Grant Agreement No. 2007105

Updated Health Impact assessment (HIA) of urban air pollution in several Spanish cities

P Martín-Olmedo1, F. Ballester2, M Nebot3, T. Martínez-Rueda4, C. Illagüez2, A. Daponte1, E. Alonso-Fustel4, P Sánchez-Villegas1, M. Pascal5, C Declerq5, S. Medina5 on behalf of the Aphekom collaborative network

1Andalucian School for Public Health (Granada), 2School for health studies (Valencia), 3Barcelona Public Health Agency (Granada), 4Basque Foundation for Health Innovation and Research (Vitoria-Gasteiz), 5Institut de Veille Sanitaire (Paris)

BACKGROUND

• Great efforts have been invested worldwide to better understand and mitigate the impact of air pollution on human health. However, the debate about safe standards is still open.

• This study aims to describe the health benefits that would be achieved by meeting the World Health Organization air quality guidelines (WHO-AQG) for PM10, and PM2.5 in the Spanish cities of Barcelona, Bilbao, Granada, Malaga, Seville and Valencia, in the framework of the Aphekom project.

DATA AND METHODS

• Traditional standard procedure for HIA of urban air pollution updated under the EU-sponsored APHEKOM project was applied in each city.

• Short-term impacts of PM10 on mortality and morbidity, as well as the long-term of PM2.5 on mortality, life expectancy (LE) and monetary health benefits were quantified based in published concentration-response functions and economic values.

• Pollutants and health outcome data were recorded for the period 2004-2006. Results were referred to population 30 years of age and older.

RESULTS

Figure 1: Average Annual PM10 concentrations (µg/m³) (2004-2006)

Figure 2: Preventable annual number of deaths (mortality excluding external causes; NEM), and hospital admissions for cardiovascular (HACv) and respiratory (HAR) diseases, if annual PM10 levels in each city would be reduced to WHO-AGC standard of 20 µg/m³.

Figure 3: Average Annual PM2.5 concentrations (µg/m³) (2004-2006)

Figure 4: Annual number of attributable deaths avoidable if annual PM2.5 levels in each city would be reduced to WHO-AGC standard of 10 µg/m³.

Annual mean of PM10 for the study period did not exceed the legislative limit value in Europe (40 µg/m³) in any of the cities. However, compliance with WHO-AQG of 20 µg/m³ would prevent each year more than 313 deaths, and between 284 and 658 hospital admissions for cardiovascular and respiratory diseases, respectively, in the six cities.

The compliance with WHO-AQG in annual PM2.5 mean would avoid more than 2732 deaths for the six cities each year, accounting for a monetary health benefit of more than 4,500 millions Euros. This decrease would result in a LE gain that would range between 13.8 and 2.3 months.

CONCLUSIONS: Our findings support the need to revise current air quality legislative limit values, especially in the case of fine particles PM2.5.

Contact: piedad.martin.easp@juntadeandalucia.es

ACKNOWLEDGMENTS

The Aphekom project has been co-funded by the European Commission’s Programme on Community Action in the Field of Public Health (2003-2008) under Grant Agreement No. 2007105, and by the many national and local institutions that have dedicated resources to the fulfilment of this project.