

Report to the California Legislature



IMPLEMENTATION OF THE TOXIC MOLD PROTECTION ACT OF 2001

April 2005

Arnold Schwarzenegger
Governor
State of California

Kimberly Belshé
Secretary
California Health and Human Services Agency



Sandra Shewry
Director
Department of Health Services

ACKNOWLEDGEMENTS

We would like to acknowledge Senator Deborah Ortiz for her leadership and commitment in addressing this and other important environmental health issues.

We are grateful to the individuals and organizations that have contacted us to describe their experiences in dealing with indoor mold-related building or health problems.

We also appreciate the continued interest of those who have volunteered to serve on the stakeholder task force mandated by the Toxic Mold Protection Act of 2001.

We acknowledge the valuable administrative assistance of David Paniagua and Kathleen Jayne.

We also thank reviewers Raymond Neutra, Chief of Division of Environmental and Occupational Disease Control (DEODC); Richard Kreutzer, Chief of Environmental Health Investigation Branch (EHIB); Peter Flessel, Chief of Environmental Health Laboratory Branch (EHLB); and Michael Lipsett, Chief of EHIB's Exposure Assessment Section for their timely and constructive comments.

TO OBTAIN COPIES OF THE REPORT

Contact David Paniagua at (510) 620-3620 or dpaniagu@dhs.ca.gov or 850 Marina Bay Parkway, Building P, 3rd Floor, Richmond, CA 94804

AUTHORS

This report was prepared by staff of the Division of Environmental and Occupational Disease Control (DEODC) of the California Department of Health Services (DHS) including members of the Environmental Health Investigations Branch (EHIB) and the Environmental Health Laboratory Branch (EHLB).

Principal Authors

Janet Macher, M.P.H., Sc.D.
EHLB, Indoor Air Quality Section

Sandra McNeel, D.V.M.
EHIB, Exposure Assessment Section

Jed Waldman, Ph.D., Section Chief
EHLB, Indoor Air Quality Section

TABLE OF CONTENTS

ACKNOWLEDGEMENTS2

AUTHORS3

EXECUTIVE SUMMARY5

INTRODUCTION7

BACKGROUND8

PERMISSIBLE EXPOSURE LIMITS (PELS) FOR INDOOR FUNGI 11

IMPLEMENTATION STATUS OF OTHER MANDATED TASKS..... 16

CONCLUSIONS AND RECOMMENDATIONS 18

REFERENCES 19

ACRONYMS23

GLOSSARY OF TERMS.....24

APPENDIX - TEXT OF THE TOXIC MOLD PROTECTION ACT OF 2001.....27

EXECUTIVE SUMMARY

The Toxic Mold Protection Act of 2001 (Senate Bill (SB) 732 Ortiz, Chapter 584, Statutes of 2001; California Health and Safety Code Sections 26100 et seq.; see Appendix I) was enacted to address increasing concerns regarding health effects from exposure to indoor molds and to provide Californians with guidelines or standards for the safe and effective removal of molds from buildings. This statute directs the California Department of Health Services (DHS) to determine the feasibility of identifying permissible exposure limits (PELs) for indoor molds, as well as to convene a stakeholder task force to consult with DHS in developing enforceable standards and voluntary guidelines to prevent health conditions that may arise from exposure to or remediation of damp or moldy indoor environments.

DHS conducted a technical review of indoor mold growth, human exposures, and related health issues. Microscopic mold spores are ubiquitous in both ambient and indoor air as well as in household dust, soil, and on leaf surfaces. Most persons regularly encounter varying amounts of many different species of mold throughout their lives without experiencing adverse health effects. However, molds can affect human health, depending on several interacting factors: the mold species and its products, such as allergens or irritants, the person's susceptibility, as well as the amount and duration of an individual's exposure to mold spores, fragments, or products. Health effects from mold exposure occur through allergic reactions, infection, irritation of mucous membranes, or toxicity. Recent studies have concluded there is strong evidence that living or working in damp or moldy buildings increases the risk for respiratory problems such as cough, wheeze, and asthma exacerbation. However, damp buildings also promote the growth of bacteria, dust mites, and cockroaches, as well as formation of irritant chemicals from degradation of wet building materials. All of these agents may also contribute to human illness. Current studies have not been able to identify the specific agent(s) in damp buildings responsible for occupants' symptoms.

DHS scientists have evaluated the feasibility of developing a PEL for indoor mold. A PEL for mold was considered to be the highest concentration to which people could be exposed repeatedly without experiencing adverse health effects. Critical challenges in developing a mold PEL include:

- The absence of exposure-response data to determine the types of human health problems occurring after inhalation of various concentrations of different mold spores or fragments. In particular, the development of any health-protective PEL depends on the identification of an air concentration or threshold below which no adverse health effects would be expected.
- Differences in individual susceptibilities to molds due to factors such as genetics, age, nutritional status, personal habits, and medical conditions.

- The existence of hundreds of mold species capable of growing indoors, each varying in its ability to produce airborne spores, allergens, or toxins depending on environmental conditions.

After considerable research into this question, DHS staff has determined that sound, science-based PELs for indoor molds cannot be established at this time.

The financial crisis affecting California has severely limited DHS resources and has not allowed completion of other activities mandated by the Toxic Mold Protection Act. Following recent enabling legislation (Assembly Bill (AB) 442, Chapter 1161, Statutes of 2002, Section 5.5, <http://www.leginfo.ca.gov/bilinfo.html>), the Public Health Protection from Indoor Mold Hazards Fund was established. This fund allows any individual or group to donate money to support DHS' mold-related activities, including, but not limited to, implementation of the Toxic Mold Protection Act. When sufficient donations or other funding sources are identified, the remaining tasks mandated in the Toxic Mold Protection Act will be completed.

Notwithstanding the inability to develop PELs for indoor molds, DHS agrees with other building and health professionals that indoor dampness, water intrusion, or fungal growth should always be eliminated in a safe and efficient manner. The public health is best protected by limiting exposure to mold growth, other biological contaminants, and chemicals in damp buildings to prevent allergic, irritant, and infectious health effects.

INTRODUCTION

This report to the California Legislature provides an overview of health issues associated with indoor mold exposure and discusses the feasibility of adopting permissible exposure limits (PELs) for indoor molds. The report also indicates the implementation status of other tasks assigned to the California Department of Health Services (DHS) in the Toxic Mold Protection Act.

Mandate for the Report

The Toxic Mold Protection Act of 2001 (SB 732 Ortiz, Chapter 584, Statutes of 2001, California Health and Safety Code Sections 26100 et seq.; <http://www.leginfo.ca.gov/bilinfo.html>; see Appendix I for full text) became effective on January 1, 2002, and requires DHS to:

1. Explore the feasibility of developing objective PELs for indoor molds;
2. In consultation with a stakeholder task force, develop:
 - Practical standards to determine when visible or hidden indoor mold becomes a health hazard;
 - Guidelines for recognizing indoor mold growth and water damage, including methods of environmental sample collection and laboratory analysis;
 - Guidelines for cleaning up and removing molds from indoor environments;
 - Guidelines for local health and building code enforcement officials regarding enforcement of real estate disclosure requirements required by the Toxic Mold Protection Act;
 - Recommendations on the need for training standards or certification of professionals offering mold testing or mold remediation services to the public; and
3. Report to the Legislature on the implementation status of these tasks by July 1, 2003.

BACKGROUND

Increased public concern about mold growth in homes and workplaces has been driven by a combination of media coverage of mold-damaged homes, offices, and schools,^{18, 27, 28} and scientific reports suggesting potentially serious health consequences from exposure to fungal constituents or products.^{6, 12, 22, 24} In addition, improper use of new building techniques and construction materials may have led to a progressively higher prevalence of indoor moisture and subsequent mold growth in recent years.^{19, 16} Guidelines from authoritative sources agree that visible mold growth indoors is a potential health hazard and should be remediated by removing the mold and correcting the water intrusion or moisture accumulation that allowed it to proliferate.^{1, 11, 14, 17, 27, 28} However, when mold odor is present but visible growth is not readily apparent (e.g., hidden behind walls, cabinets, inaccessible locations), questions arise about how to resolve the problem appropriately.

