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NCCEH Mould Investigation Toolkit



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Overview

Public Health Inspectors (PHIs) and Environmental Health Officers (EHOs) across Canada have different responsibilities, policies, and guidelines when it comes to investigating public inquiries about mould in indoor environments. Some PHIs/EHOs conduct initial walkthroughs only, some conduct comprehensive investigations, and others educate the public about next steps without conducting any field evaluation themselves.

This toolkit provides PHIs and EHOs with some of the tools for evaluating indoor environments for mould (and other microorganisms), providing information, conducting walkthrough investigations, and understanding laboratory and consultant reports that they may be asked to review. This toolkit is meant to be a living document as new information becomes available and new tools are discovered or created. It is the NCCEH's intention to enlist the help of PHIs, EHOs, and content experts to keep this toolkit current and useful.

The toolkit consists of the following:

- **Sample inspection checklists and forms**
- **Overview of microbial sampling methods**
- **Overview of typical fungi**
- **Interpretation of microbial laboratory reports**
- **Reviewing microbial investigation reports**

Preamble

Fungi are microorganisms that thrive in the presence of water and organic material. Water damage (e.g., sewer backup, broken plumbing) and repeated water infiltration (e.g., roof, windows) can allow the growth of microorganisms and encourage the presence of insects and rodents. Contaminants from these can affect the health of occupants. Attention is needed to identify conditions favouring the presence of water and moisture in materials or the air of the building. In addition to effects on health, excessive moisture can affect the integrity and lifespan of a building; examples include rust, swelling plaster or drywall, rotting wood materials or derivatives, and cracking of masonry by repeated freezing and thawing.

Excessive moisture on materials beyond 48 hours is likely to allow mould growth. In most cases, mould is not visible from within the house and is often hidden in walls, ceilings, or floors affected by water and humidity. Water infiltration is often not visible because it occurs through leakage from roofing, windows, bricks, foundations, and plumbing. It is essential to regularly inspect the building to identify potential sources of infiltration.

If mould develops inside a wall, ceiling, or floor, the spores, fungal fragments, or microbial volatile organic compounds they produce can propagate (e.g., through crawl-spaces, cracks, electrical outlets) into living spaces and can be inhaled by occupants. Even if moisture is removed, mould left in place can still aerosolize and can affect the health of occupants.

As for the ambient air, relative humidity should be maintained between 30% and 50% in order to prevent fungal growth on surface materials. A relative humidity above 60% would favour fungal growth and proliferation.¹ Even if moisture in the air is normal or lower, this does not exclude a problem if mould material, for example inside a wall, is affected by high, persistent humidity (>48 hours) due to localized seepage. It is generally recommended that any material contaminated with moulds (regardless of genus or species) must be removed or decontaminated.²⁻⁷ For more information on [mould](#) assessment and remediation, please see the NCCEH evidence reviews [Mould Assessment Recommendations](#) and [Mould Remediation Recommendations](#).

Investigations often involve a progression of the following activities, with the goal of determining the presence of mould growth or excess moisture in building materials or air:

1. Collecting background information on suspect building and occupants, including history of water infiltration and health issues, respectively.
2. Providing a non-intrusive visual and walkthrough evaluation of suspect areas, including inside and outside of building, ventilation systems, and areas with water infiltration. This includes using cameras and infrared cameras and taking moisture measurements of surface materials and ambient air (e.g., moisture meter, hygrometer).
3. Providing an intrusive inspection (e.g., use of borescope) to determine sources of hidden mould, if suspected from non-intrusive inspections.
4. Sampling air or materials for microbial laboratory analysis. Air sampling is generally not necessary and care must be taken when interpreting results. It can provide supporting information regarding fungal amplification when investigations are unable to determine the cause of the problem or are insufficient to rule out concern (e.g., occupants have symptoms consistent with poor indoor air quality and the building history is unknown, areas are inaccessible, intrusive inspections cannot be done, or other information is unavailable). Surface sampling may be performed more frequently to confirm observations of suspect mould.

Having clear objectives, assumptions, hypotheses, and proper methods for sampling is essential. There are inherent limitations and results cannot be used to determine whether human health effects will occur; conversely, sampling cannot rule out the presence of a mould problem. Results must be interpreted with information from other investigative activities to allow for an informed assessment.

Disclaimer

While we have taken reasonable measures to ensure the reliability and accuracy of the information presented in the NCCEH Mould Investigation Toolkit, the NCCEH and its content providers shall have no liability in relation to the use of information in the documents.

References

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