

New York State Toxic Mold Task Force
Final Report to the Governor and Legislature

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New York State Department of Health

New York State Department of State

PART 2

C. Actions taken by state and local governments and other entities

1. Survey approach and results

NYSDOH and NYSDOS staff conducted multiple searches for published materials addressing any actions taken by state and local governments or other entities relevant to the Task Force scope as defined in Section 1384.¹¹ The information obtained was categorized into four main topic areas:

- Building and housing codes and industry standards;
- Regulatory programs;
- Outreach and education; and
- Mold task force laws or initiatives.

These are discussed in detail below.

Two other common actions were identified during these searches that were considered outside of the scope of Section 1384 and are mentioned here without further discussion. One of these is the use of or requirement for real estate disclosures. These generally are either recommended by local real estate broker associations or required by state or local law and are intended to protect a property seller or landlord from liability and/or inform prospective purchasers or tenants by disclosing a property's known mold-related conditions or history (see, for example, <http://www.cdph.ca.gov/programs/CLPPB/Documents/ResEnviroHaz2005.pdf> and <http://www.realtor.org/realtororg.nsf/pages/moldchart0403>). The other action involved legal requirements for "right to cure" clauses in construction contract language. This is intended to provide an opportunity for builders to correct construction problems that lead to water damage and/or mold problems in exchange for some protection from liability claims (see, for example, <http://commerce.wi.gov/SB/SB-DivPublications.html>).

2. Building and housing codes and industry standards

Existing building codes

NYSDOS staff reviewed construction codes for NYS (available at: <http://www.dos.state.ny.us/code/lc-codes.html>) and other states and consulted with International Code Council staff to review building, residential and mechanical codes for 12 large states and localities. Construction, property maintenance and housing codes generally do not specifically address the presence of mold. Codes are

¹¹ There is no central source for this type of information, so internet-based searches focused on state health departments, relevant federal agencies and industry standards organizations, along with additional searches using internet search engines and contacts with other state agencies and independent associations knowledgeable in related technical areas. Although this approach cannot claim to be exhaustive, there was an effort made to survey all states for any relevant guidance, legislative or regulatory actions and all state health department web sites specifically for relevant outreach and education materials. A broad survey of state building codes was conducted, along with a more focused survey of building, residential and mechanical codes for 12 states. Web site addresses appearing in the report were verified as of August, 2009.

prevention oriented and contain many provisions aimed at building moisture control such as building ventilation requirements, drainage and building envelope elements (e.g., caulking and flashing).

In NYS, code chapters (2007 revision) that address building moisture prevention and control include:

- Building code, Chapter 14, Exterior Walls;
- Building code, Chapter 15, Roof Assemblies and Rooftop Structures;
- Building code, Chapter 18, Soils and Foundations;
- Residential code, Chapter 3, Building Planning;
- Residential code, Chapter 4, Foundations;
- Residential code, Chapter 7, Wall Covering;
- Residential code, Chapter 9, Roof Assemblies;
- Residential code, Chapter 11, Energy Efficiency;
- Residential code, Chapter 15, Exhaust Systems;
- Residential code, Chapter 18, Chimneys and Vents;
- Mechanical code, Chapter 4, Ventilation;
- Plumbing Code, Chapter 11, Storm Drainage;
- Property Maintenance Code, Chapter 1, General Requirements;
- Property Maintenance Code, Chapter 3, General Requirements; and
- Property Maintenance Code, Chapter 5, Plumbing Facilities and Fixture Requirements.

Industry standards organizations have developed many standards relevant to construction materials or building dampness (Appendix D). For example, the American Society for Testing and Materials (ASTM) has many testing standards for assessment of water or mold resistance of various building materials. The American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) has developed performance standards for building ventilation systems that include consideration of moisture prevention. These are consensus industry technical standards that can be incorporated into building codes by reference, but are otherwise generally voluntary.

Building code enforcement

Code enforcement in NYS is largely the responsibility of the local municipality. Code enforcement officials (CEOs) are the individuals who are responsible for approving construction documents, doing inspections during construction and issuing certificates of occupancy upon successful completion of the building. They also are required to inspect existing buildings (except one and two family dwellings) on a regular basis and can issue violations.

Dampness problems and mold growth in buildings can be addressed by CEOs under existing authority to control nuisance conditions that affect building habitability. CEOs should understand obvious problems with plumbing leaks or weatherproofing

that could lead to a mold problem. However, their ability to recognize subtle moisture problems in buildings (e.g., uncontrolled airflows causing condensation) probably varies and, as result, potential construction or maintenance violations that can lead to mold problems may be missed.

The NYC HPD inspection program for disrepair violations described previously (Section II.B.2) is an example of building-code enforcement applied to dampness and mold problems. NYC also has a separate part under its judicial system that specializes in housing issues, including landlord-tenant conflicts that can arise from dampness and mold problems in apartments.

Despite the extensive enforcement infrastructure for property-maintenance issues in NYC, public comments made at Task Force meetings stated that the enforcement system is limited in its ability to successfully resolve many building owner-building resident conflicts related to dampness and mold problems. For example, some public speakers reported that HPD mold violations were repaired by simple measures such as surface cleaning and re-painting without fully abating contaminated building materials or the underlying water problem causing the mold growth. Although these repairs initially corrected the letter of the violation (based on visual appearance), mold problems were reported to recur after a short period of time. Information was not available to the Task Force to determine how common this type of superficial repair work is. Another limitation of the HPD program is that it does not apply to all residential situations in NYC (e.g., Co-Op buildings and public housing are outside HPD's jurisdiction).

The Task Force also heard from attorneys who pointed out that NYC Housing Court judges cannot require building owners to follow the details of the NYCDHMH mold assessment and remediation guidance when making dampness and mold-related repairs, because, as guidelines, they are not legally enforceable.

In NYS outside of NYC, no other formal enforcement programs appear to exist, based on information available to NYS DOS staff, as well as responses to an informal email poll of CEOs. However, isolated examples were found where town CEOs have used their authority on an *ad hoc* basis to require mitigation of water and mold problems in buildings based on disrepair conditions or habitability judgments. The application of this authority is subject to local discretion on the part of each town code enforcement office.