Tenants' groups, homeowners, and local health officials approached the Legislature to strengthen local housing codes to ensure that property owners and builders would deal efficiently and effectively with damp or moldy conditions. At the same time, housing and insurance industry representatives expressed their desire for scientifically based standards to determine what conditions would require extensive testing and remediation.

Possible Health Consequences of Living in Damp or Moldy Indoor Environments

Damp buildings or occupied rooms within buildings that have visible fungal growth or moldy odors are unsanitary and a potential health risk for the occupants. Recent studies have concluded that the evidence is strong for a causal relationship between living or working in damp or moldy buildings and respiratory health problems such as cough, wheeze, and asthma exacerbation.^{7, 13, 27, 28} However, research has not yet clarified which agents in damp buildings are responsible for the range of illnesses that occupants report. Damp buildings encourage the growth of dust mites, cockroaches, and other arthropods as well as bacteria and molds that may release toxic products. Degradation of wet building materials also may produce irritating compounds. Exposure to elevated levels of one or all of these agents may cause illness in building occupants.

Fungi are known to affect human health through several mechanisms, of which allergy, irritation, and infection are most thoroughly understood. Fungal allergies are common, and 15–50 percent of genetically susceptible individuals can expect to become sensitized, that is, to produce allergic-type antibodies to fungi that they have encountered in outdoor or indoor environments.¹³ However, the true frequency of allergy to indoor fungi is probably underestimated for several reasons. First, the fungal extracts used in allergy testing are not standardized, so the test materials vary in strength and other important characteristics among commercial sources. Second, the fungi in many mixtures used for routine skin tests are primarily outdoor

molds, not the varieties that tend to grow in damp or wet buildings. Both of these factors could lead to a falsely negative test in an individual sensitized to indoor mold growth.

Nonallergic persons exposed to extensive mold growth may experience eye, nose, or throat irritation leading to symptoms similar to “hay fever,” that is, reddened or itchy eyes, runny nose, nasal congestion, cough, or sore throat.²⁷ Recent studies have reported such nonspecific irritant effects in persons without a history of allergy or family predisposition to allergic disorders.^{10, 12} These effects may be due to exposure to irritating chemicals produced during mold growth, fragments of the mold cells themselves, or other biological or chemical irritants present in damp buildings.

Superficial fungal infections of the skin or nail bed, such as athlete’s foot, are common. However, these infections are not caused by the types of fungi that can grow in the indoor environment. Few of these fungi cause infections of internal organs, such as the lung, because these molds cannot survive the elevated temperature and reduced oxygen levels of the human body. However, several members of the genus *Aspergillus* can cause lung, sinus, or other infections in immunocompromised individuals.^{1, 23} Asthmatics are also at increased risk of developing fungal airway colonization, which in some instances may result in long-term lung damage.²⁹

Currently there is insufficient scientific information to determine if inhalation of fungal particles may also cause systemic toxic effects in humans. Inhabitants of damp or moldy buildings have reported nonspecific symptoms, such as fatigue, headache, memory problems, nosebleed, body aches, and fevers.^{6, 12, 15, 22} However, it is unclear whether such symptoms are due to exposure to fungal allergens, chemical irritants in fungal cell walls, mycotoxins, or other factors associated with damp buildings (e.g., bacterial endotoxins, other microorganisms such as actinomycetes, or chemicals arising from dampness-induced degradation of building material). Despite our incomplete understanding of how health problems develop in damp or moldy buildings, there is sufficient scientific evidence linking mold exposure with the adverse effects described above to recommend that people not live or work in buildings with visible mold growth or persistent moldy odor.^{27, 28, 11, 17}

“Toxic” Versus “Nontoxic” Molds

More than 400 species of fungi are genetically capable of producing compounds known to have toxic effects in humans, including nausea, vomiting, and diarrhea, as well as tremors, bleeding, and damage to the liver, kidneys, or nervous system. Some mycotoxins cause genetic mutations and have been associated with increased risks of cancer. Mycotoxin production by molds growing within a building depends on many variables, such as the specific strain (or sub-strain) of the fungus, the material on which it is growing, and the presence or absence of other microorganisms.¹

There is a wealth of information about animal and human health effects from fungal toxins consumed in contaminated grain products.²¹ With repeated ingestion over a long period of time, some fungal toxins can increase the risk of human liver cancer as well as some kidney and liver disorders.^{1, 20} However, in mold-contaminated buildings, inhalation exposure, rather than ingestion, is of primary concern. An increasing number of animal studies or reports involving human health effects from inhalation of toxin-containing fungal spores are being published. However, our understanding of the relationship between inhalation exposure to fungal toxins, especially under conditions similar to those found in moldy buildings, is still rudimentary. A major difficulty in determining whether airborne fungal toxins cause human health problems is the limited availability of methods to measure such toxins in either indoor air or the human body.¹ Thus we lack information on several critical steps in the pathway linking exposure to airborne mycotoxins and human health effects:

- How much mycotoxin enters the lungs following inhalation of airborne fungi in a moldy home or workplace?
- How much inhaled mycotoxin is absorbed into the body from the lungs, and how much is damaged or destroyed by respiratory protective mechanisms?
- Can inhaled mycotoxins reach critical internal organs in doses sufficient to cause damage?

At this time, scientific evidence does not indicate a need to approach the remediation of potentially toxin-producing fungi differently than clean-up of molds not known to produce toxins. However, because of the uncertainties involved, DHS agrees with other building and health professionals in recommending that indoor dampness, water intrusion, or fungal growth always be eliminated in a safe and efficient manner, with the goal of limiting inhalation and dermal exposure to all fungi, other biological contaminants, and irritant cleaning products. This precautionary approach is intended to minimize the potential for allergic responses, as well as other health disorders.^{1, 3, 14, 17}

PERMISSIBLE EXPOSURE LIMITS (PELS) FOR INDOOR FUNGI

The Toxic Mold Protection Act of 2001 requires DHS to consider the feasibility of adopting PELs to molds in indoor environments and, if feasible, to adopt PELs to prevent adverse health effects of mold exposure. After considerable research into this question, DHS staff has determined that sound, science-based PELs for indoor molds cannot be established at this time.

Exposure limits for chemical, biological, and physical agents in food, water, and air are developed from professional reviews of scientific data. This is the case for chemicals in the workplace and in ambient air, drinking water, and food. PELs are defined under the General Industry Safety Orders of Title 8 of the California Code of Regulations.⁸ PELs are “not-to-exceed” concentrations for specific agents and are ordinarily established by the California Occupational Safety and Health Administration (Cal/OSHA)⁸ or the United States Occupational Safety and Health Administration (OSHA)¹⁹ for workday (8-hours) and short-term (15-minute) durations. As used here, a PEL for mold is understood to mean the highest concentration to which people could be exposed repeatedly without experiencing adverse health effects.

Cal/OSHA has developed PELs for over 500 chemicals but for only a few biological materials such as cotton, grain, or wood dust and vegetable oil mist (http://www.dir.ca.gov/Title8/5155table_ac1.html). The regulated agents (for example, chemicals used in industrial processes) share the feature that their sources in a workplace generally are known or readily identifiable. Federal and state agencies also regulate fungal contamination in consumer products. For example, mold spoilage and the presence of fungal toxins in food are detected through mandated inspections. Items that fail to meet minimum requirements are banned from being sold as food for animals or humans. For all of these hazardous agents, data from human or animal studies are available on the exposure–response relationships between the regulated contaminants and specific health outcomes.

Developing a PEL

Five components must be available in order to develop standards to limit exposure to an environmental agent:

1. The scientific basis for the standard;
2. A standardized, validated field sampling or detection method;
3. A standardized, validated laboratory analytical method;
4. A sampling strategy; and
5. A limit value.

Several expert panels, professional associations, and governmental agencies have established or considered the establishment of such limits for airborne bacteria and fungi but have determined that such an effort is premature based on following findings.

