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1 UFIPOLNET: All UFP 330 prototypes online (EN)

The new developed instrument UFP 330 has been installed at all 4 measuring stations (Dresden, Augsburg, Stockholm and Prague). The Data will be compared to conventional DMPS in 3 stations and in all stations with nitrogen oxides (NOx).

Fig 1a-d Info plates and running instruments at all 4 stations: Stockholm (up, left), Augsburg (up, right), Prague (down, left), and Dresden (down, right) Feb-2007 (Photos by UFIPOLNET-Partners).

The UFIPOLNET Interim Report will be available in April 2007 on the website www.ufipolnet.eu. You will find there also other additional news concerning new developments and dissemination activities as well as news about the project final conference from 23rd to 24th October "Ultrafine Particles in Urban Air" this year.

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2 How to improve Human Health Protection in Air Quality Policies (DE)

Science for Environment Policy 8 February, 2007 Issue 53

Different studies have demonstrated the association between high ambient concentrations of particulate matter (PM) and the prevalence of adverse effects on human health. The EU 1999/30/EC Council Directive Relating to Limit Values for Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter and Lead in Ambient Air, established limit values (50 µg/m3) for particulate matter smaller than about 10µm, referred to as PM10, starting from 2001. Furthermore, in the draft Air Quality Directive and Clean Air for Europe report from September 2005, the European Commission recommended the implementation of an annual cap value of 25 µg/m3 for particles with a diameter below 2.5 µm (PM2.5) after 2015. Some recent toxicological studies suggest that the chemical composition of PM, which reflects different source contributions, plays an important role in the associated adverse effects on human health.

European researchers have analysed the chemical composition of PM in two size fractions (PM2.5 and PM10) in two different climatic and geographic regions in Europe: Ghent (Belgium) in West Europe, and Barcelona (Spain) in the Mediterranean region. The researchers observed that the composition of PM10 was markedly different in the two sites and in the two seasons, even at similar absolute PM10 levels, owing to regional and climatic factors. Indeed, at similar PM10 concentrations, particulate matter in Ghent (winter) was mainly made up of second inorganic aerosols whereas in Barcelona (summer) the same fraction accounted for approximately half as much. Conversely, in Barcelona mineral matter was the dominant component, whereas in Ghent it only accounted for 9% of the PM10 mass.

When examining the possible approach of subtracting the mineral and the sea-salt fraction from the total PM load in order to calculate the number of cases where established limits were exceeded, the authors observed that the subtraction of the mineral faction would have the largest impact. Indeed, it resulted in a 27% and 9% reduction of average daily PM10 levels in Barcelona and Ghent respectively, and a 9% and 3% reduction in PM2.5 levels. The subtraction of the sea-salt fraction had no effects on PM10 or PM2.5 excesses in Barcelona and removed one excess of each size fraction in Ghent.

Original source: M. Viana, W. Maenhaut, X. Chi, X. Querol and A. Alastuey (2007) « Comparative chemical mass closure of fine and coarse aerosols at two sites in south and west Europe: Implications for EU air pollution policies», Atmospheric Environment 41(2): 315-3
Contact: mviana@ija.csic.es
Source: "Science for Environment Policy"08-Feb-2007; Issue 53
http://ec.europa.eu/environment/integration/research/newsalert/themes_en.html

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3 Mutagenic Effects of Urban Air Pollutants (DE/EN)

Science for Environment Policy 8 March, 2007 Issue 57

“Fine particulate matters with a diameter of less than 2.5µm (PM2.5), in particular, have adverse effects on human health because these small size particles are able to go deep inside the alveolar regions of the lungs where blood exchange occurs. The major sources of this pollutant include fuel combustion from automobiles, power plants, wood burning, industrial processes and diesel powered vehicles. Scientists have largely demonstrated the health effects of PM2.5, such as decreased pulmonary function and cardiovascular disease. In the EU, this pollutant causes about 390,000 premature deaths per year (i.e. every year, the life of about 390,000 EU inhabitants is shortened by 9 years due to PM2.5 inhalation). Besides these health effects, PM2.5 is also a mutagenic agent. However, its mutagenic properties have been little studied.”
Italian researchers have evaluated the genotoxic activity of PM2.5 in order to identify the mutagenic properties of this pollutant. They sampled airborne particles in Turin for 3 years in short distance from high

traffic areas. The samples were then used to perform mutagenic tests using Salmonella typhimurium, a bacterium that is well known for its hyper-sensitivity to mutagenic and carcinogenic agents.
The monthly mean concentration of PM2.5 in the air over the 3 years was 48.76 µg/m3, which is high compared to the annual mean concentration of 15µg/m3 set by American legislation. Winter concentrations are up to 3 times higher than summer values. In winter, mutagenic activity is up to 8 times higher than in summer. PM2.5 concentrations are correlated with the mutagenic activity. They observed a month by month and year by year variation in the results of the mutagenic activity test and suggest that the composition of mutagen compounds in airborne particles may vary depending on the atmospheric conditions.
Overall, the researchers suggest that these findings could be useful for evaluating the risk of cancer due to air pollution in order to improve the precautionary measures taken, especially in urban areas. In the Thematic Strategy on Air Pollution1, the European Commission proposed to set the PM2.5 concentration limit at below 25µg/m3. The results of this study could provide new insights into the choice of such a limit.