Indoor mold may be addressed as a building code issue in other states, although this appears to vary. Internet searches were conducted to find examples of how building-code enforcement is applied to dampness and mold problems in other states. This was not intended to be an exhaustive survey. Links to relevant documents found are provided in Table 2. These examples show that mold problems are sometimes addressed by local CEOs, while in other locations this does not appear to be an option.

3. Regulatory approaches to mold problems in buildings

Assessment and remediation industry regulation

In the sections that follow, mold assessment refers to inspection of buildings for the presence of moisture problems and associated mold growth. Mold assessment activities also involve developing work plans for remediating dampness and mold problems that have been identified in a building and follow-up inspection to establish that remediation work has been successfully completed. Other common terms used for assessment include inspection and evaluation.

Mold remediation is used in this report to refer to the actual work involved in repairing or removing mold-contaminated building materials following work plans based on a building inspection. This can include several components, depending on the extent of the mold problem, including establishing proper containment, demolition, cleaning, surface disinfection, worker protection and waste handling. Remediation work can also include work to repair sources of building dampness such as roof or plumbing leaks, but these repairs can also be done by workers or companies with expertise not specific to mold remediation (e.g., plumbers or roofers). Other common terms used for remediation include abatement, mitigation and clean-up.

The scope of any mold assessment or mold remediation job and the need for specialized services will depend on the extent of the problem. Small-scale, temporary moisture and mold problems can often be successfully assessed and remediated by a homeowner or building maintenance staff with minimal technical resources. Successfully assessing and remediating extensive flooding or widespread, chronic roof leaks leading to extensive mold contamination will generally require hiring specialized services. Many variations on the need for either assessment or remediation services fall in-between these two extremes. It is not simple to foresee all the possible combinations of assessment and remediation conditions that might arise within this continuum.

Table 2. Examples of the way dampness and mold problems are addressed through building-code enforcement in other states.

State or Locality	Document link
North Carolina	http://www.ncbar.org/download/environmentalLaw/moldContamination.pdf
Sacramento County, California	http://www.emd.saccounty.net/EH/Tenant-Landlord-mold.pdf & http://www.hrfh.org/mold.html
San Francisco, California	http://www.sfdph.org/dph/files/EHSdocs/ehsPublsdocs/Art11FAQ.pdf
Maywood, Illinois	http://www.maywood-il.org/VoM_Depts/Code/Code_1indx.htm
Delta Township, Michigan	http://www.deltami.gov/wp-content/uploads/2009/08/Moldabatementpolicy.pdf
Peoria, Illinois	http://www.ci.peoria.il.us/frequently-asked-questions-code-enforcement#6
New Mexico	http://www.health.state.nm.us/eheb/tenants.shtml
Bradenton, Florida	http://www.cityofbradenton.com/vertical/Sites/%7B2D1C3C91-86C5-4ACC-86B6-6CFA76381D46%7D/uploads/%7BF34266B0-0749-454D-9C1E-318175F91098%7D.PDF

Assessment and remediation of buildings affected by water damage and resulting mold problems are subject to different levels of government oversight in different states. Nine states were found to have some form of statute or regulation that applied to building assessment and/or remediation for mold problems (Table 3). There is an inherent trade-off when attempting to regulate these industries between providing needed flexibility for service providers to respond to specific conditions as they encounter them and providing prescriptive solutions to many possible dampness and mold situations. More flexibility can also mean more variation in the quality of work that is done. Conversely, prescriptive rules may provide greater quality control but are more likely to create unnecessary obstacles in some situations. The regulatory approaches taken by different state and local governments can affect how these two competing goals are balanced, and there seems to be relatively little consistency in way this problem has been approached.

Existing regulatory approaches vary in terms of which providers are regulated (assessment, remediation or both). They also vary in terms of the stringency of their licensing requirements. States sometimes rely on completion of third party training courses or industry certification programs (discussed in detail below) as the basis for licensure, while in others the state has developed its own training and testing criteria for obtaining licenses. Most states appear to have addressed mold assessment and mold remediation by issuing guidance (or endorsing existing guidance) and have not taken any specific regulatory action.

In Texas, mold assessors, mold remediators and mold laboratories must be licensed to operate legally in the state. The Texas Department of State Health Services (TX

DSHS) administers this program, establishes minimum work practices for each discipline, certifies training programs and administers the testing program that is used to issue licenses (<http://www.dshs.state.tx.us/mold/default.shtm>). The Texas program also includes work site inspections and complaint investigations related to mold remediation jobs. This is currently the most extensive regulatory program of any state for mold assessment and remediation. When contacted, TX DSHS staff estimated that the mold licensing program requires approximately 10 full time equivalents (FTEs). However, the mold program is not budgeted separately from other programs, so detailed program expenses are not available. See Appendix K for additional details.

In Louisiana, mold remediators are licensed by the State Licensing Board for Contractors (http://www.lslbc.louisiana.gov/mold_remediation_menu.htm). The Board sets training requirements that can be met by third party training courses. Mold assessors apparently do not require licensure. The Louisiana State Licensing Board for Contractors was not able to provide a precise cost estimate for its mold remediator licensing program, because they do not assign dedicated staff to that activity. However, license applications and renewals for mold remediators in Louisiana constitute approximately 1.5 percent of the total license and registration applications and renewals processed by the State Licensing Board annually. The Board has 55 employees (August 2008), nearly evenly divided between licensing and enforcement responsibilities. This suggests licensing and enforcement related to mold remediation contractors in Louisiana accounts for about three-quarters of one full-time-equivalent per year ($55 \times 0.015 = 0.82$). See Appendix K for additional details.

A licensing program for both assessors and remediators based on meeting training requirements and passing a state exam is scheduled to go into effect in Florida in 2010 (2008 Florida Statutes, Chapter 468, Part XVI, ss 468.84-468.8423; <http://www.myfloridalicense.com/dbpr/pro/mold/statutes.html>). The Florida program will be administered by the State Department of Business and Professional Regulation.