1. Scientific basis for the standard:

Insufficient Scientific Basis for a PEL for Mold in Indoor Environments

People respond differently to molds depending on many variables: genetic factors, age, nutritional status, personal habits, medical conditions, and medication use, as well as prior exposures to mold and the frequency, duration, and intensity of current exposures. Likewise, fungi vary in their ability to produce allergens or toxins, which determine the types and severity of reactions in exposed persons. Furthermore, little is known about how people react to fungi when also exposed to the other chemicals and biological agents that may be present in damp or moldy buildings.

Humans ingest, inhale, and have skin contact with many molds without experiencing adverse effects. This suggests that the concentrations and types of fungi to which we are unavoidably exposed generally are safe. Sampling surveys of indoor and outdoor air in buildings without water damage or occupant health complaints have provided long lists of fungi and the concentrations at which they were found. These measurements provide useful reference information on the prevalence of molds, but the individual studies differ widely in design and in the methods used to collect and analyze samples. Therefore, each study reflects typical environmental conditions in buildings of a specific region and season, but how well these data represent the universe of building types and climatic conditions found in California is not known.

The lack of reliable exposure–response information for inhalation of spores, mold fragments, or toxins is a major obstacle to formulating PELs for mold. Most previous research done in moldy buildings has measured mold concentrations in air or dust or on surfaces as a proxy for actual inhalation or skin exposure. Ideally a person’s true exposure to mold would be measured by identifying a unique chemical in blood or urine (a biological marker compound or biomarker), which is present as a result of exposure. Skin prick tests and blood tests can demonstrate production of immune responses (specifically, allergic-type antibodies) to test agents. Thus, they provide evidence of prior exposure and sensitization to specific allergens. Such sensitization may be associated with allergic symptoms in the presence of the allergen. For example, an asthmatic sensitized to cat dander may develop wheezing on entering a room where a cat has been. However, people who test positive (i.e., who are sensitized) to an allergen will not necessarily have symptoms related to such sensitization. Positive reactions are therefore not, in and of themselves, diagnostic of allergic disease, or other symptoms.

DHS has considered the value of blood tests offered to test for exposure to the mold *Stachybotrys chartarum* (<http://www.dhs.ca.gov/ehib/ehib2/topics/Serologyf2.htm>). DHS concluded that the demonstration of mold-specific antibodies alone is insufficient evidence that health effects reported by individuals in moisture-damaged buildings are caused by mold exposure. Moreover, except for skin prick and blood tests for allergic sensitization, there are no generally accepted biomarkers that can determine whether an individual has been exposed to and absorbed mold spores,

mycotoxins, or other microbial products. Also, few research studies of mold exposures have used objective health outcome measures that could be examined at different levels of exposure. Therefore, there are few data to identify exposure–response relationships or threshold levels that would allow identification of safe indoor air concentrations.

DHS has concluded that the data available from surveys of problem and non-problem buildings do not provide a sufficient scientific basis to establish a numerical value that would distinguish safe from unsafe indoor environments. In reaching this conclusion, DHS considered: a) individuals different susceptibilities to fungi and fungal products; b) the range of types and severity of reactions that individuals can have to molds; and c) the absence of reliable exposure-response data for total fungi, individual fungi, fungal products, or fungal toxins. While DHS cannot recommend a PEL, we believe it is reasonable to assume that inhalation of fewer mold spores is preferable to inhalation of many and that exposure should be avoided by preventing the growth of mold indoors and removing it safely when it occurs.

2 and 3 Standardized, validated field sampling or detection method and laboratory analytical method:

Limitations of Current Sampling and Analytical Methods for Fungi

Compliance with an exposure limit can only be determined by testing the indoor environment, that is, by collecting air or source samples to determine if the concentrations are above or below a limit value. In order to recommend a PEL for mold, DHS would need to identify: a) which agents to measure (for example, culturable fungi or total spores identified to the genus or species level or specific allergens, mycotoxins, or other fungal products); and b) what methods to use to collect, detect, and quantify those agents. Some methods for measuring mold concentrations have limitations that preclude their use to determine compliance with a PEL.

Air Samples. Fungi typically are collected by passing air through a filter or by redirecting the flow of sampled air so that suspended particles deposit on a surface. Research repeatedly has shown that devices differ in their ability to collect particles (for example, some samplers do not capture small fungal spores efficiently). Instruments also differ in their ability to preserve fungi for different analyses such as laboratory culture. Finally, investigators must have experience operating a device to collect valid samples.

Bulk Material and Surface Samples. Fungi can be collected from porous materials by vacuuming the items to recover dust or by removing small sections and sending them to a laboratory for examination and testing. Fungi also can be collected from surfaces by applying clear adhesive tape and lifting off material for examination. This type of sampling is straightforward

and easy to conduct after minimal instruction and practice. However, while bulk and surface samples can provide evidence of mold presence, source samples are only indirect indicators of exposure or possible levels of exposure. The relationships between mold on surfaces and concentrations of airborne mold spores or other products are poorly understood.

Sample Analysis. Analytical techniques for fungi range from simple, widely available, and well-established procedures to experimental research methods. Various governmental and professional agencies oversee clinical laboratories that test patient specimens and environmental laboratories that analyze samples such as water to detect fungal contamination.^{4, 5} Professional oversight and routine quality assurance procedures generally ensure the accuracy of laboratory results. Therefore, questions arise less often over the results of the laboratory tests than over how the samples were collected and what the findings mean.

4. Sampling Strategy

The choices of where, when, how often, and how many samples to collect to characterize environmental conditions in a building are critical to obtaining representative and reliable measurements. Balancing the expense of a sampling strategy that provides representative data with convenience and monetary considerations for building occupants and owners presents a serious challenge to the enforcement of a PEL for mold in indoor environments. If other critical factors such as exposure-response relationships and valid environmental assessment techniques can be established, DHS could then consider developing appropriate sampling strategies.

5. Limit Value

Threshold Limit Values (TLVs) refer to air concentrations of known hazardous substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse health effects.² TLVs are developed by the American Conference of Governmental Industrial Hygienists (ACGIH) following extensive review of both published and unpublished studies of specific chemical, biological, or physical agents. These values are recommendations, but federal and local agencies adopt many of them as workplace standards (PELs).^{8, 19} TLVs and PELs are intended to protect healthy workers and may be set at levels that would not protect the general public, especially children, the elderly, and individuals with chronic diseases.

The limitations described above for the component steps of the PEL development process preclude DHS from determining protective limit values and from designing appropriate sampling strategies. Therefore, at this time, DHS does not consider it feasible to develop scientifically based health protective indoor mold PELs or other numeric guidelines for either healthy adults or potentially sensitive groups such as

infants, the elderly and persons with compromised health. This conclusion is similar to those reached by other organizations that have examined the feasibility of establishing exposure limits for indoor molds. Professional associations and governmental agencies (such as the ACGIH, the U.S. Environmental Protection Agency (EPA), and the American Industrial Hygiene Association), with experience in determining exposure limits to protect workers and the public from hazardous biological, chemical, and physical agents, also have been unable to set standards for fungi in indoor environments or have retracted previously issued numerical guidelines.^{1, 2, 3, 27}

IMPLEMENTATION STATUS OF OTHER MANDATED TASKS

The Toxic Mold Protection Act of 2001 stipulates that mandated activities shall be undertaken to the extent that DHS determines that funds are available for their implementation (Health and Safety Code Section 26156). The financial crisis affecting California has not permitted state support of tasks mandated by the Toxic Mold Protection Act of 2001, except as noted above. The statutory tasks not yet addressed include convening the stakeholder task force and, with their consultation, developing practical standards to determine when both visible and hidden indoor mold pose a health threat, guidelines for identification and remediation of indoor molds, and assessing the need for standards or certification of mold testing and remediation professionals.

