DNA Analysis of Building

DNA Mould Test

Address Garðaskóle

Case nr. GARÐABÆR
3.161.348

Requester Mannvit hf, Eythor

Lab nr. 2023001171

Test ID 7430, 7431, 7432, 7433, 7434 og 7435

Sample date 08.03.2023 Receipt date 10.03.2023 Analysis date 17.03.2023

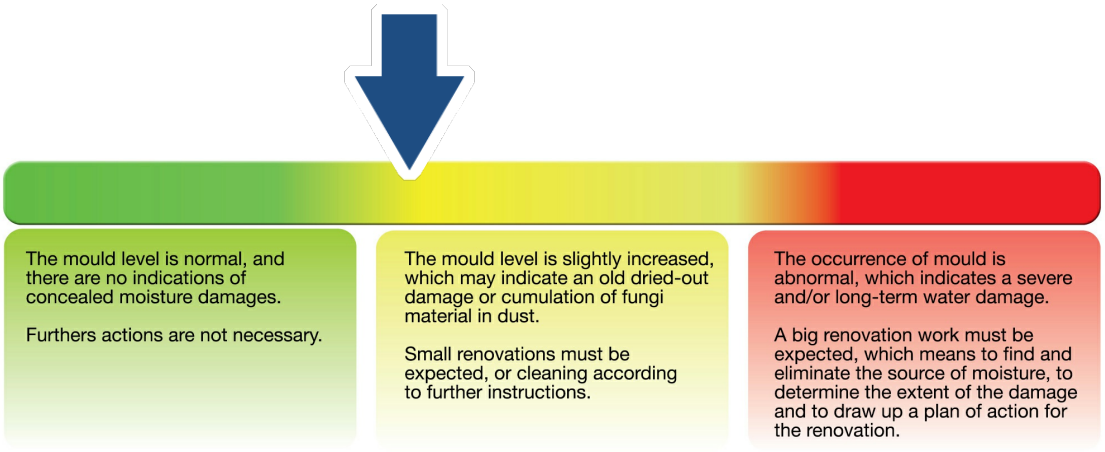
DNA tests may reveal whether there are microorganisms (mould) in dust originating from moisture damaged building materials or concealed water damages. Microbiologic material from concealed constructions may over time be released to the residential zone, where it will sediment with the dust. The result of the DNA analysis is an indication of the extent of which the room is affected by microbiologic material.

CONCLUSION

Based on the analysis results for the test made from stofa 200, Garðaskóle, our evaluation is that the rate of mould in the building is somehow above the normal, expected level for dry, clean and undamaged buildings. The presence of *Aspergillus* and *Penicillium* often observed in buildings with moisture and water damages is far above normal level. There is an increased level of *Aspergillus fumigatus* in the test.

As a whole our evaluation is that the zone is affected by atypical levels of microbiologic material.

However, we would like to point out that the evaluation is merely based on the analysis results. As the results only form part of our evaluation basis, these results should always be compared to observations and moisture measurings on site, before drawing a final conclusion. We therefore recommend further testing in order to identify extent and cause of the observed occurrence of mould and moisture problems in the inspected areas.



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7430 Garðaskóle
stofa 200, 069

RESULT

Mængden af organismer pr. cm²

Total antal skimmelsvamp	13045	100,00%
Wallemia sebi	0	0,00%
Cladosporium cladosporioides	94	0,72%
Cladosporium herbarum	197	1,51%
Cladosporium sphaerospermum	107	0,82%
Mucor/Rhizopus grp.	0	0,00%
Rhizopus stolonifer	0	0,00%
Acremonium strictum	0	0,00%
Aspergillus og Penicillium arter	3230	24,76%
Aspergillus fumigatus	24	0,18%
Penicillium chrysogenum	0	0,00%
Tricoderma viride	0	0,00%
Aspergillus glaucus	0	0,00%
Aspergillus niger	0	0,00%
Aspergillus versicolor	442	3,39%
Alternaria alternata	62	0,47%
Ulocladium chartarum	0	0,00%
Stachybotrys chartarum	0	0,00%
Chaetomium globosum	0	0,00%
Streptomyces	0	0,00%

The evaluation is based on the assumption that the test has been made correctly according to OBH's guide lines.