In Arizona, mold assessment and remediation is defined under state law as a form of structural pest control (http://www.sb.state.az.us/PDFDocuments/Laws&Rules/OPM_Statutes7-07-08.pdf; <http://www.sb.state.az.us/LicCatDefConv.php>). Companies and individuals in Arizona are licensed by the Structural Pest Control Commission to inspect and treat structures for visible fungus. Requirements for mold assessment and remediation licensure under this program appear to be the same as for other structural pest control applicators.

Table 3. Summary of state regulations for mold assessment and remediation

State	Type of Regulatory Program	Bill/Law Establishing Legal Authority	Responsible Agency	Program Summary
Arizona	License	Chapter 115 of 46 th Legislature, First Regular session 2003	Structural Pest Control Commission	<ul style="list-style-type: none"> Assessment and control of fungi added to pests under structural pesticide law Individuals and companies licensed as for other pest control http://www.azleg.gov/FormatDocument.asp?inDoc=/legtext/46leg/1R/laws/0115.htm http://www.sb.state.az.us/PDFDocuments/Laws&Rules/OPM_Statutes7-07-08.pdf
Arkansas	License	Act 1467 of 2009	State Plant Board	<ul style="list-style-type: none"> License mold investigators Establish standards for mold investigations Establish qualifications for mold investigators http://www.arkleg.state.ar.us/assembly/2009/R/Pages/BillInformation.aspx?measureno=sb803
Florida	License	2008 Florida Statutes, Chapter 468, Part XVI, ss 468.84-468.8423;	Dept of Business and Professional Regulation	<ul style="list-style-type: none"> Applies to assessment and remediation Sets training and experience requirements Establishes state exam or equivalent http://www.myfloridalicense.com/dbpr/pro/mold/statutes.html
Illinois	-	Public Act 095-0456; 2007	Dept of Public Health	<ul style="list-style-type: none"> Requires the Department to report annually on any Federal regulations implemented for indoor air quality standards and training or licensing The Department may adopt rules requiring mold remediation companies to register with the State and provide proof of financial responsibility http://www.ilga.gov/legislation/publicacts/95/095-0456.htm
Louisiana	License	Act 800, Regular Session 2003	State Licensing Board for Contractors	<ul style="list-style-type: none"> Applies to remediation Sets training requirement Only explicit work practice requirement is written report to client http://www.lslbc.louisiana.gov/pdf_files/Mold%20Act.pdf
Maryland	License	Chapter 537 of Laws of 2008	Maryland Home Improvement Commission	<ul style="list-style-type: none"> Applies to remediation Based on certification by independent accreditation body Does not apply to nonresidential property http://mlis.state.md.us/2008rs/chapters_noln/Ch_537_hb1309E.pdf

Table 3

Table 3 continued

State	Type of Regulatory Program	Bill/Law Establishing Legal Authority	Responsible Agency	Program Summary
Oklahoma	-	2004 OK Session Laws Section 425	-	<ul style="list-style-type: none"> Prohibits a firm from conducting both mold assessment and remediation on the same property
Texas	License	Acts of 2003, Chapter 205, Sec. 1	Dept of State Health Services	<ul style="list-style-type: none"> Applies to assessment, remediation and laboratory analysis Specifies training, examination and minimum work standards Remediation protocol required to include unspecified clearance criteria http://www.statutes.legis.state.tx.us/Docs/OC/htm/OC.1958.htm
Virginia	License	Chapter 358 of Virginia Acts of Assembly, 2009	State Board for Asbestos, Lead, Mold and Home Inspectors	<ul style="list-style-type: none"> Requires license to perform mold inspection or remediation in state Board to promulgate regulations setting licensing requirements Mold-related provisions become effective July, 2011 http://leg1.state.va.us/cgi-bin/legp504.exe?091+sum+HB2032

In Maryland, mold remediation companies are required to be licensed by the state Home Improvement Commission (Title 8, Business Regulation, Sections 8-701 – 8-718; <http://www.dllr.state.md.us/license/law/mhiclaw.shtml> and follow instructions for Title 8 Annotated Code of Maryland). Employees who provide remediation services must be certified by the American Indoor Air Quality Council (renamed the American Council for Accredited Certifications [ACAC] in 2009) or other accreditation body that is independent of training, industry or trade organizations.

A law passed in 2009 requires that, beginning in January 2010, persons in Arkansas wishing to perform mold investigation services for a fee must be licensed by the state (<http://www.arkleg.state.ar.us/assembly/2009/R/Bills/SB803.pdf>). The licensure program is to be administered by the State Plant Board, a state agency that regulates certain aspects of agriculture, including pesticide regulation. The Plant Board is charged with developing regulations to implement the new law.

Oklahoma does not appear to require mold assessors or remediators to be licensed or certified, but a state law prohibits companies or individuals from conducting assessment and remediation activities on the same property (2004 OK Session Laws Section 425).

A 2007 law passed in Illinois (Public Act 095-0456; <http://www.ilga.gov/legislation/publicacts/95/095-0456.htm>) requires the Illinois Department of Public Health (IDPH) to report annually to the State Legislature on any federal regulations that establish indoor air quality standards or any standards for training, certification or licensing of mold remediation services. The law gives authority to the IDPH to develop rules to register parties offering mold remediation services in the state and have them provide evidence of financial responsibility. The law's effective date was January 1, 2008, but no rules implementing the law have been promulgated as of July 2010.

A 2009 law passed in Virginia (Acts of Assembly, Chapter 358; <http://leg1.state.va.us/cgi-bin/legp504.exe?091+sum+HB2032>) requires mold inspectors and mold remediators to be licensed by the state Board for Asbestos, Lead, Mold and Home Inspectors. The Board is required to promulgate regulations establishing the licensing requirements. The law becomes effective July 2011.