Stakeholder Task Force

The Toxic Mold Protection Act of 2001 requires DHS to convene a volunteer stakeholder task force to advise DHS on development of the guidelines and standards noted above. As a result of announcements on DHS websites, in print and electronic news media, and at indoor air quality conferences throughout the state, 195 individuals have indicated their interest in participating on this task force. The Act requires that the task force include members with a broad range of training or experience, either personal or professional, related to indoor mold or water damage. Table I categorizes the experience, occupations, or affiliations of potential task force volunteers. Members will be selected and the task force convened when resources become available to undertake the remaining mandated activities.

Table I. Knowledge/Experience Categories of Potential Mold Task Force Volunteers
(as of April 2005)

Affiliation	Number
Consultants (building assessors or remediators)	77
Attorneys	22
Local and state government officials	20
Housing advocates (individuals or associations)	14
School districts/colleges	13
Property owners (individuals or associations)	9
Microbiology laboratory staff	8
Contractors/builders	7
Insurance companies	6
Manufacturers of building supplies or furnishings	6
Others	13
Total	195

Public Health Protection from Indoor Mold Hazards Fund

At the close of the 2002 legislative session, DHS was authorized to establish the Public Health Protection from Indoor Mold Hazard Fund ("the Fund") (AB 442, Chapter 1161, Statutes of 2002, Section 5.5, <http://www.leginfo.ca.gov/bilinfo.html>). Through the Fund, DHS may accept voluntary contributions to be used solely for its indoor mold-related activities. Projects that may be supported through the Fund include, but are not limited to, those identified in the Toxic Mold Protection Act of 2001.

The Fund was established in February 2003; its availability was announced on DHS websites, by notification of potential task force volunteers and legislative offices, and during indoor air quality conferences and training sessions in which DHS staff participated.

CONCLUSIONS AND RECOMMENDATIONS

Evidence is accumulating that damp indoor environments can increase risks for a variety of health problems, especially cough, wheeze, worsening of asthma, and other respiratory symptoms. However, the specific elements in damp buildings that can cause such health effects are not yet sufficiently understood to warrant regulatory action. Possible agents in damp buildings include fungal and bacterial allergens or toxins, allergens from dust mites or insects, and volatile chemicals produced by microorganisms or deteriorating building materials. Additionally, there is wide variation in individual sensitivity or susceptibility to mold exposure and insufficient data to allow determination of the amount of mold exposure necessary to cause illness and allergic reactions. Thus, it is not yet feasible to establish PELs for indoor molds.

Other actions mandated by the Toxic Mold Protection Act of 2001, such as development of practical standards to determine when both visible and hidden indoor mold poses a health threat and guidelines for identification and remediation of indoor molds, will be completed based on availability of sufficient contributions to the Public Health Protection from Indoor Mold Hazards Fund.

Because of the potential for indoor mold growth or other dampness-associated biological agents to increase the risk for health problems in some individuals, DHS recommends that water intrusion be corrected promptly and any mold growth removed safely. DHS supports the voluntary guidelines for indoor mold remediation developed by the EPA^{27, 28} and New York City Department of Health.¹⁷ These documents and other authoritative resources are available at the molds section of the DHS Indoor Air Quality Section website, <http://www.dhs.ca.gov/iaq/>.

DHS staff looks forward to working with interested stakeholders to resolve issues we have not yet been able to address due to limited resources.

Persons interested in the status of SB 732 implementation can visit <http://www.dhs.ca.gov/iaq/mold/SB732update.htm>.

REFERENCES

- ¹ACGIH. American Conference of Government Industrial Hygienists, Cincinnati, OH, <http://www.acgih.org/>, (513) 742-2020
Bioaerosols: Assessment and Control. JM Macher, HM Ammann, HA Burge, DK Milton, and PR Morey, Eds. (1999).
(<http://www.acgih.org/Store/ProductDetail.cfm?id=349>)
- ²ACGIH. Introduction to the Chemical Substances. pp. 3–11. and Biologically Derived Airborne Contaminants. pp. 183–186. In: *2003 TLVs[®] and BEIs[®]. Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*. (2003).
(<http://www.acgih.org/store/ProductDetail.cfm?id=1401>)
- ³AIHA. American Industrial Hygiene Association (AIHA), Fairfax, VA, <http://www.aiha.org/>, (703) 849-8888,
Report of Microbial Growth Task Force (stock #458-EQ-01) (2001).
(<http://www.aiha.org/committees/documents/webmicrobial.pdf>)
- ⁴AIHA. Environmental Microbiology (EMLAP) — Accredited Laboratories
(<http://www.aiha.org/LaboratoryServices/html/emlap.htm>)
- ⁵AIHA. Industrial Hygiene (IHLAP) — U.S. Accredited Laboratories
(<http://www.aiha.org/LaboratoryServices/html/labstate.htm>)
- ⁶Auger PL, Pepin P, Miller JD, et al. Chronic toxic encephalopathies apparently related to exposure to toxigenic fungi. In *Bioaerosols, Fungi & Mycotoxins: Health Effects, Assessment, Prevention and Control*, the Proceedings of the Third International Conference on Fungi, Mycotoxins and Bioaerosols, September 23–25, 1998, Saratoga Springs, NY, USA. E Johanning, Ed. Eastern New York Occupational and Environmental Health Center, Albany, NY (1999)
(<http://www.fungalresearchgroup.com/abstracts/toc.html>).
- ⁷Bornehag C-G, Blomquist G, Gyntelberg F, et al. Dampness in Buildings and Health — Nordic Interdisciplinary Review of the Scientific Evidence on Associations between Exposure to “Dampness” in Buildings and Health Effects (NORDDAMP). *Indoor Air*. 11:72–86 (2001).
- ⁸California Code of Regulations (CCR) Title 8, Section 5155
<http://www.dir.ca.gov/Title8/5155.html>.
- ⁹Ellringer PJ, Ellringer CA, Olson LK, et al. Fungal investigation concerns related to vinyl base molding and the use of water-based latex adhesives. In *Proceedings, Indoor Air Quality 2001*, San Francisco, California, November 4–7, 2001. American Society of Heating, Refrigerating and Air-Conditioning Engineers (2001).

- ¹⁰Haverinen U, Husman T, Toivola M, et al. An approach to management of critical indoor air problems in school buildings. *Environmental Health Perspectives* 107(Supplement 3):509-514 (1999) (<http://ehpnet1.niehs.nih.gov/docs/1999/suppl-3/509-514haverinen/abstract.html>).
- ¹¹Health Canada. (<http://www.hc-sc.gc.ca/english/index.html>). *Fungal Contamination in Public Buildings: A Guide to Recognition and Management*. Federal-Provincial Committee on Environmental and Occupational Health. Environmental Health Directorate, Ottawa, Ontario (1995)
- ¹²Hodgson MJ, Morey P, Leung W-Y, et al. Building-associated pulmonary disease from exposure to *Stachybotrys chartarum* and *Aspergillus versicolor*. *Journal of Occupational and Environmental Medicine*. 40:241–249 (1998).
- ¹³IOM. Institute of Medicine, National Academy of Sciences. Committee on the Assessment of Asthma and Indoor Air. *Clearing the Air: Asthma and Indoor Air Exposures*. National Academy Press, Washington, DC (2000) (<http://books.nap.edu/books/0309064961/html/index.html>).
- ¹⁴ISIAC. International Society of Indoor Air Quality & Climate. (<http://www.ie.dtu.dk/isiaq/>) *Control of Moisture Problems Affecting Biological Indoor Air Quality*. International Society of Indoor Air Quality & Climate, Finland (1996).
- ¹⁵Johanning E, Giagini R, Hull DL, et al. Health and immunology study following exposure to toxigenic fungi (*Stachybotrys chartarum*) in a water-damaged office environment. *International Archives of Occupational and Environmental Health* 68:207-218 (1996).
- ¹⁶Lstiburek JL. Moisture Control for Buildings. *ASHRAE Journal*. 44:36–41 (2002).
- ¹⁷New York City Department of Health. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. City Department of Health, Bureau of Environmental and Occupational Disease Epidemiology, New York, NY, (2000). (<http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html>)
- ¹⁸New York Times Magazine. *Haunted by Mold*. by Lisa Belkin, August 12, 2001.
- ¹⁹OSHA. Occupational Safety and Health Administration, U.S. Department of Labor. Safety and Health Topics: Permissible Exposure Limits (<http://www.osha-slc.gov/SLTC/pel/>).
- ²⁰Robbins CA, Swenson LJ, Nealley ML, et al. Health effects of mycotoxins in indoor air: a critical review. *Applied Occupational and Environmental Hygiene*. 15:773–784 (2000).

