considerably higher than the comparable outside measurements. The residents' complaints were multiple and varied in severity, but most commonly elicited were cough (49%), rhinitis (44%), wheeze (31%), and headache (41%). With the exception of the latter, these symptoms were determined in the 2004 Institute of Medicine report[2] to have an association with living and working in mold-contaminated environments.

There are several carefully performed clinical studies in the environmental medicine literature documenting significant respiratory disease in subjects exposed to fungal contamination in schools,[3] office buildings,[4] a courthouse,[5] and homes.[6,7] In many instances, *Stachybotrys chartarum* was isolated, but in other studies, *Alternaria*, *Aspergillus*, *Penicillium*, *Cladosporium*, and *Zygomycetes* were implicated.

As noted in the position paper, fungal metabolic products and cell wall components are indeed difficult to measure. However, *Stachybotrys chartarum* macrocyclic trichothecene mycotoxins have been measured by ELISA in contaminated areas in amounts greater than 1300 pg/m^3.[8] The same toxins have been detected in blood[9] and urine[10] of exposed persons.

These citations lead me to believe that there is sufficient evidence that the concept of mold toxicity is real and that it should not be downplayed as a potential public health problem. We as allergists can help by collaborating with environmental health specialists and medical toxicologists in further elucidating this subject.

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Disclosure of potential conflict of interest: G. B. Goldstein was an expert witness for a plaintiff in a mold exposure case.

REFERENCES

1. Bush RK, Portnoy JM, Saxon A, Terr AI, Wood RA. The medical effects of mold exposure. J Allergy Clin Immunol 2006;117:326-33.
2. Committee on Damp Indoor Spaces and Health. Board of Health Promotion and Disease Prevention, Institute of Medicine of the National Academies. Damp indoor spaces and health. Washington (DC): National Academies Press; 2004.
3. Dangman KH, Bracker AL, Storey E. Work-related asthma in teachers in Connecticut: association with chronic water damage and fungal growth in schools. Conn Med 2005;69:9-17.
4. Cox-Ganser JM, White SK, Jones R, Hilsbos K, Storey E, Enright PL, et al. Respiratory morbidity in office workers in a water-damaged building. Environ Health Perspect 2005;113:485-90.
5. Hodgson MJ, Morey P, Leung WY, Morrow L, Miller D, Jarvis BB, et al. Building-associated pulmonary disease from exposure to Stachybotrys chartarum and Aspergillus versicolor. J Occup Environ Med 1998; 40:241-9.
6. Mahooti-Brooks N, Storey E, Yang C, Simcox NJ, Turner W, Hodgson M. Characterization of mold and moisture indicators in the home. J Occup Environ Hyg 2004;1:826-39.
7. Stark PC, Burge HA, Ryan LM, Milton DK, Gold DR. Fungal levels in the home and lower respiratory illness in the first year of life. Am J Respir Crit Care Med 2003;168:232-7.
8. Brasel TL, Martin JM, Carriker CG, Wilson SC, Straus DC. Detection of airborne Stachybotrys chartarum macrocyclic trichothecene mycotoxins in the indoor environment. Appl Environ Microbiol 2005;71:7376-88.
9. Van Emon JM, Reed AW, Yike I, Vesper SJ. ELISA measurement of stachylysin in serum to quantify human exposures to the indoor mold Stachybotrys chartarum. J Occup Environ Med 2003;45:582-91.
10. Croft WA, Jastromski BM, Croft AL, Peters HA. Clinical confirmation of trichothecene mycotoxicosis in patient urine. J Environ Biol 2002;23:301-20.

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Position paper on molds is seriously flawed

To the Editor:

As a longtime member of the Academy, I was shocked and disappointed by the position paper printed in the February issue of the Journal.[1] A number of criticisms come quickly to mind:

1. At least 2 of the authors earn a substantial income testifying against patients in mold-related litigation. The potential conflict of interest is not addressed.
2. This is not a position paper generated from free and open discussion among Academy members. It is a one-sided opinion paper.
3. The authors seem to be ignoring one of the basic tenets of allergy: when symptoms appear after an exposure and abate on its cessation, chances are the patient is reacting to something in that exposure. Before we label her a hypochondriac, let us explore the details. Perhaps we can learn.
4. The authors draw conclusions about the health effects of indoor mold exposure for which they offer no positive support from the literature. The lack of evidence is not evidence against.
5. The authors have selected from the literature articles that, however tenuously, support their opinions and ignore the mountain of evidence that refutes their conclusions.[2,3]
6. Two peer-reviewed literature references that do not support the authors' conclusions are cited and rejected as ''poor quality'' without discussion.[4,5]
7. The authors' review of the literature involving the presence of mold-specific IgG antibodies reflecting the patients' exposure to mold is completely distorted. They seem to suggest that the measurement of mold-specific IgG antibodies cannot be a useful clinical parameter in diagnosing and monitoring the progress of patients with mold-related illness.
8. The conclusion that mycotoxins are not proteins and therefore mycotoxin antibodies are not possible ignores the enormous literature on penicillin reactions (a mycotoxin). One of the articles cited by the authors specifically identifies IgG antibodies against mycotoxins but is given no value in reading their conclusion.[6]
9. No reference is made to the very important work done by the group headed by Dr Sherris, formerly of the Mayo Clinic, now at the University of Buffalo, in which mold-specific IgG antibodies are identified as markers of chronic rhinosinusitis, and no difference between patients and control subjects is seen with IgE antibodies.[7]

I am astounded that the Academy would take such a blatant stand against the best interest of patients and

disburse biased opinions as facts to its membership. I believe this article does not meet the minimal standard for a position paper by the Academy. It should be withdrawn. The Academy would do well to sponsor an open forum in which to debate the issues of health effects from mold exposure in the Journal.

