MOLD IN HOUSING

Information for First Nations Communities

HOUSING MANAGERS' GUIDE

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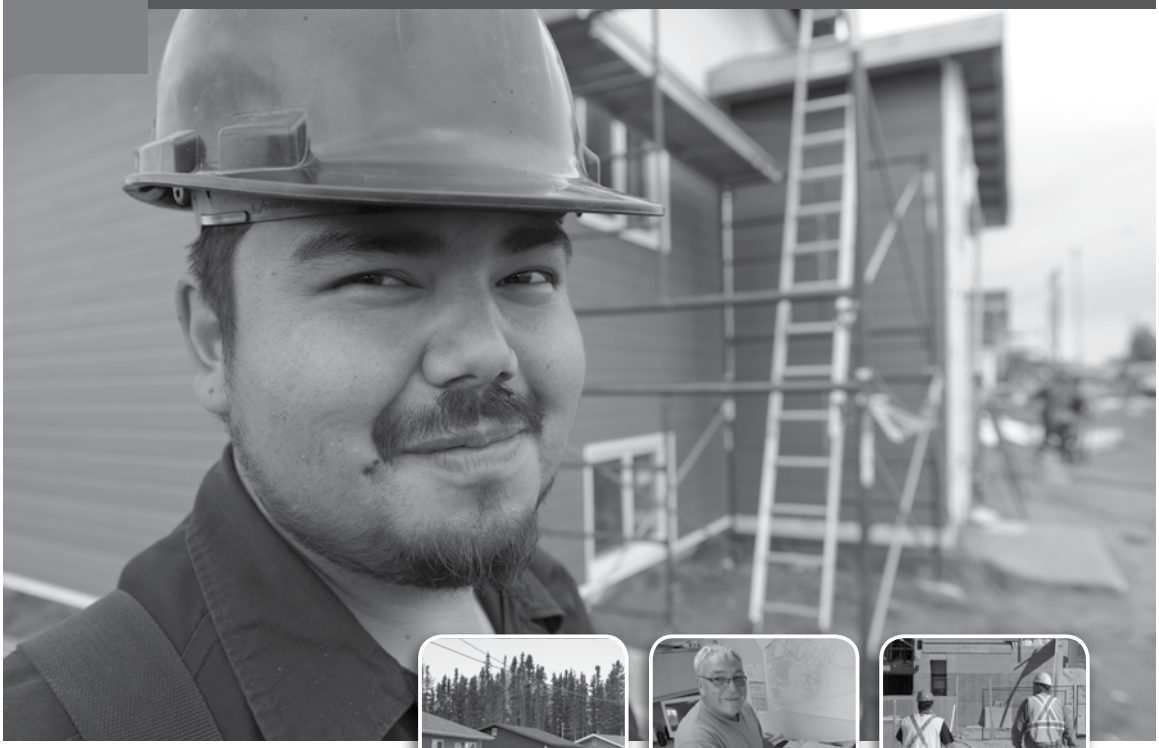

HOUSING MANAGERS' GUIDE

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Cette publication est aussi disponible en français sous le titre : *La moisissure dans les logements : Information pour les communautés des Premières nations – Guide du gestionnaire d'habitations* (nº de produit 67300).

The information in this publication is a result of current research and knowledge. Readers should evaluate the information, materials and techniques cautiously for themselves and consult appropriate professional resources to see if the information, materials and techniques apply to them. The images and text are guides only. Project and site-specific factors (climate, cost, aesthetics) must also be considered.

Mold in Housing: Information for First Nations Communities—Housing Managers' Guide

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INTRODUCTION

The *Housing Managers' Guide* is part of the *Mold in Housing* series. The information in this Guide will help First Nations housing managers recognize when there is a mold problem in the community and take the necessary steps to deal with the problem. This Guide may also be suitable for:

- Chief and Council;
- First Nations housing committees, maintenance supervisors, property management/maintenance officers, construction supervisors, crew leaders, labourers;
- Health providers—community health nurses/ representatives and environmental health officers;
- Trades—builders, contractors and renovators; and
- Technical service providers (inspectors).

This Guide is part of a series that includes the *Home Occupants' Guide* and the *Guide to Mold-Resistant Renovations and New Construction*. Housing managers should read all three guides.

ABOUT THE *MOLD IN HOUSING* SERIES

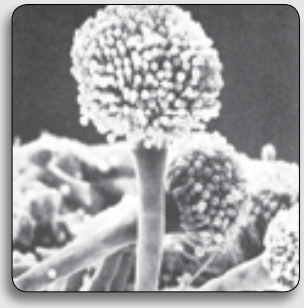
Home Occupants' Guide—This first Guide of the series includes information written for home occupants and any other individuals who want to learn basic information about mold (Product # 67237).

Housing Managers' Guide—This second Guide suggests possible roles of key players and identifies the training they need to deal with mold issues. The Guide includes information on specialized topics and is directed to technical service providers and housing managers (Product # 67299).

Guide to Mold-Resistant Renovations and New Construction—This final Guide of the series includes information on technical and specialized topics and is directed to housing managers, builders, contractors, renovators, technical service providers and mold remediation specialists (Product # 67301).

If you have any questions or comments about this document or other CMHC publications, please call 1-800-668-2642.

INTRODUCTION TO MOLD



Mold is a common problem in houses, both in and outside First Nations communities. It can be a minor nuisance or it can have major effects on the occupants.

Mold in houses does not happen overnight. The solutions are also not immediate. To control mold, a plan needs to be put in place that:

- deals with existing mold problems;
- prevents future mold problems; and
- plans for new, mold-resistant construction.

Mold problems indoors are always caused by moisture or water. Water can come from leaky pipes, water condensation on cold surfaces or from water seeping through a wall, foundation, floor or roof. Moisture can come from the people living in the house and from daily activities like bathing, cooking and washing clothes. Additional moisture can also be deliberate, as in the use of humidifiers or a pot of water on a wood-burning stove. Moisture can build up indoors and become a problem if it is not dealt with quickly.

Recognizing the moisture problem in the home is a critical step in understanding mold problems and finding solutions.

This Guide will help housing managers to better understand moisture and mold in houses and to help find the safest and best steps to solve the problem.

Water damage under a window

Daily activities, such as cooking, produce moisture

LONG-TERM MOLD CONTROL

Cleaning up houses with serious mold problems is not easy. It may upset the occupants' lives and take a lot of work and money. Mold problems come back if they are not dealt with properly.

To fix mold problems for the long term, a Housing Manager needs to:

- understand why houses become moldy;
- be able to recognize when a house is moldy;
- act quickly to find and fix moisture and mold problems;
- provide clear guidelines to people or companies doing the cleanup or renovation;
- understand mold cleanup techniques that work;
- know when and why to use proper mold sampling, analysis and record keeping;
- hire trained contractors; and
- make sure every house is maintained properly.

Water damage on a ceiling

Trained contractors repairing water damage

IDENTIFYING THE ROLES OF KEY PEOPLE

- Home occupants, housing departments, environmental health officers and community health nurses/representatives are key people in making sure mold problems get dealt with properly.
- Trained contractors and renovators clean up mold, take care of the causes and restore houses.
- Trained technical service providers can provide information, advice and supervision which will help make sure that cleanup and renovation are done properly.
- Housing maintenance staff and occupants can work together to keep houses mold-free.
- Trained builders construct homes that are moisture- and mold-resistant.

The responsibilities for mold cleanup are usually shared between the occupants and the community. Arrangements will vary by community depending on knowledge and skills. Mold problems are easier to deal with if all the key players work as a team.

Home occupants can clean up small mold problems before they get bigger

HOME OCCUPANTS

Home occupants have a very important role to play. They should:

- learn how to recognize mold in their home;
- learn about health and indoor air problems caused by mold;
- clean up mold problems before they get bigger; and
- maintain their homes to prevent mold.

The *Home Occupants' Guide* provides information for occupants on how to clean up mold and how to prevent mold from returning. Helping occupants take care of mold problems is a key part of good community health and housing management.

FIRST NATIONS HOUSING DEPARTMENTS

First Nations housing departments can play a role by:

- providing information on mold to community members;
- providing information to occupants on good housekeeping (cleaning) practices to prevent mold;
- assisting with inspections of houses by technical service providers or other individuals trained in mold inspections;
- working with the environmental health officer or community health nurse/representative on occupancy suggestions if mold is a problem;
- helping with alternative housing arrangements, when needed;
- assisting home occupants with what needs to be done to cleanup mold;
- assisting with the renovation specifications for mold-contaminated houses;
- assisting occupants with arranging cleanup, renovation, inspection and preparing the house for re-occupancy;

Housing managers are key players in mold prevention

- promoting prevention of mold from growing back through good maintenance practices of houses in the community;
- organizing information sessions for occupants on how to recognize and clean up small patches of mold and help occupants identify when they need help; and
- making sure any plans for home renovations or new houses built in the community address moisture problems.

In many communities, the housing department is the key player in mold prevention and remediation.

CHIEF AND COUNCIL

The Chief and Council can support by:

- ensuring that technical service providers and inspectors are qualified to investigate houses for mold problems;
- ensuring housing staff know about renovating and building houses so they are less likely to get moldy;
- developing a housing policy that clearly defines the roles and responsibilities for home maintenance and repair, mold remediation, inspections, etc.; and
- supporting training for home occupants on how to clean up and prevent mold.

TECHNICAL SERVICE PROVIDERS AND INSPECTORS

Technical service providers and inspectors may help ensure that the mold remediation specifications, contract and completed work meet the requirements of the community and occupant.

Technical service providers who are trained in mold remediation may:

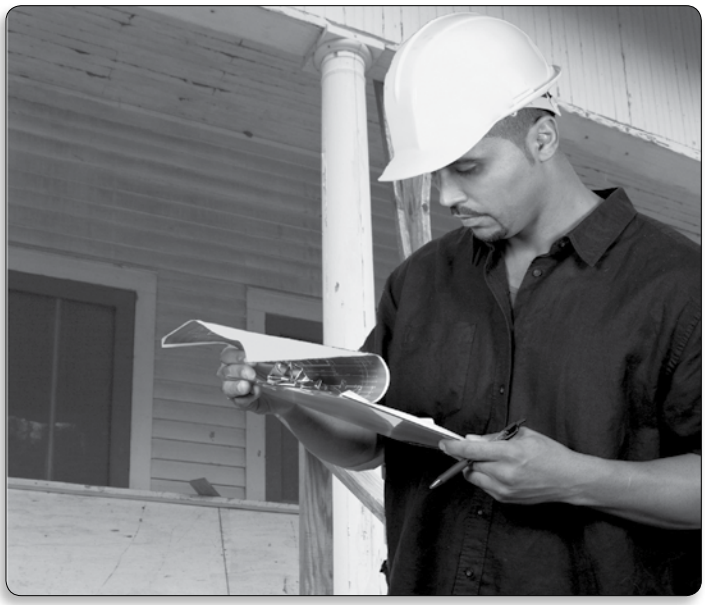
- investigate mold-troubled houses;
- develop and provide specifications for workers on mold cleanup, renovation or new construction;
- oversee workers doing the cleanup, renovations and new construction;
- provide technical support on mold issues; and
- act as a resource for the community.

ENVIRONMENTAL HEALTH OFFICERS

Environmental health officers (EHOs) may:

- inform health services staff and housing managers on how mold in houses affects public health;
- provide health information and advice about mold concerns to community members;
- respond to requests for individual health assessments in homes;
- inspect homes to help determine the severity of mold; and
- conduct microbial sampling for mold, or identify particular mold types, if necessary.

Technical service providers and inspectors may investigate mold-troubled houses and provide valuable expertise



MOLD CLEANUP CONTRACTORS

Mold cleanup contractors are trained to deal with mold problems. They may:

- provide a detailed description of the mold cleanup and remediation work and cost estimates;
- provide a detailed contract for the job;
- install temporary protective barriers to isolate the work site from the rest of the house;
- arrange for waste disposal and install temporary ventilation, if needed;
- talk to occupants to determine which furnishings are to be cleaned and which may have to be thrown away;
- decontaminate furnishings that are reusable;
- properly dispose of furniture and possessions that cannot be cleaned and reused;
- decontaminate, wash, rinse and dry areas damaged by moisture and mold;
- clean areas that are not visibly moldy by HEPA vacuuming;
- clean the remaining parts of the house as required;
- clean up work areas and leave the site ready for reconstruction; and
- provide a checklist of what has been done.