Table 4. Standards and guidance documents for assessment and remediation of mold and dampness in buildings*

Organization	Year	Title
American Conference of Governmental and Industrial Hygienists	1999	Bioaerosol: assessment and control
American Industrial Hygiene Association	2005	Assessment, Remediation, and Post-Remediation Verification of Mold in Buildings
American Industrial Hygiene Association	2008	Recognition, Evaluation and Control of Indoor Mold
American Society for Testing and Materials	2006	ASTM E2418 Standard Guide for Readily Observable Mold and Conditions Conducive to Mold in Commercial Buildings: Baseline Survey Process
American Society for Testing and Materials	Draft May 2010	ASTM WK3792: Guide for Assessment of Fungal Growth in Buildings (draft work item)
CT Department of Public Health	2006	Connecticut Guidelines for Mold Abatement Contractors
CT Department of Public Health	2007	Get The Mold Out: Mold Clean-Up Guidance for Residences
Enterprise Community Partners & the National Center for Healthy Housing	2006	Creating a healthy home: a field guide for clean-up of flooded homes
Health Canada	2007	Residential Indoor Air Quality Guidelines: Moulds
Institute of Inspection Cleaning and Restoration Certification	2003	IICRC S520 Standard and Reference Guide for Professional Mold Remediation
Institute of Inspection Cleaning and Restoration Certification	2006 (3 rd edition)	ANSI/IICRC S500-2006 Standard and Reference Guide for Professional Water Damage Restoration
New York City Dept of Health and Mental Hygiene	2008 (revised)	Guidelines on Assessment and Remediation of Fungi in Indoor Environments
US Environmental Protection Agency	2001	Mold Remediation in Schools and Commercial Buildings
US Environmental Protection Agency	2002	A Brief Guide to Mold, Moisture, and Your Home
US Environmental Protection Agency	Sept 2008 update	Mold resources web site: http://www.epa.gov/mold/moldresources.html
World Health Organization	2009	WHO Indoor air quality guidelines for dampness and mould

* Major guidance documents and standards are listed. A more extensive list of fact sheets, brief guidance and other related documents from many states, cooperative extension offices and other organizations is presented in Appendix F.

Guidance materials and voluntary industry credentials

Beyond formal regulation, many government agencies and private organizations provide guidance materials related to building assessment and remediation for dampness and mold (Table 4). For example, detailed guidance for response to water damage and mold growth in buildings was developed by the NYCDHMH in 1993 and has been revised twice since then (NYCDHMH, 2008). This guidance

document has been adopted as a minimum work practice by Pennsylvania (PA DOH, 2006). Similar detailed guidance has been produced by the Connecticut Department of Health and US EPA. Industry associations and standard-setting organizations (for example, the American Industrial Hygiene Association and the American Society of Testing and Materials) have also developed several detailed guidance documents for various aspects of prevention, assessment and remediation of dampness or flooding and mold growth in buildings.

Many private organizations provide credentials related to aspects of mold assessment and remediation in buildings (a list of some of these found through internet searches is provided in Appendix E). Information was gathered to explore how different types of credentialing programs compare in terms of their requirements and what they indicate about the credential-holder's knowledge and experience. In the discussion that follows, mention of specific training, credentialing or certification organizations or programs does not constitute endorsement of that organization, program or credential. The discussion is only intended to describe and compare various alternative approaches that currently exist.

In general, private credentialing for activities such as mold assessment and remediation falls into two categories: 1) "certificates" indicating completion of a specific training course or 2) "certifications" based on an assessment of an individual's specific industry knowledge and experience that are issued by an organization independent of any training program. Certificates represent completion of a single training course that could range from a short online course to a multi-day in-person course. In contrast, certifications are based on meeting a series of established criteria that demonstrate industry knowledge and experience. The criteria can include requirements for relevant post-secondary education (e.g., bachelors or masters degree), a minimum level of work experience in relevant fields and passing written or practical examinations that are not tied to any particular training course.

Certifications are granted for a limited time after which they need to be renewed to remain valid. The only mold-related certifications found in our review are offered by ACAC (formerly American Indoor Air Quality Council). ACAC requires re-certification every two years. The current ACAC re-certification fee is \$300 and documentation of 40 hours of continuing education or professional development credits is also required during the two-year certification term (<http://www.acac.org/recertification/rchome.htm>). Examples of two to three day re-certification courses listed on the ACAC web site cost between \$500 and \$1000 each. ACAC does not develop, audit or administer these courses.

As of October 2009, 145 NYS residents held ACAC-administered mold-related certifications, 354 residents of states bordering NYS held ACAC mold-related certifications and a total of 3298 US residents held ACAC mold-related certifications (personal communication from ACAC representative Adam Andrews).

Another example of a certification program is the Certified Industrial Hygienist (CIH) credential provided by the American Board of Industrial Hygiene. Individuals with CIH credentials would generally be qualified to conduct building assessments, although assessing potential mold exposure in damp buildings is not a primary focus of this certification.

Most certificates for mold training are provided by non-governmental organizations. In general, mold training programs from non-governmental organizations cost between \$300 and \$1000 per person. Numbers of mold-related certificate holders from various training organizations are not available. However, the number of certificate holders is likely to exceed the number of ACAC certifications because certificates can be obtained in a training class, but certifications can only be issued after a person's training, experience and capability are reviewed and approved.

One industry standard was found relating to the development of training courses that issue certificates: the National Organization for Competency Assurance (NOCA)¹² 'Quality Standard for Assessment-Based Certificate Programs' (NOCA 1100, 2009).¹³ NOCA 1100 is an American National Standards Institute (ANSI) accredited industry standard. It is intended to set minimum quality standards for training courses that issue certificates. A certificate issued by a NOCA 1100 compliant training course should indicate that course participants have achieved intended learning outcomes for the course based on rigorous assessment.

The very similar terminology (i.e., certificate vs. certification) used to categorize different types of credentials possessed by mold assessors and remediators could be confusing for those in need of services. The training, experience and industry knowledge – and therefore the quality of services provided – of individuals and companies claiming to be “certified” might vary substantially. NOCA 1100 stipulates that the term “certified” or the use of acronyms after an individual's name to indicate certification are reserved for holders of professional certifications (such as those administered by ACAC). Under NOCA 1100, individuals possessing only a training certificate may not use “certified” to describe their credentials or follow their name with acronyms implying certification (see industry bulletins from the American Council for Accredited Certification:

<http://www.acac.org/forms/otherpdfs/NOCA%20Article%203-09.pdf>;

<http://www.acac.org/forms/otherpdfs/NOCA1100.pdf>). However, NOCA 1100 is

¹² In November, 2009, NOCA officially changed its name to the Institute for Credentialing Excellence.

