

## **1.6 The WHO/UNEP Global Environment Monitoring Systems (GEMS) Programmes for Measuring Human Exposure to Air Pollutants**

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The WHO/UNEP GEMS Programme recognises that ambient (outdoor) air quality data, although useful for many other purposes such as control and trends, does not reflect human exposures to air pollution. People spend of the order of 90% of their time indoors where the presence of pollutant sources and sinks can enhance or mitigate the outdoor pollutant effect.

It is necessary to determine the amounts of pollutants people actually take in. WHO/UNEP GEMS is encouraging the conjoint approach of measuring personal exposures to air pollutants (through all media) along with ambient air quality as an appropriate tool for definition and solution of air pollution problems. This is the GEMS/HEAL (Human Exposure Assessment Location) programme in developed and developing countries. The member countries are Brazil, China, Germany, Hungary, India, Japan, Mexico, Russia, Sweden, Thailand, USA and Yugoslavia. The measurements are difficult to carry out as people vary widely in their ventilation rates. Measurements include the use of monitors in situ, indoors and outdoors and personal, analysis of duplicate meals etc.

Preliminary results have been obtained of lead and cadmium levels in a number of cities. Lead levels have decreased over time as a result of the decreased use of lead in motor fuel. However, cadmium levels have remained constant due to the fact that the cadmium is all derived from food.

Future determinations on eg. mercury, fluorine, will depend on which items are chosen by collaborating countries.