

ESCAPE



ESCAPE is a collaboration of more than 30 European cohort studies including some 900,000 subjects. It is aimed at quantifying health impacts of air pollution and at reducing uncertainty.



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The ESCAPE (European Study of Cohorts for Air Pollution Effects) project investigates effects on human health of long-term exposure to air pollution in Europe. The background is that the current estimates of the European health impact of especially fine particles in the air are large. However, available estimates are primarily based on exposure response relationships established in studies from North America. There is an urgent need to perform studies in Europe on recent and current exposures, and to use refined exposure assessment tools.

The overall strategy is to efficiently utilize health and confounder data from European cohort studies. To these studies, air pollution exposure assessment will be applied at the individual home address level of participants in each of these studies.

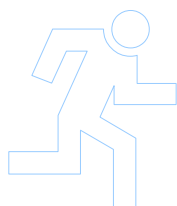
Objectives

The objectives of the ESCAPE project are:

1. To develop a flexible methodology for assessment of long-term population exposure to air pollution focused primarily on fine particles, particle composition, and nitrogen oxides.
2. To apply the exposure assessment methodology on existing cohort studies of mortality and chronic disease in Europe that have been selected based on their potential to quantify relationships between long-term exposure and health response precisely.
3. Specifically, to investigate exposure-response relationships and thresholds for (1) adverse perinatal health outcomes, and development of diseases such as asthma in children; (2) respiratory disease endpoints in adults; (3) cardiovascular disease endpoints in adults; (4) all-cause and cause-specific mortality, and cancer incidence.
4. To develop a database for quantitative estimates of the health impacts of long-term exposure to air pollution for all of these health endpoints for the European population.

The first 18 months of the study have been devoted to performing air pollution measurements, collecting GIS information, and preparing for the epidemiological data analyses.

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Description of the work and results since the beginning of the project

The ESCAPE project is organized as a set of seven, interlinked work packages, each led by one of the project partners:

WP	Work package title	Lead scientist
1	Coordination	Bert Brunekreef, Institute for Risk Assessment Sciences (IRAS), Utrecht University, the Netherlands
2	Exposure assessment	Gerard Hoek, Institute for Risk Assessment Sciences (IRAS), Utrecht University, The Netherlands and David Briggs/Kees de Hoogh, Imperial College London, United Kingdom
3	Pregnancy outcomes and birth cohorts	Göran Pershagen, Karolinska Institute, Sweden
4	Respiratory disease	Nino Künzli, Swiss Tropical and Public Health Institute Basel, Switzerland
5	Cardiovascular disease	Annette Peters, Helmholtz Research Center for Environmental Health, Germany
6	Cancer incidence and mortality	Paolo Vineis, Imperial College London, United Kingdom
7	Impact and dissemination	Bert Brunekreef, Institute for Risk Assessment Sciences (IRAS), Utrecht University, the Netherlands

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WP1 – Coordination

This WP coordinates the ESCAPE project. During the first 18 project months a plenary meeting has been organized and a study manual has been developed. The coordinating center has participated in all work package activities, and has prepared the current progress report.

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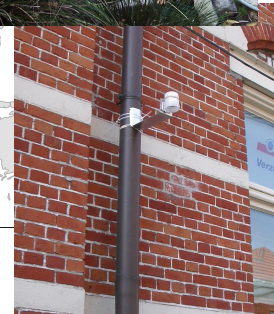
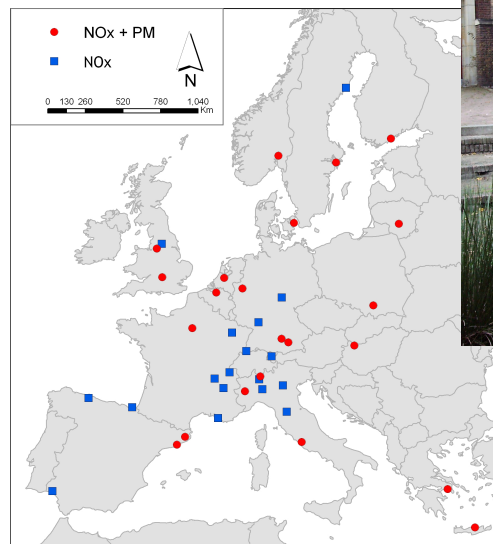


WP2 – Exposure assessment

This WP develops tools for air pollution exposure assessment, and provides these to the four health outcome WPs for implementation. A mixture of measurements and modelling will be used to estimate air pollution exposure for the individual home addresses of study participants. In addition, noise exposure will be assessed in selected cohort studies.

During the first 18 project months an exposure measurement protocol has been developed and air pollution measurements of particulate matter (PM) and nitrogen oxides (NO_x) have started in 20 of the in total 37 monitoring areas. Monitoring in the remaining areas has commenced or will commence in early 2010. Figure 1 shows the locations of all ESCAPE monitoring areas together with pictures of PM and NO_x measurements. An exposure modelling protocol has also been developed which will be used to develop exposure models.

Figure 1: Locations of ESCAPE monitoring locations and measurements of particulate matter and nitrogen oxides



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WP 3-6: Health outcomes

These WPs will use the estimated exposure to study the association between air pollution and health outcomes using already ongoing cohort studies. The association between four health outcome groups will be studied:

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1. Adverse perinatal health outcomes, and development of diseases such as asthma in children;
2. Respiratory disease endpoints in adults;
3. Cardiovascular disease endpoints in adults;
4. All-cause and cause-specific mortality, and cancer incidence.

During the first 18 project months the health outcome WPs have developed a study protocol describing the included studies and procedures regarding the to be conducted epidemiological analyses (milestones at 18 months).

WP 7 – Impact and dissemination

The aims of this WP are to develop and maintain the ESCAPE website, to discuss and report policy relevant conclusions from the ESCAPE project and to provide materials for patient groups that will inform them about risks of air pollution to their health. During the first 18 project months the ESCAPE website has been developed: www.escapeproject.eu. A dissemination strategy has also been developed, which will be further discussed and approved during the next plenary meeting (June 2010).

Expected final results and their potential impact and use

The ESCAPE project will significantly increase knowledge on the health effects of air pollution exposure and will develop a database for quantitative estimates of the health impacts of air pollution for the four health outcome groups. This will create a basis for refined European assessments of the health impact of exposure to air pollution. The output of ESCAPE can be used to support policies developed in the European Environment and Health Action Plan 2004-2010, the Thematic Strategy on Air Pollution and the Thematic strategy on the Urban Environment.

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