Seeing smell: A little strip of high-tech litmus paper one day could detect
diseases faster and more cheaply than current tests.

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You take a breath analysis test. Not to see if you've been drinking — though it is sensitive enough to discern Bud
from Miller. This test tells you if you have early stage lung cancer.

This is not too far off, if all goes well for Kenneth Suslick, a chemist at the University of Illinois at Urbana-Champaign.

He has invented a little strip of high-tech litmus paper, called a colorimetric sensor array, that makes it possible, in
effect, to see smells.

He puts dots of chemical-sensitive dyes onto a five-by-five array about the size of a quarter. The dyes change color
when they come into contact with even the slightest whiff of an organic chemical, which rise as byproducts off of
beer, soft drinks, bacteria and even tumors.

"That's not the way Mother Nature usually does things," he said, referring to the way that
eyes recognize a face (and noses recognize a smell) from its overall quality, not from
individual freckles. Much like a fingerprint, the
sensor array produces a dot map that
precisely identifies the smell.

In recent scientific papers, Suslick has shown
that the sensors can quickly and cheaply
distinguish Pepsi from Coke and Bud from
Miller. He thinks coffee, beer and soft drink
companies might want to pursue the
real applications are in medicine, he says.

"I think you could have a strip that
requires multiple expensive tests, said ChemSensing President Matthew Placek. That time could be cut down to half
a day, with a disposable strip that costs only dollars to make.

With the other objective, breath analysis, the strips can identify the strain of bacteria causing a respiratory infection
such as pneumonia and allow a doctor to tailor a prescription. A recent pilot test at the Cleveland Clinic in Ohio found
that the sensors could detect lung cancer on the breath of victims 75 percent of the time.

Placek says detection rates can be improved up to 90 percent and hopes to see the technologies available to the
public in the next three to five years.