- ²¹Smith JE, Henderson RS. *Mycotoxins and Animal Foods*. CRC Press, Inc., Boca Raton, Florida (1991).
- ²²Sorenson WG. Fungal spores: hazardous to health? *Environmental Health Perspectives* 107 (Supplement 3):469–472 (1999).
(<http://ehpnet1.niehs.nih.gov/docs/1999/suppl-3/469-472sorenson/abstract.html>)
- ²³Summerbell RC. Respiratory tract infections caused by indoor fungi. Ch. 3.5 In *Microorganisms in Home and Indoor Work Environments*. B Flannigan, RA Samson, JD Miller, Eds. Taylor & Francis Inc., New York, NY (2001).
- ²⁴Trout D, Bernstein J, Martinez K, et al. Bioaerosol lung damage in a worker with repeated exposure to fungi in a water-damaged building. *Environmental Health Perspectives*. 109:641–644 (2001).
(<http://ehpnet1.niehs.nih.gov/docs/2001/109p641-644trout/abstract.html>)
- ²⁵USA Weekend. *Mold: A health alert*. by Arnold Mann, December 3–5, 1999.
- ²⁶USA Weekend. *When mold takes hold?* by Arnold Mann, July 19–21, 2002.
- ²⁷US EPA. United States Environmental Protection Agency. Office of Air and Radiation, Indoor Environments Division (6609-J), Washington, DC
Mold Remediation in Schools and Commercial Buildings. #402-K-01-001 (2001)
(<http://www.epa.gov/iaq/molds/index.html>).
- ²⁸US EPA. United States Environmental Protection Agency. Office of Air and Radiation, Indoor Environments Division (6609-J), Washington, DC
A Brief Guide to Mold, Moisture and Your Home #402-K-02-003 (2002)
(<http://www.epa.gov/iaq/molds/moldguide.html>).
- ²⁹Kabalin CS, Greenberger PA. Allergic Pulmonary Aspergillosis. Ch. 40 In *Allergy, Asthma, and Immunology from Infancy to Adulthood*. CW Bierman, DS Pearlman, GS Shapiro, WW Busse, Eds. W.B. Saunders Co., Philadelphia, Pennsylvania (1996).

Other Resources

AIHA. American Industrial Hygiene Association, Fairfax, VA, <http://www.aiha.org/>, (703) 849-8888,

- *The Facts About Mold.* (<http://www.aiha.org/GovernmentAffairs-PR/html/oomold.htm>)
- *Field Guide for the Determination of Biological Contaminants in Environmental Samples.* HK Dillon, PA Heinsohn, and JD Miller, Eds. (1996)
- Indoor Air Consultants Listing, (<http://www.aiha.org/ConsultantsConsumers/html/consultantslist.asp>)
- Guidelines for Selecting an Indoor Air Quality Consultant. (<http://www.aiha.org/ConsultantsConsumers/html/OOiaq.htm>).

ACRONYMS

Acronym	Definition
AB	Assembly Bill
ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
CCR	California Code of Regulations
Cal/OSHA	California Occupational Safety and Health Administration
DEODC	Division of Environmental and Occupational Disease Control
DHS	California Department of Health Services
EHIB	Environmental Health Investigations Branch
EHLB	Environmental Health Laboratory Branch
EPA/U.S. EPA	United States Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PCR	Polymerase Chain Reaction
SB	Senate Bill
TLV	Threshold Limit Value

GLOSSARY OF TERMS

Actinomycete	A microorganism that is found in soil and has a fungus-like appearance. These microorganisms can grow indoors on damp building materials.
Allergen	A chemical or biological substance (for example, pollen, animal dander, or house dust mite proteins) that can induce an allergic state or reaction in susceptible individuals.
Arthropod	A large group of invertebrate animals that includes insects; such as cockroaches and termites, as well as spiders and mites.
Asthma	A chronic lung disease characterized by chronic inflammation and episodic narrowing of the airways, accompanied by respiratory symptoms, including wheezing, difficulty breathing, cough, chest tightness, and excess production of phlegm. Persons with asthma often develop symptoms after exposure to allergens and airborne chemical irritants.
Biological agent	A substance of plant, animal, or microbial origin, such as a fungal spore or allergen, that can cause a variety of health effects, including infections, allergic reactions and illnesses, and other responses.
Colonization	When used in relation to a human or animal body tissue such as the lungs or sinuses, colonization refers to growth of a microorganism within the mucus fluid lining these structures without invasion into the tissue itself.
Fungus	Organism that absorbs nutrients in solution directly through its cell wall and reproduces through spores (includes molds, mildews, yeasts, and mushrooms); none conduct photosynthesis.
Microorganism	A microscopic organism, especially a bacterium, fungus, or protozoan.
Mold	A filamentous fungus; usually refers to a superficial, often woolly, growth on damp or decaying organic matter.
Mycotoxin	Nonvolatile chemical produced during fungal metabolism that causes a harmful reaction in an exposed

microorganism, animal, or person. Humans may be exposed through inhalation, ingestion, or skin contact.

Permissible Exposure
Limit (PEL)

Enforceable standard promulgated by federal or state OSHA that is designed to protect healthy adult workers in occupational settings from adverse health effects associated with pollutant exposures. PELs are not intended to protect individuals outside the workplace, young children, or the elderly.

Threshold Limit
Value (TLV)

Guideline (**not** standard) prepared by the ACGIH to assist industrial hygienists in making decisions about safe levels of exposure to various workplace hazards. TLVs reflect the level of exposure that the typical worker can experience repeatedly without an unreasonable risk of disease or injury.

APPENDIX

TEXT OF THE TOXIC MOLD PROTECTION ACT OF 2001

TEXT OF THE TOXIC MOLD PROTECTION ACT OF 2001

Health & Safety Code Sections 26100 et seq.

Article 1. General Provisions

26100. This chapter shall be known, and may be cited, as the Toxic Mold Protection Act of 2001.

26101. For purposes of this chapter, the following definitions apply: (a) “Affect” means to cause a condition by the presence of mold in the dwelling unit, building, appurtenant structure, common wall, heating system, or ventilating and air-conditioning system that affects the indoor air quality of a dwelling unit or building.

(b) “Authoritative bodies” means any recognized national or international entities with expertise on public health, mold identification and remediation, or environmental health, including, but not limited to, other states, the United States Environmental Protection Agency, the World Health Organization, the American Conference of Governmental Industrial Hygienists, the New York City Department of Health, the Centers for Disease Control and Prevention, and the American Industrial Hygiene Association.

(c) “Certified Industrial Hygienist” means a person who has met the education, experience, and examination requirements of an industrial hygiene certification organization as defined in Section 20700 of the Business and Professions Code.

(d) “Code enforcement officer” means a local official responsible for enforcing housing codes and maintaining public safety in buildings using an interdepartmental approach at the local government level.

(e) “Department” means the State Department of Health Services, designated as the lead agency in the adoption of permissible exposure limits to mold in indoor environments, mold identification and remediation efforts, and the development of guidelines for the determination of what constitutes mold infestation.

(f) “Indoor environments” means the affected dwelling unit or affected commercial or industrial building.

(g) “Mold” means any form of multicellular fungi that live on plant or animal matter and in indoor environments. Types of mold include, but are not limited to, Cladosporium, Penicillium, Alternaria, Aspergillus, Fusarium, Trichoderma, Memnoniella, Mucor, and Stachybotrys chartarum, often found in water-damaged building materials.

