

Rev 7-2

Mould & bacteria risk reduction decontamination

This paper shows alternatives to professional mould remediation. I must state at the outset that as a co-author to several international & British technical consensus documents on professional mould remediation, I have been reticent to provide a solution at a lower level/standard of remediation. This paper is not a replacement for professional mould remediation but does provide an alternative to what is generally seen as prohibitive costs.

I stress if money is available the correct procedures should always be followed but the results from the following protocols should provide a reduction of health hazards at an affordable cost.

I would also point out that even with the most expensive mould decontamination treatment anywhere in the world, guarantees of safe remediation are never given by professional companies. They recognise exposure and client immune response triggers and synergy are impossible to quantify and as mould is always present only risk reduction is possible. Most importantly mould may be only one of many contaminants affecting health.

Summary

We show two different approaches to mould decontamination

- The first internationally recognised as professional remediation, usually costs more than £100,000 and this includes demolition, decontamination rebuild and remediation with alternative accommodation, which few can afford
- The second method that Building Forensics offer costs start at £1200 and provides verifiable risk reduction results.

The issues of Biological Exposure and Health



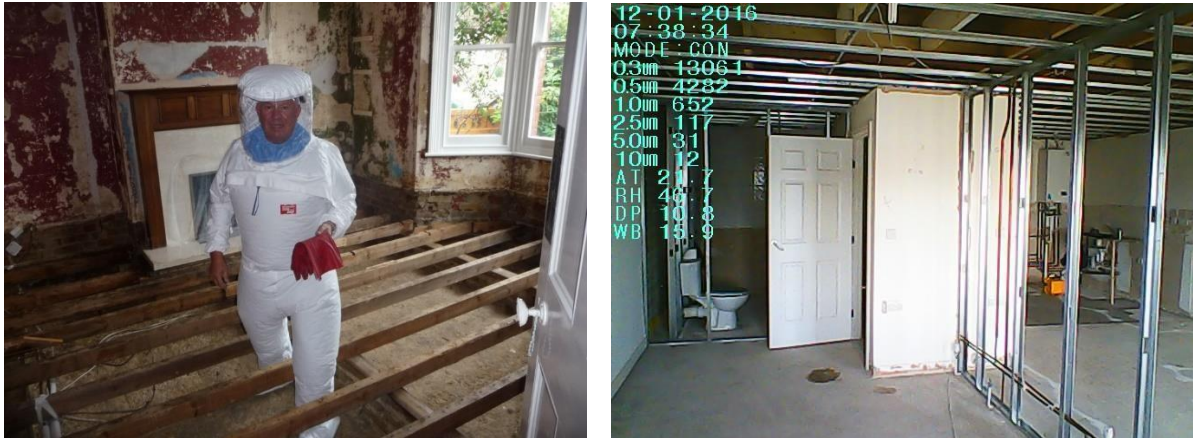
A water damaged property may be expected to see bio amplification of Gram negative and positive bacteria, Endotoxins, and of course various species of mould. It is accepted that dead bio fragments are often more of a health risk than whole spores. (ref WHO). It is generally accepted that continuing exposure to the triggers is unlikely to see health improvements from any form of medical treatment. Much like putting a hand back in a fire after burn treatment.

Professional Mould Remediation very expensive

The following two mould removal photos show professional remediation Building Forensics undertook for insurers and which followed international standards. They show intrusive investigation to identify or reveal sources and reservoirs of mould and biological agents. The projects required the properties to be gutted, decontaminated, and then restored.

The clients (insurance companies) required guarantees that the home was decontaminated to the best possible level. Despite walls, ceilings and floor screed removal there were and

cannot be guaranteed in either property that occupants wouldn't react when re-entering the completed home.



Both properties were gutted, and occupiers were re located for 8 months during works. Insurers paid for both projects.

Objectives of Professional Mould Removal and Remediation

- Identify mould causation issues
- Identify mould presence and hidden reservoirs
- Dry affected areas or identify construction defect
- Remove and decontaminate surfaces and air
- Verify all results
- Building Forensics undertook both contracts for insurers with each costing over £100,000 including alternative accommodation and refurbishment

International guidance on medically required decontamination/remediation

The attached consensus document was written by leading Indoor Environmental Hygienists in USA and working with leading mould practitioners including Dr shoemaker of www.Survivingmold.com. Jeff Charlton of Building Forensics is listed as co-author of this consensus group and is the designer of the following economic alternative for mould control and risk reduction.