¹³ The standard's scope is described by ANSI as follows (<http://www.nsn.org/search/DetailResults.aspx?docid=659060&selnode=>):

“This standard pertains to assessment-based certificate programs defined as a non-degree granting program that: a) provides training to aid participants in acquiring specific knowledge, skills, and/or competencies; b) evaluates participants' achievement of the intended learning outcomes; and c) awards a certificate only to those participants who meet the performance, proficiency, or passing standard for the assessment(s). This standard is NOT intended to cover classes, courses, programs, or events that award only a certificate of attendance or participation; nor is it intended to apply to professional or personnel certification programs.”

relatively new and compliance with industry standards such as NOCA 1100 is voluntary.

Possible approaches to developing guidance or regulation of mold-related industries

As indicated by the preceding discussion, state and local governments have taken many different approaches to guidance, oversight or regulation of industries involved in mold assessment or mold remediation. Different approaches to industry self-regulation (e.g., voluntary training-course standards and certification criteria) also exist. Based on this review, there does not appear to be a clear consensus about an ideal regulatory approach to mold assessment or remediation.

The main public health goal of any additional guidance or regulation of mold assessment or mold remediation industries should be to reduce the potential for mold exposures and the concomitant risk of health effects in damp buildings by improving the quality of mold assessment or remediation work done in the State. To achieve this, state oversight approaches could include encouraging or requiring that assessment and/or remediation workers have appropriate training and could also involve inspection and enforcement activities.

It is important to note that any goals pertaining to oversight of the mold assessment or remediation industries should be supplemental to the primary goal of preventing dampness or water damage conditions in buildings in the first place. As discussed at the beginning of this section, that goal depends on strengthening construction and property-maintenance codes and their enforcement to prevent water problems.

Another important element of any government activity in this area is to improve awareness of building dampness and mold growth issues among building owners and occupants. A number of guidance materials intended for residential building occupants already exist that help explain the relationship between building dampness or moisture problems and mold contamination (see Section II.C.4, page 57). Additional guidance materials are needed that will help building owners and occupants when they need to hire mold assessment or remediation service providers. Consumers considering prospective service companies should ask what certifications or other qualifications are held by the company or its employees. They should also ask for a written itemized description of the water damage or mold contamination that has been identified, the specific remediation actions that are proposed to correct the identified problems and what assessment criteria will be used to determine that the job has been completed satisfactorily.

In the following discussion and in Table 5, several possible alternative guidance or regulation approaches are described for mold assessment or mold remediation services. The limited number of regulatory strategies considered below and in the table is intended to provide examples of the range of possible oversight actions from voluntary guidance to a relatively regimented regulatory program. Table 5 provides

cost estimates for this range of examples. Other combinations of government requirements within this broad continuum are possible, and the discussion here is not intended to precisely define specific regulatory frameworks. There is no assumption implied that mold assessment and mold remediation companies should have the same level of government oversight; any of these approaches could be applied only to mold assessment companies or only to mold remediation companies.

Mold assessment and mold remediation services can be provided by contracting or consulting companies with many employees or by individual contractors. The licensing approaches described below and in Table 5 are assumed to apply to mold assessment or mold remediation companies. The companies would then be responsible for documenting that their employees have obtained the proper training or industry credentials. However, in cases where the “company” is an independent contractor the licensing and documentation requirements would obviously apply to the same individual as both the regulated entity and the employee.

Based on the review of relevant programs in NYS and other states, several levels of potential government oversight of the mold assessment and remediation industries are outlined:

- A. Voluntary guidance: Guidance materials (e.g., the 2008 NYCDHMH mold assessment and remediation guidance, the 2007 Cornell University Cooperative Extension guidance (Cornell, 2007) on hiring a mold remediation contractor) could be recommended that establish a basic set of preferred work practices for assessing and remediating moisture and mold problems in buildings, but would not carry any government oversight or enforcement authority. Information should also be developed to assist consumers with making decisions about responding to moisture and mold problems.
- B. Voluntary training or certification programs: Government agencies could review available training courses or certification programs for mold assessment or remediation and identify recommended courses or certification, but not make obtaining the preferred training or certification a legal requirement to perform work in the state. This could help establish preferred work practices that emphasize the basic set of recommended principles for addressing moisture and mold problems in buildings. The state could create a list of providers who are self-identified as having obtained the preferred training or industry credentials. This would be a market-driven approach putting the onus on consumers to be informed about recommended training or certification and thereby creating demand for compliant providers. Additional guidance for consumers to assist them in selecting providers should accompany this approach.
- C. State licensing of service companies: Under this approach, mold assessment or remediation companies would be licensed by the state and would be required to document that their workers have the appropriate training or certification credentials. Offering services without a license would be a violation. Different variations on this approach have been implemented in other states. These variations on licensing companies providing mold assessment or remediation

services (based on approving training courses or certification programs or providing direct training and certification) differ in their required state resources and the level of credentialing required of licensed companies' employees.

1. A licensing program based on requiring companies to document that their employees have attended certain third party training courses would require dedicated state resources to review training programs and identify those that qualify. Under this option, workers of licensed companies should all be exposed to the same set of basic recommended assessment and/or remediation principles. This would be similar to option (B) above, with the additional requirement that companies would have to submit a license application (with any associated fees) and document compliance. The level of state resources required would be less than in option (2) below if the training programs are not directly accredited by the state and if there is no state audit process to verify worker attendance at training courses. This option is also a relatively less stringent requirement on companies compared to option (3) requiring workers have full industry certification from a third party.
2. A licensing program that includes review and accreditation of training courses would require an organization similar to the current NYS asbestos program, where the state regulates both the abatement companies and the training programs. Under this option, workers of licensed companies should all be exposed to the same set of basic recommended assessment and/or remediation principles. This option would require more dedicated state resources, compared to options (1) or (3), to review and process applications for approval of training curricula and to conduct training-course audits. Course audits would probably be limited, but would provide some degree of compliance assurance. Having employees attend required training courses should be a less stringent requirement on companies than requiring that employees possess full industry certification from a third party.
3. A licensing program based on requiring companies to document that their employees possess approved industry certification from a third party would require dedicated state agency resources to review a limited number of alternative programs and to administer the company licensing program. Certification programs (e.g., ACAC Certified Mold Remediator) already have established criteria for educational background, work experience and continuing education to maintain the certification credential. Relying on an independent certification program to identify acceptable education, experience and re-certification training would remove the need for the state to undertake a more costly training review and approval program (as compared with the accredited training-based alternative (2) above). However, requiring formal industry certification for employees of licensed mold assessment or remediation companies is a more stringent requirement on the companies than requiring that employees attend training courses. Requiring companies to document that their employees have formal

certification is modeled after the law in Maryland (requiring that workers possess certification by ACAC or equivalent).

