

West Coast District Health Board

Te Poari Hauora a Rohe o Tai Poutini

Corporate Office High Street, Greymouth 7840 Telephone 03 769-7400 Fax 03 769-7791

6 June 2018



RE Official Information Act request WCDHB 9126

We refer to your email dated 23 April 2018 requesting the following information under the Official Information Act from West Coast DHB.

- Any reports, reviews or briefings pertaining to any repair or remedial work required to be undertaken by the West Coast DHB, focusing on weather tightness issues in buildings managed by the Health Board.
- From beginning of 2013 to present: Independent assessments and recommendations, risk registers, legal opinions, on weather-tightness issues pertaining to buildings managed by the Health Board.
- Information on when any affected structure was built.
- Estimated costs for any remedial or repair work to be undertaken to resolve weather-tightness issues, pertaining to buildings managed by the Health Board.

West Coast DHB recently became aware of a water ingress/humidity issue affecting parts of Greymouth Hospital. Mould was evident and samples from the following areas were sent for testing:

- IT Software office:
- Staff member's office; and
- Hardware office.

We attach as **Appendix 1** a Mould Remediation Plan from TechClean & Restoration received on 10 May 2018. The black mould in the staff member's office has since been removed in accordance with the remediation plan. Air samples are currently being analysed and next steps will depend on the air sampling results.

West Coast DHB has also recently had mould samples tested from parts of Haast Clinic, Haast. We attach as **Appendix 2** the report from Chemsafety dated 15 May 2018. The report indicates there is no "black mould" present in the building, however the six samples from waiting rooms, store room and toilet returned positive results for other types of mould. While there is no immediate health risk from toxic black mould, the other moulds are allergenic and may cause a reaction in sensitive people.

We are not otherwise aware of any issues in design or construction that that would render any DHB building a "leaky building". West Coast DHB does, however, have a number of old buildings that have issues in the nature of maintenance. These issues can be exacerbated by climatic conditions on the

West Coast that can lead to greater humidity within buildings. Water ingress and any resulting mould issues are addressed as part of a business as usual maintenance programme.

Other than that provided, West Coast DHB does not hold information pertaining to repair or remedial work required to be undertaken relating to weather tightness/leaky building issues.

We trust that this satisfies your interest in this matter.

Please note that this response, or an edited version of this response, may be published on the West Coast DHB website.

Yours sincerely

Carolyn Gullery Executive Director Planning, Funding & Decision Support



Mould Remediation Plan For

Greymouth Hospital

This control plan is subject to review at such time as changes occur to any future legislation and /or industry standard.

Next review date: 31/10/18

Endorsed by:______D Austen______

Mould Remediation Plan Page 1 of 8 Dale Austen – 0211 130 300 – <u>dale@techclean.co.nz</u>Christchurch Head Office – 2a Barbour Street





Mould remediation control plan for

This document supersedes all previous issued management and removal plans for this workplace				kplace
Site Address		Greymouth Hospital		
Client Name		Canterbury District Health Board		
		Evgeny Zakharov – Programme Manager – Health and Safety		
		021548356		
Site Contact Person		Evgeny		
Site Contact E-Mail		Evgeny.zakharov@cdhb.health.nz		
Commissioned	C	ale Austen	Tech Clean Staff Trained in Mould Remediation?	Yes
Authors	Dale Austen		Tech Clean staff receive training in PPE/RPE Use?	Yes
Revision	Dale Austen		Tech Clean staff received information regarding health risks with mould remediation and receive health monitoring?	Yes
Endorsed	Dale Austen			

 Mould Remediation Plan
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 Dale Austen – 0211 130 300 – dale@techclean.co.nz_Christchurch Head Office – 2a Barbour Street





Background

Tape samples collected from Greymouth Hospital staff and send to Chemsafety for mould analysis:

