

Mould Review

Mould and Moisture Problems in Buildings and Indoor Air Quality Concerns

Water leakage of building envelopes, due to climactic conditions, construction techniques and changes to building codes and standards, has become a major issue in the past decade in British Columbia. In addition to building envelope durability problems, recent experience with mould and bacteria infestation resulting from building envelope and drainage failures has signaled an alert to a potential Indoor Air Quality Problem due to microbial contamination and increased humidity levels.

Moisture damage in buildings is caused by:

- 1) Leaks in the building envelope from the foundation up to the roof.
- 2) Leaks caused by faulty plumbing materials or poor workmanship.
- 3) Moisture existing in the building materials before construction and sealed into the envelope.
- 4) Moisture caused by occupant activities such as showering and bathing.
- 5) Moisture caused by combustion sources particularly open-flame cooking and heating appliances, such as stoves and water heaters.
- 6) Poor site drainage.

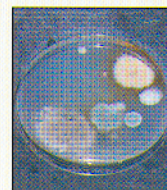


Once moisture problems have occurred, if not diagnosed and repaired promptly, they can result in increased humidity levels and dampness which may affect not only the durability of the building but also the health and comfort of occupants. For example, the evidence suggest that the optimal conditions to enhance human health and minimize the growth of biological



organisms occurs in the narrow range between 20% and 60% relative humidity. In fact, the Workers' Compensation Board of British Columbia has adopted this range as a compliance requirement of the new Indoor Air Quality regulation. This optimal humidity level has proven to be difficult to achieve in moisture-troubled buildings in British Columbia. Where buildings house a workplace, such as schools, hospitals or office buildings, failure to achieve the required humidity level may trigger a Workers' Compensation Claim.

Diagnosing and solving moisture-related problems, particularly those that occur in the building envelope, can be complex and costly. Often, some of the greatest cost incurred is caused by intrusive testing and inspection of the building envelope when moisture problems are suspected. In many cases it may be possible



to avoid this cost by implementing a less destructive and non-intrusive screening procedure. The process is based on sampling air in the occupied space and in the wall cavity for moisture and mould. Using this screening approach, the specific location of likely damage can be more accurately pinpointed. Once pinpointed, only those areas of likely damage require inspection using destructive and intrusive procedures. Once those areas of damage have been identified and the extent of damage has been determined, appropriate, cost-effective repairs can be implemented. Often if caught early enough, damage can be corrected by application of anti microbial agents. These agents will also inhibit the future growth of mould and bacteria. This building envelope performance screening procedure may also be effectively applied to proactively manage the risk of building envelope failures for new and existing buildings. For new buildings, a program of regularly scheduled sampling for mould and moisture, and inspection for water incursion should begin immediately after construction is complete. For existing buildings, an initial inspection should first be undertaken to establish baseline performance parameters for mould and moisture levels and signs of water incursion. The baseline parameters will then form the basis for comparison with results of regularly scheduled testing. In addition to identifying envelope performance and durability issues, this proactive program will also provide documentation that the optimal humidity conditions for occupant health and comfort are being achieved, and alert the building management to any occupant-caused humidity problems.



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*See reverse on Mould and
Moisture Conference*