



IICRC S520

Standard and Reference Guide for Professional Mold Remediation



IICRC

Institute of Inspection Cleaning
and Restoration Certification

IICRC S520-2008

Second Edition



Disclaimer

The Institute of Inspection, Cleaning and Restoration Certification S520 Standard and Reference Guide for Professional Mold Remediation (referred to as the “Standard and Reference Guide” or the “S520”) is intended to provide information about the remediation of mold contaminated structures, systems and contents and to assist individuals and entities working in the mold remediation industry in establishing and maintaining their professional competence. Users of this document should stay updated and informed about developments in the field of mold remediation, implement changes in technology and procedures as appropriate, as well as follow applicable federal, state, provincial and local laws and regulations. Since every mold remediation project is unique, in certain circumstances, common sense, experience and professional judgment may justify a deviation from this Standard and Reference Guide. Furthermore, this Standard and Reference Guide is not intended to be either exhaustive or inclusive of all pertinent requirements, methods or procedures that might be appropriate on a particular mold remediation project. The information upon which this Standard and Reference Guide is based is subject to change, which may invalidate any or all of the information contained herein.

This Standard and Reference Guide was developed through a consensus standard development process, which brought together volunteers representing varied viewpoints and interests to achieve consensus on mold remediation issues. While the Institute of Inspection, Cleaning and Restoration Certification (IICRC) administers the process and establishes policies, procedures and guidelines to promote fairness in the development of consensus, it does not independently test, evaluate or verify the accuracy of any information or the soundness of any judgments contained in this Standard and Reference Guide.

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IICRC S520

Standard and Reference

Guide for Professional

Mold Remediation



IICRC
Institute of Inspection Cleaning
and Restoration Certification

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Foreword

Awareness of mold growth in buildings has risen sharply in recent years. Several factors have contributed to this heightened awareness, including energy conservation measures, changes in building materials, the use of fast-track construction techniques, failure of occupants to manage moisture intrusion and humidity properly, and an increased reliance on mechanical Heating, Ventilating and Air Conditioning (HVAC) systems for comfort control. In addition, significant media focus and litigation have fueled increased consumer concern.

Response by public and private organizations to mold concerns led to the publication of several documents and guidelines that address mold remediation. They were written primarily for risk managers, building managers, occupational safety and health professionals, public health officials and those making remediation decisions. The IICRC S520 Mold Remediation Consensus Body Standard Committee has reviewed and considered those existing documents; e.g., New York City Department of Health (NYCDOH) guidelines, Environmental Protection Agency (EPA) guidelines, and National Institute of Environmental Health Sciences (NIEHS) in the development of this revised document.

In 1994, the Institute of Inspection, Cleaning and Restoration Certification (IICRC) first published the *Standard and Reference Guide for Professional Water Damage Restoration* (S500, revised 1999, 2006), which describes procedures for water damage restoration of structures, systems and contents. While the S500 was a significant step forward in the water damage restoration industry and it recognized the problem of microbial growth associated with water damage, it was not intended to provide specific guidance on the subject of mold remediation. The IICRC S520 *Standard and Reference Guide for Professional Mold Remediation* (S520; referred to separately in this document as “Standard” or “Reference Guide”) attempts to combine essential scientific principles with practical procedures for remediators facing mold remediation challenges.

The S520 is a procedural Standard. It is based on reliable remediation principles, review of available scientific and industry literature and information, and practical experience. In addition, there has been extensive consultation with, and information obtained from, numerous other sources. These sources include, but are not necessarily limited to, microbiologists and other scientists, government and public health professionals, industrial hygienists, international, national and regional trade associations serving the professional mold remediation industry, chemical formulators and equipment manufacturers, cleaning and remediation training schools, remediation firms, the insurance industry, allied trades persons and others with specialized experience. This document is subject to further revision as developments occur in technology and procedures.