RENOVATION CONTRACTORS

Renovation contractors are involved in the renovation of houses after a mold cleanup. They may also cleanup mold if trained to do so. When hired to clean up mold, renovation contractors should:

- provide a detailed description of the work, cost estimates and a contract for the renovation work to correct problems with the house and to restore the house after a mold cleanup; and
- renovate the house to the specifications provided in the contract.

Mold cleanup contractors should provide a checklist of the work that has been done

Renovation contractors solve moisture problems and restore houses

ASSESSING A SUSPECTED MOLD PROBLEM

- A trained and knowledgeable individual reviews the mold problem and the condition of the house.
- Mold problems can be ***small***, ***medium*** or ***large***—each requiring a different approach.

The *Mold Assessment Summary* of the *Household Investigation Tool for Mold* on page 52 can be used to help identify the location and extent of a mold problem in a house. Combined with completed checklists from other houses, it can also help to document the extent of the mold problem in the community over time.

Upon completing the *Mold Assessment Summary*, if many small mold patches or, one or more medium or large areas of mold are found, the next step should be a complete building investigation by a trained and qualified individual in your community. The *Household Investigation Tool for Mold* on page 32 is intended to guide such investigations.

DETECTING MOLD

In addition to visual and odour checks described in the *Home Occupants' Guide*, there are a few quick checks that can also be carried out to help detect mold.

Bleach test

Dab a drop of household bleach onto a suspected mold spot. If the spot loses its colour or disappears within two hours then it may be mold. If there is no change, it probably isn't mold.

Paper swipe test

With a small strip of rough paper (a coffee filter works well), gently rub the surface of the suspected patch of mold. If powder rubs off onto the paper, it may be mold. This test works especially well with dark-coloured mold. Beware that soot from candles or other combustion sources is also dark and will also rub off on paper.

Flashlight test

In a darkened room, hold a flashlight against the surface suspected of being moldy and shine the beam across the surface from the side. Areas where mold is growing may show up as a shadow and appear as fine fuzz. This test works well with light-coloured mold that may not be easily seen in daylight.

Efflorescence

A common sign of moisture problems affecting foundation walls is the formation of fuzzy white spots on the surface of poured concrete and masonry. This fuzzy growth is called efflorescence. It is made up of delicate crystals of salts that form when moisture with high salt content moves through the concrete or masonry. If this has been happening over a long period

Efflorescence on foundation wall is not mold

of time, the salt will build up and can be several centimetres thick. You can test to see if it is mineral salt by mixing it with a few drops of household vinegar to see if it bubbles or dissolves. If this happens, it is salt deposits and not mold.

ESTIMATING THE EXTENT OF MOLD

Use the images below to estimate if the area of mold is ***small***, ***medium*** or ***large***.

The mold area is ***small*** if there are one, two or three patches of mold and each patch is smaller than one square metre (1 m x 1 m). Mold on window sills are usually *small* areas.

Small moldy areas in houses can become bigger if ignored, so it is important to clean up even tiny patches of mold.

Many small patches of mold in one area or throughout the house are a sign of moisture problems that need to be investigated and corrected right away. However, in most cases, small areas of mold can be cleaned up by home occupants or housing maintenance staff using proper precautions. See "Cleaning up a small mold problem" on page 24.

The mold area is considered ***medium*** if there are more than three patches of mold (each smaller than one square metre) but the total mold area is less than three square metres (for example, 1 m x 3 m or about the size of a 4 ft. x 8 ft. sheet of plywood). Patches close together are considered as one patch.

In many cases, professional help is needed to take care of medium amounts of mold but home occupants may be able to attempt the cleanup with training and proper precautions.

The mold area is ***large*** if a single patch of mold is larger than three square metres (for example, 1 m x 3 m or a standard piece of 4 ft. x 8 ft. plywood) or if there are many medium or large patches of mold all through the house.

Large mold areas should be left to contractors who are trained to deal with mold cleanup.

The *Mold Assessment Summary* of the *Household Investigation Tool for Mold* on page 52 can be used to record the extent of the mold found in a house. For each room, the investigator records if the mold problem is ***small***, ***medium*** or ***large*** by putting a checkmark in the appropriate column. The location of the mold and any other comments are also recorded. Upon completion of the inspection, the extent of the mold problem will become apparent based on the number of "Small," "Medium" or "Large" mold problems found.

Small mold area

Examples of medium mold areas

Examples of large mold areas

MOLD TESTING AND SAMPLING

Testing for mold in houses is usually not necessary. Mold must be cleaned up no matter what type is present. Current methods for testing and sampling for mold in homes can not be used to relate the results to health.

Why is testing usually not recommended?

The first thing that comes to many people's minds when they suspect a mold problem is to have the air in the house tested. This means collecting an air sample and sending it to a laboratory for analysis.

Testing for mold is usually not necessary and should not be the first step. You don't need to know what kind of mold is growing before making a plan to remove it. Air sampling alone provides no information about the extent of the mold problem, why it exists, health risks, or how to fix the problem. Decisions cannot be made based on laboratory results alone.

Is testing useful?

In some cases, and if properly done by an accredited laboratory, testing for mold might be useful to help detect hidden contamination. The types of mold are identified, and how much there is in the samples submitted may also be noted. However, it is very rare for mold or signs of water damage not to be detected after a home investigation by a qualified individual.

How is testing done?

Air samples or samples of moldy materials are sent to a laboratory for analysis. Typically, many samples have to be taken. Testing may have to be done at different times (seasons) to properly assess the situation. The samples are typically sent to a laboratory within 24 hours. The results may take several weeks to come back.

The solution is the same for all types of mold and for any area affected: if mold is obvious, it must be removed, the area cleaned properly, and the moisture problem that caused mold needs to be fixed. No agency has suggested a "safe level" of indoor mold.

A complete investigation of the home done by a qualified and knowledgeable individual can be more helpful than testing the air. In most cases, a complete investigation of the home can provide the housing manager and occupants with the information needed to understand why mold is growing in the house and what to do to take care of the problem.

Mold testing is also time-consuming and the wait for test results can delay cleanup and lead to increased exposure of the occupants. For these reasons, the time and resources allocated for mold testing may be better spent on diagnosing and solving the mold problem.

Mold testing is not usually recommended—resources may be better spent fixing the problem

If testing is done, who collects the samples?

Trained technical service providers, environmental health officers or community health nurses/ representatives may collect dust samples, scrapings of moldy material and air samples.

Mold samples can be sent to laboratories accredited for mold analysis. (See "Mold analysis laboratories" on page 54 for a list of accredited laboratories).

How are mold sampling methods chosen?

Trained technical service providers, environmental health officers and other health professionals can select the sampling method using the guidelines in the American Industrial Hygiene Association's (AIHA) publication entitled *Field Guide for the Determination of Biological Contaminants in Environmental Samples.* The laboratory that performs the analysis can also make suggestions on sampling methods.

IDENTIFYING THE CAUSES OF MOISTURE AND MOLD PROBLEMS

- A thorough house investigation, inside and out, will help identify areas that are wet or damp, those that show signs of mold and those that smell earthy or musty.
- Identify moisture problems—this is a critical step toward understanding mold problems and finding practical solutions.
- Use these practical solutions to correct existing moisture and mold problems.

THE IMPORTANCE OF HUMIDITY

Warm air can hold more moisture than cool air. When warm, moisture-filled air comes into contact with a cooler surface, the air itself cools. If the air cools enough, it can't retain the same amount of moisture, and the excess moisture collects on the surface as tiny droplets of liquid water called condensation.

Here are three common situations where excess moisture in the air leads to moisture problems and mold growth indoors:

- Condensation forms on the interior side of poorly-insulated exterior walls or windows during the winter. Molds can grow on damp painted or papered wall surfaces, as well as wooden window sills. (Winter problem.)
- Uninsulated cold water pipes drip condensation, causing local moisture damage. This happens most often along the incoming water line in the basement. Items beneath these drips may get wet and grow mold. (Summer problem.)
- Fabric, paper, cardboard and leather, have a tendency to absorb airborne moisture. When stored in humid conditions, such as in a damp basement, these items can become moldy. (Basement or garage problem.)

Water pipe condensation and plumbing leaks can lead to mold

Papers and clutter can absorb moisture and grow mold

Measure the relative humidity in all the homes that you inspect. To do this you will need a relative-humidity meter, also known as a hygrometer. Ideally, the indoor relative humidity during the heating season should be low enough to prevent condensation on windows.

Indoor relative humidity should be between 30% and 50%. When it is below -10°C (14°F) outside, the relative humidity inside should be 30% but it may have to be as low as 25% in extremely cold regions, to prevent condensation on cold surfaces such as windows.

High indoor humidity can be the result of many factors including:

- Many occupants living in one home
- Firewood stored indoors
- Hang drying clothes indoors
- Cooking
- Lack of kitchen range hood and bathroom fans
- Large number of plants in the home
- Water leaks, damp foundation

Indoor humidity should be low enough to prevent condensation on windows

Cold surfaces, in combination with high humidity, may experience condensation that can lead to moisture damage and mold growth. Cold surfaces may be due to:

- Missing or inadequate insulation in walls and attics
- Inefficient, older windows
- Thermal bridges (such as structural framing)
- Drafts
- Wind washing of attic insulation at the eaves
- Inadequate heating—blocked heating ducts, covered baseboard heaters, deactivated space heaters
- Cold water pipes

Moisture damage: what to look for

Although molds require moisture to grow, they do not need much. An investigation will have to consider all degrees of moisture damage, ranging from soaking wet to slightly damp. Materials that are wet are easy to spot. More problematic are those areas that look and feel dry but were wet and moldy in the past, and those that are only slightly damp but may become a problem. The techniques below can help to detect these less obvious problems.

Water, as described above, is frequently the cause of indoor mold growth. Gravity affects the movement of water: the lowest part of any material subject to a leak is likely to be the wettest, which is especially true for the framing members and insulation located in walls and attics.

- If you locate a leak, carefully trace the routes that the water has travelled to determine the possible extent of the water damage and where the water might be coming from.
- Floor drains in basements are intentionally installed at the lowest points in the floor. Look around the drain for tiny dried riverbeds left over from previous leaks or flooding.

- Dry drip marks may remain after condensed moisture has dripped down the interior side of cold exterior walls in winter and may indicate thermal bridges, missing insulation and air leakage points.
- Dark staining is the most common feature associated with water damage. It is most often seen on wood and paper products that have become wet. This sort of staining is more obvious on fibres, such as wood, cardboard and ceiling tiles.
- Items that appear darker than they should be may be damp even though they may not feel so to the touch.
- Moisture damaged materials such as drywall or ceiling tiles can become soft to touch.
- Rusted metal fasteners and other hardware may indicate a moisture problem in the area.
- Dripping cold water pipes (or white deposits on the underside of pipes) may indicate high humidity levels.
- Damaged finishes around windows and doors may indicate water leakage between the wall and window or door.
- Blisters, or air pockets, in painted or wallpapered surfaces may indicate high moisture conditions in the wall.

Stains on materials often indicate water damage

- Efflorescence on basement walls may indicate a damp foundation due to wet soil conditions.
- Loose or lifting floor tiles and raised joints in laminate flooring may indicate moisture problems in the floor below, an adjacent wall area or the ceiling above.

The checklist in *Mold in Housing: Home Occupants' Guide* can be used to help identify moisture and mold problems. Further guidance on finding and diagnosing moisture and mold problems is provided below. The process starts with an assessment of the exterior elements of the property including the site, roof, walls, windows, doors and foundation. Next, the interior elements including the attic, ceilings, walls, windows, doors, floors, foundation, heating and ventilation systems and occupant-related factors are considered. The *Household Investigation Tool for Mold* on page 33 can be used to record your observations.

