WHITE PAPER ON MOLD TOXICITY

I. Introduction

Molds are ubiquitous in outdoor and indoor environments. Outdoor levels are typically higher than those found indoors. Recent studies and the lay literature have raised concern, and even alarm concerning mold exposures in indoor spaces such as residences and offices.

Mold needs three factors to grow: a food source, a suitable temperature range, and a source of moisture. In the natural world, the function of molds and other fungi is to break down materials containing cellulose. In built environments such as homes and offices, materials such as wood, sheetrock, upholstery, and carpet (which all contain cellulose) can provide a food source for molds. Since indoor temperatures are typically close to those outdoors, all that is needed for mold growth is water.

There are many ways in which excess water can enter homes and buildings. Among these are plumbing leaks, leaky windows or door openings, and roof leaks. The condensation of water from humid air is another source of indoor moisture.

II. Potential Adverse Health Effects

A host of adverse health effects has been claimed to be caused by mold exposure including very serious diseases such as cancer, asthma, chronic obstructive pulmonary disease, effects on reproduction, and neuropsychiatric problems. The current scientific consensus, however, is that mold exposure can cause three main types of responses in humans: 1) allergic response, 2) infection, and 3) toxicity. By far the most common of these is allergy.

A. Allergic Response

Many individuals are allergic to molds, but the symptoms encountered are limited to sneezing, watery eyes, and other “hay fever” type symptoms. Exposures to molds, like exposures to other respiratory irritants, can affect people with pre-existing asthma. There is no reliable evidence, however, that mold exposure can cause a person to develop asthma.

Massive exposures to some types of molds can cause an allergic-type condition known as hypersensitivity pneumonitis. This type of response is limited to situations such as farmers handling large quantities of moldy hay or other human exposures to molds at levels orders of magnitude greater than those present in typical indoor and outdoor environments.

B. Infection

Exposure to molds can also cause infections. These include common superficial

infections of the feet, nails, or skin and more serious infections of the respiratory tract and other organs. There is some evidence that mold exposures can increase the risk of ear infections. The more serious mold exposure related infections are normally seen only in individuals whose immune systems are compromised. These would include such patients undergoing cancer chemotherapy, organ transplant patients on immuno-suppressive medications, or those individuals suffering from severe AIDS or uncontrolled diabetes.

C. Toxicity

Much has recently been made in the lay press concerning the third major response to mold exposure, toxicity. The specter of "toxic mold" in people's homes has been raised without much scientific basis. Certain molds, under certain environmental conditions, can produce mycotoxins that can affect human health if the exposure to these chemicals is great enough.

It is important to note that the mere presence of mold does not imply that mycotoxins are present as well. Most of the information we have about the toxicity of mycotoxins comes from cases of ingestion of significant amounts of moldy foodstuffs. There is currently no evidence that inhalation exposures to mycotoxins at levels typically found in human residences or workplaces can cause any adverse health effects.

III. Summary

In summary, while many serious adverse health outcomes have been associated with mold exposure, the only scientifically-documented effects are limited to upper respiratory tract symptoms, cough, and exacerbation of pre-existing asthmatic conditions.

IV. Further Reading

The literature on the human health effects of mold exposure is extremely extensive. The following publications are good general sources of information concerning this issue.

"Damp Indoor Air Spaces and Health", Institute of Medicine of the National Academies, Washington, D.C. (2004)

"Guidance for Clinicians on the Recognition and Management of Health Effects Related to Mold Exposure and Moisture Indoors", University of Connecticut Health Center Division of Occupational and Environmental Health, Farmington CT (2004)

"Mold Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes and Major Floods", National Center for Environmental Health, Centers for Disease Control, Atlanta GA (2006)

“Preventing Mold-Related Problems in the Indoor Workplace”, Occupational Safety and Health Administration, Washington D.C. (2006).

Disclaimer: The information in this white paper is current as of 2014. Research into the health effects of mold exposure is on-going. For the latest information, please contact Dr. Dydek directly at dydek@tox-expert.com.