quotidien de passages pour asthme dans des services d'urgence d'Ile-de-France (données OSCOUR® via SurSaUD®).

#### Number of emergency department visits for asthma in Paris région

in 2012, in 2013 and in 2014

(7-days non-centred moving average)



**1<sup>st</sup> peak of emergency visits for asthma :** 20 March (mainly children 2-14 years).

**2<sup>nd</sup> peak of emergency visits for asthma :** 30 March (mainly young adults 15-44 years).

Asthma is a multifactorial disease (allergens, tobacco smoke...).

But it is probable that a part of the observed increase is due to the PM peak



## PM peak in March 2014 (6/6)

As a conclusion, we can say that this air pollution episode :

➔ Strong media coverage :

Press book of > 400 pages...

➔ Strong demand of information in particular of health recommendations for vulnerable/sensitive persons (children...) : from nurseries, preschools, elementary schools...

- Highlighted the air pollution issue.

- Raised awareness :

**on its health effects** (even if the short-term symptoms -nasal, eye irritation... - are less important in comparison with the long-term effects, they were strongly felt by people),

on the **contribution of different sources** (cars,...)

on the **greener behaviours** (for transport...) (people = victims AND actors of AP).

- Occasion to **communicate also** on long-term effects of air pollution and on the **necessity to reduce the mean levels of air pollution and the population exposure.**



## **Future works in this field :**

- Specify these health recommendations on certain points (children, use of cycling during a peak, role of aggravating factors...).
- Develop health messages for other situations (health effects of long-term air pollution and actions/behaviours to reduce it ; pollen peak...).
- Develop specific informations for the health professionals, in particular the general practitioner.



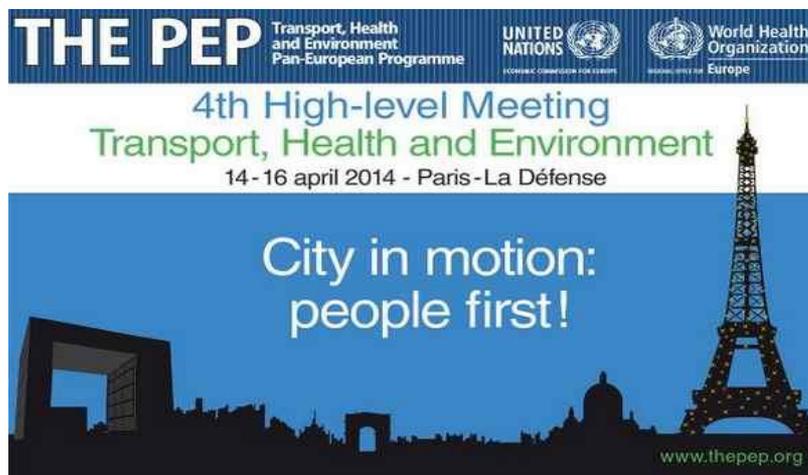
## Two informations from PARIS :

### ▶ 14-15-16 April 2014 : **Fourth High-level Meeting of the UNECE/WHO-Europe Paneuropean Programme on Transport, Health and Environment (THE PEP)**

> 200 persons from 35 State-Members of this programme (several ministers).

➡ Adoption of Paris Declaration which sets priority goals for more sustainable and healthy transports by 2020 (one goal on the reduction of transport emissions).

(Paris Declaration available on : [http://www.unece.org/thepep/en/hlm/hl4\\_info.html](http://www.unece.org/thepep/en/hlm/hl4_info.html))



### ▶ December 2015 : **21<sup>st</sup> United Nations Climate Change Conference (COP21) in Paris (Le Bourget).**

