

*These results have just been published in the "Epidemiology" magazine and its editorial details and comments on the principal points of the study.*

## **Dust originating in the Sahara is adding to the harmful effects produced through air contamination.**

*Barcelona, 29 October 2008.-* Investigators from the Centre of Investigation in Environmental Epidemiology (**CREAL**), from the Municipal Institute of Medical Investigation (**IMIM-Hospital del Mar**) and from the Jaume Almera Centre of the CSIC, amongst others, have for the first time completed a study signed by Laura Pérez which shows up to which point dust originating in the deserts of the Sahara are adding to the contamination which already exists in our city and is causing **a worsening of the effects produced by the contamination in mortality rates at the population level**. This work is one of the first studying the effects on health of the exposure to Saharan dust.

Winds originating in the Sahara and Sahel deserts periodically transport large quantities of dust into Europe and other parts of the world which arrive in the form of suspended particles. The object of the Study is to investigate if, in Barcelona, these suspended particles have been adding to the contamination produced by human activity and could produce additional harmful effects on health.

The suspended particles (PM) are a type of particle present in the air that we breathe and are classified according to their size. The coarse PM which are the largest, measure between 2.5 to 10 micrometres – 25 to 100 times smaller than a human hair – and are normal and of natural origin such as those which come from the desert. The fine particles which are the smallest, are called PM<sub>2.5</sub>, less than 2.5 micrometres, whose presence is attributed principally to road traffic combustion processes. The Study's initial hypothesis was to observe the existing relationship between the mortality of the inhabitants of Barcelona and the effects of the exposure to coarse and fine particles in the period between March 2003 and December 2004 inclusive, comparing the effects during two days with and without winds from the Sahara.

According to **Jordi Sunyer**, from CREAL and IMIM-Hospital del Mar and Study Director: ***"upon inhaling coarse particles, these are deposited in the bronchial tracts and can be responsible for deterioration in cases of asthma, chronic obstructive respiratory disease, pneumonia and other airway infections. On the contrary, fine particles are deposited in the alveoli and can contribute to the development of cardiovascular illnesses."***

Investigators obtained information via satellite on the paths of air masses originating in the Sahara. At the same time, they looked at the daily deaths in Barcelona, a total of 24,580 deaths occurring during the study period which showed that, coinciding with a presence in the breathable air of dust from the Sahara produced daily and **in the city of Barcelona an increase in mortality of 8.4% for every increase in coarse PM compared with 1.4% recorded during the days free of winds from North Africa**. An increase in the mortality rate which the investigators attribute to an increase in the air of coarse particles. It must be said that the increase in mortality due to fine PM did not vary in days with or without dust from the Sahara, which coincides with the fact that this (PM) was of local origin mostly due to traffic.

In order to evaluate each country's compliance with the legal limit value of coarse PM in the air, new European legislation already envisages discounting daily excesses of suspended particles which are of natural origin. **The importance of the present work is due to the fact that it can be shown for the first time and in an explicit way, the danger to health which exists, associated with the increase of coarse particles originating from natural processes such as dust from deserts.**

The possibility that dust from the Sahara contains irritants or additional allergogenics has already been evaluated by other studies which have already demonstrated that it contains high levels of microbes and fungi. On the other hand, it does not appear that the level of metals this dust contains is responsible for this mortality increase but rather biogenic factors which the larger particles carry. Furthermore, there can be other chemical substances responsible for this effect such as pesticides or industrial by-products, also carried by Saharan dust which were not measured in the present study.

**In light of the results, the study showed the need to study in greater depth the mechanisms by which coarse particles present in the air notably increase mortality rates in the population.**

**Reference works:**

*“Coarse Particles From Saharan Dust and Daily Mortality” Epidemiology 2008; 19: 800–807*

*“Desert Dust. An Unrecognized Source of Dangerous Air Pollution” Epidemiology 2008; 19: 808–809*

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