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## ARTICLES

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### Neuropsychological Performance of Patients Following Mold Exposure

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*This study investigated the effects of mold exposure (ME) on human cognition by analyzing neuropsychological data from patients who were exposed to mold in their homes or workplaces. Compared to normative data, ME patients were impaired (< 10th percentile) on a number of cognitive measures, with the most consistent deficits in visuospatial learning, visuospatial memory, verbal learning, and psychomotor speed. We also examined emotional functioning and found that a number of ME patients showed evidence of both Axis I and Axis II pathology. Interestingly, there was a significant correlation among patients' scores on the Beck Depression Inventory–Second Edition and the number of neuropsychological tests falling within the impaired range. Given the limited understanding of ME and its effect on the human central nervous system, we provide a working model that attempts to capture the complex interactions of impaired cognition, psychosocial stressors, poor physical health, and emotional functioning in patients following ME.*

*Keywords: mold exposure, mild traumatic brain injury, toxic exposure*

Adverse health effects due to mold exposure (ME) have been reported in humans for thousands of years (Sorenson, 1993; Ueno, 1980, 1983). Ergotism, a syndrome associated with ingestion of fungus-contaminated grains, involves symptoms such as convulsions and gangrene and has been hypothesized as the basis for unusual behavior that was interpreted as demonic possession in medieval times (Donaldson, Cavanagh, & Rankin, 1997). In the late 1800s, a Japanese scientist showed that moldy rice contained toxins that were responsible for symptoms such as vomiting, convulsions, paralysis, and respiratory arrest (Ueno, 1983).

More rigorous research on ME has taken place in the last 100 years and has shown that certain toxic fungal (mold) metabolites, known as mycotoxins, are associated with a number of health effects, including respiratory disease, cardiac disease, cancer, and even death (Coulombe, 1993; Reijula, 1999; Sorenson, 1993; Ueno, 1980, 1983). In recent years, airborne mycotoxins have been posited as the basis for adverse health effects in water-damaged buildings (so-called sick building syndrome), but documenting a causal link has proven difficult (Fung, Clark, & Williams, 1998; Hodgson et al., 1998).

Recently, it has been suggested that ME may also result in central nervous system (CNS) changes (K. E. Gordon, Johanning, & Haddad, 1999; W. A. Gordon, Masotti, & Waddell, 1993; Johanning & Landsbergis, 1999; Sudakin, 1998). A recent case study reported that a teenage boy presented with tremorgenic encephalopathy following exposure to moldy fodder on his family's

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