

Japanese researchers develop tiny toxic smog sensor

May 29 2008

Japanese researchers say they have developed a smog sensor the size of a finger nail that could be carried around and used to measure pollution in the air that people breathe each day.

It is significantly smaller than the sensors as big as bulky boxes that are currently used to measure smog and continuously take measurements.

"In the future you could measure the pollution at the end of the day when you come home," one researcher involved in the study at NTT Energy and Environment Systems Laboratories told AFP.

The user could carry around the small sensor with his or her personal belongings to expose it to the air for an hour, a day, a week or longer to allow pollutants to accumulate in the chip.

The user could then snap a picture of the sensor with a cellphone camera for detailed analysis using software installed in the mobile telephone or by sending the data to a research centre for feedback.

"It would be good if you can analyse data with the camera built in a cellphone that you already have," the researcher said.

There are 100 million cellphones in Japan, meaning almost everybody in a nation of 127 million people has one.

The photochemical sensor is a square glass chip measuring eight by eight

millimetres (0.32 inches) and one millimetre thick.

White smog occurs when nitrogen dioxide in car fumes and other chemicals react in sunlight and produce harmful photochemical oxidants.

The chip has countless tiny pores which hold chemical compounds. When they react with oxidants in the air, the spectrum of the glass changes depending on the oxidants' density.

Currently the change cannot be seen by the human eye although researchers are working to try to make it more visible.

The researcher said "visualising the environment" is important as people need to be aware of their surroundings before taking steps to tackle pollution.

The sensor results could also be sent to a research centre to form a pollution map or pollution forecast for a designated area.

As the chip cannot be refreshed, the user has to replace it to start again. The laboratory hopes to put the sensor in practical use at some point.

Industrial pollution from China is increasingly worrying its neighbours.

Some schools in southern Japan and South Korea have occasionally curbed activities because of toxic chemical smog from China's factories or sand storms from the Gobi Desert caused by rampant deforestation.

(c)2008 AFP

2024 from <https://phys.org/news/2008-05-japanese-tiny-toxic-smog-sensor.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.