

Think you have chemical intolerance?

Answer three questions

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Intolerances to chemicals, foods and drugs impact 8%-33% of individuals, studies suggest, yet few people are screened for it at their doctors' offices.

To address this and increase awareness of chemical intolerance, researchers at The University of Texas Health Science Center at San Antonio (UT Health San Antonio) developed and validated a three-question, yes-or-no survey that primary care providers, allergists, dermatologists and other specialists can incorporate into patient visits. The survey, called the Brief Environmental Exposure and Sensitivity Inventory, or BREESI, can also be used by researchers and patient groups, and for epidemiological studies in exposed populations.

Sept. 16 in the journal *PLOS ONE*, the researchers reported that the BREESI accurately predicts scores on a comprehensive 50-question survey called the [Quick Environmental Exposure and Sensitivity Inventory \(QEESI\)](#). The QEESI, which the UT Health San Antonio group introduced online in 2014, is available at no charge to patients and clinicians. Researchers worldwide are using it,

making it the new standard for measuring chemical intolerance.

"People who become ill from exposures to chemicals, such as bleach, disinfectants, pesticides, mold, combustion products or [volatile organic compounds](#) (VOCs), have higher scores on the QEESI," said Claudia S. Miller, MD, MS, professor emeritus in the Joe R. and Teresa Lozano Long School of Medicine at UT Health San Antonio. "But the QEESI is a little long for rapid screening."

Carlos Jaén, MD, Ph.D., professor and chairman of the Department of Family and Community Medicine at the university, suggested that the team develop and test a brief screening questionnaire.

Predictive value

The BREESI focuses on three different exposure categories: chemical inhalants, drugs/medications and foods/food additives. The research team enrolled 293 volunteers from a university-based primary care clinic and online to complete the BREESI and QEESI.

"The BREESI showed high sensitivity and specificity," according to the authors.

- Of respondents who said "yes" to all three BREESI questions, 90% had scores "very suggestive" of chemical intolerance.
- Of those who said "no" to all three BREESI questions, 95% had scores "not suggestive" of chemical intolerance.

Ray Palmer, Ph.D., professor of family and community medicine at UT Health San Antonio, said the team is currently validating the BREESI in larger, population-based studies in the U.S. and internationally.

"Only a minute or two is required to administer the

BREESI, making routine evaluation of chemical intolerance feasible for medical and surgical workups, epidemiological investigations, and before-and-after studies of environmental exposure events such as the Gulf War burn pits or 9/11," Dr. Miller said.

California wildfires

Currently, Dr. Miller is concerned that misuse of disinfectants to combat COVID-19 may be endangering susceptible individuals. Combustion products from the California wildfires are another concern. Outgassing of volatile organic chemicals (VOCs) from new construction, remodeling and "sick" buildings frequently triggers chemically intolerant individuals' symptoms.

"Quick screening questionnaires are used routinely in clinics today, e.g., for quality of life or substance abuse, or reactions to antibiotics or latex, and we believe chemical intolerance also needs to be assessed routinely, given its high prevalence," Dr. Palmer said.

Pregnancy and chemicals

It is especially important for [expectant mothers](#) to know whether they are chemically intolerant, so that they can work with their physicians and families to eliminate exposures that may affect them and their babies, Dr. Palmer said.

"We encourage physicians to use the BREESI to identify [chemically intolerant mothers whose children may be at increased risk for ADHD and autism](#)," Dr. Palmer said. ADHD is short for [attention deficit hyperactivity disorder](#).

The Marilyn Brachman Hoffman Foundation, for which Dr. Miller is environmental medicine consultant, funded the research. "Our goal is to improve everyone's understanding of [chemical intolerance](#) through research, education, and outreach," Dr. Miller said. "Educating health care workers is a top priority. We have now given them a useful tool."

Both [the BREESI and the QEESI are available online at no charge](#). Researchers should contact

the [TILT Research Program](#) for permission to use these surveys in their studies. TILT is short for Toxicant-Induced Loss of Tolerance.

More information: Raymond F. Palmer et al, Three questions for identifying chemically intolerant individuals in clinical and epidemiological populations: The Brief Environmental Exposure and Sensitivity Inventory (BREESI), *PLOS ONE* (2020). [DOI: 10.1371/journal.pone.0238296](https://doi.org/10.1371/journal.pone.0238296)

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