Sample Details	Microscopic Features
3 May 2018	Stachybotrys was NOT detected.
#35846/1	Web level of Ole descentions and a set 1 of
	High level of <i>Cladosporium</i> and a moderate
Sample type & location	level of Penicillium/Aspergillus type spores
Adhesive tape sample	present
Pipes in IT software office	Conclusion
-	The mould is likely superficial growth in
Appearance	response to a raised relative humidity
Black discolouration on tape	
3 May 2018	Stachybotrys WAS detected in moderate to
#35846/2	abundant levels. Active growth likely.
Sample type & location	Occasional Chaetomium and Alternation spores
Adhesive tane sample	also present
Autometape sumple	also present.
Line managers office – carpet backing	Conclusion
	Likely well established growth of Stachybotrys
Appearance	Energy went established growth of ordenyboligo
Black discolouration was noted on the tape	
4 September 2017	Stachybotrys was NOT detected.
#35846/3	
	High levels of amorphous particulates with no
Sample type & location	obvious microbial elements observed
Adhesive tape sample	
	Conclusion
Hardware office – concrete and rubber	No evidence of active fungal growth
compound	
Appearance	
Large black particulates adhering to tape	

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Proposed Remediation Personnel

Certified Supervisor (s)	Dale Austen – IICRC Applied Microbial 169696
Mould Remediation Crew	Edwin Pope, Steve Broughton
Specialist Operations	Dale Austen
Auditing / QA / Health and Safety	Tom Jeffrey
Overall Site Controller	Tech Clean Ltd
Spore Trap Sampling Analysis	Air samples to be sent to Biodet Services for analysis

Proposed Removal dates

The contractor proposes to commence remediating the mould decontamination 9th / 10th May 2018

Isolation of work area

All work areas to be isolated by signage as per the Health and Safety in Employment Regulations 2015

In addition to this barrier tape will be deployed to cordon off a work area.

No non mould remediation personal will be allowed to cross the barrier.

Upon entry to site any non-mould remediation personal will be appraised of the work being done and the isolation in place

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Remediation Sequence

Arrive on site, carry out toolbox and safety talk meetings. Set up barriers, signage, containment and decontamination chambers

Removal works involves labour only. Remediation will be done by lining out work faces separating this from the rest of no contaminated areas. Linings will be done with 250micron polythene sheeting. A negative air unit will be set up in S09 IT office extracting air to the exterior using certified units. Once rooms/work areas isolated then remediation will happen as indicated below. No persons will be allowed access to this area without induction training and suitable PPE.

Plant and Equipment Proposed

Plant and Equipment

- Electric leads tested and tagged current
- Negative air units with certified HEPA filters.
- HEPA vacuums
- Cardboard Boxes
- Polythene sheeting
- Danger / hazard signage / labels for packaging
- Decontamination chambers
- Carpet and upholstery cleaning equipment
- Anti microbial solution
- Step ladders
- Air compressors
- Generators
- Other products as required for dust suppression

Personal Protective Equipment

- P3 half or full face HEPA respiratory protective devices (RPD's)
- Disposable full body coveralls (3 suits per day per staff)
- Construction Hard Hats
- Steel capped work boots or gumboots
- Hearing Protection
- Eye Protection/googles
- Disposable gloves
- Disposable booties
- Certified Ladders/scaffold

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Emergency evacuation

- 1. Emergency meeting point front carpark
- 2. When all clear proceed back to decontamination unit and decontaminate

Method for Removal -

- 1st Step set up containment
- 2nd Step Removal of affected wall linings, flooring
- 3rd Step HEPA vacuum and clean all surfaces and cavities
- 4th Step Swirl up remaining spores by using pressured air
- 5th Step HEPA vacuum and clean all surfaces and cavities
- 6th Step Anti microbial wash down of all surfaces and cavities
 - 1 Site induction/safety meeting
 - 2 Set up barriers, containment, signage
 - 3. During the remediation **process**, all **persons shall wear P3 HEPA filter RPD's and disposable** coveralls during mould remediation in accordance with procedures as documented below.
 - 4. A decontamination room will be set up adjacent work area using a disposable speed dock decontamination unit. This area will be set up to receive bagged and sealed from isolated rooms. This area will also be where the staff will remove overalls
 - 5. The work area will have a cover of approved 250micron plastic over floor and additional lower micron clear polythene plastic covering all walls and doors to prevent any airbourne mould spores from travelling.
 - 6. Mould remediation as per the steps above
 - 7. Removal of polythene, removal of all equipment, containments, rubbish sealed for disposal off site at a registered landfill.
 - 8. Vacuuming using a certified HEPA vacuum cleaners will be used and everything washed down with anti microbial solution. The negative air units will be utilised continuously throughout the remediation. The primary filters will be checked, cleaned or changed daily.