The Second Edition of the S520 has been updated and rewritten. Additional Chapters and Sections have been added covering Building and Material Science and Equipment, Tools and Materials. This document supersedes the *IICRC S520 Standard and Reference Guide for Professional Mold Remediation* (S520 First Edition 2003, 2004).

This document is written for use by those involved in the mold remediation industry, primarily for mold remediation companies and workers, and secondarily, for others who investigate or assess mold complaints, prepare remediation specifications, protocols or procedures, and manage remediation projects, (e.g., indoor environmental professionals (IEPs), other specialized experts) and finally, for other potential materially interested parties (e.g., consumers and occupants, property owners and

managers, insurance company representatives, government and regulatory bodies). The S520 is a voluntary Standard and Reference Guide. Although attempts have been made to ensure that this Standard and Reference Guide is technically consistent with knowledge about mold remediation at the date of its publication, there is no representation or guarantee that every issue and topic relevant to mold remediation has been thoroughly addressed. Users of this document should stay updated and informed about the rapid developments in the field of mold remediation, implement changes in technology and procedures, as appropriate, and follow applicable federal, state, provincial and local laws and regulations. All mold remediation projects are unique and in certain circumstances, common sense, experience and professional judgment may justify deviation from this Standard and Reference Guide. It is the responsibility of the remediator to verify on a case-by-case basis that application of this Standard and Reference Guide is appropriate. When in doubt, apply caution and seek additional professional opinions. Users of this document assume all risks and liability resulting from use of and reliance upon this Standard and Reference Guide.

The S520 is presented in a two-part format: the procedural Standard and a supplemental informative annex hereinafter referred to as a Reference Guide. The Standard is printed first within the document on colored pages, followed by the longer Reference Guide section. The Standard summarizes most of the significant and important procedures and methodologies of a mold remediation project, while the Reference Guide restates and further explains those procedures and methodologies, and provides additional background information which supports the Standard. Although the material in the Reference Guide does not carry the official status of a Standard, the two sections complement one another and should always be considered in tandem. The S520 does not attempt to teach mold remediation procedures, but rather provides the principles and foundation for understanding proper remediation practices. The S520 is not a substitute for remediation training and certification programs that are necessary to attain competence in the field of mold remediation and properly apply this Standard.

The S520 is not intended to establish procedures or criteria for assessing mold contamination in an indoor environment. These issues are most appropriately addressed by professional organizations that represent IEPs. Since these professional organizations have not agreed upon threshold exposure limits or levels of visible mold growth that constitute a concern for occupant and worker safety, the IICRC S520 Mold Remediation Consensus Body Standard Committee decided not to establish action levels or procedures based upon the quantity or size of the area of visible mold growth.

Remediators and other parties to the remediation process often request specific guidance regarding quantities of mold or mold spores that trigger remediation activities or confirm remediation success. Quantifying visible levels of mold growth alone is not feasible as an action level decision criterion, because it does not take into consideration hidden, concealed (not readily visible) mold growth, and it does not take into consideration contamination resulting from settled spores (not visible) that were dispersed from areas of actual growth.

Thus, S520 represents a philosophical shift away from using “size” of visible mold growth to determine the remediation response. Instead, it establishes mold contamination definitions, (Conditions 1, 2, and 3) and guidance, which, when properly applied, can assist remediators and others in determining remediation response or confirm remediation success.

The terms “indoor environmental professional” and “IEP” are used in this document and in the remediation industry to generically describe individuals having advanced technical competency in a wide range of subjects related to mold in the built environment, that qualify them to perform