For a better understanding of the technical and practical difficulties in medically safe remediation please read the consensus document in Free help section.

Mould control and health risk reduction by Building Forensics

This process is primarily aimed at the reduction of exposure to health hazards and risk factors.

In the following process, our goal is to reduce exposure to airborne contamination which trigger immune response of susceptible people.

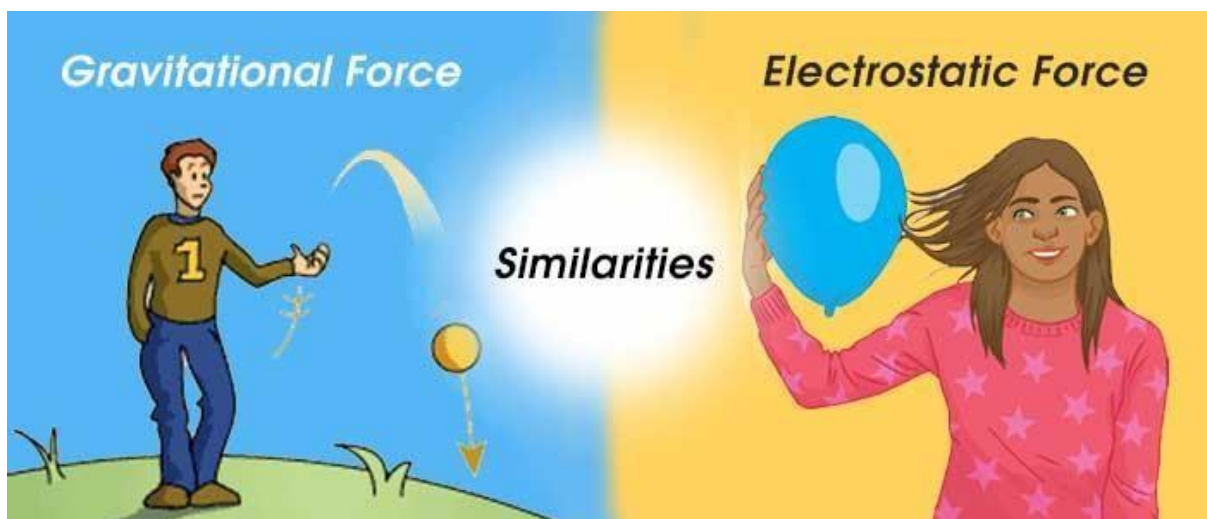
Target contaminates

- Gram Positive and Negative Bacteria
- Endotoxins
- Mycotoxins
- Mould Spores and fragments