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CONCLUSION

Based on the analysis results for the test made from Bókageymsla, Garðaskóle, our evaluation is that the rate of mould in the building is somehow above the normal, expected level for dry, clean and undamaged buildings. When looking at the composition of mould species there is no sign of a severe or long-lasting moisture damage. However, there is an increased level of *Penicillium* and *Aspergillus*, which may originate from a small moisture damage with low moisture levels, as e.g. condensation on a thermal bridge.

We recommend to dry off horizontal surfaces and to vacuum with a HEPA filter.

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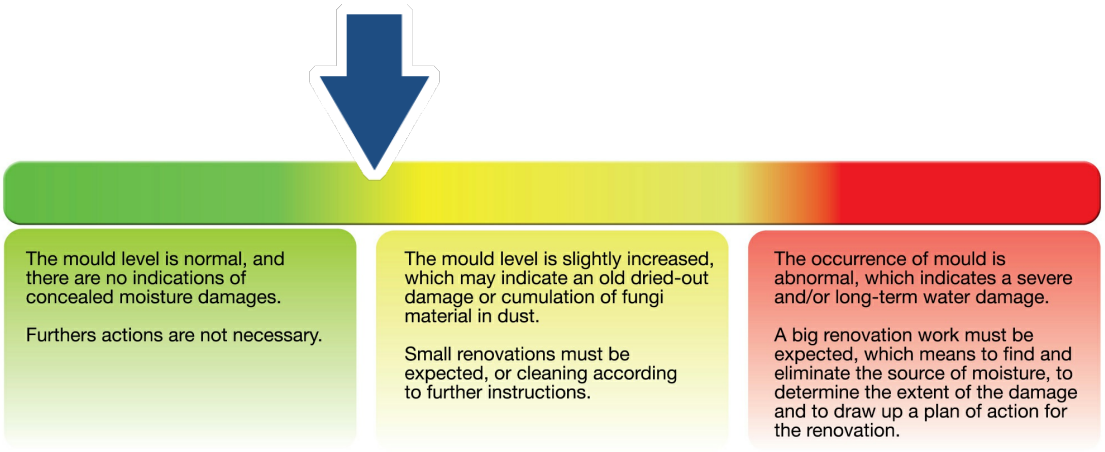

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7431 Garðaskóle
Bókageymsla, 067

RESULT

Mængden af organismer pr. cm²

Total antal skimmelsvamp	4432	100,00%
Wallemia sebi	0	0,00%
Cladosporium cladosporioides	134	3,03%
Cladosporium herbarum	75	1,69%
Cladosporium sphaerospermum	16	0,36%
Mucor/Rhizopus grp.	0	0,00%
Rhizopus stolonifer	0	0,00%
Acremonium strictum	0	0,00%
Aspergillus og Penicillium arter	778	17,55%
Aspergillus fumigatus	0	0,00%
Penicillium chrysogenum	0	0,00%
Tricoderma viride	0	0,00%
Aspergillus glaucus	15	0,33%
Aspergillus niger	0	0,00%
Aspergillus versicolor	61	1,38%
Alternaria alternata	0	0,00%
Ulocladium chartarum	0	0,00%
Stachybotrys chartarum	0	0,00%
Chaetomium globosum	1	0,02%
Streptomyces	34	0,76%

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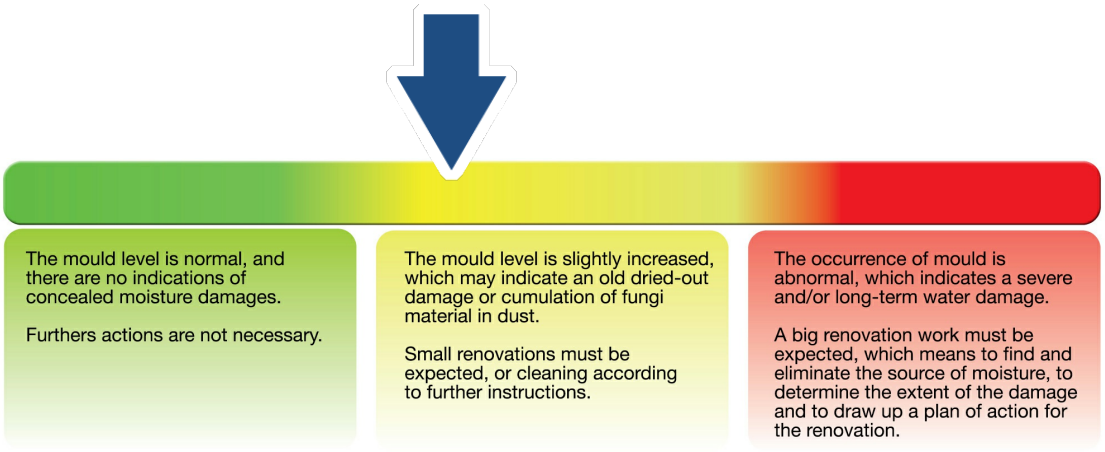
CONCLUSION