assessments and related professional services typically provided by an IEP, as defined in this document. Because there is such a broad array of skills encompassed within the description of an IEP, it is impossible to develop a single, meaningful course of study that would adequately address the advanced levels of knowledge an IEP should possess within their area of specialization. Therefore, the terms "indoor environmental professional" and "IEP" are used in this document and in the remediation industry as a description, and not as a title, designation, certification, trademark or service mark. Consequently, there is no single license, designation or certification that qualifies an IEP. The qualifications required for an IEP are often gained through years of formal study at the university level, specific training related to mold and the indoor environment, and years of on-the-job work experience, or a combination of these factors. Therefore, the IICRC does not offer or recognize a professional certification or designation for an IEP, and prohibits the exclusive use or co-option of the terms "indoor environmental professional" and "IEP" in association with any one individual, entity or organization, as such use would be contrary to the intent of this document. However, use of the terms "indoor environmental professional" and "IEP" as a generic description is permitted. Remediators and others who engage an indoor environmental professional are advised to consider the individual's knowledge, skill, education, training and experience to best judge their ability, qualifications and competence, as further explained in this document.

This Standard does not specifically address the protocols and procedures for remediation when potentially hazardous, regulated materials are present or likely to be present in mold contaminated structures, systems and contents. Such potentially hazardous, regulated materials include, but are not limited to: asbestos, lead, arsenic, mercury, polychlorinated biphenyls (PCBs), pesticides, fuels, solvents, radiological residues, and other chemical and biological contaminants. This standard also does not address water damage restoration; please reference the *ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration* for information directly related to water damage restoration.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The IICRC is not responsible for identifying any or all such patent rights.

The S520 is a living document subject to change as more information regarding mold contamination and remediation becomes available and as scientific developments occur and advancements are made in remediation technology and practice. The S520 will be reviewed, evaluated and validated through application in the field, and thereafter revised and improved. This process and further professional and public review allows the industry to develop a body of mold remediation science and achieve the overall IICRC goal of improving the environments in which people live and work.

The IICRC invites and encourages professional and public review and comment. Please send comments and suggestions for S520 revisions or additions to:

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Attention: IICRC Standards Committee



Dedication



IICRC

Institute of Inspection Cleaning
and Restoration Certification

Mark B. Hansen, a major contributor to the *IICRC S520 Standard and Reference Guide for Professional Mold Remediation* and long-time legal counsel to the IICRC, passed away following the completion of this document, but before its publication. The IICRC recognizes Mark for his outstanding leadership, writing and editing ability, and organizational skills in making the IICRC Standards truly, “*World Class.*”

Mark was both complex and simple: complex in that he worked simultaneously on many projects requiring multiple skills and abilities; yet simple in that everything he worked on always was guided by the basic question, “What is right, ethical and honest?”

For almost 25 years, Mark Hansen served the cleaning and restoration industries as advisor, counselor, advocate and friend. Always professional and thorough, Mark guided IICRC through many difficult situations as its General Counsel including: the formation of IICRC as a non-profit organization, several total by-law revisions, legal reviews, contract negotiations, and commentary and legal review on every IICRC Standard published to date. More importantly, Mark served as legal advisor to ten IICRC presidents, gaining the trust and admiration of each. While his professional accomplishments demonstrate his expert legal skill, Mark was much more than a good lawyer. His attention to detail, his quiet yet insistent manner, his brilliant insights, and impeccable ethics all serve to define this unique man.

Complementing Mark’s highly professional work was his personal life. Mark was good-natured, always ready to laugh at a good story, willing to adventure into new territory, loyal and true to his beliefs, and deeply spiritual. Mark was always able to look at life’s challenges from a positive perspective and seek the good in any situation. Those who had the opportunity to travel with Mark came to know his thirst for adventure, always wanting to gain the most from any opportunity.

Mark loved his family deeply, especially his daughter Danielle, and his soul mate, Lori. It was while he was with his family that one could see the full measure of Mark Hansen. Mark was never too busy to share time with a friend or loved one. Even though he was brilliant, he never made those around him feel inferior.

The world is a better place because of Mark Hansen’s presence. Those of us who count ourselves among his friends have been enriched by the opportunity to have worked and played alongside Mark. While he is no longer with us physically, his legacy remains forever. His work speaks for itself: detailed, insightful, comprehensive and ethical. However, Mark will be remembered most for his passion and love of life. We, the IICRC, dedicate this document to Mark Hansen: devoted father, fiancé, attorney, counselor and friend.