4. A licensing program based on requiring companies' employees to possess state certification would be similar to combining options (2) and (3) above, except a state agency would be directly responsible for the establishment of all certification criteria and for conducting training and testing programs. Developing and administering a state-operated training and certification program for employees of licensed mold assessment or remediation companies would require a similar or slightly greater level of dedicated state resources compared to option (2) above. This approach is modeled after the regulatory program in Texas.

- D. Field inspection and enforcement: The alternative regulatory approaches described in item (C) above focus on documentation of appropriate worker training or certification as the basis for licensing mold assessment or remediation companies. Separate enforcement authority could also be created that could apply to any of those alternatives. Licensed companies could be subject to field inspection of actual mold assessment or remediation work sites by a state agency and work-practice violations could be issued. Based on the inspection and enforcement elements of the NYS asbestos regulatory program, these activities would require substantial state resources in addition to those required for any of the alternatives under item (C) above.

The regulatory approaches considered above rely on identifying existing guidance, training courses or certification programs that emphasize the general building assessment and remediation principles to find and correct water problems and clean or remove moldy building materials. Focusing on these basic principles is preferred over attempting to codify detailed building inspection or remediation protocols through regulation. There are major challenges to developing detailed prescriptive regulations for building assessment and remediation. Each building assessment and remediation plan for dampness and mold problems will have unique features. It is probably not possible to anticipate all the possible circumstances that could arise so as to avoid creating adverse unintended consequences for building owners, occupants or service providers when attempting to codify detailed protocols for building inspection or remediation.

It should also be noted that a state licensing program can emphasize certain work practices and discourage others, but cannot verify that preferred work practices are actually being implemented without an enforcement program that includes field inspection of actual work sites and the authority to issue violations. Enforcement activities are particularly costly and, depending on available resources, would probably only be able to cover a small fraction of all mold assessments or mold remediation jobs.

In addition to any oversight approach for assessment and remediation companies, written guidance materials should be developed for service consumers (building owners and occupants) to help them when obtaining assessment or remediation services. This includes obtaining information from prospective companies about their qualifications and obtaining written documentation of assessment findings, proposed remediation work plans and criteria to be used to assess whether the job has been completed satisfactorily.

Cost estimates in Table 5 for different potential oversight approaches are based on available information from similar existing programs.¹⁴ Guidance and licensing approaches that depend on third-party training courses or industry certification programs were assumed to require a minimal level of dedicated state resources (one to two full-time equivalents) to administer. This was informed, in part, by cost estimates for the Louisiana licensing program and the recognition that establishing and administering a new licensing program without dedicated resources is likely to be burdensome for state agencies.¹⁵ Cost estimates could be up to twice as high as those shown in Table 5 if separate staff and administrative costs are required to administer programs regulating both the building assessment and building remediation industries.

The NYS regulatory program for asbestos abatement companies was used as a model for the level of resources that might be required to implement a relatively extensive regulatory program (including enforcement authority) for mold remediation. The NYS asbestos program requires that asbestos abatement companies be licensed and that licensed companies oversee projects that involve the abatement of asbestos. The program requires asbestos training programs to be accredited by the State and asbestos workers to obtain training from accredited training programs (see additional details in Appendix K). Detailed information was available from that program to develop cost estimates for different regulatory approaches for analogous mold assessment and remediation services. Limited information from the Texas program was also used to estimate the number of staff that would be needed for two of the five approaches, although those estimates are less certain than the estimates based on the asbestos program.

¹⁴ Cost estimates for personal services and administrative costs are based on 2010 salary, fringe and other operating expenses (e.g., supplies, etc.) assuming relevant civil service titles for the programmatic functions described. The actual legal requirements for program implementation will influence program costs. Many other factors such as the effects of climate or age of housing stock could affect the actual cost of implementing a New York State program compared to other states' programs. Also, New York State does not currently license general building contractors, so additional resources could be required to create a new programmatic infrastructure to administer such a licensing program.

¹⁵ Fees and fines paid into a special revenue account established for the program could be considered as one means of offsetting agency costs. However, the special account should be created in legislation and the legislation should give the agency the authority to set fees in regulation. Fees and fines should be structured to continue to provide adequate program funding over time.

Table 5. Cost estimates for potential alternative approaches to developing guidance or regulation of mold assessment or remediation service companies. Refer to discussion in Section II.C.3 (page 42) for further detailed explanations of items **A – D**.