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Disclosure of potential conflict of interest: V. A. Marinkovich has served as an expert witness in mold litigation cases.

REFERENCES

1. Bush RK, Portnoy JM, Saxon A, Terr AI, Wood RA. The medical effects of mold exposure. J Allergy Clin Immunol 2006;117:326-33.
2. Straus D, editor. Sick building syndrome: advances in applied microbiology. Albany (NY): Boyd; 2004. p. 55.
3. Johanning E. Bioaerosols, fungi, bacteria, mycotoxins and human health. Albany (NY): Fungal Research Group Foundation; 2005.
4. Gray MR, Thrasher JD, Crago R, Madison RA, Arnold L, Campbell AW. Mixed mold mycotoxicosis: immunological changes in humans following exposure in water-damaged buildings. Arch Environ Health 2003;58: 410-20.
5. Campbell AW, Thrasher JD, Gray MR, Vojdani A. Mold and mycotoxins: effects on the neurological and immune systems in humans. Adv Appl Microbiol 2004;55:375-406.
6. Trout D, Bernstein J, Martinez K, Biagini R, Wallingford K. Bioaerosol lung damage in worker with repeated exposure to fungi in a water-damaged building. Environ Health Perspect 2001;109:641-4.
7. Shin SH, Ponikau JU, Sherris DA, Congdon D, Fregas E, Homburger HA, et al. Chronic rhinosinusitis: and enhanced immune response to ubiquitous airborne fungi. J Allergy Clin Immunol 2004;114:1369-75.

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The role of airborne mold in chronic rhinosinusitis

To the Editor:

Bush et al[1] confuse the role of molds in chronic rhinosinusitis (CRS). They accept the paradigm of allergic fungal rhinosinusitis and state that the criteria have been well delineated and that allergic fungal rhinosinusitis is readily distinguishable from typical CRS. They do not mention that these criteria have been established in patients who had been preselected to have these criteria present.[2,3] Recent advances in the detection methods for the criteria have resulted in the demonstration of those criteria in the vast majority of CRS cases.[4,5] The only exception is the presence of an IgE-mediated allergy to molds, which must be seen as a comorbid allergic rhinitis to molds.[3-7]

The presence of airborne molds in the mucus of patients with CRS has been established by means of culture, PCR, histology, and antigen detection, whereas healthy control subjects also had positive cultures.[4,5,8-13] The presence of eosinophilic mucus with cluster formation has been found to be present in more than 95% of unselected patients undergoing surgery for CRS when the mucus was preserved during surgery and no presurgical systemic steroids were given.[4,5,14]

It has been found that immune cells from patients with CRS (PBMCs) react to common airborne fungi, specifically *Alternaria* species, with the production of cytokines that are crucial for eosinophilic inflammation, namely IL-13 and IL-5.[11] The increased fungus-specific IgG levels correlated directly with the production of IL-5. This immune response was independent from the allergy status of the patients and absent in healthy control subjects.[11]

In addition, *Alternaria* species also induced a striking degranulation of eosinophils.[15] The fraction from *Alternaria alternata* that induced the degranulation had a molecular weight of approximately 60 kd, was highly heat labile, and worked protease dependant through a G protein–coupled receptor.[15] Other fungal antigens did not induce eosinophil degranulation, nor did neutrophils respond to *Alternaria* species extracts, suggesting the presence of a fungal species and a cell type–specific novel immune response in human subjects.[15]

Although one trial delivering antifungals as a spray failed to demonstrate efficacy,[16] other trials that formulated amphotericin B differently or used squirts for delivery showed a reduction in inflammatory mucosal thickening on computed tomographic scanning, endoscopy, or both, as well as a reduction of intranasal makers of inflammation, when compared with placebo.

None of these recent developments are cited in the ''state of the art'' review. Instead, it is stated that ''evidence supporting a role for fungi in CRS does not exist,'' citing only Dr Bush's own editorial as evidence. Either the authors were unaware of the emerging evidence for a role of certain molds or choose not to share it with the readers, either of which is unacceptable in a position paper that carries the weight and name of the American Academy of Allergy, Asthma and Immunology and indirectly the Journal.

To withhold crucial scientific information on the role of mold in CRS questions the intentions of the authors. Hopefully, the references cited, when read in reference to one another, will clarify the current ''state of the art'' and help to understand the role mold-induced inflammation plays in CRS.

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REFERENCES

1. Bush RK, Portnoy JM, Saxon A, Terr AI, Wood RA. The medical effects of mold exposure. J Allergy Clin Immunol 2006;117:326-33.
2. Bent JP III, Kuhn FA. Diagnosis of allergic fungal sinusitis. Otolaryngol Head Neck Surg 1994;111:580-8.
3. deShazo RD, Swain RE. Diagnostic criteria for allergic fungal sinusitis. J Allergy Clin Immunol 1995;96:24-35.
4. Ponikau JU, Sherris DA, Kern EB, Homberger HA, Frigas E, Gaffey TA, et al. The diagnosis and incidence of allergic fungal sinusitis. Mayo Clin Proc 1999;74:877-84.