Exterior

- Check site for standing water and the grading around the house. Grading sloped towards the house can cause water to accumulate next to the foundation.
- Check the condition of the roof for any places where water might enter.
- Inspect for ice damming in the winter. Ice dams form when heat from the house warms the roof enough to melt snow. The water then runs off, only to freeze when it reaches the cooler part of the roof out beyond the walls of the house. Eventually, a layer of ice forms and melting snow is trapped between the ice and the roof and the water can leak into the attic, and from there, into the house. Walls and ceilings below ice dam areas are prone to mold growth. This needs to be inspected and repaired.
- Inspect shingles. Asphalt shingles on a pitched roof should lie flat. Missing, worn, lifting or curling shingles should be replaced.

- On flat roofs, look for cracking, blistering, open seams or uneven surfaces. Water pooling on a flat roof should be fixed to prevent it from draining into the house.
- Inspect chimney for spots water could enter.
- Inspect eavestroughs, downspouts (which should extend at least 3 m or 10 ft. from any wall) for blockages, disconnections or missing sections.
- Make sure grading is sloped to direct water away from the house. This includes lawns, gardens, driveways and walkways around the house.
- Check that all window wells are well drained and basement windows are in good condition.
- Inspect cladding (wood, vinyl siding, metal siding, masonry, stucco) for signs of cracking, surface wear, loose or cracked caulking. Repair any damage found to keep water out.
- Inspect windows closely. Check to make sure the caulking seal around the windows is solid and has no gaps or cracks. Check for any signs of staining that might indicate water is seeping in.
- Check for leakage between the frame joints or through joints between the sashes and the frames. These kinds of leaks can cause wetting that is usually worse on the wall and floor right below the window. Check the weatherstripping. Also, check to make sure windows close properly. Air leaks around windows can cause condensation, moisture damage and mold growth. Repair as necessary.
- Inspect wooden window sills for mold growth appearing as powdery black, brown or reddish stains on painted or unpainted sill surfaces.

Clear eavestroughs of debris such as leaves

Basements and crawl spaces

Basement walls

- Inspect interior sides of basement walls (including cold cellars) for signs of mold, moisture and leaks.
- A common sign of moisture problems affecting foundation walls is the formation of efflorescence (see page 8).
- Check that any insulation on the basement walls is covered and sealed with air/vapour barriers on the basement walls and between floor joists.
- Check for signs of rotting wood.

Cold cellars

- The right conditions for storing food (cool and damp) are also the right conditions for mold growth. It is not a good idea to keep an indoor cold cellar unless it can be isolated from the rest of the house and has an outdoor entrance.
- A cold cellar that is very moldy can be a source of mold for the whole house.

Rotting wood at the base of a finished basement wall

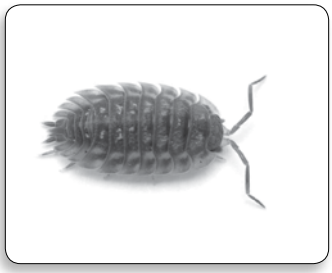
Basement floors

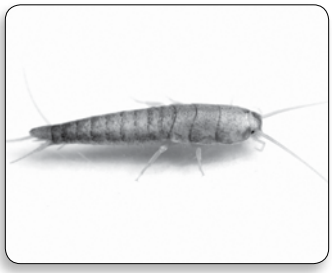
- Check for carpets or vinyl flooring on basement floors. They may have to be removed if wet or damp. Moisture can come up through the concrete slab or airborne moisture can accumulate on the cool concrete and make the carpets and underpads damp and mold can grow.
- Check under raised floors, since the cavities created under these floors are good hiding places for mold.
- Inspect the floor for cracks.
- Watch for signs of flooding, such as staining of the walls and floors or "dry riverbeds" that meet at the lowest point on the floor (usually the drain).
- Note any insects such as pill bugs or sow bugs (which look like tiny armadillos). These can indicate moisture problems.

Bathrooms

- Check that the bathroom fans are operating. The fan should create airflow strong enough to hold a sheet of tissue paper to the grille when operating. Check the duct, dampers and outside vent hood for blockages if the airflow is weak.
- Inspect plumbing under the bathroom sink and toilet for signs of leakage or condensation. Inspect the condition of the cabinetry under the sink for signs of moisture damage.

Insects such as pill bugs and silverfishes indicate moisture problems





- Inspect toilet tanks for condensation in the summer. Consider replacing the toilet if it is not insulated on the inside and condensation is a problem. A leaking flapper valve, which causes the tank to keep filling with cold water may also cause condensation. To check, add a few drops of food colouring to the water inside the toilet tank. Wait 30 minutes. If the water in the toilet bowl changes colour, the flapper valve inside the tank may be leaking and should be replaced with a new flapper made for the toilet model.
- Inspect the caulking around the bathtub and shower stalls. Small gaps or cracks can cause leakage when the tub or shower are used. Look around the sides of the tub and on the floor for any signs of leaking and water damage.
- Note any insects such as silverfish, centipedes, springtails and pill bugs. These all indicate moisture problems.
- Check the condition of painted ceilings and walls. Cracked or peeling paint may indicate that there is too much moisture in the air, leaks in the walls or roof or too little insulation.

Inspect plumbing under the sink and behind the toilet for signs of leakage

Kitchens

- Make sure the range hood is vented outside and is working.
- Check the condition of the outside vent hood to make sure the flapper works easily and does not let in rainwater.
- Inspect the plumbing for the kitchen sink and any other appliances for signs of leakage or condensation and for signs of water damage.

Laundry areas

- Make sure dryers are vented directly outside with short, straight runs of aluminum duct with sealed joints.
- Check the duct for lint build-up—this is a fire hazard, prevents effective moisture venting and can cause the dryer to operate longer than necessary, wasting energy.
- Inspect the plumbing for the clothes washer and check for leaks. Burst hoses can cause a great deal of water damage. Make sure the washer drains properly to the laundry tub or a drain pipe without leaking or spilling. Check under and behind the washer for signs of moisture and water damage.
- Check the laundry tub faucet—dripping will wet the bottom of the laundry tub, adding to humidity problems.
- Check laundry sink plumbing for signs of leakage.

All living areas

- Check condition and cleanliness of carpets.
- Inspect ceilings and walls for any signs of water staining or discolouration. Water damage to the ceiling usually happens as a result of a plumbing leak or a roof leak. Mold growth from condensation can also happen on the ceiling in places where the attic insulation is poor, causing the ceiling to be too cold in the winter.
- Look for water staining or mold growth on exterior walls. It is usually worse in areas where the air is cold or not flowing well and where wall insulation lacks, such as in corners near the ceiling or baseboard. Furnishings can also reduce air circulation against the wall. Check walls behind hanging pictures, large pieces of furniture or curtains for signs of condensation, moisture damage and mold. Use a flashlight at an angle to look for small patches of mold and light-coloured mold.

Dripping faucets add to humidity problems

Water staining and mold growth on ceiling tiles

- Check for water leaking through the wall beside and beneath windows. Gently push on the wall to feel for soft spots that may indicate moisture problems.
- Lift carpets at the edges where they meet the walls and look underneath. Staining on walls, subfloors or the underside of carpets could indicate water leaks.
- Check for cold walls and poor air circulation in closets—they can result in condensation, moisture damage and mold growth.

Attic

- Shine your flashlight on the underside of the roof. Look for stains that may indicate water leaks. Check closely where the roof bends or changes direction, since leaks commonly occur in these locations.
- Make sure the attic roof insulation is over R-31 as lower R values may allow too much heat to escape from the house to the attic which contributes to ice damming. The insulating properties vary from material to material, but glass fibre insulation should be about 9 inches (220 mm) thick to provide R-31 insulation value.
- Check for a musty smell in the attic, which can indicate dampness. Air leakage into the attic from the house can cause condensation on cool surfaces in the attic during winter causing mold growth. It can also contribute to ice damming. Air leaks from the house should be sealed.
- An ammonia-like smell in the attic may indicate the presence of animals. Pigeons and bats can be very hazardous when they roost in attics and the fungi that live in their droppings can cause infectious diseases in people. If you find birds or bats roosting in the attic, get professional help to remove them and to clean up the area.

Mechanical systems

Forced-air heating systems

- Check that the furnace has been serviced. Annual maintenance service is recommended.
- Check the condition of any furnace humidifiers. Poorly-maintained humidifiers increase humidity levels and can cause mold growth. Standing water in the humidifier and leakage in the plumbing can be a source of moisture problems.

Black discolouration of carpeting near baseboards can be a sign of a mold problem

Discoloration and staining on the underside of the roof indicates a water leak

Increase airflow in rooms with no air return grilles by undercutting the door by one inch

- Make sure any forced-air system can circulate air freely throughout the house. Undercut room doors so air can circulate back to central returns, if required. Continuous fan operation can help circulate air throughout the house.
- Clean and replace furnace filters regularly to ensure good airflow through the furnace.
- Make sure sufficient heat is provided to the basement to reduce cold spots and the risk of condensation.
- If mold problems are discovered in the basement, immediately seal the ducts and grilles in the basement to prevent air from being drawn from the basement and circulated into the rest of the house. This is only a temporary measure. In the winter, provide the basement with an alternate heat source until the mold problem is solved.
- Remove floor registers and inspect for dust build-up using a flashlight and mirror to take a look inside. Vacuum the registers and the return duct regularly. Arrange for professional duct cleaning if the dust accumulated inside the ducts is excessive.

Water heater

- Check the water heater and the pipes attached to it for leaks or signs of condensation.
- Check the water heater drain and pressure relief valve for leaks.
- Check pipes for insulation to prevent heat loss from hot water pipes and condensation on cold water pipes.

Heat recovery ventilator (HRV) or air exchangers

- Check outside hoods to make sure they are clean. Check filters inside the unit and clean as necessary. For HRVs, remove the heat exchange core and check for cleanliness and blockages.
- Inspect condensate drain pans in HRVs for proper drainage and cleanliness. Check that the condensate line from the HRV is clean, free-draining and properly connected to a drainage point.
- Ensure controls are operating. Check the controls on the unit and any remote controls provided in bathrooms or in another central location.
- Check for strong airflows from the supply air grilles and at the exhaust air grilles.
- Check for the last service date and compare with manufacturer's recommendations.
- If the HRV or air exchanger is connected to a forced-air system, make sure the furnace fan is set to run continuously to keep air circulating throughout the house.

SOLVING THE MOISTURE PROBLEM

- Once the moisture problem is identified and the causes determined, it's important to fix the problem before cleaning up the mold.
- Sometimes, moisture problems can be complex to diagnose and solve—trained expertise may be required.

Having identified the moisture problem and its causes, measures can be put in place to stop or control the moisture source. The measures may be temporary if there is a need to renovate the home as a result of the mold damage and cleanup activities.

Sometimes solving the moisture problem is complex, such as in the case of excavating a foundation to install damp or waterproofing, new drainage tile, insulation, free-draining backfill and properly sloped surface grading. In such cases, the work to fix the moisture problem may have to be done at the same time as the cleanup work. However, there is little point in completing a cleanup before the moisture problem has been solved as the mold problems will likely come back soon after the cleanup has been completed.

General approaches to solving moisture problems include:

- Ensuring water drains away from the foundation and that there are no low areas next to the foundation walls.
- Fixing water leaks in roofs, walls, windows and foundations.
- Supplying bathroom fans, an exterior vented kitchen range hood or a heat recovery ventilator to help control indoor humidity levels.
- Fixing leaks and dealing with condensation on pipes and plumbing fixtures.
- Fixing problems around bathtubs and shower enclosures.
- Fixing damp foundations and crawl spaces.
- Ensuring space heating systems maintain adequate temperatures and air circulation throughout the house.

More information on these solutions, and others, are provided in *Mold in Housing: Guide for Mold-Resistant Renovations and New Construction.*

Use downspout extensions or a splash block to drain water away from foundations

Fixing damp foundations and crawl spaces can be complex and often requires trained experts

GETTING THE HOUSE READY FOR CLEANUP

- Once the moisture problem has been identified and fixed, the house is ready for cleanup.
- A plan is needed to guide every cleanup to help ensure it is done properly.
- Prepare the work area according to the size of the cleanup.
- Protect occupants and workers from exposure to mold, dust and debris during cleanup.