Decontamination Procedures

All personnel, plant and equipment utilised in the remediation of mould must be effectively cleaned to ensure that all spores are removed and no possibility of cross contamination into clean areas occurs.

The contractor proposes dry decontamination procedures for all personnel, with personnel wet wiping and if necessary vacuuming their coveralls, gloves, helmets and RPDS with a HEPA vacuum prior to removing all protective clothing and equipment and disposing of them in a 200µ plastic bag. All disposable clothing is to be marked and bagged as contaminated waste. Breathing apparatus are to be wiped with clean iso wipes before exiting the decontamination room. Iso wipes are to be disposed of as contaminated waste.

For all plant and equipment, these will be washed/wiped down prior to removing off site.







& RESTORATION Airborne Mould Spore Suppression

The negative air units will be utilised during and after the remediation process.

Other dust suppression agents may be used as required.

Contingency Plan for the Discovery of Additional Mould

In the event that further contaminated materials be discovered during the removal operations (i.e. such as other unknown areas etc.), the following procedures will be implemented:

TECHCLEAN

- 1. Site management will conduct a visual inspection of the materials, recording the following aspects;
 - Location of materials clearly mark on available site plans where possible
 - Type of material
 - Condition of material damage etc.
 - Potential Risk possible mechanical damage from operations, water damage etc., and exposure levels to personnel etc.
- 2. Arrange with the Client or their representative for appropriate sampling of the material will be taken and recorded that is representative of the perceived extent of materials.
- 3. This information will be conveyed to contract management immediately.
- A preliminary assessment of the exposure risk to personnel based on information will be done to determine the most appropriate course of temporary actions / controls to E/I/M/P the hazard to personnel until testing results are available.
- 5. If results are positive for the presence of mould, contract management will develop a method and if necessary particular safety plans for the safe and effective removal of the materials identified.
- 6. Contract management or the Client authorises necessary actions based on information provided.

Proposed Landfill

The contractor proposes to use a transpacific offsite bin for disposal. This company holds the necessary consents and permits to accept such material.

Background / Air Monitoring/ Spore Trapping

Tech clean will use an Bioaerosol Sampling pump and gather air samples from 4x locations:

S09, S15, S10 and outdoor sample for control comparison.

All samples will be sent to Biodet Services Auckland for analysis.

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Initial Findings

S09 IT Office



- Removal of contaminated flooring and wall lining
- HEPA vacuum and sanitize full room of contents/structure

S15 Technicians Workshop



- Removal of contaminated flooring and wall lining
- HEPA vacuum and sanitize full room of contents/structure

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Mould ID Report Haast Clinic

West Coast District Health Board

Prepared by

Reviewed by

Sample

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Report Date 15 May 2018

Reference 66108 Report 1 version 1

Important Information:

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Introduction

Chemsafety was requested by the West Coast District Health Board, WCDHB to provide analysis of suspected mould samples taken from the Haast Clinic, Haast. The samples were collected by the WCDHB and were sent away by Chemsafety for analysis as received.

Report Limitations

This report has been prepared based on analytical techniques described reported in Table 1. The site conditions as described in this report have been interpreted from, and are subject to, this information and its limitations and accordingly Chemsafety does not represent that its interpretation accurately represents the full site conditions.