Potential approach	Annual cost estimate ^a
A. Voluntary guidance	
recommend specific guidance (e.g., NYCDHMH) as preferred work practices for assessment and remediation in state	1 FTE ^b approximately \$150,000 for ongoing review and updating of guidance materials
B. Voluntary training or certification programs	
identify particular third-party training curricula or industry certification credentials as preferred without requiring them by law or regulation	1 FTE approximately \$150,000 for ongoing review of third-party training curricula or industry certification programs and administering list of providers; does not include auditing of providers for compliance with training or certification requirements
C. State licensing of service companies	
1) require licensing of assessment or remediation companies based on documenting that workers obtain preferred third-party training curricula do not require state accreditation or auditing of training providers or courses	2 FTEs approximately \$200,000 for ongoing review of third-party training curricula and administering licensing program
2) require licensing of assessment or remediation companies based on documenting that workers successfully complete state-accredited, third-party training course require state accreditation of training providers and auditing of training courses by regulator as in DOH asbestos program	Up to 10 FTEs approximately \$1.2 million including auditing of some training courses (based on analogy to asbestos program)
3) require licensing of assessment or remediation companies based on documenting that workers have obtained specific independent industry certification (e.g., ACAC ^c -certified mold inspector or mold remediator)	2 FTEs approximately \$200,000 for ongoing review of third-party certification criteria and administering licensing program
4) require licensing of assessment or remediation companies based on workers obtaining certification through state-developed training and testing program	10 – 15 FTEs approximately \$1.2 – 1.6 million without field inspection (based on analogy to NYS asbestos program and limited feedback from TX)
D. Field inspection and enforcement	
for any of the licensing options (C) above: include authority for state agency to conduct inspections of assessment and/or remediation work and issue violations	approximately 30 additional FTEs approximately \$3.3 million based on analogy with NYS DOL/DOH asbestos program

^a Cost estimates could be up to twice as high as indicated if separate staff and administrative costs are required to implement programs for mold assessment companies and mold remediation companies

^b FTE = full-time equivalent; one person working full-time for one year, based on 2010 salary estimates

^c ACAC = American Council for Accredited Certification (formerly American Indoor Air Quality Council)

4. Outreach and education

Almost all state health departments and some cooperative-extension services provide education and outreach materials developed for the general public that address water problems and mold growth in buildings. These were reviewed and an itemized list of these resources is provided in Appendix F. Major messages or attributes that are common to many of these educational and outreach materials are summarized here.

Public health education and outreach materials generally cover some elements of potential mold health effects and the prevention, assessment and mitigation of water and mold problems. A number of common messages occur in these materials. Health department educational materials indicate that indoor mold growth resulting from dampness or moisture problems has the potential to contribute to adverse health effects in building occupants and, therefore, should be abated to minimize the potential risks by minimizing exposures. The goal of abatement is generally to minimize potential mold exposure in buildings by controlling exposure sources and correcting the root cause of the mold condition (i.e., moisture problems). This includes tracing and correcting water sources in the building and removal or cleaning of mold-damaged building materials. Many educational materials include recommendations for precautions to take during abatement work to limit mold dispersal and worker exposure. Most educational materials developed by health agencies recommend little need for environmental mold sampling to achieve or confirm the remediation goal of complete elimination of the water problem and any moldy materials in the building, especially in residences.

5. State mold task force laws

At least four other states convened advisory committees similar to the NYS Task Force to investigate various aspects of the mold and damp buildings issue and have issued reports (CA DHS, 2005; CRB, 2006; ME DHHS/DEP, 2007; PA DOH, 2006; TX RCC, 2005). The major recommendations from each task force are listed *verbatim* in Appendix G. Selected observations from two state reports are mentioned here.

California passed a law in 2001 entitled “The Toxic Mold Protection Act.” The law directed the California Department of Health Services (DHS; now the Department of Public Health) to determine the feasibility of establishing permissible exposure limits (PELs) for indoor mold and to convene a stakeholder task force to consult with DHS in developing enforceable standards and voluntary guidelines to prevent health conditions that may occur with exposures in damp or moldy indoor environments. DHS issued a report (2005) where it concluded, based on several significant information gaps, that sound, science-based PELs were not feasible (see Section II.D, page 63 on exposure limits for details). DHS further reported that, due to severe resource limitations, the agency could not complete the remainder of the

tasks in the law. Nevertheless, DHS concluded that indoor dampness, water intrusion or fungal growth should always be eliminated in a safe and efficient manner and that public health was best protected by limiting indoor mold exposures.¹⁶

The Maine Departments of Health and Human Services and Environmental Protection issued a “Mold in Maine Buildings Task Force” report in 2007. Several of its primary recommendations dealt with aspects of building management issues particular to Maine, including modifying model building codes (local adoption of residential codes is voluntary in Maine) and construction contract language. The task force also recommended that the state publicize existing guidelines and standards for building assessment; building remediation; education and certification of mold assessment and remediation professionals; and worker protection. Two recommendations not addressed in other state reports related to dispute resolution and enforcement actions and are reproduced *verbatim* here:

- Strengthen Tenants Rights
 - Tenants rights laws and guidance must be strengthened by requiring mediation between tenants and landlords in mold/moisture disputes, prior to requiring the tenant to pursue legal action against the landlord as is currently the case under the Maine Warranty of Habitability Act, 14 M.R.S.A. § 6021.
 - Rationale: Under current statute, tenants engaged in a dispute with a landlord over mold/moisture issues have little or no recourse other than to initiate litigation. This can be a hardship for many tenants, particularly the elderly or those with small children. (Based on the mold-related calls received by Maine CDC, the preponderance of tenants who call the State looking for assistance for mold issues are elderly, have a debilitating disease, or have small children.)
- Strengthen Authority of Local Health Officers
 - Add a provision to 17 MRSA c. 91 that specifically grants authority to the Local Health Officer for the purpose of investigating mold as a public or private nuisance.
 - Rationale: Consumers often look to their municipality to assist them with their mold/moisture problems, particularly those in landlord/tenant situations. Specifically granting authority to local health officers to investigate mold/moisture problems in homes and buildings will provide consumers with some recourse for getting their nuisance mold problem investigated, and subsequently resolved.

¹⁶ “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.”

6. Conclusions and recommendations – state and local actions

a) Codes

Conclusions:

- The State Uniform Fire Prevention and Building Code and the State Energy Conservation Construction Code (and analogous NYC codes) are the mechanisms that NYS uses to prevent or minimize moisture problems in buildings through design, construction and property maintenance requirements.
- The presence and power of the CEO can also help minimize the potential for mold problems in buildings when approving construction documents, during construction inspections of new buildings and when issuing property-maintenance violations related to moisture conditions in existing buildings during required inspections.
- The codes and their enforcement are important tools to help prevent moisture problems in buildings. Opportunities should be pursued by NYS and NYC to strengthen building codes and code enforcement with respect to preventing and correcting moisture problems.