Based on the analysis results for the test made from Bókageymsla/af bókarkile, Garðaskóle, our evaluation is that the rate of mould in the building is somehow above the normal, expected level for dry, clean and undamaged buildings. The presence of *Aspergillus* and *Penicillium* often observed in buildings with moisture and water damages is far above normal level. There is an increased level of *Aspergillus versicolor* in the test.

As a whole our evaluation is that the zone is affected by atypical levels of microbiologic material.

However, we would like to point out that the evaluation is merely based on the analysis results. As the results only form part of our evaluation basis, these results should always be compared to observations and moisture measurings on site, before drawing a final conclusion. We therefore recommend further testing in order to identify extent and cause of the observed occurrence of mould and moisture problems in the inspected areas.



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7432 Garðaskóle
Bókageymsla/af bókarkile, 101

RESULT

Mængden af organismer pr. cm²

Total antal skimmelsvamp	2694	100,00%
Wallemia sebi	0	0,00%
Cladosporium cladosporioides	63	2,35%
Cladosporium herbarum	61	2,27%
Cladosporium sphaerospermum	24	0,88%
Mucor/Rhizopus grp.	0	0,00%
Rhizopus stolonifer	0	0,00%
Acremonium strictum	0	0,00%
Aspergillus og Penicillium arter	301	11,19%
Aspergillus fumigatus	0	0,00%
Penicillium chrysogenum	0	0,00%
Tricoderma viride	0	0,00%
Aspergillus glaucus	18	0,67%
Aspergillus niger	0	0,00%
Aspergillus versicolor	143	5,30%
Alternaria alternata	0	0,00%
Ulocladium chartarum	17	0,64%
Stachybotrys chartarum	0	0,00%
Chaetomium globosum	0	0,00%
Streptomyces	0	0,00%

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CONCLUSION

Based on the analysis results for the test made in stofa 202, af lista af vegg, Garðaskóle, our evaluation is that the rate of mould in the building is at a normal, expected level for dry, clean and undamaged buildings. No occurrence of mould indicates that the indoor environment should not be affected by concealed water damages.

However, we would like to point out that the evaluation is merely based on the analysis results. As the results only form part of our evaluation basis, these results should always be compared to observations and moisture measurings on site, before drawing a final conclusion.

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7433 Garðaskóle
stofa 202, af lista af vegg, 101

RESULT

Mængden af organismer pr. cm²

Total antal skimmelsvamp	11688	100,00%
Wallemia sebi	0	0,00%
Cladosporium cladosporioides	74	0,63%
Cladosporium herbarum	238	2,03%
Cladosporium sphaerospermum	72	0,62%
Mucor/Rhizopus grp.	0	0,00%
Rhizopus stolonifer	0	0,00%
Acremonium strictum	0	0,00%
Aspergillus og Penicillium arter	0	0,00%
Aspergillus fumigatus	0	0,00%
Penicillium chrysogenum	0	0,00%
Tricoderma viride	0	0,00%
Aspergillus glaucus	0	0,00%
Aspergillus niger	0	0,00%
Aspergillus versicolor	0	0,00%
Alternaria alternata	0	0,00%
Ulocladium chartarum	0	0,00%
Stachybotrys chartarum	0	0,00%
Chaetomium globosum	0	0,00%
Streptomyces	0	0,00%

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CONCLUSION

Based on the analysis results for the test made from myndlist 108. ofan af lista, Garðaskóle, our evaluation is that the rate of mould in the building is somehow above the normal, expected level for dry, clean and undamaged buildings. However, there is an increased level of *Tricoderma viride and Stachybotrys chartarum*

We recommend to dry off horizontal surfaces and to vacuum with a HEPA filter.