(h) “Person” means an individual, corporation, company, association, partnership, limited liability company, municipality, public utility, or other public body or institution.

(i) “Public health officer” means a local health officer appointed pursuant to Section 101000 or a local comprehensive health agency designated by the board of supervisors pursuant to Section 101275 to carry out the drinking water program.

26101.5. All standards that the department develops pursuant to this chapter shall be in accordance with existing administrative law procedures applicable to the development of regulations.

26101.7. The department shall convene a task force which shall advise the department on the development of standards pursuant to Sections 26103, 26105, 26106, 26120, and 26130. The task force shall be comprised of representatives of public health officers, environmental health officers, code enforcement officers, experts on the health effects of molds, medical experts, certified industrial hygienists, mold abatement experts, representatives of government-sponsored enterprises, representatives from school districts or county offices of education, representatives of employees and representatives of employers, and affected consumers, which include, but are not limited to, residential, commercial and industrial tenants, homeowners, environmental groups, and attorneys, and affected industries, which include, but are not limited to, residential, commercial and industrial building proprietors, managers or landlords, builders, realtors, suppliers of building materials and suppliers of furnishings, and insurers. Task force members shall serve on a voluntary basis and shall be responsible for any costs associated with their participation in the task force. The department shall not be responsible for travel costs incurred by task force members or otherwise compensating task force members for costs associated with their participation in the task force.

26102. The department shall consider the feasibility of adopting permissible exposure limits to mold in indoor environments.

26103. (a) If the department finds that adopting permissible exposure limits to mold in indoor environments is feasible, the department, in consultation with the task force convened pursuant to Section 26101.7, shall:

- (1) Adopt permissible exposure limits to mold for indoor environments that avoid adverse effects on health, with an adequate margin of safety, and avoid any significant risk to public health.
- (2) Notwithstanding paragraph (1), balance the protection of public health with technological and economic feasibility when it adopts permissible exposure limits.
- (3) Utilize and include the latest scientific data or existing standards adopted by authoritative bodies.
- (4) Develop permissible exposure limits that target the general population.

(b) The department shall consider all of the following criteria when it adopts permissible exposure limits for molds in indoor environments:

- (1) The adverse health effects of exposure to molds on the general population, including specific effects on members of subgroups that comprise a meaningful portion of the general population, which may include infants, children age 6 years and under, pregnant women, the elderly, asthmatics, allergic individuals, immune compromised individuals, or other subgroups that are identifiable as being at greater risk of adverse health effects than the general population when exposed to molds.
- (2) The standards for molds, if any, adopted by authoritative bodies.
- (3) The technological and economic feasibility of compliance with the proposed permissible exposure limit for molds. For the purposes of determining economic feasibility pursuant to this paragraph, the department shall consider the costs of compliance to tenants, landlords, homeowners, and other affected parties.
- (4) Toxicological studies and any scientific evidence as it relates to mold.

(c) The department may develop alternative permissible exposure limits applicable for facilities, which may include hospitals, child care facilities, and nursing homes, whose primary business is to serve members of subgroups that comprise a meaningful portion of the general population and are at greater risk of adverse health effects from molds than the general population. These subgroups may include infants, children age 6 years and under, pregnant women, the elderly, asthmatics, allergic individuals, or immune compromised individuals.

(d) The department shall report to the Legislature on its progress in developing the permissible exposure limit for molds by July 1, 2003.

26104. (a) (1) The department shall, at the time it commences preparation of the permissible exposure limits to mold, provide notice electronically by posting on its Internet Web site a notice that informs interested persons that the department has initiated work on the permissible exposure limits to mold.

(2) The notice shall also include a brief description or a bibliography of the technical documents or other information the department has identified to date as relevant to the preparation of the permissible exposure limits.

(3) The notice shall inform persons who wish to submit information concerning exposure to molds of the name and address of the person in the department to whom the information may be sent, the date by which the information must be received in order for the department to consider it in the preparation of the permissible exposure limits, and that all information submitted will be made available to any member of the public who makes the request.

(b) The department may amend the permissible exposure limits to molds to make the limits less stringent if the department shows clear and convincing evidence that the permissible exposure limits to molds should be made less stringent and the amendment is made consistent with Section 26103.

(c) The department may review, and consider adopting by reference, any information prepared by, or on behalf of the United States Environmental Protection Agency or other authoritative bodies, for the purpose of adopting national permissible exposure limits to molds.

(d) At least once every five years, after adoption of permissible exposure limits to molds, the department shall review the adopted limits and shall, consistent with the criteria set forth in subdivisions (a) and (b) of Section 26103, amend the permissible exposure limits if any of the following occur:

(1) Changes in technology or treatment techniques that permit a materially greater protection of public health.

(2) New scientific evidence that indicates that molds may present a materially different risk to public health than was previously determined.

26105. (a) The department, in consultation with the task force convened pursuant to Section 26101.7, shall adopt practical standards to assess the health threat posed by the presence of mold, both visible and invisible or hidden, in an indoor environment.

(b) The department shall adopt assessment standards for molds that do the following:

(1) Protect the public's health.

(2) Notwithstanding paragraph (1), balance the protection of public health with technological and economic feasibility when it adopts assessment standards.

(3) Utilize and include the latest scientific data or existing standards for the assessment of molds adopted by authoritative bodies.

(4) Develop standards that target the general population.

(5) The department shall ensure that air or surface testing is not required to determine whether the presence of mold constitutes a health threat posed by the presence of mold, both visible and invisible or hidden, in an indoor environment.

(c) The department shall consider all of the following criteria when it adopts standards for the assessment of molds in indoor environments:

(1) The adverse health effects of exposure to molds on the general population, including specific effects on members of subgroups that comprise a meaningful portion of the general population, which may include infants, children age 6 years and under, pregnant women, the elderly, asthmatics, allergic individuals, immune compromised individuals, or other subgroups that are identifiable as being at greater risk of adverse health effects than the general population when exposed to molds.

(2) The standards for assessment of molds, if any, adopted by authoritative bodies.

(3) The technological and economic feasibility of compliance with the proposed permissible exposure limit for molds. For the purposes of determining economic feasibility pursuant to this paragraph, the department shall consider the costs of compliance to tenants, landlords, homeowners, and other affected parties.

(4) Any toxicological studies or additional scientific evidence.

(d) The department shall report to the Legislature on its progress in developing the assessment standards for molds by July 1, 2003.

26106. The department may develop alternative assessment standards applicable for facilities, which may include hospitals, child care facilities, and nursing homes, whose primary business is to serve members of subgroups that comprise a meaningful portion of the general population and are at greater risk of adverse health effects to molds than the general population. These subgroups may include infants, children age 6 years and under, pregnant women, the elderly, asthmatics, allergic individuals, or immune compromised individuals.

26107. (a) (1) The department shall, at the time it commences preparation of standards for the assessment of molds, provide notice electronically by posting on its Internet Web site a notice that informs interested persons that the department has initiated work on the assessment standards.

(2) The notice shall also include a brief description, or a bibliography, of the technical documents or other information the department has identified to date as relevant to the preparation of the assessment standards.

(3) The notice shall inform persons who wish to submit information concerning the assessment of molds in indoor environments of the name and address of the person in the department to whom the information may be sent, the date by which the information must be received in order for the department to consider it in the preparation of the assessment standards, and that all information submitted will be made available to any member of the public who makes the request.

(b) The department may review, and consider adopting by reference, any information prepared by, or on behalf of, the United States Environmental Protection Agency or other authoritative bodies, for the purpose of adopting national assessment standards for molds.

(c) At least once every five years, after adoption of assessment standards for molds, the department shall review the adopted standards and shall, consistent with the criteria set forth in subdivisions (a), (b), and (c) of Section 26105, amend the standards if any of the following occur:

(1) Changes in technology or treatment techniques that permit a materially greater protection of public health.

(2) New scientific evidence that indicates that molds may present a materially different risk to public health than was previously determined.

