

Statement on Building Dampness, Mold, and Health

CDPH has concluded that the presence of **water damage, dampness, visible mold, or mold odor** in schools, workplaces, residences, and other indoor environments is unhealthy. We recommend against measuring indoor microorganisms or using the presence of specific microorganisms to determine the level of health hazard or the need for urgent remediation. Rather, we strongly recommend addressing water damage, dampness, visible mold, and mold odor by (a) identification and correction of the **source of water** that may allow microbial growth or contribute to other problems, (b) the rapid drying or removal of **damp materials**, and (c) the cleaning or removal of **mold and moldy materials**, as rapidly and safely as possible, to protect the health and well-being of building occupants, especially children.



Indoor dampness and mold (fungal growth) are common problems in California and worldwide. In its 2005 report to the State Legislature in response to the 2001 Toxic Mold Protection Act (SB 732), the California Department of Public Health (CDPH) concluded that sound, science-based Permissible Exposure Limits (PELs) for indoor molds could not be established at that time.* The scientific basis for this conclusion has not changed as of 2015. To date, no federal or state policies set safe exposure limits or quantify the health risks from dampness and mold in buildings.

While PELs remain elusive, mounting scientific evidence on dampness and mold, much of it published since 2005, supports an alternate, evidence-based approach to the assessment of health risks from indoor dampness and mold. Human health studies have led to a consensus among scientists and medical experts that the presence in buildings of (a) visible water damage, (b) damp materials, (c) visible mold, or (d) mold odor indicates an increased risk of respiratory disease for occupants. Known health risks include: the development of asthma; the triggering of asthma attacks; and increased respiratory infections, allergic rhinitis, wheeze, cough, difficulty breathing, and other symptoms. Available evidence suggests that the more extensive, widespread, or severe the water damage, dampness, visible mold, or mold odor, the greater the health risks, and also that children are more sensitive to dampness and mold than adults. Beginning Jan 1, 2016, the presence of visible mold will be added to the list of conditions in the California Housing Code, already including dampness of habitable rooms, that make housing substandard (Cal. Health & Safety Code §17920.3).

*Information on SB 732, the 2005 CDPH report to the legislature, and a 2008 update to the report are available at www.cdph.ca.gov/programs/IAQ/Pages/IndoorMold.aspx.

There also is consensus that the traditional measurement methods used to identify increased mold exposure do not reliably predict increased health risks. Therefore, the current practices for the collection, analysis, and interpretation of environmental samples for mold cannot be used to quantify health risks posed by dampness and mold in buildings or to guide health-based actions.

Finally, current consensus does not justify the differentiation of some molds as *toxic molds* that are especially hazardous to healthy individuals. The presence of molds that grow only on very wet materials might be interpreted as demonstrating damp conditions that could place occupants at increased risk. However, the only types of evidence that have been related consistently to adverse health effects are the presence of current or past water damage, damp materials, visible mold, and mold odor, *not* the number or type of mold spores nor the presence of other markers of mold in indoor air or dust.

Background note: Building dampness degrades indoor environmental quality in many ways. Mold growth is perhaps the most common and noticeable result of excessive or chronic indoor dampness. Molds are fungi (as are mushrooms and yeasts). To grow and reproduce, molds need only moisture and nutrients. As nutrients are almost always available from organic material (e.g., leaves, wood, paper, and dirt), the presence or lack of moisture generally is what allows or limits mold growth. In addition to mold, indoor dampness can support bacterial growth and contribute to infestations of house dust mites, cockroaches, and rodents, which also pose health risks for building occupants. Moisture also may alter the chemistry of damp materials. Hence, while excessive or chronic dampness is not by itself a cause of ill health, it may indicate or increase other exposures that do have adverse health effects.

Our goal in issuing this notice is to increase awareness of the hazards from indoor dampness and mold and to reduce exposures to these hazards. The following are recent publications that support our positions on the assessment of health risks and the remediation of dampness and mold:

Kanchongkittiphon W, Mendell MJ, Gaffin JM, Wang G, Phipatanakul W. Indoor environmental exposures and asthma exacerbation: an update to the 2000 review by the Institute of Medicine. *Environmental Health Perspectives* 2015;123:6-20; www.ncbi.nlm.nih.gov/pmc/articles/PMC4286274/

Mendell MJ, Mirer AG, Cheung K, Tong M, Douwes J. Respiratory and allergic health effects of dampness, mold, and dampness-related agents: a review of the epidemiologic evidence. *Environmental Health Perspectives*, 2011; <http://ehp.niehs.nih.gov/1002410/>.

World Health Organization. *WHO Guidelines for Indoor Air Quality: Dampness and Mould*. Copenhagen: WHO Europe, 2009 (Chapter 4, Health effects associated with dampness and mould); www.euro.who.int/__data/assets/pdf_file/0017/43325/E92645.pdf.

Krieger J, Jacobs DE, Ashley PJ, et al. Housing interventions and control of asthma-related indoor biologic agents: A review of the evidence. *Journal of Public Health Management and Practice*, 2010, 16(5):S11–S20; www.ncbi.nlm.nih.gov/pmc/articles/PMC3934496/.

U.S. Environmental Protection Agency. *Mold*. Washington, D.C.: USEPA; www.epa.gov/mold/mold_remediation.html.