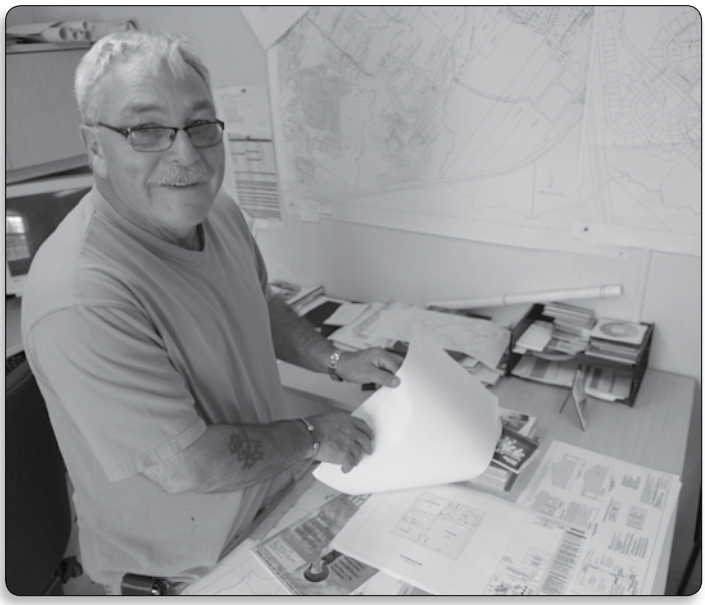
Once the moisture problems have been addressed, it is time to plan the cleanup. Proper preparation is required to ensure the job is done properly with as little risk and disruption for the occupants as possible. For ***small*** mold problems, the preparation tasks include determining whether or not the occupants will clean up the mold, educating the occupants on mold cleanup and measures to protect themselves and their families and ensuring the occupants have the right materials to get the job done. For ***medium*** mold problems, determine if the occupants can clean up the mold effectively and safely. With the right knowledge and tools, some occupants may be able to handle the work. Often, trained maintenance personnel or other trained individuals deal with ***medium*** mold problems. ***Large*** mold problem may require a contractor who specializes in mold cleanup.

After the cleanup, a separate contractor may be needed to renovate and restore the house, deal with the moisture problems, and make it more mold-resistant.

Agreements must be prepared for both the cleanup contractor and the renovator that include clear descriptions of the work to be done, the costs and the schedule. Go over the plan with the contractors, their experience can be valuable.

An independent contractor or inspector, trained in mold remediation, may also be hired to confirm the plan of action, perform quality assurance inspections and advise on the remediation and renovation work as it proceeds.

Agreements with contractors must include work specifications



SITE AND TEAM PREPARATIONS

Depending on the size of area covered by mold, preparation is needed to make sure that work is done correctly, on time and on schedule, with as little disruption to the occupants as possible.

The preparation may include the following steps:

- Arranging a meeting with the environmental health officer/community health nurse/representative, occupants and contractor to review everyone's roles and responsibilities during the mold cleanup.
- Reviewing with contractors the safety requirements for workers and occupants including making arrangements to isolate the work area to protect occupants, as described in the next section.
- Making sure that the cost estimate and method for dealing with unforeseen work (work not covered by the estimate and contract) is current, covers all work required and is provided in writing.
- Reviewing the work to be done with the contractor, workers, technical service provider and community health nurse/representative or environmental health officer.
- Organizing the disposal (dumpster, disposal permits, etc.) of the moldy waste and other waste materials through the closest exit.
- Informing occupants of the cleanup and renovation work to be done, the expected schedule and anything else that they may have to do to help get the project completed as quickly and safely as possible.

Arrange meetings with team members to discuss the work plan

Isolate the work area to protect the occupants

OCCUPANT PROTECTION DURING CLEANUP AND RENOVATION

Depending on the situation, the occupants may have been exposed to the mold in their house for a long time. They may be experiencing health effects by the time the mold problem is recognized. During cleanup and renovation, the amount of mold, dust and debris in the air may increase and cause further problems.

Consider the following when making decisions on the continued occupancy of the house during the cleanup and renovation:

- size of the cleanup;
- level of disruption;
- whether or not it is possible to isolate the area to be cleaned from the rest of the house; and
- health of the occupants.

If the area to be cleaned is large and it cannot be isolated from the rest of the house, it may be necessary to relocate the occupants during the cleanup and renovation work.

Who is at higher risk from mold?

Certain individuals may be at higher risk to mold exposure. Health Canada advises that the following people should not carry out any of the cleanup activities or be in or near the work area:

- people with breathing difficulties (asthma, tuberculosis or other respiratory disease);
- people with a mold allergy or chemical sensitivities;
- people with any sort of immune suppression or immunocompromised condition (HIV, chemotherapy, transplant, taking certain medications, etc.);
- people with any virus or bacterial infection (bronchitis, pneumonia, severe cold or flu) should wait before working in moldy areas until at least three days after they are well.
- pregnant women;
- infants;
- children; and
- the elderly.

Occupants may have to be relocated if the mold area is large and can't be isolated

Occupants at higher risk should stay away from areas close to mold cleanup activities

Contact your environmental health officer or your community health nurse/representative for further information and guidance if higher-risk occupants live in a house that will undergo mold cleanup and renovation activities.

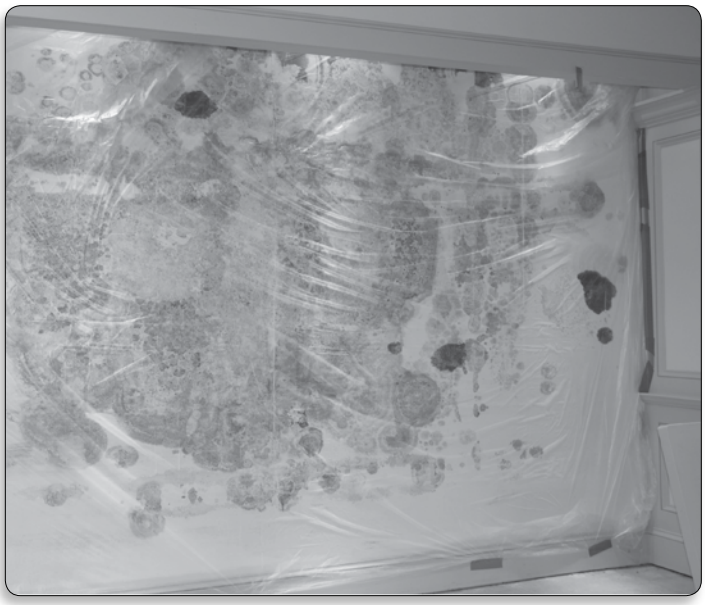
OCCUPANT PROTECTION MEASURES

If occupants live in the house during the cleanup, they must be protected by isolating the work area from the rest of the living space.

Steps typically taken to isolate the cleanup area and to minimize occupant disruption include:

- Sealing off the area using plastic sheeting taped to walls, ceiling or floor.
- Closing and taping doors to non-work areas. Draping plastic sheeting and tape across doorways without doors.
- Shutting off the fan/blower on forced air furnaces. Sealing all duct openings to keep renovation/cleanup dust from getting into the duct system and to avoid the air in the work area from escaping into the rest of the house.
- Installing an exhaust fan in a window in the room being cleaned to provide ventilation and help prevent contamination of other areas of the house.

Seal off the area using plastic sheeting taped to walls, ceiling and flooring



- Making sure the work is done as quickly and carefully as possible.
- Designating a worker access entrance to the work area.
- Providing drop clothes to protect floors between the work area and the selected worker access entrance.
- Cleaning up the work area at the end of the day.
- Storing all materials and tools safely.
- Disposing of waste and contaminated material right away.
- Having the work area professionally cleaned once the cleanup and renovation are completed.

WORKER PROTECTION MEASURES

Contractors must put into practice worker protection measures as required by provincial/federal regulations. Contact the provincial ministry of labour for information on occupational health and safety for mold cleanups.

All workers should be familiar with their personal protective equipment, its repair, maintenance and cleaning requirements and the hazards associated with handling mold-contaminated materials.

Minimum worker (or occupant) personal protective equipment (PPE)

For **small** mold cleanups

- Safety glasses or goggles.
- A mask (if possible an N95 respirator or equivalent; this type of mask traps small particles like mold better than a regular dust mask).
- Household rubber gloves.

For **medium** mold cleanups

- Half-face respirator with charcoal cartridges. A good fit is necessary to provide proper protection.
- Safety goggles or glasses.
- Disposable gloves (latex or nitrile) covered with a second pair of standard work gloves for heavy work.

For **large** mold cleanups

- Full-face respirator with disposable filters. A good fit is necessary to provide proper protection.
- Disposable gloves (latex or nitrile) covered with a second pair of standard work gloves for heavy work.
- Disposable coveralls (covering head and shoes).

To minimize exposure to mold, dust and debris, only the cleanup crew should be in the work area.

Common sense do's and don'ts for workers

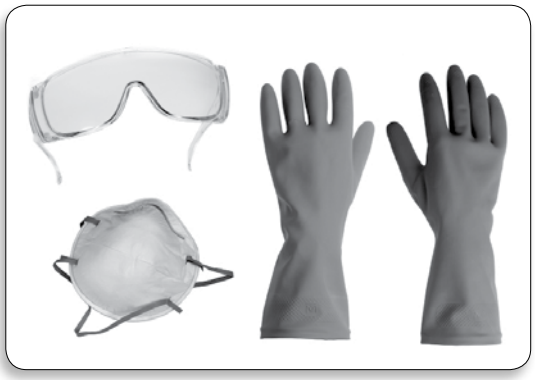
Do encourage workers to:

- remove mold-contaminated clothing and wash hands before eating;
- wash or dispose of gloves when finished working for the day;
- store masks in clean plastic bags; and
- wash work clothes separately and shower at the end of the working day (to prevent exposing their family members to the mold).

Workers should not:

- assume that mold will not affect them;
- eat in a moldy area; and
- touch their face or skin with their working gloves.

Make sure occupants have the proper protective equipment



Minimum PPE for a medium area cleanup

These workers are wearing proper PPE for large mold area cleanups

CLEANING UP A SMALL MOLD PROBLEM

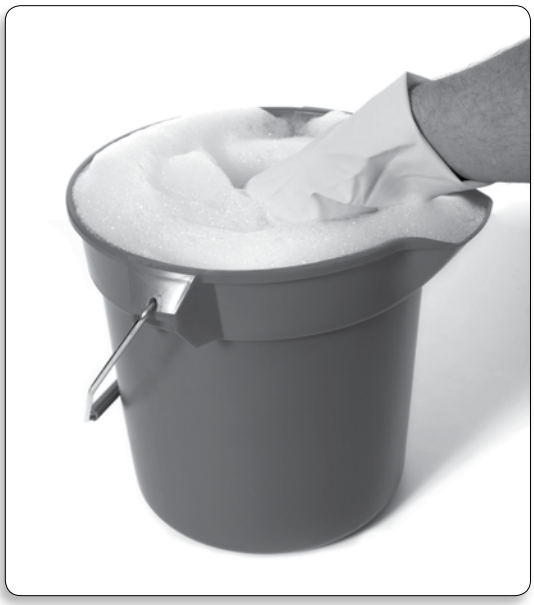
- Occupants can usually be trained to clean up small mold problems using the information in the *Mold in Housing: Home Occupants' Guide*.
- Continue to monitor the house after the work has been done to make sure the problem has been fixed.

Small mold problems can become larger, more serious problems if not dealt with quickly and thoroughly. For small mold problems, the occupants are generally capable of dealing with the problem themselves.

As with any mold problem, it is important to understand the moisture problem that is causing the mold to grow and to educate the occupants on how to control indoor moisture conditions. The information contained in the *Mold in Housing: Home Occupants' Guide* publication can help Housing Managers to provide occupants with the information they need to know.

It is important to monitor the home after the cleanup has been completed to ensure the mold problem does not come back.