Article 2. Guidelines for Identification of Molds

26120. The department, in consultation with the task force convened pursuant to Section 26101.7, shall adopt mold identification guidelines for the recognition of mold, water damage, or microbial volatile organic compounds in indoor environments.

26121. Identification guidelines shall include scientifically valid methods to identify the presence of mold including elements for collection of air, surface and bulk samples, visual identification, olfactory identification, laboratory analysis, measurements of amount of moisture, and presence of mold and other recognized analytical methods used for the identification of molds.

26122. (a) Identification guidelines developed by the department shall do all of the following:

- (1) Avoid adverse effects on the health of the general population, with an adequate margin of safety, and avoid any significant risk to public health.
 - (2) Notwithstanding paragraph (1), balance the protection of public health with technological and economic feasibility.
 - (3) Utilize and include the latest scientific data or existing standards for the assessment of molds adopted by authoritative bodies.
- (b) The department shall consider all of the following criteria when it develops identification guidelines for mold:
- (1) Permissible exposure limits to molds developed by the State Department of Health Services pursuant to subdivisions (a) and (b) of Section 26103, or what constitutes a health threat posed by the presence of mold, both visible and invisible or hidden, in an indoor environment, according to the department's standards as developed pursuant to Section 26105.
 - (2) Standards for mold identification, if any, adopted by authoritative bodies.
 - (3) Professional judgment and practicality.
 - (4) Toxicological reports or additional scientific evidence.
- (c) The department shall not require a commercial, industrial, or residential landlord or a public entity that rents or leases a unit or building to conduct air or surface tests of units or buildings to determine whether the presence of molds exceeds the permissible exposure limits to mold established by subdivisions (a), (b), and (c) of Section 26103.
- (d) The department shall develop a reporting form for building inspection that may be used to document the presence of mold.
- (e) The department shall report to the Legislature on its progress in developing identification guidelines for mold by July 1, 2003.

26123. The department may review, and consider adopting by reference, any information prepared by, or on behalf of, the United States Environmental Protection Agency or other authoritative bodies, for the purpose of adopting national identification standards for molds.

26124. (a) The department shall, at the time it commences preparation of identification guidelines for mold, electronically post on its Internet Web site a notice that informs interested persons that it has initiated work on the identification guidelines.

(b) The notice shall include a brief description, or a bibliography, of the technical documents or other information the department has identified to date as relevant to the preparation of the identification guidelines for mold.

(c) The notice shall inform persons who wish to submit mold identification information of the name and address of the person in the office to whom the information may be sent, the date by which the information must be received for the department to consider it in the preparation of the identification guidelines, and that all information submitted will be made available to any member of the public who makes the request.

26125. All identification guidelines for mold published by the department shall be reviewed at least once every five years and revised, as necessary, based upon the availability of new scientific data or information on effective mold identification.

Article 3. Guidelines for Remediation

26130. The department, in consultation with the task force convened pursuant to Section 26101.7, shall develop and disseminate remediation guidelines for molds in indoor environments.

26131. (a) Remediation guidelines for mold developed by the department shall do all of the following:

- (1) Provide practical guidance for the removal of mold and abatement of the underlying cause of mold and associated water intrusion and water damage in indoor environments.
 - (2) Protect the public's health.
 - (3) Notwithstanding paragraph (2), balance the protection of public health with technological and economic feasibility.
 - (4) Utilize and include toxicological reports, the latest scientific data, or existing standards for the remediation of molds adopted by authoritative bodies.
 - (5) Provide practical guidance for the removal or cleaning of contaminated materials in a manner that protects the health of the person performing the abatement.
 - (6) Include criteria for personal protective equipment.
 - (7) Not require a landlord, owner, seller, or transferor, to be specially trained or certified or utilize the services of a specially qualified professional to conduct the mold remediation.
- (b) The department shall consider all of the following criteria when it develops remediation guidelines for mold:
- (1) Permissible exposure limits to molds developed by the department pursuant to subdivisions (a) and (b) of Section 26103, or what constitutes a health threat posed by the presence of mold, both visible and invisible or hidden, in an indoor environment, according to the department's guidelines as developed pursuant to Section 26105.
 - (2) Guidelines for mold remediation, if any, adopted by authoritative bodies.
 - (3) Professional judgment and practicality.
- (c) The department shall not require a commercial, industrial, or residential landlord, or a public entity that rents or leases a unit or building to conduct air or surface tests of units or buildings to determine whether the presence of molds exceeds the permissible exposure limits to mold established by subdivisions (a), (b), and (c) of Section 26103.
- (d) The department shall report to the Legislature on its progress in developing remediation standards for mold by July 1, 2003.

26132. (a) The department shall, at the time it commences preparation of remediation guidelines for mold, electronically post on its Internet Web site, a notice that informs interested persons that it has initiated work on the remediation standards.

(b) The notice shall also include a brief description, or a bibliography, of the technical documents or other information the department has identified to date in the preparation of remediation guidelines for mold.

(c) The notice shall inform persons who wish to submit information concerning mold remediation of the name and the address of the person in the office to whom the information may be sent, the date by which the information must be received in order for the department to consider it in the preparation of remediation standards, and that all information submitted will be made available to any member of the public who makes the request.

26133. The department may review, and consider adopting by reference, any information prepared by, or on behalf of, the United States Environmental Protection Agency or other authoritative bodies, for the purpose of adopting national remediation standards for molds.

26134. (a) The department shall make available to the public upon request, information about contracting for the removal of mold in a building or surrounding environment, including all of the following:

- (1) Recommended steps to take when contracting with a company to remove mold.
- (2) Existing laws, regulations, and guidelines developed by the department, pertaining to permissible exposure limits to mold infestation, identification, and remediation.
- (3) Basic health information as contained in existing mold publications.

- (b) All mold remediation guidelines published by the department shall be reviewed at least once every five years and revised, as necessary based upon the availability of new scientific data.
- (c) (1) The State Department of Health Services shall develop public education materials and resources to inform the public about the health effects of molds, methods to prevent, identify and remediate mold growth, resources to obtain information about molds, and contact information for individuals, organizations, or government entities to assist with public concerns about molds.
- (2) The department shall make its public education materials available to public health officers, environmental health officers, commercial and residential landlord organizations, homeowners' organizations, and tenants' organizations. These materials shall be readily available to the general public.
- (3) These materials shall be comprehensible to the general public.
- (4) These materials shall be produced to include other languages, in addition to English, to accommodate the diverse multicultural population of California.
- (5) These materials shall be made available on the department's Internet Web site.

Article 4. Disclosures

26140. (a) Subject to subdivisions (b), (c), and (d), a seller or transferor of commercial or industrial real property, shall provide written disclosure to prospective buyers as soon as practicable before the transfer of title when the seller or transferor knows of the presence of mold, both visible and invisible or hidden, that affects the unit or building and the mold either exceeds permissible exposure limits to molds established by subdivisions (a), (b), and (c) of Section 26103 or poses a health threat, according to the department's guidelines as developed pursuant to Section 26105.

(b) A seller or transferor of commercial or industrial real property shall be exempt from providing written disclosure pursuant to this subdivision if the presence of mold was remediated according to the mold remediation guidelines developed by the department pursuant to Section 26130.

(c) A commercial or industrial real property landlord shall not be required to conduct air or surface tests of units or buildings to determine whether the presence of molds exceeds the permissible exposure limits to molds established by subdivisions (a) and (b) of Section 26103.

(d) The requirements of this section shall not apply until the first January 1 or July 1 that occurs at least six months after the department adopts standards pursuant to Sections 26103 and 26105 and develops guidelines pursuant to Section 26130.

26141. (a) Subject to subdivisions (c), (d), and (e), commercial and industrial landlords shall provide written disclosure to prospective and current tenants of the affected units as specified in subdivision (b), when the landlord knows that mold, both visible and invisible or hidden, is present that affects the unit or the building and the mold either exceeds the permissible exposure limits to molds established by subdivisions (a) and (b) of Section 26103 or poses a health threat according to the department's guidelines as developed pursuant to Section 26105.

