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Artificial nose 'sees' smells

By Merritt McKinney

NEW YORK (Reuters Health) - Sniffing a milk carton to see if the milk has turned sour may one day be a thing of the past. Dyes that are activated when they come into contact with certain chemicals make it possible to see that a smell is present, according to a report.

The system has several potential uses, both at home and at work, one of the authors of the study, which is published in the August 17th issue of the journal *Nature*, told Reuters Health.

"We have a very simple way of using an array of dyes that change colors when they interact with other chemicals," Dr. Kenneth S. Suslick, of the University of Illinois at Urbana-Champaign, told Reuters Health in an interview. Although the colors are visible to the human eye, taking a digital picture or scan before and after using the dye provides a detailed color fingerprint--a pattern unique to a specific chemical--Suslick said.

The technology makes it possible "to basically have an artificial nose," according to Suslick. This artificial nose has many practical applications, he said, including monitoring workers' exposure to chemicals in factories and screening luggage for contraband fruits and vegetables or even explosives. The military may use the technology as a way to detect poisonous gas, he stated.

Suslick also suggested refrigerators may one day be equipped with detectors that signal when milk has gone sour. While refrigerators that sniff out bad food smells are not for sale yet, Suslick said the artificial nose technology should be available soon, although it will probably be used in industrial settings before it makes its way into homes. "We've passed most of the scientific hurdles," he said, noting that the technology should be fully functional within a year or two.

The visual smelling system could have many uses, according to Dr. Ingemar Lundstrom, of Linkopings University in Sweden. It could be used to measure levels of pesticides in the environment or to zero in on infection-causing bacteria, Lundstrom notes in an editorial that accompanies the study.

"We have not yet seen the last development in systems to detect specific chemical interactions and, in particular, to 'see the smell,'" the editorialist concludes.

SOURCE: *Nature* 2000; **406**: 682-683, 710-713.