You can clean a small mold area with a mild unscented dishwashing detergent



CLEANING UP A MEDIUM MOLD PROBLEM

- Cleanup and safety procedures depend on the area covered by mold, where it is located and extent of the damage.
- HEPA vacuuming the house can help reduce exposure to mold before, during and after renovation.
- A mold problem may spread to the rest of the house during the cleanup if not done properly and conditions are right for mold growth.
- Clean moldy furniture, clothes and possessions thoroughly and properly before they are returned to a cleaned-up house or moved to another house.
- Continue to monitor the house after the work has been done to make sure the problem has been fixed.

Medium mold cleanups often require the participation of trained maintenance staff. However, sometimes the occupants may want to deal with the cleanup themselves. In such cases, advise the occupants to follow the recommendations on how to deal with ***medium*** mold problems in the *Mold in Housing: Home Occupants' Guide*. Make sure they have the proper protective equipment.

For a medium mold problem, the basic steps include:

- Stopping and correcting sources of moisture and leaks.
- Taking the steps necessary to prevent occupant exposure to mold and cleanup debris.
- Removing all wet or damaged materials from the work area.
- Deciding what can and cannot be salvaged.
- Cleaning up mold on surfaces as described below.
- Restoring or renovating the work area.

FURNITURE

- Vacuum furniture with a HEPA or externally-exhausted vacuum first. Vacuuming before cleaning mold-contaminated surfaces can reduce exposure to mold.

Ordinary vacuum cleaners must not be used for mold cleanup as they can cause small particles and mold spores to become re-suspended in the air.

- Furniture that has hard, washable surfaces can be scrubbed with unscented dishwashing detergent mixed with warm water. Sponge it with a clean, damp rag and dry it quickly.
- Surfaces that are likely to be damaged by water may be cleaned with baking soda. Do a patch test first on a hidden surface to make sure the material, surface or finish won't become discoloured (stained) or affected.

Start by vacuuming furniture with a HEPA or externally vented vacuum

- Add just enough water to baking soda to make a paste. Apply the paste to the surface to be cleaned and leave it on for half an hour or longer. Wipe off or vacuum using a HEPA or externally-exhausted vacuum. Repeat as necessary. Air the item out in the sun.

CARPETS

- Carpets should be pulled away from walls that are wet.
- Carpets can be cleaned by vacuuming with a HEPA or externally-exhausted vacuum cleaner.
- Carpets and underpads that are moldy should be thrown out. Mold in carpets can stay hidden. Water stains on carpets usually means that there is a mold problem. Any carpet that has been wet for longer than 48 hours should be thrown away since it probably contains mold.
- Moist or damp carpets that have a musty odour should be removed. Carpets that are not damp but have a musty odour may be liberally sprinkled with plenty of baking soda and left overnight. Vacuum well with a HEPA or externally-exhausted vacuum. If after cleaning there is still a musty smell, the carpet may have to be discarded.

Wet carpets and underpads must be dried immediately. Replace them if they have been wet for more than 48 hours

- Very old carpets may have to be discarded no matter what their condition is because they often accumulate dust that may contain mold spores.
- After the carpeting and underpad have been removed, a HEPA or externally-exhausted vacuum can be used to clean the floor.
- Area rugs may be removed and professionally cleaned.

To reduce the amount of mold in the air when removing moldy carpeting, work slowly and carefully to avoid stirring up dust. Roll up the carpet for disposal if possible.

Proper vacuuming technique

Vacuuming can help reduce exposure to mold but it must be done properly and carefully as follows:

- The vacuum is first pushed forward across the object or area being vacuumed and then is slightly lifted and pulled back across the area being vacuumed to trap dust in the air immediately above the carpet.
- All areas are vacuumed in four directions if possible but at least in two directions at right angles to each other.
- Each square metre of the object or area should be vacuumed for at least two minutes. This is much more than for normal vacuuming.
- "Beater" heads should not be used unless they are designed to prevent the vacuum from stirring up dust in the room.

WOOD

Wood that is visibly rotting should be thrown away and replaced. Framing and other wood surfaces that only have surface mold can be cleaned, but the wood should be dried first.

- Loose mold can be vacuumed from the wood surface using a HEPA or externally-exhausted vacuum cleaner.
- The surface of the wood may be cleaned with unscented detergent and water. Rinse with a clean

damp rag and dry quickly. The drying process can be sped up with fans and open windows (if the relative humidity outside is low), or with dehumidifiers (keep windows and doors closed). Do not allow the wood to be wet for more than a day. Measure the relative humidity of the air next to the framing. The conditions are typically dry enough for painting or refinishing when the wood is dry and the relative humidity of the air is less than 60%.

- If the mold stains do not come off by cleaning, the surface of the wood can be sanded and vacuumed with a vacuum/sander combination until all signs of mold disappear. It is important to use a HEPA or central vacuum while sanding to prevent mold spores from being released into the air. Sanding is only effective for mold on the surface of the wood. Wood that is rotten should be replaced.

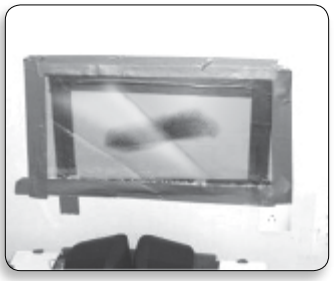
DRYWALL (GYPSUM WALLBOARD)

Mold on the painted surface of drywall can be cleaned with unscented detergent. If the mold has gone below the surface of the paint, into the drywall, the moldy patch of drywall should be cut out and replaced as follows:

- Cover the moldy area with a piece of 0.15-mm (6-mil) polyethylene (poly) plastic large enough to overlap the area by at least 200-mm (8-in.)
- Seal and secure the edges of the poly with sheathing or duct tape.
- Disconnect the power to any electrical circuits close to the work area before cutting away the drywall.
- Use a utility knife to cut around the border of the taped area and to remove the material. A utility knife is better at cutting drywall than a saw and it is easier to control and creates much less dust. Make sure that the blade is new and set the depth of the cut to the thickness of the drywall, usually half an inch. Cut in several passes, slowly and with even pressure. If you try to cut through the entire thickness all at once or too quickly, you risk slipping and hurting yourself. Once you have cut through the drywall thickness, gently remove the section using a pry-bar (installing new drywall will be easier if the section you cut out spans at least two stud or joist surfaces).
- Double bag the moldy material in heavy-duty garbage bags or wrapped in 0.15-mm (6-mil) poly (plastic) with taped joints. The amount of material in each bag should be limited so they are easy to lift and do not rip when lifted. The bags should be placed immediately in a dumpster or other waste container until they can be taken to a landfill site.
- Wash the surrounding area with an unscented detergent solution and dry quickly.
- The cavity area behind the cutout should be inspected. If there is mold inside the wall cavity, more work is needed. Moldy insulation may need to be removed, the wood framing may need to be cleaned and more drywall may need to be removed. New drywall and framing eventually will become moldy if mold in the cavity is not dealt with and the source of moisture is not stopped. Delay the installation of new materials until the source of the moisture is corrected and the framing is dry. If the work is not done right away, the cutout area should be sealed with poly (plastic) and the edges sealed with tape to prevent mold from escaping into the room.

Always replace wet insulation. Even though mold does not grow well on insulation materials like fibreglass and cellulose (unless these materials remain soaking wet for several days or weeks), always replace wet insulation. Wet insulation can wet the wood structure, drywall, exterior sheathing and lead to mold problems.

Temporarily cover small mold areas with plastic and seal the edges



CONCRETE

- Concrete surfaces can be vacuumed using a HEPA vacuum or externally-exhausted vacuum cleaner.
- Concrete surfaces can be cleaned up using unscented detergent and water (as described above for cleaning furniture) and dry quickly.
- If the surfaces still look moldy after cleaning:
  - Dissolve one cup of trisodium phosphate (TSP) in two gallons (7.57 litres) of warm water. Stir for two minutes. Note: Do not allow TSP to come in contact with skin or eyes—wear protective goggles and rubber gloves.
  - Saturate the moldy concrete surface with the TSP solution using a sponge or rag. Keep the surface wetted for at least 15 minutes.
  - Rinse the concrete surface twice with clean water.
  - Dry thoroughly and as quickly as possible.

WHOLE HOUSE CLEANING

- Because of the way air moves in a house, a mold problem in one area can spread through the house. Even spores from mold growing behind walls or above ceilings can get into the indoor living space through cracks and holes. If conditions are right, mold will start to grow in a new place adding to the overall mold problem. The house should be completely cleaned from top to bottom after the mold cleanup and renovations are done.
- Walls, ceilings and floors can be cleaned with a detergent solution making sure that all work areas are completely dry. A HEPA or externally-vented vacuum can be used as a final cleaning step.
- Heating, ventilating and air-conditioning ducts in a mold-troubled house may contain mold-contaminated dust; all ducts should be cleaned. Professional duct cleaning is a good option.
- Any furnishings or possessions that were removed from the house during the mold cleanup should be cleaned (if possible) or thrown out. Moldy furniture could bring mold spores back into the newly-cleaned home.

Wash surrounding areas with unscented detergent and dry quickly

Concrete surfaces can be cleaned with unscented detergent or TSP

Furniture that has been in a moldy house must be cleaned or thrown out

CLEANING UP A LARGE MOLD PROBLEM

- A large area of mold should be handled by a trained and qualified mold remediation contractor.
- HEPA vacuuming can help reduce exposure to mold before, during and after renovation.
- Precautions must be followed to prevent exposure of occupants to mold during cleanup.

Large mold problems are managed much in the same manner as medium mold problems. However, the extent of large mold problems typically requires the services of specialized mold cleanup contractors or well-trained maintenance personnel. To deal with ***large*** mold problems, make sure proper protective equipment is used and protective measures are put in place to limit the exposure of the occupants to dust and debris.

For a large mold problem:

- Correct the source of moisture as a first step in the mold remediation process. Stop water from leaking into the house and control moisture generated by the occupants.
- Clean the house using a trained contractor.
- If repair or renovation is in only one or two areas of the house, build an enclosure of framing and poly (plastic) sheeting or tarpaulins around the work areas to protect the occupants.
- When the mold area is very large, use exhaust ventilation while working to prevent renovation dust and debris from being scattered throughout the house.
- Cleanup procedures typically follow those outlined for small and medium mold cleanups.
- Store all debris in closed containers prior to disposal.
- Remove all demolition debris as soon as possible.
- Remove construction debris by the end of the job.
- Clean all surfaces that have been marked or soiled, and fix any damaged areas.
- Completely dry the area before refinishing or renovation work begins.

IS IT WORTH FIXING THE HOUSE?

Sometimes damage from mold is so great that you will have to decide whether or not to fix the house. Judge each case individually based on the cleanup and renovation plans and cost estimates.

Examples of houses that may be difficult and expensive to clean up and renovate to get rid of mold are:

- houses with a large amount of visible mold, where mold may be hidden in every cavity which would have to be opened, leaving only the structural shell;
- older houses that have been renovated several times and have many layers of finishes that would be difficult to remove and clean;
- houses with one or more additions resulting in hidden cavities, incomplete drainage systems or poor heating and ventilation that would be difficult and costly to fix.

If the house is not worth renovating, it should be demolished and the materials discarded. The demolition crew, whether tearing down the house manually or with heavy machinery, must wear protective clothing and equipment. Clouds of spores are likely to be released as the structure is demolished. Erect temporary fencing around the site and be sure to notify bystanders and neighbours when the work is being done. During the demolition, make sure the site is not accessible to children or anyone identified with higher risk of health problems as listed in the section "Who is at higher risk for mold?" on page 21.

Dispose of materials or furnishings from a condemned building in such a way that no one can reuse them and contaminate their house.

The replacement house should be built to improved standards that are less likely to result in moisture problems and mold contamination (see *Mold in Housing: Guide to Mold-Resistant Renovations and New Construction* for more information).

Use the cost estimates to decide if a badly-damaged moldy house is worth renovating

CARING FOR THE HOME AFTER MOLD CLEANUP

- Clean up and safely dispose of construction damage or debris.
- Confirm with the environmental health officer or community health nurse/representative that the house is suitable for occupancy.
- Show the occupant the cleanup and renovation work and how to use and maintain any new materials, finishes and equipment.
- Inform occupants of steps to take to prevent mold growth.
- Prevent moisture problems through good maintenance.

