Asthma Triggers

Connecting Your World
Asthma prevalence is currently at an all-time high, making it the most common and costly disease in the US according to the Asthma and Allergy Foundation of America (AAFA). According to AT&T Labs researcher Bob Miller, “The increasing prevalence of asthma due to plastics, cleaning chemicals, perfumed aerosols and other airborne volatile organic compounds (VOCs) in the home and elsewhere are a likely cause.” Noting the impact of VOCs on asthma, AT&T Labs researchers have prototyped Asthma Triggers, a wireless sensor that scans the air for harmful chemicals and alerts users so that an asthma attack might be averted. By helping to prevent these attacks, asthma sufferers can experience less unnecessary suffering, fewer expensive hospital visits and a higher quality of life.

This sensor is equipped with ZigBee wireless connectivity, builds on the Actuarius™ and the VitalSpan™ gateway cloud platform, feeding air quality data through AT&T’s advanced collaborative care and healthcare information exchange platform, AT&T Healthcare Community Online. When it detects VOCs, large enough to be unusual or a potential problem, it transmits the readings to the Telehealth Remote Monitoring dashboard, which can be viewed online and via mobile devices.

How did the idea hatch?
As researchers were exploring how the use of ZigBee-powered sensors in the home could enable seniors to "age in place" and maintain independence, they began to research other ways sensors could be used to best monitor a person’s lifestyle to provide assistive and convenience applications. Using this technology to monitor for triggers in the air seemed like a natural fit, owing to the increasing prevalence of environmental VOCs and its possible implication in asthma and chronic obstructive pulmonary disease (COPD).

The Future
The Asthma Triggers sensor provides a stream of low power battery-operation. Currently, the sensor has been tested in the Labs and will move into trials as a next step. Future developments for this technology may include:

- **Application Integration.** Enhancing this technology with app integration would add an additional system of alerts for patients and enable remote monitoring of loved ones by caregivers.
- **Remote Patient Care.** In the future this technology could be used to assist physicians with post-procedure homebound patient care and monitoring.
- **Total Health Monitoring.** The move towards “clean air” is only part of a solution for those who wish to live at home independently. This capability includes a variety of wellness measurements including blood pressure, pulse-oximetry and blood sugar monitoring for patients coping with chronic conditions.

About the Researchers
AT&T Labs researcher Bob Miller is based in Florham Park, N.J. His department develops new concepts and technologies for next-generation AT&T wired and wireless broadband packet access systems and services. Miller and his team are committed to creating innovations that can positively impact the world. “We believe that the power of our
research is to provide new sensor systems for Telehealth Remote Monitoring, the collection of long-term data and the use of ‘bundled’ health measurements to encourage wellness instead of sickness,” explains Miller.

One member of Miller’s team is Karrie Hanson. Hanson is a subject matter expert in Personal Sensors, Services for Cities and Towns, City Directories, Studies of Human Mobility, Collaboration and Conference Call Services, Service Design, Data Visualization and Electrochemistry. Hanson has a Ph.D. from the University of California at Berkeley in Chemical Engineering.