

lar traffic, turned out to be a relevant public health problem in Italy. In order to set up a long-term surveillance program (2001-2010), a network of public institutions in the field of environmental control and public health has been set up.

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- P100 -

PARTICULATE MATTER FROM A PARTICLE NUMBER COUNTER AND HEALTH EFFECTS IN TURIN, ITALY: PRELIMINARY RESULTS

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Introduction. Epidemiological research has found correlation between exposure to particulate matter (PM) and health effects. Supposing that the total surface of the particles closer correlate with tissue damage, we evaluated the daily PM concentration, usually expressed as a mass, through a measurement of the number of particles.

Objectives. To evaluate the associations between PM levels and acute health effects using innovative monitoring instruments that will allow the fine fraction analysis.

Methods. 7,144 subjects resident in Turin, aged over 35 years and died for natural, cardiac, cerebrovascular and respiratory causes were considered, as well as acute hospital admissions for the same diseases. An optical particle counter was placed over a period of one year in an urban background station in the city of Turin. In this first step, particle masses were calculated from the particle counter data, and expressed as $\mu\text{g}/\text{m}^3$. A case-crossover analysis was applied using a time-stratified approach, controlling for influenza, holidays, population decrease, temperature. Analyses were stratified for gender, age class and season of death/hospitalization. Results are expressed as percent increase in mortality/hospitalization for 10 $\mu\text{g}/\text{m}^3$ PM increase (lag 0-1).

Results. For the mortality, except that for cardiac causes, we observed percent increases always above 0 but never statistically significant, with higher risks for respiratory causes. Among subjects aged 75-84 years, men and in cold season we observed significant effects of PM on cerebrovascular and respiratory mortality. Subjects aged 75-84 years were at risk for hospital admission for cerebrovascular and respiratory diseases.

Conclusions. We analyzed short terms effects for a short period (about 1 year) of available data. The preliminary findings suggest that: a particle counter might be suitable for assessing particular matter variability; further investigation are necessary for particulate fine fraction.

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A CASE-CROSSOVER ANALYSES ON THE EFFECTS OF AIR POLLUTANTS ON HOSPITALIZATION FOR RESPIRATORY AND CARDIOVASCULAR DISEASE, IN MASSA AND CARRARA, TUSCANY, ITALY (2005-2009)

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Introduction. Several studies have reported significant associations between outdoor air pollution and health outcome, such as deaths and hospital admissions for respiratory and cardiovascular diseases.

Objectives. To analyse the short-term effects of air pollutants levels on hospital admissions for respiratory and cardiovascular diseases occurred in Massa-Carrara (Italy) during 2005-2009.

Methods. Hospital admissions for respiratory and cardiovascular diseases, ambient air pollution data (PM10, NO₂, O₃ and CO) and meteorological parameters were collected from July 2005 to December 2009 in the area of Massa-Carrara, northern Tuscany (Italy). A time-stratified case-crossover design was implemented and conditional regression models were fitted, adjusting for meteorological data and a set of time-dependent variables. The associations between exposure and hospitalised events were analysed taking into account different lag patterns in order to evaluate immediate or delayed effects of pollutants. Stratified analyses were conducted to identify more susceptible subgroups.

Results. 7,931 admissions in local hospitals for respiratory diseases and 18,521 for cardiovascular diseases were identified for residents in Massa-Carrara. Respiratory hospital admissions were associated to 0,1 mg/m^3 increase in CO (OR=1.035; 95%CI: 1.017-1.053, lag0), to 10 $\mu\text{g}/\text{m}^3$ PM10 increase during warm season (OR=1.05; 95%CI: 1.01-1.10, lag 4); children (0-14 years) respiratory admissions were associated to NO₂ (OR=1.14; 95%CI: 0.979-1.343, lag1) and to O₃ (OR=1.09; 95%CI: 1.01-1.17, lag3). Cardiovascular admissions were associated to NO₂ (OR=1.029; 95%CI: 1.004-1.056, lag0), to PM10 (OR=1.029; 95%CI: 1.001-1.058, lag1) and to CO (OR=1.035; 95%CI: 1.005-1.067, lag4) during warm season.

Conclusions. This study confirmed the adverse effects of outdoor air pollution on cardiovascular and respiratory health. Elder people and children had higher risks of disease, mainly during warm season.

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A NATIONAL SURVEILLANCE SYSTEM FOR THE MONITORING OF THE IMPACT OF ENVIRONMENTAL EXPOSURES ON MORTALITY

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Introduction. Since 2004, a national mortality surveillance system was implemented within the national program for the prevention heat-health effects to monitoring summer mortality in Italian cities.

Objectives. To show the possible applications of real time mortality data to monitoring timely health threats such as heat waves and influenza pandemic.

Methods. Every day, anonymous individual mortality records for the resident population are sent by local Registry Offices. In most cities, mortality counts are complete on average 72 hours providing a high quality database which is readily usable. A city-specific mortality baseline is defined on the basis of long time series of deaths, accounting for month and day of the week. Observed mortality is com-