This report is intended to provide a general understanding of the types of mould and its location in the rooms assessed in order to assist with further information gathering and the beginnings of a remediation strategy. This report does not include exhaustive safety procedures for staff carrying out remediation works. Procedures should be in place prior to this work.

The information contained in this report applies to the time at which the inspections were carried out. With time, the site conditions could change, so that the reported assessment may be no longer valid. Thus, in the future, the report should not be used without confirming the validity of the reports information at that time.

All work is undertaken subject to our General Terms and Conditions of Trade. The report has been prepared by Chemsafety for the purpose described in the report. Chemsafety accepts no liability to any other person if the report is used for any other purpose. Any such use or reliance will be solely at their own risk. The presence or absence of other chemicals or hazards at the site is not considered in this report.

Analysis Results

Sample Details	Microscopic Features
4 May 2018	Stachybotrys was NOT detected.
#35882/1	
Sample type & location	Hign level of <i>Cladosporium</i> spores present.
Adhesive tane sample	Conclusion
Autesive tape sample	<u>Conclusion</u> The mould is likely superficial growth in
4A.Corner waiting room, near skirting board	response to a raised relative humidity.
Appearance	
Grey/Black discolouration on tape	
4 May 2018	Stachybotrys was NOT detected.
#35882/2	
Sample type & location	Discrete areas of high-level <i>Cladosporium</i> like
Adhesive tape sample	growth.
Acresive tape sample	Conclusion
4B. Corner waiting room wall	<u>Conclusion</u>
	I ne mould is likely superficial growth in
Appearance	response to a raised relative numidity.
Black spotted discolouration was noted on	
the tape.	
4 May 2018	Stachybotrys was NOT detected.
#35882/3	Discrete cross of moderate level Cladesperium
Sample type & location	like growth and another up identified fungue
Adhesive tape sample	like growin and another un-identified lungus.
	Conclusion
5. Storeroom, lower north wall	The mould is likely superficial growth in
A	response to a raised relative humidity.
Appearance	
Large black particulates adhering to tape.	Stephyloty a was NOT data stad
4 May 2018 #25992/4	Stachydotrys was NUT detected.
#30002/4	An occasional area of high level Wallemia
Sample type & location	Occasional Penicillium/Asperaillus spores
Adhesive tape sample	Cladosporium and miscellaneous spores
1. Under cushions on bench seat in waiting	Conclusion
room	The mould is likely superficial growth in
Appearance	response to a raised relative humidity.
Particulates adhering to tape	

Table 1 – Mould Analysis Results – Haast Clinic

4 May 2018	Stachybotrys was NOT detected.
#35882/5	
Sample type & location Adhesive tape sample	Dense particulate's with an unidentified dematiaceous fungus actively growing within the particles.
2.Staff and Patient toilet	Conclusion
Appearance Faint greyish discolouration on tape.	Likely active growth in response to a damp environment.
4 May 2018	Stachybotrys was NOT detected.
#35882/6	
Sample type & location Adhesive tape sample	Discrete areas of moderate-level <i>Cladosporium</i> like growth and another un-identified fungus.
	Conclusion
3. Store room , north wall	The mould is likely superficial growth in
Appearance	response to a raised relative humidity.
Grevish discolouration noted on tape.	

Mould Types

Deteriogenic – Species that can cause decay and rot in cellulose rich materials such as timber, wallpaper, plaster board, and cotton.

Allergenic – Species which can cause allergic-type reactions with hay fever-type symptoms in sensitive people.

Pathogenic – Species which can cause disease and infection in people.

Discussion & Recommendations

Chaetomum: This fungus produces black fruiting bodies that superficially resemble *Stachybotrys*. It produces strong cellulose enzymes which can breakdown cellulosic material such as wallpaper and GIB paper lining very rapidly (deteriogenic). It can also cause soft rots of timber and decay of carpet backing under damp conditions. It is often associated with musty odours and has the potential to produce allergenic responses in some people and skin / nail infection in immunocompromised people.

Aspergillus and Penicillium species are common environmental isolates and are often found on damp building materials. These fungi may contribute to high spore levels in the air resulting in allergenic reactions in sensitive people.