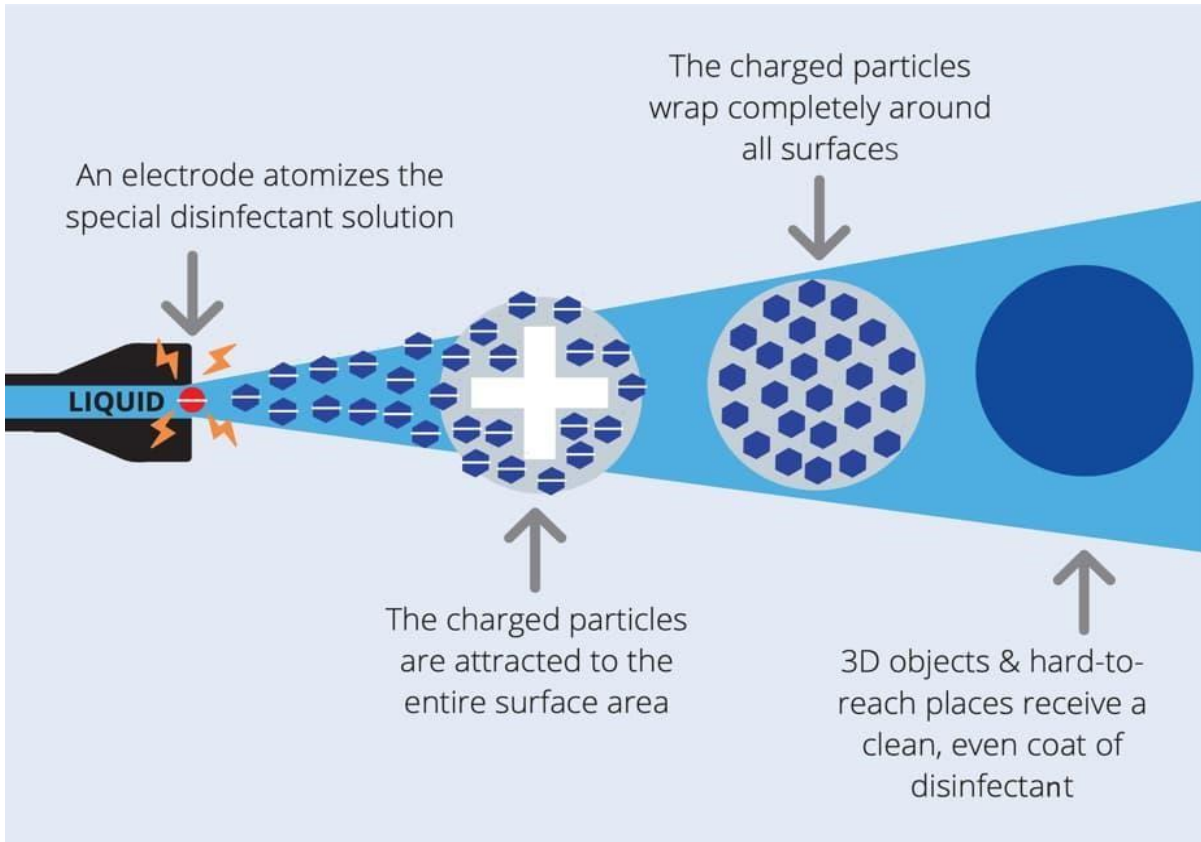
Procedure

- Fill the affected areas with a Bio Aerosol oxidising disinfecting agent resulting in the oxidisation or denaturing of contaminates on surfaces and air, thereby reducing exposure risk.
- Fill the air with a Bio Aerosol which is electrostatically charged to bring down and bind contaminates.
- Apply a cationic Biostat dry film to lock in residue contamination which also provides surface protection.
- Particle counts pre and post treatment to prove efficacy.
- Use pre and post treatment spore counts (if required and at extra cost).
- Provide pre and post verification complying to International standards of risk reduction

We use chemistry and physics to produce chemicals and application systems that cover and bind to surfaces to offer the best protection.



Here we see the two different forms of natural force. Unlike most other chemicals our treatment is attracted to all surfaces not just the floor.



In this diagram we show how our disinfecting and the biostatic misting deposits on all surfaces to provide even greater protection.

Disinfection Type	Electrostatic spray	Fogging	UV disinfection
Wet or dry	Dry	Wet	Dry
Disinfection period	1-5 minutes	30 -40 mins	30+ mins

Note UV light disinfection requires direct light exposure and only areas exposed to the light are disinfected.

The biocidal microbe shield we apply is unique anti-microbial technology which has been used and tested for over 30 years and is an accredited BIOCIDE with the Environmental Protection Agency and comparable regulatory bodies around the world. This technology has been used in hospitals for the wound area of surgical drapes etc. The product is used in leading clothes retailers such as NIKE and M&S as odour control (bacteriostat) in their products

This is not a onetime kill as often stated with bleach, but a continuing ongoing bacteriostat and mould control product.

Medical Note

Effectiveness of medical treatment for symptoms associated with mould, chemical inflammagens, and bacteria should initially focus on the removal of the triggers and source of moisture eliminated.

It is unlikely that medical treatment will be as effective as possible if there is a continuing exposure, therefore some form of decontamination and exposure reduction must be seen as essential and of course beneficial. This is risk reduction

Typical action and control results

The Biostatic film is carried by a silane type product, which chemically bonds to all surfaces and provides long lasting protection against the following moulds and bacteria:

Mould/Fungi protection

Aspergillus niger
Mucor sp.
Aspergillus fumigatus
Tricophyton mentagrophytes
Aspergillus versicolor
Tricophyton interdigitalie
Aspergillus flavus
Trichoderma flavus
Aspergillus terreus
Chaetomium globusum
Penicillium chrysogenum
Rhizopus nigricans
Penicillium albicans
Cladosporium herbarum
Penicillium citrinum
Aureobasidium pullulans
Penicillium elegans
Fusarium nigrum
Penicillium funiculosum
Fusarium solani
Penicillium humicola
Gliocladium roseum
Penicillium notatum
Oospora lactis
Penicillium variabile
Stachybotrys atra

Algae

Oscillatoria borneti LB143
Schedesmus quadricauda
Anabaena cylindrica B-1446-1C
Gonium sp. LB 9c