Acknowledgments

This publication is the result of a collaborative effort involving industry experts and trade associations, educational institutions, training schools and other organizations. The Institute of Inspection, Cleaning and Restoration Certification (IICRC) is the principle designer of the document. Other organizations contributing to the creation of this document include the Indoor Environmental Institute (IEI), the National Air Duct Cleaners Association (NADCA), and the Society of Cleaning and Restoration Technicians (SCRT). The IICRC specifically recognizes the significant contribution by the IEI toward the development of this standard and reference guide.

The development and publication of this document was made possible through the generous contributions of a dedicated group of volunteers. The IICRC Board of Directors and the Standards Committee genuinely appreciate the time and effort contributed by these individuals. They exhibit the true volunteer spirit that has been the driving force behind the IICRC since its inception. At the time of approval of the second edition of the S520 Standard and Reference Guide for Professional Mold Remediation, the IICRC S520 Mold Remediation Consensus Body Standard Committee consisted of the members listed below. Other contributors and some past contributors to this document and their respective roles are also listed below.

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Important Definitions

Throughout this document the terms “shall,” “should,” and “recommend” are used to compare and contrast the different levels of importance attached to certain practices and procedures. It is impractical to prescribe procedures intended to apply to every mold remediation situation. In certain circumstances, deviation from portions of this Standard and Reference Guide may be appropriate. Carelessness is unacceptable and common sense and professional judgment are to be exercised in all cases.

shall: when the term *shall* (previously “must”) is used in this document, it means that the practice or procedure is mandatory due to natural law or regulatory requirement, including occupational, public health and other relevant laws, rules or regulations, and is therefore a component of the accepted “standard of care” to be followed.

should: when the term *should* (previously “highly recommended”) is used in this document, it means that the practice or procedure is a component of the accepted “standard of care” to be followed, while not mandatory by regulatory requirements.

recommend(ed): when the term *recommend(ed)* is used in this document, it means that the practice or procedure is advised or suggested, but is not a component of the accepted “standard of care” to be followed.

In addition, the terms “may” and “can” are also available to describe referenced practices or procedures, and are defined as follows:

may: when the term *may* is used in this document, it signifies permission expressed by the document, and means that a referenced practice or procedure is permissible within the limits of this document, but is not a component of the accepted “standard of care” to be followed.

can: when the term *can* is used in this document, it signifies an ability or possibility open to a user of the document, and it means that a referenced practice or procedure is possible or capable of application, but is not a component of the accepted “standard of care” to be followed

For the practical purposes of this document, it was deemed appropriate to highlight and distinguish the critical remediation methods and procedures from the less critical, by characterizing the former as the perceived and recommended “standard of care”. The IICRC S520 consensus body standard committee interprets the “standard of care” to be: practices that are common to reasonably prudent members of the trade who are recognized in the industry as qualified and competent. Notwithstanding the foregoing, this Standard and Reference Guide is not intended to be either exhaustive or inclusive of all pertinent requirements, methods or procedures that might be appropriate on a particular mold remediation project. Ultimately, it is the responsibility of the remediator to verify on a case-by-case basis that application of this Standard and Reference Guide is appropriate.

Standard and Reference Guide Cross-Reference Table

Although they are not numbered in the same sequence, several chapters of the Reference Guide correspond directly with sections of the Standard. The table below is designed to help the reader cross-reference those chapters. *For ease of use of this document, an electronic version of the S520 is available which will allow the user to search for specific keywords.

Section	Standard	Chapter	Reference Guide
1	Scope, Purpose and Application		
		2	The Fungal Biology of Indoor Environments
		3	Health Effects from Indoor Exposure to Mold in Water/Moisture-Impacted Buildings
2	References		
3	Definitions		
4	Principles of Mold Remediation	1	Principles of Mold Remediation
5	Equipment, Tools and Materials	5	Equipment, Tools and Materials
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7	Remediator Qualifications		
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