Cladosporium is a mould that is common in the environment. Outdoors, it can be found on plants and other organic matter. Indoors, *Cladosporium* is common in the air and on surfaces such as wallpaper or carpet, particularly where moisture is present. Cladosporium is an **allergenic** fungus. *Cladosporium* species are common air-borne contaminants particularly in outdoor air. They are typically found on timber surfaces and will also grow superficially on indoor surfaces that have a moisture level between 15 and 20%, often in response to slightly elevated moisture levels such as condensation. The main effect of the fungus is disfigurement. Although not generally considered toxic, they do have the ability to sporulate heavily and have buoyant and easily dispersed spores which makes this an important fungal airway allergen.

The *Dematiaceous* fungal group are fungi that produce dark fungal spores and/or dark hyphal structures. Many of these fungi are difficult to accurately identify from a microscopic examination alone, but their presence must be considered significant, as they are frequently isolated from water damaged building materials. Many of these fungal types are known to cause deterioration of paper and paper products, plastics, textiles, timber etc.

Exposure to *Wallemia* is suspected to cause allergic sensitization.

It is important that repair of the defects that caused the water damage is attended to before any remediation work begins to prevent further contamination and degradation of material.

The presence of fungi always indicates that moisture is or has been present. The types and amounts of fungi identified indicate that there has been a prolonged water problem. It is important to eliminate the source of the moisture and improve the ventilation to prevent further mould growth.

An investigation is required to identify the source of the mould growth. This may involve inspection of wall cavities, ceiling spaces and the exterior cladding. It is recommended that spore trapping is conducted to discover the extent of contamination. Spore traps capture spores, dust, pollen and bacteria from the air for counting and identification. This method does not involve culturing (growing) the sample and thus can identify fungi species and pollen/dust, as well as non viable fungi spores in the environment. Non viable fungi spores can still cause a health issue in susceptible people.

Different responses are required depending on the type of material affected. Hard impermeable materials need to be treated differently to porous, absorbent materials.

The goal of remediation is to remove or clean contaminated materials in a way that prevents fungi and dust contaminated with fungi from entering non-infected areas, while protecting the health of workers performing the remediation.

Note: This is particularly important given that the elderly and sick are present in the building. It may be prudent to consider a professional mould remediation company to undertake this work.

Typically, absorbent materials such as carpets, furnishings, plaster board etc must be removed and disposed of. Impermeable materials such as metal and glass can be decontaminated and re-used. Decontamination of impermeable material involves washing with warm soapy water and thoroughly drying the material before re-installation. The use of bleach is discouraged as it can cause strong odour by reacting with the fungi.

For larger areas remediation must involve the total removal of affected material. This is best carried out by a trained operator, with the contaminated material being removed in sealed plastic bags.

Any contact with the fungi should be carried out by wearing a half face mask with organic vapour cartridges and P2 pre-filters, protective gloves and overalls.

Remediation of plasterboard and timber

A more in-depth assessment of the extent of affected plasterboard and ceiling timber will be required during scoping of the work. Any plaster wall linings where mould is apparent should be removed and replaced.

All building timbers that are significantly affected by soft-rot fungi should be replaced with treated pine, as the strength of these decayed timbers may be compromised. Where timber has mould growth but does not have soft rot damage it is preferable to replace the

timber to control the growth of fungi; however there is the possibility of cleaning and treating the effected timbers. If the timber is left untreated the fungi will cease to grow once the source of moisture is eliminated but dormant growth could restart if rewetting occurs.

Remediation of carpets

All water damaged carpets (and other soft furnishings) showing signs of mould growth should be removed and replaced.

