

# The Findings of the APHEIS Study

**APHEIS**  
*Air Pollution and Health : A European Information System*

**The findings of the APHEIS study**

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*on behalf of the APHEIS group*

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### What is Apheis ?

- **European public health surveillance** system to monitor the effects of air pollution on public health at city level
- **Objective:** translates epidemiological findings into decision-making tools and provide reliable, up-to-date and easy-to-use information on the effects of air pollution on public health
- **Target audiences:** policy-makers, environment and health professionals, NGOs, the general public

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### How Apheis meets the information needs of its key audiences ?


- Create a Europe-wide public health surveillance network on the effects of air pollution on health
- Perform health-impact assessments (HIAs) on short- and long-term effects of air pollution over time
- Deliver periodic reports on the impact of air pollution on public health at the city and European levels simultaneously
- Develop communications tools for its different target audiences

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### The Apheis Network

**APHEIS 1, 2, 3:**  
1999-2004  
26 cities in 12 european countries  
~ 40 million inhabitants

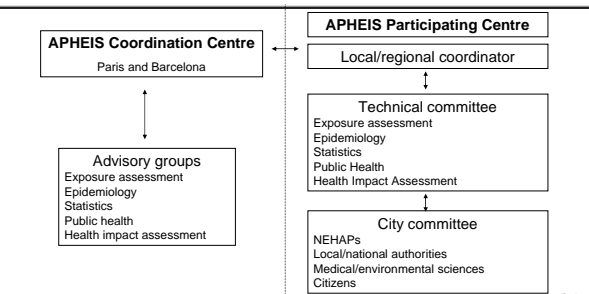
**APHEIS in ENHIS-1:**  
2005  
31 cities in 18 european countries  
> 45 million inhabitants



Legend:  
 ● Apheis Steering Committee  
 ● Apheis cities and steering committee  
 ▲ Apheis cities

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### The Apheis Network concept



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    graph TD
      ACC[APHEIS Coordination Centre  
Paris and Barcelona] <--> APC[APHEIS Participating Centre]
      subgraph APC
        LRC[Local/regional coordinator]
        TC[Technical committee  
Exposure assessment  
Epidemiology  
Statistics  
Public Health  
Health Impact Assessment]
        CC[City committee  
NEHAPs  
Local/national authorities  
Medical/environmental sciences  
Citizens]
        LRC <--> TC
        TC <--> CC
      end
      AG[Advisory groups  
Exposure assessment  
Epidemiology  
Statistics  
Public health  
Health impact assessment] <--> ACC
    
```

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### Actions, steps and results during Apheis 1 (first year)

- Created five advisory groups: public health; health-impact assessment; epidemiology; exposure assessment; statistics
- Drafted guidelines for designing and implementing the surveillance system, and for developing a standardised protocol for data collection and analysis for HIA
- Review of capacities for HIA in institutions of participating cities

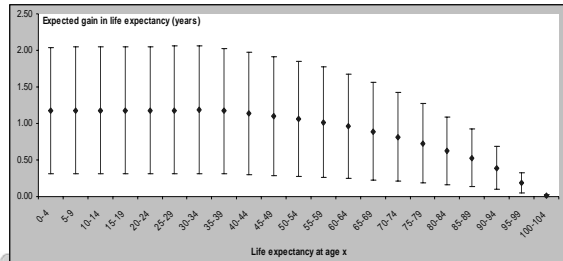
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# The Findings of the APHEIS Study

## Expected gain in life expectancy if PM<sub>2.5</sub> current annual mean levels (35 µg/m<sup>3</sup>) did not exceed 15 µg/m<sup>3</sup> in Seville



## CAFE process at the EC Setting limit values for PM<sub>2.5</sub>: 20 vs 15 µg/m<sup>3</sup>

- Our HIA revealed that reducing PM<sub>2.5</sub> levels to 15 µg/m<sup>3</sup> produces a benefit for both total and cause-specific mortality that is over 30% greater than for a reduction to 20 µg/m<sup>3</sup>
- However, because a significant health impact can be expected even below 15 µg/m<sup>3</sup>, we advise reducing air pollution to levels lower than 15 µg/m<sup>3</sup>:
  - All other things being equal, the HIA estimated that 6 355 premature deaths, including 4 199 cardiopulmonary deaths and 743 lung-cancer deaths, could be prevented annually if long-term exposure to PM<sub>2.5</sub> levels were reduced by 3.5 µg/m<sup>3</sup> in each city

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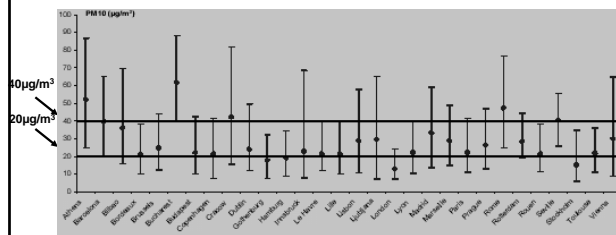
## Actions, steps and results during Apehis in ENHIS-1

- Selected air pollution indicators PM<sub>10</sub> and ozone
- Focus on children
- HIA based on available exposure/response functions, focused on
  - Post-neonatal mortality (total, respiratory, Sudden Infant Death Syndrome)
  - Hospital respiratory admissions (0-14 years)
  - Cough, lower respiratory symptoms (5-17 years)
  - Effects of ozone on emergency visits for asthma (>18 years)

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## Annual mean levels and 5<sup>th</sup> and 95<sup>th</sup> percentiles of the distribution of PM<sub>10</sub> in 30 cities (ref. year 2001-2002)



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## Reductions of PM<sub>10</sub> levels

- In absolute numbers,
- In addition to Apehis 3 findings,
- A reduction of PM<sub>10</sub> levels by 5 µg/m<sup>3</sup> would be associated with an annual decrease of 23 total post neonatal death, 5 respiratory and 7 SDIS
- A reduction of short term exposure to PM<sub>10</sub> by 5 µg/m<sup>3</sup> would be associated with an annual decrease of 2% for cough and lower respiratory symptoms (5-17 years) and 0.5% for hospital respiratory admissions (>15 years)

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## Learnings from Apehis

- The APHEIS findings add « one more brick in the wall » of evidence that air pollution continues to threaten public health in Europe
- Main source of air pollution in Apehis cities: traffic
- A bottom-up network very successful to help simultaneously local and European decision-making
- Alternative to health impact assessment at national level
  - “Local”, Urban situations
  - Use for hands-on decision making and follow up of interventions, evaluation of actions

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# The Findings of the APHEIS Study

## In addition,

The Apheis programme fosters ongoing **cross-fertilization** between multiple disciplines and regions to:

- create skilled, local teams
- enrich know-how and the quality of its findings
- and explore important HIA methodological issues

Using this approach, Apheis has established a good basis for comparing methods and findings between cities



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## Apheis as of today

Today Apheis is a highly active network of environmental and health professionals in Europe

### Thirty one cities on HIA of outdoor air pollution in 2005

- ◆ Various local and national authorities have identified this network as able over time to provide sound scientific advice on health risks related to air pollution
- ◆ Implementation of network in various settings, i.e. as NEHAP project



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## Apheis tomorrow

Memorandum of Understanding between the **Apheis network** and JRC (meeting in June in Ispra to decide on the workplan and future fundings), more cities in perspective ...

Cities not involved in the Apheis programme have expressed a desire to join the network

For further information please visit:

[www.apheis.net](http://www.apheis.net)

KNOWLEDGE  ACTION



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