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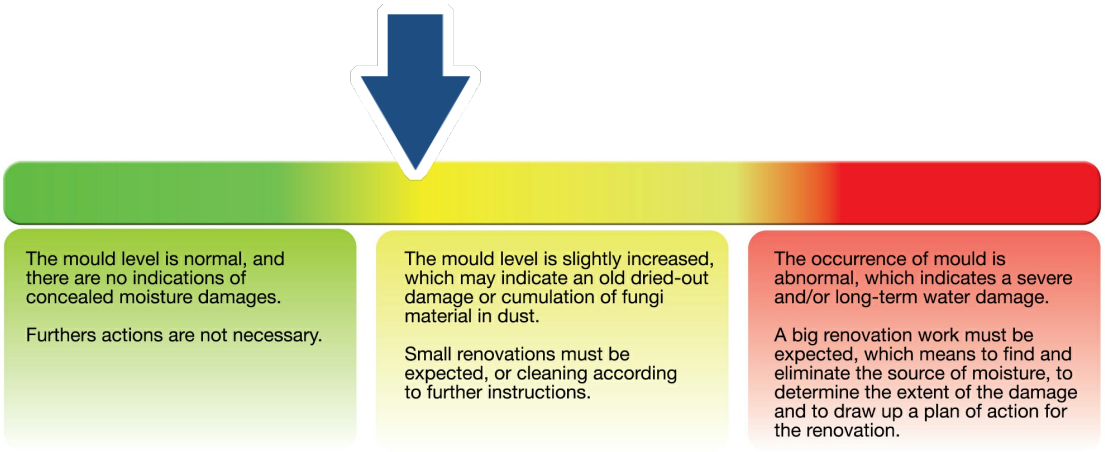

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7434 Garðaskóle
myndlist 108. ofan af lista, 066

RESULT

Mængden af organismer pr. cm²

Total antal skimmelsvamp	278596	100,00%
Wallemia sebi	0	0,00%
Cladosporium cladosporioides	0	0,00%
Cladosporium herbarum	51	0,02%
Cladosporium sphaerospermum	0	0,00%
Mucor/Rhizopus grp.	0	0,00%
Rhizopus stolonifer	0	0,00%
Acremonium strictum	0	0,00%
Aspergillus og Penicillium arter	12903	4,63%
Aspergillus fumigatus	29	0,01%
Penicillium chrysogenum	0	0,00%
Tricoderma viride	220	0,08%
Aspergillus glaucus	256	0,09%
Aspergillus niger	0	0,00%
Aspergillus versicolor	1332	0,48%
Alternaria alternata	0	0,00%
Ulocladium chartarum	0	0,00%
Stachybotrys chartarum	24	0,01%
Chaetomium globosum	0	0,00%
Streptomyces	0	0,00%

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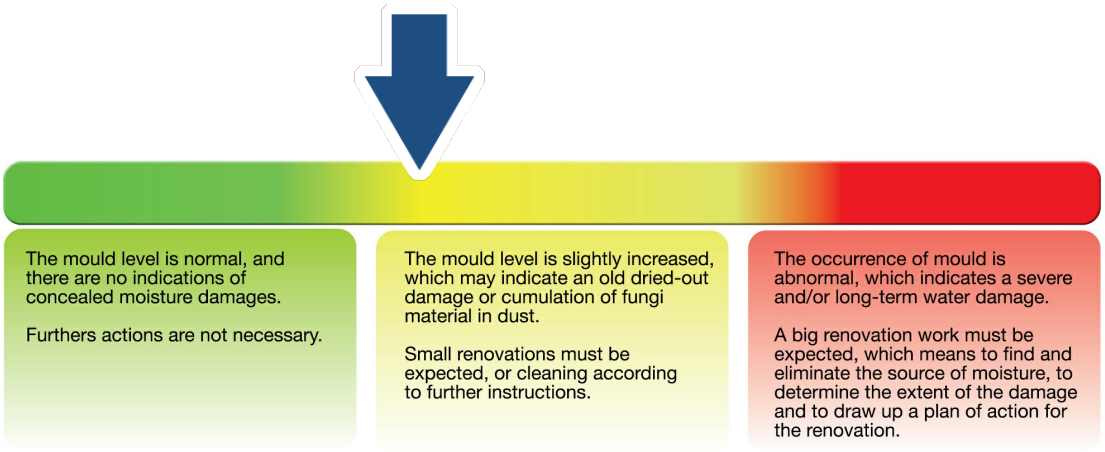
CONCLUSION

Based on the analysis results for the test made from texstíl stofa 106, Garðaskóle, our evaluation is that the rate of mould in the building is somehow above the normal, expected level for dry, clean and undamaged buildings. The presence of *Aspergillus* and *Penicillium* often observed in buildings with moisture and water damages is far above normal level. There is an increased level of *Tricoderma viride* in the test.