Laboratory Analysis

Biodet Services Ltd

100 X 313 Kilylust Over Fasel PO Box 99071 resonance Schwart 1710 Phone 10-824-8111 E-mail: Longe Browning for water house our

11 May 2018

Biodet Ref: 18/35882 Client Ref: 66108

Chemsafety Ltd PO Box 8141 CHRISTCHURCH 8440

Attn: Tony Bird

Dear Tony

Re: EXAMINATION OF SELLOTAPE® SWAB SAMPLES

Building/Ref:	Haast Clinic, 1962 Jacksons Bay Road, Haast
Samples taken:	4 May 2018
Samples received:	8 May 2018
Samples analysed:	9 May 2018

Laboratory Number	Client Reference	Sample Type	Location
35882/1	91616	Sellotape® swab	4A. Corner Waiting Room, near skirting board
35882/2	91617	Sellotape® swab	4B. Corner Waiting Room, wall
35882/3	91618	Sellotape® swab	5. Store Room, lower north wall
35882/4	91613	Sellotape® swab	1. Under cushions on bench seat in Waiting Room
35882/5	91614	Sellotape® swab	2. Staff and patient toilet
35882/6	91615	Sellotape® swab	3. Store room, north wall

MACROSCOPIC AND MICROSCOPIC EXAMINATION

The samples were examined both macroscopically and microscopically.



Lonsuming industries' Monthologies

Sample ID	Macroscopic features	Microscopic features and comments
35882/1 (91616)	Sample: Sellotape® swab Appearance: Grey/ black discolouration noted on the tape.	Stachybotrys was not detected. Areas of high-level Cladosporium-like growth. Occasional insect parts. Conclusion: Likely superficial fungal growth in response to a raised relative humidity.
35882/2 (91617)	Sample: Sellotape® swab Appearance: Black spotted discolouration noted on the tape.	Stachybotrys was not detected. Discrete areas of high-level Cladosporium-like growth. Conclusion: Likely superficial fungal growth in response to a raised relative humidity.
35882/3 (91618)	Sample: Sellotape® swab .Appearance: Black spotted discolouration noted on the tape.	Stachybotrys was not detected. Discrete areas of moderate-level Cladosporium-like growth and another unidentified fungus. Conclusion: Likely superficial fungal growth in response to a raised relative humidity.
35882/4 (91613)	Sample: Sellotape® swab .Appearance: Particulates adhering to the tape.	Stachybotrys was not detected. An occasional area of high-level Wallemia. Occasional Penicillium/Aspergillus spores, Cladosporium and other miscellaneous fungal spores also noted. Conclusion: Likely superficial fungal growth in response to a raised relative humidity.
35882/5 (91614)	Sample: Sellotape® swab Appearance: Faint greyish discolouration noted on the tape.	Stachybotrys was not detected. Dense particulates with an unidentified dematiaceous fungus actively growing within the particles. Mites present. Conclusion: Likely active fungal growth in response to a damp environment.

Teport 3,5582

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Consulting Industrial Microbiologists

Sample ID	Macroscopic features	Microscopic features and comments
	Sample: Sellotape® swab	Stachybotrys was not detected.
35882/6 (91615)	Appearance: Greyish discolouration noted on the tape.	Discrete areas of moderate-level <i>Cladosporium</i> -like growth.
		<i>Conclusion</i> : Likely superficial fungal growth in response to a raised relative humidity.

Note: Active fungal growth can be determined by the presence of distinct fungal hyphae and structures that readily take up stain.

DISCUSSION

The presence of fungi always indicates that moisture is or has been present. It is likely that there has been an increase in relative humidity resulting in areas of superficial fungal growth. It was not clear from the samples whether there were any moisture ingress issues but if there are, it is important that repair of any defects that have led to water damage are attended to promptly. Moisture ingress issues can result in sustained increase in relative humidity that result in the growth of superficial fungi on indoor surfaces.

Stachybotrys was not detected suggesting that there was likely insufficient moisture present for the growth of this fungus on the surfaces sampled, but there may be sufficient moisture within wall/ceiling cavities to allow the growth of this fungus. This must be considered and investigated.

