



The Blue Ridge Poison Center

# Tox Talks

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## Health Effects of Indoor Exposure to Mold and Mold Toxins

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**MEDICINE?** The Blue Ridge Poison Control Center offers CME-accredited toxicology lectures through telemedicine. To request a topic, schedule a lecture for your staff, or more information contact Heather Collier: 434-924-5185 or [HLC8E@virginia.edu](mailto:HLC8E@virginia.edu).

### THE UVA CENTER OF CLINICAL TOXICOLOGY

associated with the Blue Ridge Poison Center manages over 500 patients each year on site in the University of Virginia Health System - from outpatient clinic visits to critically ill inpatients managed in our pediatric and adult intensive care units. In addition, over 2,000 requests are made each year for consultation with our Boarded Medical Toxicologists from other healthcare facilities by phone or telemedicine. Call 1-800-222-1222 24 hours a day, every day. [Cell users: 1-800-451-1428]

### IN CHARLOTTESVILLE

Reminder: At University of Virginia Hospital, the first Wednesday of every month features toxicology Grand Rounds. For more information, contact Heather Collier: 434-924-5185 or [HLC8E@virginia.edu](mailto:HLC8E@virginia.edu)

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There have been growing concerns over the past decade among health care practitioners and their patients regarding adverse health effects of exposure to mold in indoor environments such as homes, schools and office buildings that have been largely promulgated through various public and private media. While some of these concerns are medically reasonable and supported by good science, some are not, in particular, with regard to potential toxic effects of exposure to airborne mold spores in residential and non-agricultural workplace settings.

Of importance to maintaining a healthy perspective on this issue is to bear in mind that mold, in its various forms including mold spores, is ubiquitous as well as critical to the maintenance and stability of our planet's ecosystem. Thus, we routinely encounter mold spores as part of everyday life in indoor and outdoor environments. Even if construction of a mold-free building space were possible, the maintenance of a "mold-free" residential environment under normal conditions would be impossible, as many species of mold are regularly present in those environments. They are commonly transported from outdoors and/or grown on the surfaces of human bodies, pets, potted plants, and on foods such as fresh fruit and cheeses, as well as carried in from outdoors by normal air movement through windows and doors.

It is generally accepted in the scientific community that only air sampling can be used to estimate the potential inhalation exposure of individuals who occupy an environment of concern and that comparison to outdoor samples is critical to valid interpretation of

indoor sampling data. The presence of mold particles or growth on surfaces can be detected with surface sampling technique; however, results of surface sampling cannot be considered representative of other surfaces or used as a valid index of airborne mold exposure.

Observations and conclusions regarding human health effects of environmental mold exposure that are supported by currently available scientific evidence are summarized as follows:

- Human allergic diseases such as hay fever and asthma may involve hypersensitivity to mold or mold components; the level at which intensity of exposure (e.g., concentration of airborne mold spores) becomes clinically significant and the relative importance of mold exposure compared to other common environmental allergens (e.g., pollen, dust mites) remain uncertain. Appropriate diagnostic testing for such allergic disorders includes measurement of IgE - not IgG or IgM - antibodies to mold proteins and allergen panel skin testing.
- Systemic mold and other types of opportunistic fungal infections (e.g., candidiasis) primarily occur in high-risk individuals, i.e., those with compromised host defenses related to underlying HIV infection or immunosuppressant therapy.
- Current scientific evidence indicates that the levels of mold typically encountered in non-industrial/nonagricultural settings are not toxic to their human inhabitants.) A causal association between non-industrial/nonagricultural indoor exposure to mycotoxins (i.e., mold toxins) and numerous human health disorders has not been established.
- In an extensive review of the available scientific evidence, the Institute of Medicine in 2004 concluded that there was inadequate or insufficient evidence to determine whether a causal association exists between exposure to mold in indoor environments and numerous adverse health conditions, including lower respiratory illness in otherwise healthy adults, rheumatologic or other immune diseases, skin symptoms, asthma development, gastrointestinal tract problems, fatigue, neuropsychiatric symptoms, cancer or reproductive effects. (IOM, 2004)
- Other than directly detecting and measuring their presence and amount in biologic fluids and tissues, there are no currently available tests for accurately or reliably assessing the occurrence and degree of exposure to mycotoxins.
- Laboratory tests (e.g., non-FDA-approved assays for vascular endothelial growth factor (VEGF), matrix metalloproteinase-9 (MMP-9), leptin, and and arginine vasopressin) and treatments (e.g., oral cholestyramine) employed by certain practitioners in their evaluation and treatment of individuals who have concerns regarding mold exposure are non-evidence-based, non-FDA-approved, and medically inappropriate.

In conclusion, it is in the interest of patients and health care providers, as well as our society at large, to be mindful of and apply the principles and recommendations discussed above as we proceed in the further evaluation and management of mold-related health concerns.

For further information on this topic, the following online sources are recommended:

- [http://www.cdc.gov/mold/dampness\\_facts.htm#health](http://www.cdc.gov/mold/dampness_facts.htm#health)
- [http://books.nap.edu/openbook.php?record\\_id=11011&page=1](http://books.nap.edu/openbook.php?record_id=11011&page=1)
- [http://acmt.net/cgi/page.cgi?aid=12&\\_id=52&zine=show](http://acmt.net/cgi/page.cgi?aid=12&_id=52&zine=show)
- [http://www.aaaai.org/members/academy\\_statements/position\\_statements/mold.pdf](http://www.aaaai.org/members/academy_statements/position_statements/mold.pdf)
- <http://www.acoem.org/guidelines.aspx?id=850>

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