Recommended actions:

- NYS and NYC should continue to improve building code requirements that address building design, construction techniques and property maintenance so that they prevent or minimize the potential for water problems to occur. They should both work within the framework of the International Code Council (ICC) code adoption process to monitor and develop proposals to prevent or minimize dampness and mold in new and existing buildings.
- Provide targeted training and education to CEOs to improve understanding of subtle moisture problems in buildings (e.g., uncontrolled air flows causing condensation) and to enable them to address potential or existing water and mold problems more effectively.

Feasibility:

- NYS (except NYC) has a State Uniform Fire Prevention and Building Code that since 2003 has been based on the model codes used throughout most of the United States, written by ICC. As of 2008, the Building Code of the City of New York is also based on the ICC codes. The ICC issues new editions of its code every three years to keep up with changes in the building industry.
- The NYSDOS and the NYC Department of Buildings are both active in the ICC code adoption process. Assistance of the NYSDOH in creating code language and providing supporting documentation could be necessary for code proposals intended to prevent dampness and mold problems. Some specific examples of areas to consider for potential building code enhancements are listed in Appendix J.

The verification code for this document is 142332.

- CEO training outside of NYC is done by NYSDOS at no cost to municipalities. NYSDOS trainers working with NYSDOH indoor environmental quality experts can update existing courses on code changes or mold problems for CEOs as necessary. Any new CEO training should reflect any changes made to the codes regarding mold.

b) Regulation of mold assessment or remediation services

Conclusions:

- Having persons who provide mold assessment and remediation services properly trained and following accepted protocols is desirable. Approaches that have been tried to accomplish this range from providing specific guidance for recommended work practices to an extensive regulatory program.
- Although several states and NYC have developed some level of formal guidance or regulatory oversight, mostly for the mold remediation industry, information evaluating the effectiveness of these various regulatory approaches was not found.
- Voluntary industry standards that could apply to mold-related assessment and remediation services exist for training programs and certification.

Recommended Actions:

- The main public health goal of any additional guidance or regulation of mold assessment or mold remediation industries should be to reduce the potential for mold exposures and the concomitant risk of health effects in damp buildings by improving the quality of mold assessment or remediation work done in the State. State agencies should, at a minimum, provide guidance about recommended work practices for assessment and remediation and about the existence of training curricula and certification (see Table 5, items A, B). Other possible regulatory actions that could be considered by the state are also presented in Table 5, items C, D.

Feasibility:

- General recommended work practices and certification programs for building assessment and remediation have already been developed by reputable organizations. Providing information about these practices and programs, along with any limitations as to their effectiveness would be relatively easy and would cost about \$150,000 annually.
- The above concerns about effectiveness of regulation notwithstanding, if legislation to establish authority to regulate the mold assessment or remediation industries is considered, state funding support would be needed for agency staff and overhead administrative costs. These funds would support the development and implementation of regulations and their continuing administration and enforcement. Examples from an analogous NYS program suggests annual costs could be in the range of

\$4.5 million. Fees and fines that are established in regulation and paid into a special revenue account established for the program could be considered as one way of paying for these new government services. Fees and fines should be structured to continue to provide adequate program funding over time.

c) Education and outreach

Conclusions:

- Recognition of potential adverse health effects from dampness and resulting mold growth in buildings has driven preventive education and outreach messages toward water and mold problems in buildings by state and local health departments for over 10 years. For example, NYC initially developed guidelines in 1993 (revised in 2000 and 2008) that focused on minimizing indoor mold exposures by minimizing or correcting water, dampness and mold conditions in buildings.
- Additional targeted education might enhance efforts to prevent building moisture problems, mold problems and any concomitant health effects.

Recommended actions:

- Governmental, private and non-profit organizations should develop or enhance educational materials related to building moisture prevention and tailor those materials to specific audiences dealing with building design, construction and maintenance. These organizations should proactively disseminate the materials to the intended audiences. A coordinated proactive, multi-media educational campaign is likely to be more effective than simple distribution of brochures or other written outreach materials. Potential audiences for targeted education on preventing building moisture include architects, builders, contractors, remodelers, weatherization assistance programs, building performance consultants, building owners, code officials and building occupants.
- Education and outreach messages for the general public should emphasize that potential health problems associated with dampness and mold in buildings can be reduced by correcting water problems and removing sources of indoor mold growth in a timely manner.

Feasibility:

- State agencies with relevant outreach and education programs related to aspects of moisture prevention in building construction and maintenance include, but are not limited to, NYSDOS, NYSDOH, NYSED, NYSDHCR and the NY SOGS. Non-governmental organizations include professional and trade associations (e.g., American Institute of Architects, NYS Builder's Association, Commercial Lumberman's Association) and tenants' organizations.
- Costs for enhancing educational materials and programs would depend on how much existing programs were augmented. Costs could include

increased expenditures on supplies, printing, public media resources (e.g., TV, radio, print), travel, meeting venues and other operational resources, in addition to personnel time.

- The efficiency of educational efforts could be increased by leveraging existing outreach venues such as professional society meetings and continuing education programs, commercial trade associations and tenants' associations. Extensive multi-media educational campaigns, such as the recent NYSDOH tobacco control campaign, can be expensive. The current annual funding level for the tobacco control program was \$55.1 million dollars in state fiscal year 09-10 (see Appendix K for additional details).

d) Research

Conclusion:

- Better information obtained through careful research would help inform decision making regarding many issues related to dampness and mold problems in buildings.

Recommended action:

- Additional research is needed on the following issues:
 - the prevention and mitigation of building moisture problems and mold growth;
 - the effectiveness of different education approaches to dampness and mold prevention;
 - the effectiveness of different antimicrobial treatments as part of mold remediation;
 - the effectiveness of specific aspects of mold remediation protocols including the level of containment needed, salvage or disposal of wet or contaminated materials and the level of cleanliness required at the end of remediation;
 - the development and effectiveness of methods for identifying moisture problems in buildings undergoing energy retrofits;
 - the effectiveness of moisture-resistant building materials and the relationship between green-building and energy-conservation criteria and the prevention of building moisture problems; and
 - the possible relationship between indoor mold exposure and chronic health effects.