



## EU study of public health effects of exposure to toxic metals

**Possibilities to prevent health consequences of toxic metals will be the result of a new, large 5-year project supported by the European Union's (EU) Sixth Framework Programme. The research will be made in an integrated project in the sixth frame program on research and technological development. The EU grant is 13 million euros, but when the financing by the partners is also accounted, the total budget is about doubled, says Staffan Skerfving, professor at the Division of Occupational and Environmental Medicine at Lund University, Sweden, who is the co-ordinator of the project.**

The project (acronym PHIME - "Public health aspects of long-term, low-level mixed element exposure in susceptible populations strata") will engage a network of 31 partners (research groups) from most EU member states (Sweden, Denmark and the Faroe Islands, Finland, Germany, Belgium, United Kingdom, Italy, Slovenia, Lithuania, Poland, Slovakia, Czech Republic and Greece), one candidate state (Croatia), Switzerland, USA and three developing countries (China, Bangladesh and Seyshelles).

Health effects of exposure to toxic elements are a major problem in many parts of the world, including all parts of Europe. PHIME's focus will not be on classical toxicity of high intakes, but on long-term, low-level exposures. Important focuses will be on important public health problems – developmental disturbances of the fetal brain and diseases such as Parkinson's disease, coronary heart disease, stroke, osteoporosis/fractures, diabetes and uremia. The intention is to describe the fraction of such disorders attributed to the toxic elements, and hence preventable. PHIME will mainly address risks run by population strata at high risk, e.g., women, fetuses, children and individuals with particular genetic traits.

Major elements to be studied in PHIME are mercury, cadmium, lead, arsenic, manganese, platinum, palladium, rhodium and uranium, and in particular mixtures, since they may interact. The main interest is in the general environment (through foods, water and inhaled air). The geography of the exposure, and its changes over time, will be screened by analyses of metals in blood from women and children from many parts of Europe. This will enable comparisons and risk assessment. Of particular interest are the metals emitted from catalytic converters in the exhaust systems of cars, which rapidly increase in Europe.

Exposure to metals by plants is one important issue in PHIME. Hence, one central area to be tackled is the mechanisms by which plants take up and accumulate toxic and essential metals. This will enable design of plants that accumulate less of toxic, and more of health-promoting elements (selenium, zinc, copper, etc.). Also, the uptake of toxic metals into plants from soil contaminated by, e.g., industrial emissions will be determined.

A main issue in PHIME will be rapid and effective dissemination of the information to decision-makers, industry and organisations with capacity to use them in risk-management and health-promoting activities, such as the European Commission and its agencies, other international organizations, and national and regional authorities on health, foods, environment and agriculture.

The kick-off of the project will be at the European Environment Agency (EEA) in Copenhagen on 1-3 March 2006. "...the assessment of health impacts of low level exposures to a mixture of pollutants is of particular interest to the EEA, taking into consideration the variability in human's vulnerability to environmental stressors, geographical patterns of exposure across Europe, as well as methodological developments to support science-based decision making.", writes Prof. Jacqueline McGlade, Executive Director of the EEA.

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