Damp Buildings and Human Health: the Role of Microbial Compounds and Inflammation

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Medical experts agree that water-damaged buildings are both a cause and trigger for allergies and asthma. Many experts also agree that individuals can develop chemical sensitivities and a condition known as MCS (multiple chemical sensitivities) or WDB (water damaged building) illness as the result of exposure to a broad range of chemicals. Some MCS patients believe that water damage was the initiating exposure that led to their sensitivity and research published by Dr. Ritchie Shoemaker in July 2009 showed that WDB illness is often misdiagnosed as chronic fatigue syndrome in patients under the age of eighteen. This article will address the latest science on how damp buildings affect human health beyond allergies and asthma.

For years, many members of the medical community have dismissed patient claims of chemical sensitivity as 'psychsomatic'. Doctors found the typical MCS patient as being disoriented to a level that led the doctor to refer the patient for a psychiatric evaluation. While the claims of MCS may sound far-fetched to some people, there is credible, peer-reviewed research that supports the idea that MCS can be induced by damp environments. There is also ample research supporting the development of WDB illness in patients exposed to a building for at least 30 days that has been affected by moisture. This research strongly suggests that sensitized individuals can have immediate hypersensitivity responses due to neurogenic inflammaton – in simpler terms, it appears that volatile chemicals (such as benzene) and biological compounds (such as microbial gases) can bind to nerve cells, triggering an inflammatory response that develops more quickly than allergies. These neurogenic inflammatory responses can lead to a variety of symptoms, from fatigue to gastrointestinal distress to neurological symptoms.

As a hygienist and indoor air quality specialist, I frequently meet people who continue to have health symptoms long after repairs have been made to a water-damaged building. I have learned to accept that some people appear to be very sensitive to microbial volatile organic compounds (MVOCs) and other compounds such as mycotoxins. I have also learned that MVOCs and mycotoxins are difficult, if not impossible to remove in their entirety from a moisture-damaged building. The latest research indicates that even the best equipment will not remove residual volatile chemicals that have been adsorbed onto the surface of porous and semi-porous material.

One of the most important questions I ask occupants who are experiencing unusual health symptoms is "Do you feel better when you are away from this building?" Many will answer "yes" – that their migraine headaches, excessive fatigue, memory loss, brain fog, muscle pain, joint pain, burning, tingling or numbness in peripheral nerves, and gastrointestinal symptoms decrease or disappear altogether when they are away for more than twenty-four hours. I should mention that most MCS sufferers are busy people who do not wish to feel bad: CEOs, corporate managers, and busy moms who do not have time to be sick. *Note: some hygienists have found a means to test if a person is reacting to VOCs or MVOCs. If the subject feels relief from symptoms when wearing a properly fitted charcoal filter respirator but not when wearing a particulate filter, the person is probably reacting to VOCs or MVOCs.*

How is it that the medical community can be missing what seems to be a rather simple diagnosis? The problem lies in the research that doctors read. The majority of publications about MCS and WDB illness point to statistical analysis that many of those suffering from symptoms consistent with these conditions have also been diagnosed with a psychiatric disorder such as depression. These publications do not take into account research that suggests that most psychotic disorders are also the result of inflammation. When considering the link between inflammation and psychotic disorders, and inflammation and neural sensitization, it should not be a surprise that many MCS and WDB illness patients also report some psychological problems.

So how can exposure to a damp building lead to MCS? Inflammation is the key. **Environmental researchers and physicians have shown that exposure to damp buildings cause chronic, systemic inflammation in susceptible people due to repeated activation of immune cells**. Dr. Claudia Miller, M.D., has introduced a new term to describe what occurs: TILT, for "toxicant induced loss of tolerance". The phrase 'loss of tolerance' is intended to avoid confusion with 'sensitivity' or 'sensitization', terms used by allergists to describe well-defined immune responses. Loss of tolerance is described as a loss of natural tolerance to low levels of environmental chemicals such as MVOCs.

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