Selenastrum gracile B-325
Volvox sp. LB 9
Pleurococcus sp. LB11
Chlorella vulgarus

Yeast

Saccharomyces cerevisiae Candida albicans

Bacteria

Micrococcus sp. Aspergillus niger
Mycobacterium smegmatis Mucor sp.
Staphylococcus epidermidis1 Aspergillus fumigatus
Mycobacterium tuberculosis Tricophyton mentagrophytes
Enterobacter agglomerans1 Aspergillus versicolor
Brucella cania
Tricophyton interdigitalie
Acinetobacter calcoaceticus1 Aspergillus flavus
Brucella abortus Trichoderma flavus
Staphylococcus aureus (pigmented)1 Aspergillus terreus
Brucella suis Chaetomium globosum
Staphylococcus aureus (non-pigmented)1 Penicillium chrysogenum
Streptococcus mutans Rhizopus nigricans
Klebsiella pneumoniae ATCC 4352 Penicillium albicans
Bacillus subtilis Cladosporium herbarum
Pseudomonas aeruginosa Penicillium citrinum
Bacillus cereus Aureobasidium pullulans
Pseudomonas aeruginosa1 Penicillium elegans
Clostridium perfringens Fusarium nigrum
Pseudomonas aeruginosa PDR-10 Penicillium funiculosum
Haemophilus influenzae Fusarium solani
Streptococcus faecalis Penicillium humicola
Haemophilus suis Gliocladium roseum
Escherichia coli ATCC 23266 Penicillium notatum
Lactobacillus casei Oospora lactis
Escherichia coli1 Penicillium variabile
Leuconostoc lactis Stachybotrys atra
Proteus mirabilis Algae
Listeria monocytogenes Oscillatoria borneti LB143
Proteus mirabilis1 Schenedesmus quadricauda
Propionibacterium acnes Anabaena cylindrica B-1446-1C
Citrobacter diversus1 Gonium sp. LB 9c
Proteus vulgaris Selenastrum gracile B-325
Salmonella typhosa Volvox sp. LB 9
Pseudomonas cepacia Pleurococcus sp. LB11
Salmonella choleraesuis Chlorella vulgarus
Pseudomonas fluorescens Yeast

Corynebacterium Boris
Saccharomyces cerevisiae
Xanthomonas campestris
Candida albicans
Vancomycin Resistant enterococci
Methicillin Resistant Staphylococcus aureus (

Benefits of this protocol

This treatment usually completed in a day, provides almost instant exposure reduction. Surfaces are dry within an hour or so and fragments and spores are generally locked in. Air particle counts confirm success as compared to pre and post treatment levels.

This protocol is not designed as a substitute for professional remediation and clients are advised to invest in a professional inspection. The clear benefits are however immediate, and current exposure risks will be substantially reduced or eliminated and future growth potential will be limited or eradicated if environmental conditions are controlled.

Benefits

- We use biocide and disinfection products with internationally known and recognised capabilities to achieve objectives.
- We use application technology known to provide the coverage and homogenous protection required.
- We guarantee we will prove major reduction in exposure.
- Our claims are supported by various public body attestations including hospitals.
- Significant results can be verified by compliance with British Standards of mould measurement reduction and reduction in air particle counts as identified with a 6-channel particle counter
- Nobody in the world can categorically state your health will improve after any form of decontamination, whatever the cost.

Cost & result Comparisons

Comparisons	Professional Decontamination	Building Forensics process
Cost	£100,000 plus	Less than £2000
Time frame	6 months plus	Less than 1 day
Long term protection	No	Yes
Active control	No	Yes
Removal of contaminates	Yes	Part only but locked down
Removal of all inflammagens	Unknown	Unknown
Reduction of exposure	Yes	Yes
Decontamination guarantee	No	No
Disposal of all contents	Usually,	No
Methodology	Intrusive investigation and exposure of all possible water damage and reservoirs	Not required as system is a control process, but some continuing but limited leakage may occur
Verifiable results	Yes	Yes

Notes

- According to Institute of Medicine there can never be guarantees of successful decontamination.
- Success is considered when occupants no longer react to the building environment.
- Locked down refers to surface electrostatic attraction thereby reducing airborne inhalation (exposure risk).
- There is no alternative to professional decontamination and severely immune compromised clients may have to consider this and weigh benefits against cost issues.
- Following the risk control process and application of biostat, mould cannot re grow if the environment is controlled