Original source: G. Gilli et al. (2007) « The mutagenic hazards of environmental PM2.5 in Turin », Environmental Research 103:168-175.
Contact: Deborah.traversi@unito.it
Source: "Science for Environment Policy"08-Mar-2007; Issue 57
http://ec.europa.eu/environment/integration/research/newsalert/themes_en.html

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4 Air Pollution May Up Fatal Stroke Risk (CBS News 15-Feb-2007) (DE/EN)

By Miranda Hitti (CBS News)

(WebMD) Fine particles in air pollution may raise fatal stroke risk in people aged 65 and older during warm months.

So say experts including Jaana Kettunen, MSc, of Finland's National Public Health Institute. Kettunen's team studied fatal stroke risk and air pollution among people 65 and older in Helsinki, Finland's capital. The study, published in Stroke, shows a rise in fatal stroke risk among people 65 and older on warm days when the air was laden with fine particle pollution. Based on the findings, Kettunen offers some advice in an American Stroke Association news release. "We suggest that on high pollution days, elderly people should avoid spending unnecessary time in traffic, whether in a vehicle or walking, especially if they suffer from cardiovascular diseases, to lower their exposure to pollutants," says Kettunen. "They should also avoid heavy outdoor exercise on high pollution days, and nursing homes, for example, should not be built along heavily trafficked roads, where particle concentrations are at their highest."

Study Details
Kettunen and colleagues studied air pollution and fatal stroke in metropolitan Helsinki – where about a million people live – from 1998 to 2004. During those years, 3,265 people 65 and older died of stroke in metropolitan Helsinki, the study shows. Most of the deaths – 1,961 – occurred during the cold months of October to April. The other 1,304 deaths happened during Helsinki's warm season, May to September. The researchers also checked Helsinki's outdoor air pollution levels during the months. Data came from pollution-measuring stations around Helsinki. Kettunen's team paid special attention to fine particles. Fine particles mainly come from combustion engines and have been suggested to be "especially harmful," write the researchers.

Pollution and Fatal Stroke Risk
Although stroke deaths were most common during the cold season, the mix of warm weather and pollution may have upped fatal stroke risk. When outdoor levels of fine particle pollution were high, fatal stroke risk rose – but only during Helsinki's warm season. High levels of fine particle pollution weren't linked to fatal

stroke risk during Helsinki's cold months. Though fine particle pollution was actually a bit higher during the cold months, the study shows. But the researchers note that people spend more time outdoors, and are thus exposed to more air pollution, during warm weather. During Finland's frigid months, people tend to nestle indoors. That cuts their exposure to air pollution, possibly lowering their risk of suffering a fatal stroke. Ultrafine particle pollution, carbon monoxide, and coarse particle pollution weren't strongly linked to fatal stroke risk.

Study's Limits

The study doesn't prove that pollution causes stroke. Many factors – including age, heart disease, smoking, and diabetes – may make people more vulnerable to stroke. Kettunen's study didn't track those risk factors among the people who died of stroke. The study only included fatal strokes. Future studies should also look at nonfatal stroke risk, the researchers suggest.

Original source: Kettunen, J. Stroke, March 2007. News release, American Stroke Association.
Source: CBS News 15-Feb-2007
http://www.cbsnews.com/stories/2007/02/15/health/webmd/main2483769.shtml

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5 Auch 2006 hohe Belastung durch Feinstaub in vielen Städten (DE)

Die Auswertung der noch vorläufigen Feinstaubdaten für das Jahr 2006 zeigt: Die Belastung der Bevölkerung mit gesundheitsschädlichen Feinstäuben ist erneut zu hoch. An 100 der rund 450 Messstationen lag die Feinstaubkonzentration im vergangenen Jahr an mehr als 35 Tagen über dem zulässigen Wert von 50 µg/m³ (Mikrogramm = ein Millionstel Gramm pro Normkubikmeter Luft). Wie auch in 2005 traten Grenzwertüberschreitungen überwiegend an städtischen Verkehrsstationen auf, was darauf schließen lässt, dass der Verkehr maßgeblich zur Grenzwertüberschreitung beiträgt. Deshalb planen viele deutsche Großstädte, Umweltzonen einzurichten.

Auf der Basis der seit dem 1. März geltenden Kennzeichnungsverordnung sollen Fahrzeuge mit schlechteren Abgaswerten als EURO 2 aus Umweltzonen verbannt werden, deren Einführung derzeit zahlreiche Städte erwägen. Umweltzonen bringen – neben der zu erwartenden Verbesserung der Feinstaubsituation – noch einen weiteren positiven Effekt mit sich. Sie tragen dazu bei, die Belastung von Mensch und Umwelt mit Stickstoffdioxid zu verringern. Auch hier besteht dringender Handlungsbedarf. Derzeit wird an rund der Hälfte der innerstädtischen verkehrsnahen Messstationen der ab 2010 einzuhaltende Stickstoffdioxid-Grenzwert von 40 µg/m³ im Jahresmittel zum Teil drastisch überschritten.

Weitere Informationen und aktuelle Luftqualitätsdaten:
http://www.env-it.de/luftdaten/start.fwd
Weitere Informationen zu Umweltzonen, Plaketten und Nachrüstungsmöglichkeiten:
http://www.vcd.org/umweltzone.html

Quelle: UBA aktuell 1/2007 http://www.umweltbundesamt.de/newsletter/index.htm

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CONTACT

Dr. Holger Gerwig
Chemist / Desk officer
Project manager of UFIPOLNET
Email: Holger.Gerwig@smul.sachsen.de
Internet: http://www.umwelt.sachsen.de/lfug
UFIPOLNET: http://www.ufipolnet.eu
UFIPOLNET = Ultrafine particle size distributions in air pollution monitoring networks
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