As a whole our evaluation is that the zone is affected by atypical levels of microbiologic material.

However, we would like to point out that the evaluation is merely based on the analysis results. As the results only form part of our evaluation basis, these results should always be compared to observations and moisture measurings on site, before drawing a final conclusion. We therefore recommend further testing in order to identify extent and cause of the observed occurrence of mould and moisture problems in the inspected areas.



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7435 Garðaskóle
texstíl stofa 106, 093

RESULT

Mængden af organismer pr. cm²

Total antal skimmelsvamp	17106	100,00%
Wallemia sebi	0	0,00%
Cladosporium cladosporioides	230	1,35%
Cladosporium herbarum	51	0,30%
Cladosporium sphaerospermum	79	0,46%
Mucor/Rhizopus grp.	0	0,00%
Rhizopus stolonifer	0	0,00%
Acremonium strictum	0	0,00%
Aspergillus og Penicillium arter	1899	11,10%
Aspergillus fumigatus	27	0,16%
Penicillium chrysogenum	3	0,02%
Tricoderma viride	232	1,35%
Aspergillus glaucus	0	0,00%
Aspergillus niger	0	0,00%
Aspergillus versicolor	0	0,00%
Alternaria alternata	42	0,24%
Ulocladium chartarum	0	0,00%
Stachybotrys chartarum	0	0,00%
Chaetomium globosum	0	0,00%
Streptomyces	0	0,00%

The evaluation is based on the assumption that the test has been made correctly according to OBH's guide lines.

Contact the undersigned regarding questions to the report

Med venlig hilsen

Tina Eckardt

Tina Eckardt
Laborant
OBH Rådgivende Ingeniører
Environment and Health

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ANALYSIS METHOD

The analysis was developed by EPA, USA's Environmental Protection Agency (pat 6 387 652). The organisms are washed out of the test, and the DNA is extracted. Accordingly, the DNA is amplified in a sequential PCR process, until the light from an attached fluorescence molecule can be seen in the detector. The number of sequences are calculated and compared to a synthetic standard DNA, after which the number of original DNA sequences are calculated. As the DNA is unique for any organism the species and quantity of specific organisms can be determined. By this precise method you will rapidly be informed how much mould, respective indicator organisms which the test contains per square unit.

ANALYSIS EXPLANATION

The above evaluation applies for the test made, and not for the building as such. The analysis response should always be included as part of a total evaluation of the conditions on site together with other observations and measurings. The responsibility for correct testing always lies with the tester. Evaluations and good advice given here or in connection with interpretation of these results apply for the normal cases and are based on the assumption that the test is representative and made according to OBH's guide lines.

TAKING A DUST TEST

The purpose of the test is to evaluate whether in the indoor air there are microorganisms to indicate moisture damaged building parts. Mould releases particles, spores, cells, and other fungus components containing DNA, to the air. These microparticles float in the air and are sedimented with dust in the living area. Collecting dust is thus an expression of whether the air of the room has been effected by particles from mould over an extended period of time.

INDICATION OF QUANTITY

The DNA analysis distinguishes between 20 groups/species.

The test result states the number of DNA sequences for respective species and groups per cm².

Any colour markup states the level of each species or group, deviating according to the levels of dry, clean and undamaged buildings.

Yellow	Above normal
Orange	Far above normal
Red	Very far above normal

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HEALTH

Mould in our indoor environment may affect our health, most commonly with respiratory irritation. Further symptoms are irritation of eyes, nose and upper respiratory tract, headache, fatigue, coughing, and rashing. These symptoms will be more severe for persons with hay fever and asthma. Asthmatic symptoms may occur in connection with a long-term stay in an indoor environment with massive mould problems. The DNA result does not reveal anything about the health risk of residing in the building.

THE HEALTH DAMAGING EFFECT

In order to evaluate the health risk of residing in a building, a construction technical and healthcare evaluation must be made. According to the Danish National Board of Health the health risk is among others characterized by the unhealthy circumstances as well as the moisture and mould conditioned health problems of the residents/users.

READ MORE

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