

Indoor and Built Environment

<http://ibe.sagepub.com/>

Statistical Distribution of Airborne Mould and Causes of Mould Allergies

J. H. Lange

Indoor and Built Environment 2005 14: 443

DOI: 10.1177/1420326X05057950

The online version of this article can be found at:

<http://ibe.sagepub.com/content/14/5/443>

Published by:



<http://www.sagepublications.com>

On behalf of:



[International Society of the Built Environment](#)

Additional services and information for *Indoor and Built Environment* can be found at:

Email Alerts: <http://ibe.sagepub.com/cgi/alerts>

Subscriptions: <http://ibe.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://ibe.sagepub.com/content/14/5/443.refs.html>

Statistical Distribution of Airborne Mould and Causes of Mould Allergies

Majumdar and Bhattacharyya [1] recently provided an excellent study on mould exposure and allergy associated with a specific industry. I would like to add some additional information related to their study on statistical distribution of airborne mould and on the issue of allergic reaction to mould.

The authors cite several of my publications on distribution of airborne contaminants in the statistical analysis section. It should be noted that none of these papers actually evaluated statistical distribution of airborne mould, but rather other environmental and occupational substances (asbestos, formaldehyde and metal air pollutants). It is well known that airborne contaminants are usually non-normal in distribution and generally follow a logarithmic form [2]. As correctly mentioned by the authors, airborne mould, as an environmental contaminant, has been shown to be “non-normally distributed with most having a logarithmic form”. It is suggested that when citing the statistical distribution of a specific contaminant actual investigations that evaluated this contaminant itself be referenced. For examples of studies that reported on the distribution of airborne mould see references [3–6]. It should be noted that not every data set of airborne contaminants, including airborne mould, will be non-normally distributed [2,3] and each study should undertake its own statistical evaluation. This can

be easily achieved by using a statistical method that evaluates distribution, like the Shipiro–Wilk test [3]. Non-normality of distribution is not restricted to airborne contaminants and it has, for example, also been suggested for fungus “contaminated” furnishing materials such as carpet [7].

Majumdar and Bhattacharyya [1] reported that about 30 to 60% of the patients tested in their study had a positive skin test with fungal allergens. It should be noted that other studies [8] have reported that residents in mouldy buildings did not have positive skin tests yet experienced respiratory symptoms, which could be identified as allergic in nature. These [8] investigators suggested that exposure to mould and high moisture levels in a residential setting resulted in “non-specific inflammation following irritation” and not an immunologically (i.e., IgE) mediated response. I would like to suggest that allergy, specifically as related to a respiratory response, is not necessarily immunologically driven, but may also be a result of non-specific inflammation. This can explain why some patients may experience allergies but not have a positive skin test. Thus, careful evaluation is needed to determine the actual cause of allergies and related conditions (e.g., urticaria).

Dr J.H. Lange
Envirosafe Training and Consultants, USA

References

- 1 Majumdar MR, Bhattacharyya K: Measurement of Indoor Fungal Contaminants Causing Allergy among the Workers of Paper-related Industries of West Bengal, India: *Indoor Built Environ* 2004;13:189–197.
- 2 Sokal RR, Rohlf FJ: *Biometry*. New York, NY, WH Freeman and Company
- 3 Quezada NV, Lange JH: Final Clearance Criteria after Mould Remediation: *Indoor Built Environ* 2004;13:199–204.
- 4 Meklin T, Husman T, Vepsäläinen A, Vaheristo M, Koivisto J, Halla-Aho J, Hyvärinen A, Moschandreas D, Nevalainen A: Indoor Air Microbes and Respiratory Symptoms of Children in Moisture Damaged and Reference Schools: *Indoor Air* 2002;12:175–183.
- 5 Pei-Chih W, Huey-Jen S, Chia-Yin L: Characteristics of Indoor Airborne Fungi at Suburban and Urban Homes in Two Seasons: *The Science of the Total Environment* 2000;253:111–118.

- 6 Curtis L, Ross M, Persky V, Scheff P, Wadden R, Ramakrisnan V, Hryhorczuk D: Bioaerosol Concentrations in the Quad Cities 1 Year after the 1993 Mississippi River Flood: Indoor Built Environ 2000;9:35–43.
- 7 Spurgeon JC: A Sampling Method for Comparing Fungal Concentrations in Carpets: Am Ind Hyg Assoc J 2003;64:842–845.
- 8 Ruoppi PI, Husman TM, Reiman MH, Nuutinen J, Hyvarinen AM, Mevalainen AI: Nasal Symptoms among Residents in Moldy Housing: Scan J Work Environ Hlth 2003;29:461–467.