

# Invention busts dust

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Worried that dust from a nearby construction zone will harm your family's health? A new Tel Aviv University tool could either confirm your suspicions or better yet, set your mind at rest.

Prof. Eyal Ben-Dor and his Ph.D student Dr. Sandra Chudnovsky, of TAU's Department of Geography have developed a sensor called "Dust Alert" — the first of its kind — to help families and authorities monitor the quality of the air they breathe. Like an ozone gas or carbon monoxide meter, it measures the concentration of small particles that may contaminate the air in your home. Scientific studies on "Dust Alert" appeared recently in the journal *Science of the Total Environment*, Urban Air Pollution: Problems, Control Technologies and Management Practices.

"It works just like an ozone meter would," says Prof. Ben-Dor. "You put it in your home or office for three weeks, and it can give you real-time contamination levels in terms of dust, pollen and toxins." Functioning like a tiny chemistry lab, the device can precisely determine the chemical composition of the toxins, so homeowners, office managers and factories can act to improve air quality.

Using the measurements, Prof. Ben-Dor can sometimes find a quick remedy for a dusty or pollen-filled home. The solution could be as easy as keeping a window open, he says. "We've found through our ongoing research that some simple actions at home can have a profound effect on the quality of air we breathe."

## Instant results

Based on a portable chemical analyzer called a spectrophotometer, the invention can be installed and begin to collect data within minutes, although several weeks' worth of samples produces the best assessment of air quality. The longer period allows for fluctuations in both internal and external environments, such as changing weather patterns.

The "Dust Alert" fills an important need. Polluted air, breathed in for weeks, months and sometimes years, can have fatal consequences, leading to asthma, bronchitis and lung cancer. With findings from Prof. Ben-Dor's invention, urban planners can provide better solutions and mitigate risks. "We can certainly give an accurate forecast about the [health](#) of a home or apartment for prospective home owners. If somebody in your family has an allergy, poor air quality can be a deal breaker ," says Prof. Ben-Dor.

Prof. Ben-Dor's device may be most useful in the aftermath of disasters, such as chemical fires, heavy dust storms, hurricanes or tragedies like 9/11. Survivors of these situations are usually unaware of the lingering environmental problems, and the government can't do enough to protect them because no accurate tools exist to define the risk. Using a Dust Alert, residents could be advised to vacate their homes and offices until the dust has cleared, or to take simple precautions such as aerating hazardous rooms in a flat, suggests Prof. Ben-Dor.

## Putting dust on the map

According to Prof. Ben-Dor, the Dust Alert could also be used by cities and counties to develop "dust maps" that provide detailed environmental information about streets and neighborhoods, permitting government authorities like the EPA to more successfully identify and prosecute

offenders. Currently, for example, there is no system for demonstrating how construction sites compromise people's health.

"Until now, people have had to grin and bear the polluted air they breathe," says Prof. Ben-Dor. "The Dust Alert could provide crucial reliable evidence of pollution, so that society at large can breathe easier. We can see the dust on the furniture and on the windows, but most of us can't see the dust we breathe. For the first time, we are able to detect it and measure its more dangerous components."

With their dust maps, TAU scientists have already correlated urban heat islands with high levels of particulate matter, giving urban planners crucial information for the development of green spaces and city parks. Prof. Ben-Dor also plans to develop his prototype into a home-and-office unit, while offering customized services that can help people decode what's left in the [dust](#).

Source: Tel Aviv University ([news](#) : [web](#))

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