(b) The written notice required by subdivision (a) shall be provided:

(1) To prospective tenants as soon as practicable and prior to entering into the rental agreement.

(2) To current tenants in affected units as soon as is reasonably practical.

(c) A commercial and industrial landlord shall be exempt from providing written disclosure to prospective tenants pursuant to this section if the presence of mold was remediated according to the mold remediation guidelines developed by the department pursuant to Section 26130.

(d) A commercial or industrial landlord shall not be required to conduct air or surface tests of units or buildings to determine whether the presence of molds exceeds the permissible exposure limits to molds established by subdivisions (a) and (b) of Section 26103.

(e) The requirements of this section shall not apply until the first January 1 or July 1 that occurs at least six months after the department adopts standards pursuant to Sections 26103 and 26105 and develops guidelines pursuant to Section 26130.

26142. Any tenant of a commercial or industrial real property who knows that mold is present in the building, heating system, ventilating or air-conditioning system, or appurtenant structures, or that there is a condition of chronic water intrusion or flood, shall inform the landlord of this knowledge in writing within a reasonable period of time. The tenant shall make the property available to the landlord or his or her agents for appropriate assessment or remedial action as soon as is reasonably practicable if the landlord is responsible for maintenance of the property. Nothing in this section is intended to any way affect existing duties and obligations of residential tenants and landlords.

26143. Commercial and industrial landlords, who know or have notice that mold is present in the building, heating system, ventilating or air-conditioning system, or appurtenant structures, or that there is a condition of chronic water intrusion or flood, have an affirmative duty, within a reasonable period of time, to assess the presence of mold or condition likely to result in the presence of mold and conduct any necessary remedial action.

26144. The requirements of this article shall not apply to properties where the tenant is contractually responsible for maintenance of the property, including any remedial action.

26145. Any tenant of a commercial or industrial real property who knows or is informed that mold is present in the building, heating system, ventilating or air-conditioning system, or appurtenant structures, or that there is a condition of chronic water intrusion or flood, and is responsible for maintenance of the property shall inform the landlord in writing of that knowledge as soon as is reasonably practicable and shall correct the condition in compliance with the terms of the contract with the landlord.

26146. (a) A public entity that owns, leases, or operates a building shall provide written disclosure to all building occupants and prospective tenants as specified in subdivision (b) when the public entity knows, or has reasonable cause to believe, that a condition of chronic water intrusion or flood exists, or that mold, both visible and invisible or hidden, is present that affects the building or unit and the mold either exceeds the permissible exposure limits to molds established by subdivisions (a) and (b) of Section 26103, or poses a health threat according to the department's guidelines developed pursuant to Section 26105.

(b) The written notice required by subdivision (a) shall be provided:

(1) To prospective tenants as soon as practicable and prior to entering into the rental agreement.

(2) To current building occupants in affected units or buildings as soon as is reasonably practical.

(c) A public entity shall be exempt from providing written disclosure to prospective tenants pursuant to subdivision (a) if the presence of mold was remediated according to the mold remediation guidelines developed by the department pursuant to Section 26130.

(d) The requirements of this section shall not apply until the first January 1 or July 1 that occurs at least six months after the department adopts standards pursuant to Sections 26103 and 26105 and develops guidelines pursuant to Section 26130.

26147. (a) Subject to subdivisions (b), (d), and (e), residential landlords shall provide written disclosure to prospective and current tenants of the affected units as specified in subdivision (b) when the residential landlord knows, or has reasonable cause to believe, that mold, both visible and invisible or hidden, is present that affects the unit or the building and the mold either exceeds the permissible exposure limits to molds established by subdivisions (a), (b), and (c) of Section 26103 or

poses a health threat according to the department's guidelines as developed pursuant to Section 26105.

(b) Notwithstanding subdivision (a), a residential landlord shall not be required to conduct air or surface tests of units or buildings to determine whether the presence of molds exceeds the permissible exposure limits to molds established by subdivisions (a) and (b) of Section 26103.

(c) The written disclosure required by subdivision (a) shall be provided:

(1) To prospective tenants prior to entering into the rental or lease agreement.

(2) To current tenants in affected units as soon as is reasonably practical.

(d) A residential landlord shall be exempt from providing written disclosure to prospective tenants pursuant to this section if the presence of mold was remediated according to the mold remediation guidelines developed by the department pursuant to Section 26130.

(e) The requirements of this section shall not apply until the first January 1 or July 1 that occurs at least six months after the department adopts standards pursuant to Sections 26103 and 26105 and develops guidelines pursuant to Section 26130.

26148. (a) Residential landlords shall provide written disclosure to prospective tenants of the potential health risks and the health impact that may result from exposure to mold by distributing a consumer oriented booklet developed and disseminated by the department.

(b) The requirements of this section shall be provided to prospective residential tenants prior to entering the rental or lease agreement.

(c) The requirements of this section shall not apply until the first January 1 or July 1, that occurs at least six months after the department approves the consumer oriented booklet, as described in subdivision (a).

26149. (a) Nothing in this article shall relieve a seller, transferor, lessor, agent, landlord, or tenant from any responsibility for compliance with other obligations, laws, ordinances, codes, or regulations, including but not limited to the duties outlined in Sections 1941 and 1941.1 of the Civil Code and any other duties provided for under common law.

(b) Nothing in this article shall alter or modify any right, remedy, or defense otherwise available under law.

26150. (a) Nothing in this article shall affect the existing obligations of the parties or transferor to a real estate contract, or their agents, to disclose any facts materially affecting the value and desirability of the property, including, but not limited to, the physical conditions of the property and previously received reports of physical inspections noted on the disclosure form set forth in Section 1102.6 or 1102.6a of the Civil Code.

(b) Nothing in this article shall be construed to change the existing inspection and disclosure duties of a real estate broker or salesperson including, but not limited to, those duties imposed by Section 2079 of the Civil Code.

26151. The specification of items for disclosure in this article does not limit or abridge any obligation for disclosure created by any other provision of law, or which may exist in order to avoid fraud, misrepresentation, or deceit in the transfer transaction.

26152. All items subject to disclosure requirements pursuant to this article shall be subject to enforcement pursuant to Article 5 (commencing with Section 26154).

26153. Neither the transferor nor any listing or selling agent shall be held liable for any error, inaccuracy, or omission of any information delivered pursuant to this article if the error, inaccuracy, or omission was not within the personal knowledge of the transferor, or the listing or

selling agent, or was based on information timely provided by public agencies, or by other persons providing relevant information by delivery of a report or opinion prepared by an expert dealing with matters within the relevant scope of the professional's license or expertise, and ordinary care was exercised in obtaining and transmitting it.

Article 5. Enforcement

26154. Public health officers, code enforcement officers, environmental health officers, city attorneys, and any other appropriate government entities may respond to complaints about mold and may enforce standards adopted by the department, pursuant to subdivisions (a), (b), and (c) of Section 26103 and subdivisions (a), (b), and (c) of Section 26105, and enforce the disclosure requirements of Sections 26147 and 26148 that are developed by the department in consultation with the task force. The disclosure enforcement guidelines established by the department pursuant to this section shall include development of a form for disclosure and the penalties, if any, that may be imposed for failure to disclose. No penalty shall be assessed against an owner for failure to disclose under Section 26147 where the owner provides disclosure to the tenants in a form that substantially conforms to the disclosure form developed by the department. Local authority to enforce disclosure requirements pursuant to this section shall not apply until the first January 1 or July 1 that occurs at least six months after the department adopts disclosure enforcement guidelines for compliance with Sections 26147 and 26148.

26155. After the State Department of Health Services, pursuant to administrative law procedures, submits the proposed regulations developed pursuant to this chapter, the Department of Consumer Affairs, in consultation with representatives from the State Department of Health Services, the Department of Industrial Relations, and members of the task force convened by the department pursuant to Section 26101.7, shall consider and report on the need for standards for mold testing professionals and mold remediation specialists.

Article 6. Implementation

26156. This chapter shall be implemented only to the extent that the department determines that funds are available for the implementation of this chapter.