

WATER & FLOOD DAMAGE MANAGEMENT

Water damage is often believed to be a static effect of primary damage where the visual effects of contact and adsorption are a measure of damage. The reality is that water damage is dynamic, continually expanding its effects and is capable of developing far reaching secondary damage in minutes or days after the initial effects.

Bio amplification, mould, corrosion, swelling and distortion are typical effects of uncontrolled water escape or flooding. These effects can result in health risks, structural and contents damage and possible devaluation of property.

Water damage can be attributable to three main causes which are flooding, escape, and condensation. The result in all cases can be said to be primary damage which is the initial visible and the result of direct contact with the source and secondary damage is usually seen as preventable or at the very least capable of mitigation if controls were in place.

Flood effects can be divided into several sections and basic descriptions are;

Type of water;

- Clear, from burst pipes or sink overflow.
- Grey, from washing machine or toilet pan overflows, minimal biological loading.
- Black, from external sources, where water is from burst water mains, flooding, where the incoming water has flowed through sewers, over ground, soil and where biological loading could include pathogens, chemicals and sewage.

All classifications are expected to rise to black water within hours-days depending on temperature due to exponential biological amplification and pre-existing loading. Black water can be presumed to contain up to 1500 bacterial and 120 viral infections and exposure via cuts or grazes can result in infection including some forms of heart disease.

Water can be expected to travel horizontally, over floors, along joists and beams to far reaching areas. Equally water can travel vertically either by gravity or evaporation and the latter can result in substantial damage several floors up from the initial release or damage.

Measurement of water damage is an art coupled to science and includes the following parameters;

- Visual assessments
- Moisture mapping utilising, ultrasonic and conductive meters to measure depth and spread.
- Infra red thermal imaging to identify hidden reservoirs.
- Relative humidity of the air, the amount of water the air can hold in the current environmental conditions.
- Temperature of the air and its potential to hold moisture
- Measurement of moisture in the air (specific humidity) by thermal hygrometers and psychrometry.

These measurements are essential to ensure that a drying protocol is installed to address specific or localised damage and to assess suitability, performance and

most importantly, identify when the building has been restored to pre event conditions.

Failure to install suitable drying regimes can easily result in unnecessary secondary damage and extended loss of the damaged zone. Water migration is the effect of moisture movement which could be said to be drying, or more simply the action of capillary action or evaporation where free water moves from wet surfaces, rises through stack effect or laminar air flow. This movement raises the specific humidity of the air, and warmer air holds more moisture. As the moisture in the loaded air travels it will meet with cooler and possibly hygroscopic materials. The effects will be either adsorption or condensation. The result is that previously dry surfaces or materials will now be wet. This can be several floors up or away from the initial damaged zone. Unfortunately as this area was assumed to be dry, moisture control factors are unlikely to be installed, and if they were it simply identifies uncontrolled evaporation from the prime site!

Uncontrolled evaporation can result in condensation on circuit boards, IT systems, ventilation ductwork and the underside of roofing. As condensation forms on surfaces, it dissolves or mixes with dust, chemicals and can produce electrolytes which can either bridge or corrode micro circuitry causing shorts. These effects can be either permanent failure or more dangerously intermittent faults which are almost impossible to identify. Faults can materialise months or years after the initial water damage and invariably the damage is not associated with the flood or more importantly the insurance claim.

Health effects can also be difficult to identify, but absenteeism, or productivity post flooding should be assessed. Mould is now seen as one of the major components of sick building syndrome and the tight buildings of today, coupled to limited ventilation can expose building occupants to high levels of airborne contamination. Mould generally develops where humidity and temperature are favourable and although it can grow on almost any surface it prefers cellulose based materials. These materials are plasterboard, (backing paper) wall paper, wood and wood based products. Thousands of species of mould exist but approximately 16 genus are said to be toxic. Mould is generally accepted as a health risk and CIRIA the Construction Research & Information Service has warned that where buildings have been wet for more than 2- 3 days contractors should wear toxic respirators and those considered vulnerable should stay away. When you consider all people are vulnerable and that few if any buildings are dried in 3 days, the extent of liability to insurers and employers could be far reaching.

www.ciria.org/flooding/disinfection.htm#mould

Toxic mold in the USA has resulted in over 200 pieces of legislation and accounts for more current liability claims than asbestos. New York in particular has published two guideline documents on the remediation and decontamination of mold affected buildings and a simple glance at these guidelines will show they have assessed their liability and risk similar to asbestos. Similarly the EPA environmental protection agency has produced similar National Guidelines.