After the mold cleanup and renovations have been completed, the house should be completely cleaned.

The community health nurse/representative or environmental health officer may be consulted to confirm that the house is fit for occupancy. Make sure that moisture problems have been solved and that there is no remaining mold in the house.

Have the renovation contractor or another knowledgeable person explain any new heating or ventilating equipment or other new features of the house to the occupants. Leave printed instructions on maintenance of new or unfamiliar equipment, such as heat recovery ventilators, with the occupants.

Explain to home occupants how to use new heating and ventilating equipment

Regular inspections can help prevent mold

Provide the occupants with a copy of the *Mold in Housing: Information for First Nations Communities—Home Occupants' Guide* and go over the information in it with them. This should help the occupants to recognize and clean up small mold problems.

It is important to help occupants understand their roles and responsibilities with respect to the operation and maintenance of their home and to know when and who to call for help. The occupants should also be advised to watch constantly for any sign of moisture problems and mold growth.

Cleaned and renovated houses should be monitored after the work has been completed to ensure that moisture and mold problems do not return. With enough available moisture, mold problems will return.

HOUSEHOLD INVESTIGATION TOOL FOR MOLD

In some cases where moisture and mold problems are obvious, immediate action can be taken to fix the problems and clean up the mold. In other cases, the nature of the moisture problem and the extent of the mold may not be so clear. Additionally, when a number of houses in the community are affected by mold, there may be a need for a more thorough approach for recording the house characteristics, the condition of the home and the presence of mold so that an effective community-wide remediation strategy can be created.

The following pages provide guidance on how such information might be gathered and recorded in a *Household Investigation Tool for Mold*. Note that filling out the Investigation Tool may not be for everyone. It requires a good knowledge of house construction, heating and ventilating systems, inspection techniques and moisture and mold problems in houses to complete the Investigation Tool correctly and to understand the results. If such skills and knowledge does not exist in the community, consider hiring outside expertise.

The *Household Investigation Tool for Mold* can be used as a part of a broader community self-assessment for mold. The Tool can help communities to better understand the extent and causes of mold problems in each house and across the community. It can help to identify which houses may need attention first and to organize an effective remediation strategy. The Tool can also help housing managers to know and understand what to ask for if it is necessary to hire outside expertise to conduct a household mold investigation.

Date: YYYY / MM / DD

1. House Investigator's Information

Last name: _____ First name: _____

Title: _____ Phone: (____) _____ - _____

E-mail: _____

2. First Nations Community General Information

Community name: _____ GPS location: N __ __ __ __ __ __ . __

Annual temperature range: _____ # of people in the community: _____

Annual relative humidity range (if known): _____ # of dwellings in the community: _____

3. Occupant Information—For Head of Household, please provide the following information:

Last name: _____ First name: _____

Address: _____ Phone: (____) _____ - _____

Email: _____ Length of occupancy in current dwelling (in years): _____

Type of ownership: ❑ First Nations-owned ❑ Private ❑ Rental ❑ Don't know

Notes: _____

4. Building History

Year the house was built (approximately): Y Y Y Y ❑ Don't know

Previous mold problems? ❑ Yes ❑ No ❑ Don't know

Previous mold cleanup and renovations? ❑ Yes ❑ No ❑ Don't know

What year? (approximately) Y Y Y Y ❑ Don't know

Describe the work that was done: _____

Is there a history of:

				Location:
Flooding?	❑ Yes	❑ No	❑ Don't know	
Rain, snow leaks?	❑ Yes	❑ No	❑ Don't know	
Plumbing leaks?	❑ Yes	❑ No	❑ Don't know	
Condensation on windows?	❑ Yes	❑ No	❑ Don't know	
Moisture problems?	❑ Yes	❑ No	❑ Don't know	

Notes: _____

5. Building Characteristics

Building type:

- ❑ Single detached
- ❑ Semi-detached
- ❑ Row house
- ❑ Mobile home
- ❑ Apartment unit
- ❑ Other (specify): _____

For the first three building types, specify layout:

❑ Bungalow (one level) ❑ Two-storey

❑ Split-level ❑ Don't know

Structure type:

❑ Log ❑ Wood frame ❑ Concrete (for example, concrete block, insulating concrete forms, etc.)

❑ Other (for example, steel frame, structural insulated panel, etc.). Specify: _____

❑ Don't know

House site

In general, the ground around the house is:

❑ Gradually sloping (select one or both): ❑ Away from house ❑ Toward house

❑ Steeply sloping (select one or both): ❑ Away from house ❑ Toward house

❑ Flat

❑ Don't know

Flooding outside?	❑ Yes	❑ No	❑ Don't know
Standing water around the house or on property?	❑ Yes	❑ No	❑ Don't know
Is the site well drained?	❑ Yes	❑ No	❑ Don't know
Ground cover around the house:	❑ Earth	❑ Grass	❑ Don't know
	❑ Other (describe): _____		

Proximity to surface water (ocean, lake, river, creek, etc.) in metres: _____

Notes: _____

6. House Exterior

Foundation

Design: ❑ Basement ❑ Crawl space ❑ Slab-on-grade

Type: ❑ Poured concrete ❑ Concrete block ❑ Preserved wood ❑ Don't know

❑ Other (specify): _____

Condition: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Cracks: ❑ Large ❑ Medium ❑ Small (hairline) ❑ None ❑ Don't know

For basement and crawl space foundations:

Windows:		❑ Yes	❑ No	❑ Don't know	❑ N/A
Condition:	❑ Good	❑ Fair	❑ Poor	❑ Don't know	❑ N/A
Window wells:		❑ Yes	❑ No	❑ Don't know	❑ N/A
Condition:	❑ Good	❑ Fair	❑ Poor	❑ Don't know	❑ N/A
Well-drained:		❑ Yes	❑ No	❑ Don't know	❑ N/A
Standing water:		❑ Yes	❑ No	❑ Don't know	❑ N/A

Building services sealed: ❑ Yes ❑ No ❑ Don't know ❑ N/A

Evidence of leakage: ❑ Yes ❑ No ❑ Don't know ❑ N/A

Exterior insulation: ❑ Yes ❑ No ❑ Don't know ❑ N/A

Condition: ❑ Good ❑ Fair ❑ Poor ❑ Don't know ❑ N/A

Foundation wall waterproofing: ❑ Yes ❑ No ❑ Don't know

For crawl space foundations:

Crawl space vents: ❑ Yes ❑ No ❑ Don't know

Vents open? ❑ Yes ❑ No ❑ Don't know

For slab-on-grade foundations:

Elevated to avoid flooding: ❑ Yes ❑ No ❑ Don't know

Notes: _____

Exterior walls

Cladding type: ❑ Wood ❑ Vinyl ❑ Aluminum ❑ Stucco
❑ Brick veneer ❑ Stone veneer ❑ Other (specify): _____

Condition: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Evidence of leakage/moisture problems (stains, peeling paint, etc.): ❑ Yes ❑ No ❑ Don't know

Notes: _____

Windows

Condition: ❑ Good ❑ Fair ❑ Poor ❑ Don't know ❑ N/A

Condensation on panes: ❑ Yes ❑ No ❑ Don't know

Cracked or broken panes: ❑ Yes ❑ No ❑ Don't know

Moisture-damaged frames, sills or sashes: ❑ Yes ❑ No ❑ Don't know

Condition of weatherstripping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Evidence of water leakage: ❑ Yes ❑ No ❑ Don't know

Notes: _____

Doors

Condition:	❑ Good	❑ Fair	❑ Poor	❑ Don't know
Cracked or broken doors:		❑ Yes	❑ No	❑ Don't know
Moisture-damaged frames:		❑ Yes	❑ No	❑ Don't know
Condition of weatherstripping:	❑ Good	❑ Fair	❑ Poor	❑ Don't know
Evidence of water leakage:		❑ Yes	❑ No	❑ Don't know

Notes: _____

Roof

Slope: ❑ Flat ❑ Low ❑ Medium ❑ Steep

Finish/covering: ❑ Asphalt shingles ❑ Metal ❑ Cedar

❑ Other (specify): _____

Condition:	❑ Good	❑ Fair	❑ Poor	❑ Don't know
Eavestroughs:		❑ Yes	❑ No	❑ Don't know
Downspouts with extensions:		❑ Yes	❑ No	❑ Don't know
Flashing:		❑ Yes	❑ No	❑ Don't know

Notes: _____

7. House Interior

Odours

Odour upon entering the house? ❑ Yes ❑ No ❑ Don't know

Type of odour: ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food ❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Notes: _____

Pests

Evidence of pests (rodents, ants, cockroaches, etc)? ❑ Yes ❑ No ❑ Don't know

Describe the type of pest: _____

Notes: _____

Attic

Is there an attic?	❑ Yes	❑ No	❑ Don't know	
Attic ventilation: ❑ Gable	❑ Soffit	❑ Roof vents	❑ Ridge vents	❑ N/A
Insulation:	❑ Yes	❑ No	❑ Don't know	❑ N/A
Evidence of leakage/ moisture problems:	❑ Yes	❑ No	❑ Don't know	❑ N/A
Are house exhaust vents vented to the attic?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Is there mold?	❑ Yes	❑ No	❑ Don't know	❑ N/A

Approximate total area of mold (m^2): _____

Notes: _____

Basement

Is there a basement?	❑ Yes	❑ No	❑ Don't know	
Description:	❑ Finished (framing and insulation)			
	❑ Partially finished		❑ Unfinished	❑ N/A
Used as a living space/bedroom?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Heated during winter?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Evidence of flooding?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Evidence of condensation (walls, windows, etc.)?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Evidence of leakage (efflorescence, stains, etc.)?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Evidence of standing water?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Storage (select all that apply):	❑ On floor	❑ On shelves	❑ Against exterior walls	
	❑ No storage	❑ Don't know	❑ N/A	
Is the sump pit covered?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Is the sump pit sealed?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Is the sump pit drained?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Does the sump pump function?	❑ Yes	❑ No	❑ Don't know	❑ N/A
Is there mold?	❑ Yes	❑ No	❑ Don't know	❑ N/A

Approximate total area of mold (m^2): _____

Notes: _____

Heating

Type: ❑ Electric baseboards ❑ Hot water radiators ❑ Wood stove ❑ Forced-air
❑ Other (fireplace, space heaters, etc.)—Specify: _____

Energy: ❑ Oil ❑ Wood ❑ Propane ❑ Electricity ❑ Other: _____

Are the ducts clean? ❑ Yes ❑ No ❑ Don't know ❑ N/A

For forced-air furnace systems, is filter clean? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Notes: _____

Central Ventilation

Is there an HRV or air exchanger? ❑ Yes ❑ No ❑ Don't know

Is it serviced regularly? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is it functioning? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Are filters clean? ❑ Yes ❑ No ❑ Don't know

Outdoor intake/exhaust hoods clean? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Notes: _____

8. Room-by-Room Inventory and Assessment

Living Room

	Ceiling	*Walls*	*Floors*	*Windows/doors*
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)	_____	_____	_____	_____

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food
❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Dining Room

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)				

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food
❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Kitchen

	Ceiling	*Walls*	*Floors*	*Windows/doors*	*Under Sink*
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:	
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: ❑ Plumbing Leaks ❑ Condensation on pipes ❑ Evidence of moisture damage on nearby surfaces ❑ N/A
Mold (m^2)	_____	_____	_____	_____	_____

Is there a range hood fan? ❑ Yes ❑ No ❑ Don't know

Is it functioning? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is it vented outside? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is there an outside hood? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is there a ceiling fan? ❑ Yes ❑ No ❑ Don't know

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food ❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Bedroom 1 Description: _____

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)				

Are closets located next to exterior walls? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food ❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Bedroom 2 Description: _____

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)				

Are closets located next to exterior walls? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food ❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Bedroom 3 Description: _____

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)				

Are closets located next to exterior walls? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food ❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Bathroom 1 Description: _____

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)				

Is there an exhaust fan? ❑ Yes ❑ No ❑ Don't know

Is it functioning? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is it vented outside? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is there an outside hood? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food
❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Bathroom 1 (cont.)