Cladosporium species are common air-borne contaminants particularly in outdoor air. They are commonly found on outdoor claddings, particularly timber and will also grow superficially on indoor surfaces that have a moisture level between 15 and 20%, often in response to slightly elevated moisture levels such as condensation. The main effect of the fungus is disfigurement of the surface that the fungus is growing on. Mycotoxin production is generally not associated with this species but the ability to sporulate heavily and have buoyant easily dispersed spores makes this an important fungal airway allergen.

Wallemia species are commonly found in house dust and contaminated building materials. These are considered a xerophilic fungus (able to grow in very low-level moisture environments) but are often found associated with very damp building materials. The spores may be allergenic, and the fungus has also been implicated in a condition known as 'Farmers Lung' (a hypersensitivity pneumonitis.)

Superficial fungi: Aspergillus, Penicillium species are common environmental isolates and are often found on damp building materials. These fungi may contribute to high spore levels in the air resulting in allergenic reactions in sensitive people, and many of the species may cause infections in immunocompromised individuals.

The Dematiaceous Fungal Group. These are fungi that produce dark fungal spores and/or dark hyphal structures. Many of these fungi are difficult to accurately identify from a microscopic examination alone, but their presence must be considered significant, as they are frequently isolated from water damaged building materials. Many of these fungal types are known to cause deterioration of paper and paper products, plastics, textiles, timber etc. Many are also found as saprophytes (do not cause disease or damage) on plants, leaf litter, timber etc, and are commonly found growing in buildings where condensation has accumulated. They are not generally considered a health issue.

Report 35882

REMEDIATION¹ OF AREAS AFFECTED BY FUNGI

Different responses are required depending on the extent of the contamination problem and the type of material affected. (Hard impermeable materials need to be treated differently to absorbent materials.) It was not possible to determine the extent of the problem from the samples submitted, but the following is a guide taken from the New York Guidelines:

Repair must be followed by remediation work. The size of the area contaminated by fungi primarily determines the type of remediation. Sizing levels should be based on professional judgement and practicality; currently there is not adequate data to relate the extent of contamination to frequency or severity of health effects. The goal of remediation is to remove or clean contaminated materials in a way that prevents fungi and dust contaminated with fungi from entering non-infected areas, while protecting the health of workers performing the remediation.

Small areas (up to 10 square feet) of fungi on hard impermeable surfaces can be remediated by washing the contaminated area with warm, soapy water and drying well. Hypochlorite should not be used, as this can bind with organic compounds to form chlorophenols. These are very smelly compounds. Hypochlorite used at high concentrations is also an irritant to eyes, throats etc. Any contact with the fungi should be carried out wearing a facemask, protective gloves and overalls.

Absorbent materials that are badly affected by fungal growth would need to be removed in sealed plastic bags.

For larger areas remediation must involve the total removal of affected material. This is best carried out by a trained operator, with the contaminated material being removed in sealed plastic bags. It is important that care is taken to prevent the dried fungal spores from becoming disturbed and contaminating the internal air space.

If the remediation can be completed externally, then there would be little concern about the internal air spaces. Depending on the size and location of a contaminated area it may be necessary to vacate the building while this work is being done. Alternatively, it may be possible to seal off the contaminated area from the indoor spaces.

Care should always be taken when handling any mould-contaminated material.

¹ 'Guidelines on Assessment and Remediation of Fungi in Indoor Environments', New York Department of Health Human Resources Administration. 2008 Report 35882

CONCERNS ABOUT HEALTH IMPLICATIONS

Analysis of Sellotape® swabs can assist in determining what fungi are present in the indoor environment, but will only give information about the area swabbed. Hidden fungal growth will not be detected this way.

To establish the extent of the health risks to occupants from any potential fungal growth, the spore-trapping non-culturable sampling method can be used. This can be employed to sample the air quality and determine the types and levels of spores in the indoor environment.

I hope this information is of help to you. If you have any queries please do not hesitate to contact me.

Yours faithfully

Kate Fletcher B.Sc

Adrienne Burnie B.Sc., NZCMT The samples were tested as received. All samples will be kept for three years unless instructed otherwise. This report must not be reproduced except in full.

Report \$5882