See <http://www.nyc.gov/html/doh/html/epi/moldrpt1.shtml>
<http://www.epa.gov/mold/moldresources.html>

Toxic mould has been identified generally to include such species as “Stachybotrys and Aspergillus”. These contain a chemical “T2” toxin which has successfully been

used in Afghanistan to kill thousands of the population; clearly having it grow in your ventilation ductwork could be seen as a preventable and unnecessary risk?

Drying flood affected buildings is simply matching the rate of evaporation to the collection or transfer of moisture released. Where these parameters are not matched secondary damage may result.

The management of flood or water damaged buildings often falls to the facility manager who may or may not decide to claim on insurance. Insurers will invariably appoint an “independent” loss adjuster to assess, manage or control the claim. This independent loss adjuster will be paid by insurers and the thought that they would support their paymaster in front of the insured is vigorously denied. The facility manager or insured may decide to enlist the assistance of a loss assessor who will work directly for them. Loss assessors will draw every possible benefit from the policy wording and generally, claims handled by assessors result in higher settlement figures. This may or may not be due to the fact that their fees will reflect a percentage of the claim cost.

Despite the use of professional loss adjusters or assessors the insured may not receive the level of technical support imagined. Few if any adjusters understand or carry out technical measurement of damage and usually rely on experienced fingers to assess dryness. Nominated contractors are often illegally installed by appointed loss adjusters or insurers as if there was no alternative but the insurance ombudsman (FSA) has made it crystal clear that the insured may appoint contractors of their choice. Problems associated with nominated contractors usually revolve around availability, time line to site appearance or more importantly the level of assistance. As nominated contractors work to contract parameters regarding cost & equipment, you may find that your recovery assistance depends on average costs or contractor profit margins not what they would ideally recommend in a free market.

Although defence measures against wide area flooding can be useful it must be acknowledged that most have serious shortfalls and limitations which may result in unnecessary damage. The use of barriers for example may prevent water ingress in times of wide area flooding but can result in extreme pressures building on external walls resulting in collapse or building movement. Equally where buildings have flooded, basement should not be pumped out until surrounding areas have drained. This is because when the basement was flooded it provided an equalised pressure against ground pressure, remove this equalised pressure and there is a serious risk of building collapse.

Health & Safety is obviously of paramount importance and affected building occupants may be at risk from slip, trip and fall, electrocution and other hazards such as asbestos.

Electricity travels through many wet building materials and although isolation may have been undertaken by pulling fuses, adjacent or linked buildings may still be live. Asbestos in its many forms must in the UK, be considered as being present in all buildings built before 1999. New management regulations CAWR reg 4 places a duty on building owners or duty holders to identify and manage all asbestos within their buildings. Unfortunately the identification methods recognised as Type 1-2-& 3 surveys have serious implications post disaster. These shortfalls can result in building closure and possible legal ramifications unless strictly adhered to.

The potential of contamination or poor restoration must alert leaseholders and freeholders to the potential of long tail liabilities and claims. Forensic inspection years after water damage events can identify poor restoration and latent damage or

potential health risks. These inspections may be the result of leasehold insure & repair termination audits or simply purchasers or mortgage investigations. The likelihood of insurers picking up the cost of contamination or latent damage after a claim has been closed is remote or at best may result in lengthy arbitration.

In conclusion it must be acknowledged that water damage in any form must be approached in a competent manner and that those affected should always second guess the installed "expert". The request for warranties or guarantees based auditable evidence should be seen as a minimum requirement from contractors.

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