	Bath/shower surround	***Under Sink***	***Toilet***
Materials	❑ Tile ❑ Fibreglass ❑ Plastic ❑ Other:		
Condition	❑ Poor ❑ Fair ❑ Good Sealants: ❑ Poor ❑ Fair ❑ Good ❑ N/A	❑ Poor ❑ Fair ❑ Good Sealants: ❑ Poor ❑ Fair ❑ Good ❑ N/A Plumbing: ❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good Sealants: ❑ Poor ❑ Fair ❑ Good ❑ N/A Plumbing: ❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: ❑ Leaks ❑ Condensation ❑ Moisture damage
Mold (m^2)	_____	_____	_____

Bathroom 2 Description: _____

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other:	❑ Drywall ❑ Wood ❑ Panelling ❑ Other:	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)				

Is there an exhaust fan? ❑ Yes ❑ No ❑ Don't know

Is it functioning? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is it vented outside? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Is there an outside hood? ❑ Yes ❑ No ❑ Don't know ❑ N/A

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food ❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

Bathroom 2 (cont.)

	Bath/shower surround	***Under Sink***	***Toilet***
Materials	❑ Tile ❑ Fibreglass ❑ Plastic ❑ Other:		
Condition	❑ Poor ❑ Fair ❑ Good Sealants: ❑ Poor ❑ Fair ❑ Good ❑ N/A	❑ Poor ❑ Fair ❑ Good Sealants: ❑ Poor ❑ Fair ❑ Good ❑ N/A Plumbing: ❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good Sealants: ❑ Poor ❑ Fair ❑ Good ❑ N/A Plumbing: ❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: ❑ Leaks ❑ Condensation ❑ Moisture damage
Mold (m^2)	_____	_____	_____

Basement

	Ceiling	***Walls***	***Floors***	***Windows/doors***
Materials	❑ Drywall ❑ Wood ❑ Tile ❑ Other: ❑ Finished ❑ Unfinished	❑ Drywall ❑ Wood ❑ Panelling ❑ Other: ❑ Insulated ❑ Uninsulated ❑ Finished ❑ Unfinished	❑ Unfinished ❑ Carpet ❑ Wood ❑ Composite tile ❑ Sheet flooring ❑ Other:	❑ Wood ❑ Vinyl ❑ Aluminum ❑ Other:
Condition	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good	❑ Poor ❑ Fair ❑ Good
Moisture problems	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____	❑ Yes ❑ No Type: _____
Mold (m^2)	_____	_____	_____	_____

Heating (air temperature): ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Air circulation: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Housekeeping: ❑ Good ❑ Fair ❑ Poor ❑ Don't know

Clutter/storage: ❑ Not cluttered ❑ Partially cluttered ❑ Very cluttered

Odours: ❑ None ❑ Musty/earthy ❑ Dusty ❑ Stale ❑ Food
❑ Fragrant ❑ Tobacco smoke ❑ Chemical (gas, petroleum)

Other comments/observations: _____

_____

9. General Operation, Housekeeping, Maintenance

General

Smoking indoors: ❑ Yes ❑ No ❑ Don't know ❑ N/A

Firewood stored in the house: ❑ Yes ❑ No ❑ Don't know ❑ N/A

Wet clothes hung to dry in the house/basement: ❑ Yes ❑ No ❑ Don't know ❑ N/A

Plants kept inside the house: ❑ No ❑ Few (less than 10) ❑ Many (10 +) ❑ Don't know

Humidifier

Used: ❑ Always ❑ Occasionally ❑ Never ❑ N/A

Seasonal use (select all that apply): ❑ Winter ❑ Spring ❑ Summer ❑ Fall

Location (main floor, basement, bedroom, etc): _____

Dehumidifier

Used: ❑ Always ❑ Occasionally ❑ Never ❑ N/A

Seasonal use (select all that apply): ❑ Winter ❑ Spring ❑ Summer ❑ Fall

Location (main floor, basement, bedroom, etc): _____

Bathroom

Exhaust fan used? ❑ Always ❑ Occasionally ❑ Never ❑ N/A

If never, why not? _____

Kitchen

Exhaust fan used? ❑ Always ❑ Occasionally ❑ Never ❑ N/A

If never, why not? _____

HRV

Is it used? ❑ Always ❑ Occasionally ❑ Never ❑ N/A

If never, why not? _____

Thermostat

Temperature Range (approximately): ❑ Lowered at night and during the day ❑ Constant
❑ Lowered when away ❑ Don't know

Observed setting (in °C): _____

Most spaces in the house are: ❑ Maintained at the same temperature ❑ Don't know
❑ Some are kept cooler (list them): _____

_____

_____

Housekeeping

Is water/moisture quickly cleaned up? ❑ Yes ❑ No ❑ Don't know

Vacuum type: ❑ Regular ❑ Central ❑ HEPA ❑ Don't know

Frequency of vacuuming: ❑ Daily ❑ Weekly ❑ Monthly ❑ Infrequently
❑ Never

Frequency of dusting: ❑ Daily ❑ Weekly ❑ Monthly ❑ Infrequently
❑ Never

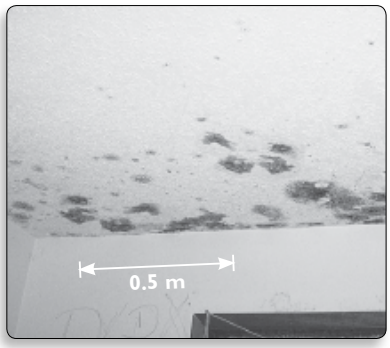
Please note any other observations or comments: _____

10. Mold Assessment Summary

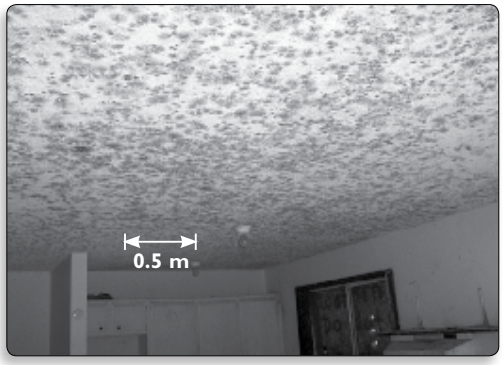
Mold Severity

Small:
If there are one, two or three patches of mold and each patch is smaller than one square metre (1 m x 1 m). Mold on window sills are usually *small* areas.

Medium:
If there are more than three patches of mold (each smaller than one square metre) but the total mold area is less than three square metres (e.g. 1 m x 3 m or about the size of a 4 ft. x 8 ft. sheet of plywood). Patches close together are considered as one patch.



Large:
If a single patch of mold is larger than three square metres.



Assessment:

Use a checkmark (✓) to identify what size of mold area is found in the following spaces based on the mold area recorded on the previous pages.

Mold Severity	*No mold*	*Small*	*Medium*	*Large*	*Cannot estimate*
Living room					
Dining room					
Kitchen					
Bedroom 1					
Bedroom 2					
Bedroom 3					
Bathroom 1					
Bathroom 2					
Attic (if easily accessible)					
Basement					
Crawl space (if easily accessible)					
Other:					
Total number of checkmarks					

FOR MORE INFORMATION

Support for mold cleanup

Canada Mortgage and Housing Corporation (CMHC), Indian and Northern Affairs Canada (INAC), Health Canada, mold analysis laboratories, mold cleanup contractors and renovation contractors may all provide support to investigate and solve mold problems.

Canada Mortgage and Housing Corporation

Through the Housing Quality Initiative (HQI), CMHC supports First Nations communities by offering:

- technical information related to housing;
- mold, indoor air quality, other information sessions for the community; and
- training (for example, *Let's Clear the Air*, *Builders Course, etc.*).

Indian and Northern Affairs Canada

INAC helps First Nations financially with their community housing needs. First Nations should contact their INAC regional office when urgent safety situations come up.

Health Canada

Health Canada supports First Nations communities through special projects, like mold education pamphlets and housing conferences. Most support for dealing with mold problems is provided by Health Canada's environmental health officers (EHOs) who can be contacted for mold investigation and sampling. EHOs share information and advice with members of First Nations communities.

Mold analysis laboratories

Mold analysis laboratories are available should analysis be required. Only accredited laboratories should be used for mold identification. Here is a list of the private laboratories that are accredited.

M.B. Laboratories Ltd.
Research Analytical and Testing Services
2062 Henry Ave. West
Sidney, B. C. V8L 5Y1
Phone: 250-656-1334
Fax: 250-656-0443
www.mblabs.com

Mycotaxon Consulting Ltd.
3 Rockwood Ave.
Halifax, N. S. B3N 1X4
Phone: 902-475-1456
Fax: 902-475-1982

Paracel Laboratories
300-2319 St. Laurent Blvd.
Ottawa, Ont. K1G 4J8
Toll-free phone: 1-800-749-1947
Email: paracel@paracellabs.com
www.paracellabs.com

Sporometrics
219 Dufferin Street, Suite 20C
Toronto, Ont. M6K 1Y9
Phone: 416-516-1660
Fax: 416-516-1670
Email: info@sporometrics.com
www.sporometrics.com
Inquiries from contractors only.

Université de Montréal
Groupe de Recherches Aeorobiologiques de Montréal
P.O. Box 6128
Montréal, Qc H3C 3J7
Phone: 514-343-8028

University of Alberta Devonian Botanic Garden
Microfungus Collection and Herbarium
Edmonton, Alta. T6G 2R3
Phone: 780-987-4811
Fax: 780-987-4141
http://www.devonian2.ualberta.ca/uamh/index.htm

Training needs

All key players need different levels of training to understand, clean, correct and prevent mold problems.

Home occupants

Households can get *Mold in Housing: Home Occupants' Guide* from their First Nations housing department.

Informed community leaders can guide information sessions on mold in the community where occupants have a chance to ask questions. The community health nurse/representative or environmental health officer is also a main source of health information.

Home occupants can also read information on mold published by CMHC. Publications can be sent to the community (see back cover).

CMHC offers hands-on, practical information sessions for occupants on how to maintain homes as part of the *Housing Quality Initiative* (see inside back cover).

Community housing managers and their staff

These individuals may need the following training to gain the tools and knowledge necessary to deal with and prevent mold problems:

Information sessions can teach home occupants about mold

- General house design and construction that covers:
  - possible problems with construction and renovation practices;
  - design principles for improved housing;
  - building science—how heat, air and moisture flow, understanding the house-as-a-system;
  - foundations—including frost-protected shallow and slab-on-grade foundations;
  - floor, roof and wall systems;
  - windows and doors;
  - heating systems;
  - mechanical ventilation systems—what is needed and how to achieve it; and
  - comfort and indoor air quality.
- CMHC offers workshops on indoor air quality for First Nations communities (Housing Quality Initiative [HQI]). Those who attend the training learn how to improve indoor air quality for existing houses as well as for new homes. Topics covered include:
  - a list of common indoor air quality problems in the home and their causes;
  - moisture and mold problems and solutions;
  - chemical contaminants and solutions; and
  - mechanical systems including combustion, heating, ventilation and filtration.
- Training on proper ways of dealing with mold problems. CMHC offers workshops on how to take care of mold. This training explains the steps to follow while renovating because of mold and how to protect workers.

Anyone who will be responsible for indoor air quality investigations may benefit from further training. See the inside back cover for more information about *Housing Quality Matters* training sessions and workshops.

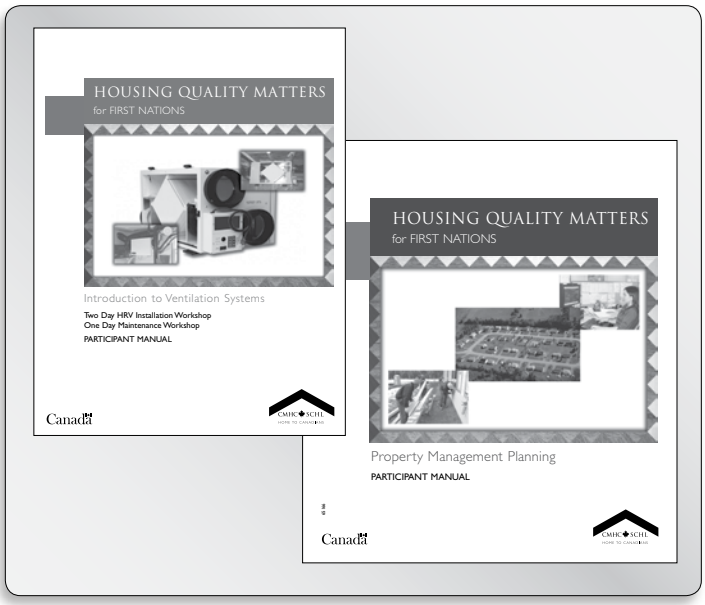
Technical service providers

These individuals may benefit from the following training:

- In-depth training in building science and construction available through the *Housing Quality Initiative* (contact your local CMHC Assisted Housing office), the *R-2000 Builder Workshop* (contact your provincial Home Builders' Association or Natural Resources Canada) and similar programs.
- Residential mechanical ventilation training available through the Heating, Refrigerating and Air Conditioning Institute of Canada (see "Organizations" on page 57).

Cleanup contractors and renovators may need training to carry out proper cleanup activities and renovations to protect themselves and reduce the risk of mold exposure for occupants. They should attend training on the correct way to take care of mold problems.

Renovators and builders can benefit from attending the *R-2000 Builder Workshop* or similar courses, residential mechanical ventilation courses, First Nations builders' courses, Housing Quality Initiative workshops, and courses on taking care of mold. Renovators and builders should work with the community to build better, mold-resilient homes.



In-depth training in building science and construction is essential for technical service providers

Organizations

Assembly of First Nations
Trebla Building
473 Albert Street, Suite 810
Ottawa, Ont. K1R 5B4
Toll-free phone: 1-866-869-6789
Phone: 613-241-6789
Fax: 613-241-5808
www.afn.ca

Canada Mortgage and Housing Corporation—National Office
700 Montreal Road, Suite 100
Ottawa, Ont. K1A 0P7
Toll-free phone: 1-800-668-2642
Toll-free fax: 1-800-245-9274
TTY: 613-748-2447
www.cmhc.ca

Canadian Home Builders' Association
150 Laurier Avenue West, Suite 500
Ottawa, Ont. K1P 5J4
Phone: 613-230-3060
Fax: 613-232-8214
Email: chba@chba.ca
www.chba.ca

Canadian Oil Heat Association
115 Apple Creek Blvd., Suite 202
Markham, Ont. L3R 6C9
Phone: 905-946-0264
Fax: 905-946-0316
www.coha.ca

First Nations National Building Officers Association
c/o Southern First Nations Secretariat
22361 Austin Line
Bothwell, Ontario N0P 1C0
Phone: 519-692-5868
Email: info@fnnboa.ca
www.fnnboa.ca

Fist Nations National Housing Managers Association
www.fnnhma.com

Heating, Refrigerating and Air Conditioning Institute of Canada
2800 Skymark Avenue,
Building 1, Suite 201
Mississauga, Ont. L4W 5A6
Toll-free phone: 1-800-267-2231
Phone: 905-602-4700
Fax: 905-602-1197
Email: hraimail@hrai.ca
www.hrai.ca

Indian and Northern Affairs Canada
Terrasses de la Chaudière
10 Wellington, North Tower
Hull, Que. K1A 0H4
Toll-free phone: 1-800-567-9604
TTY: 1-866-553-0554
Email: InfoPubs@ainc-inac.gc.ca
www.ainc-inac.gc.ca

Alberta Region
Indian and Northern Affairs Canada
630 Canada Place
9700 Jasper Avenue
Edmonton, Alta. T5J 4G2
Phone: 780-495-2773
Fax: 780-495- 4088

Atlantic Region
Indian and Northern Affairs Canada
PO Box 160
40 Havelock Street
Amherst, N.S. B4H 3Z3
Phone: 902-661-6200
Fax: 902-661-6237

British Columbia Region
Indian and Northern Affairs Canada
1138 Melville Street, Suite 600
Vancouver, B.C. V6E 4S3
Phone: 604-775-7114 or
604-775-5100
Fax: 604-666-2546

Manitoba Region
Indian and Northern Affairs Canada
365 Hargrave Street, Room 200
Winnipeg, Man. R3B 3A3
Phone: 204-983-4928
Fax: 204-983-7820

Northwest Territories Region
Indian and Northern Affairs Canada
PO Box 1500
Yellowknife, N.W.T. XIA 2R3
Phone: 867-669-2500
Fax: 867-669-2709

Nunavut Region
Indian and Northern Affairs Canada
PO Box 2200
Iqaluit, Nunavut X0A 0H0
Phone: 867-975-4500
Fax: 867-975-4560

Ontario Region
Indian and Northern Affairs Canada
25 St. Clair Avenue East, 8th Floor
Toronto, ON M4T 1M2
Phone: 416-973- 6234
Fax: 416-954-6329

Quebec Region
Indian and Northern Affairs Canada
Place Jacques-Cartier Complex
320 St. Joseph Street East,
Suite 400
Québec, Que. G1K 9J2
Toll-free phone: 1-800-263-5592
Phone: 418-648-7551
Fax: 418-648-2266

Saskatchewan Region
Indian and Northern Affairs Canada
1 First Nation Way, Room 200
Regina, Sask. S4S 7K5
Phone: 306-780-5945
Fax: (306) 780-5733

Yukon Region
Indian and Northern Affairs Canada
415C-300 Main Street
Whitehorse, Yukon Y1A 2B5
Phone: 867-667-3888
Fax: 867-667-3108

Natural Resources Canada
Toll-free publications line:
1-800-387-2000
General enquiries: 613-995-0947
Online directory: www2.nrcan.
gc.ca/dpspub/index.cfm
www.nrcan-rncan.gc.ca

Office of Energy Efficiency
www.oee.nrcan.gc.ca

R-2000 Program
Housing, Buildings and
Regulation Division
Office of the Energy Efficiency
Toll-free phone: 1-800-387-2000
Fax: 613-996-3674
Email: r.2000@nrcan.gc.ca
www.oee.nrcan.gc.ca

Service Canada
Canada Enquiry Centre
Ottawa, Ont. K1A 0J9
Toll-free information line:
1-800-O-Canada (1-800-622-6232)
TTY\TDD: 1-800-926-9105

Wood Energy Technology
Transfer Inc. (WETT)
189 Queen Street East, Suite 1
Toronto, Ont. M5A 1S2
Toll-free phone: 1-888-358-9388
Phone: 416-968-7718
Fax: 416-968-6818
Email: info@wettinc.ca
www.wettinc.ca

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About Your House: Fighting Asthma in Your House. Ottawa, Ontario, 2009.

About Your House: Fighting Mold – The Homeowners' Guide. Ottawa, Ontario, 2008.

About Your House: Measuring Humidity in Your Home. Ottawa, Ontario, 2009.

About Your House: Should You Test the Air in Your Home for Mold? Ottawa, Ontario, 2008.

About Your House: The Importance of Bathroom and Kitchen Fans. Ottawa, Ontario, 2010.

An Investigation of Design Criteria and Appropriate Technologies for Space Heating and Ventilation Systems for Northern Housing. Ottawa, Ontario, 1996.

Building Materials for the Environmentally Hypersensitive. Ottawa, Ontario, 1995.

Cleaning Up Your House After a Flood. Ottawa, Ontario, 1994.

Clean-up Procedures for Mold in Houses. Ottawa, Ontario, 2005.

Crawl Spaces: How to Avoid Moisture and Soil Gas Problems. Ottawa, Ontario, 1998.

Guide to Fixing your Damp Basement. Ottawa, Ontario, 1992, Revised 2008.

Guide to Mechanical Equipment for Healthy Indoor Environments. Ottawa, Ontario, 2001.

Indoor Air Quality Survey of Northwest Territories Housing. Ottawa, Ontario, 1991.

Sharing Successes in Native Housing. Ottawa, Ontario, 1995.

Canadian Home Builders' Association. *CHBA Builders' Manual*. Ottawa, Ontario, 1994.

Canadian Wood Council. *Permanent Wood Foundations*. Ottawa, Ontario, 1992.

Health Canada. Environmental Health Directorate. *Fungal Contamination in Public Buildings: A Guide to Recognition and Management*. Ottawa, Ontario, 1995.

Health Canada. Environmental Public Health Division. *Mould and Your Health: What you need to know for a healthier home*. Information for First Nations Community Members. 2010.

Indian and Northern Affairs Canada. *Guidelines for the Development of First Nations Housing Proposals*. Ottawa, Ontario, 1996.

NOTES

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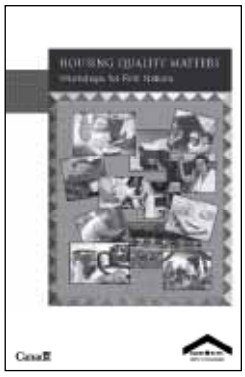
HOUSING QUALITY MATTERS
Workshops for First Nations



Information and training to better build and maintain homes

Well-built, well-maintained houses are an asset. Canada Mortgage and Housing Corporation (CMHC) offers on-reserve communities the knowledge and skills to improve their housing. CMHC has hands-on, practical information sessions and workshops called *Housing Quality Matters (HQM)*. The *Workshop for First Nations* booklet contains detailed information about these sessions and workshops.

FREE

Product # 65706

HQM courses tailored to housing managers include:

Client Counselling

Are you a member of your community's housing or finance department? Are you sometimes asked questions about a housing issue you can't answer? This two-day workshop will help you gain more counselling skills and strengthen the services of the housing department.

Let's Clear the Air—Home Assessment

This one-day workshop is designed for housing, construction and health professionals. You will gain a hands-on, basic understanding of CMHC's Indoor Air Quality (IAQ) Investigation Procedure.

Introduction to Indoor Air Quality—Leadership

Take the lead in your community and learn the basic information about maintaining healthy indoor air.

To order a copy of *Housing Quality Matters: Workshops for First Nations,* call CMHC at 1-800-668-2642. For more information about *Housing Quality Matters* workshops, please contact your local CMHC office or call 1-800-668-2642 to find the CMHC office nearest you.

MOLD IN HOUSING

Information for First Nations Communities

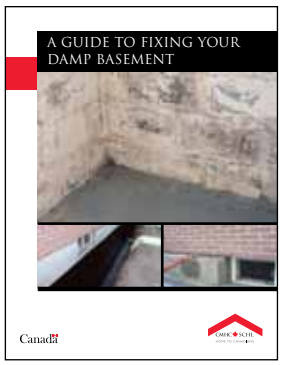
HOUSING MANAGERS' GUIDE

Should You Test the Air in Your Home for Mold?

Testing the air in their homes for mold is usually the first thing people ask for when they suspect the presence of mold, or have discovered mold growth. This fact sheet explains why air testing is not recommended and why an investigation by a trained professional is more useful, as well as what to do if testing is deemed necessary.

FREE

Product # 63911

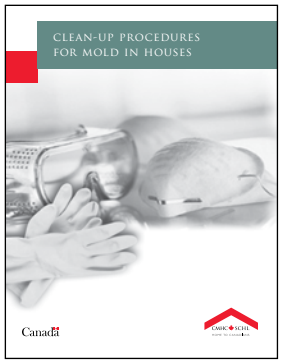


A Guide to Fixing Your Damp Basement

Learn how to diagnose a prevalent problem in housing: damp basements. Damp basements can lead to the development of indoor mold, comfort problems and structural damage. You'll find in-depth coverage of symptoms, sources and causes, plus solutions that are clear and precise.

$9.95

Product # 65886



Clean-Up Procedures for Mold in Houses

Discover how to rid your home of mold. Mold can contribute to asthma, allergies and other health problems. Left untreated, mold growth can also cause structural problems in a home or damage furnishings. But clean-up must be handled carefully. Learn the correct, safe procedures to do the job. Includes special precautions for treating surface mold and whole-house mold, as well as guidance on prevention.

$14.95

Product # 61091

Order your copies today by calling CMHC at 1-800-668-2642 or download them from www.cmhc.ca

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