

Inspection /survey basic review

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Summary

An Indoor environmental health survey is completely different from any other form of inspection.

We are looking for often invisible, hidden or camouflaged contaminants and their causes which may affect occupant's health.

If contamination is visible it doesn't need testing as it must be removed whatever it is.

In this paper I have laid out some typically common issues

- There are several forms of survey that can be undertaken. Most will be familiar with the standard surveyor who will look at a home prior to purchase and most wouldn't buy the property if you considered the caveats and what it didn't cover. The professional RICS surveyor usually has a simple moisture meter and looks at structural and legal issues. It is NOT an environmental survey.
- The Professional thermographer undertakes an Infra-red scan and identifies heat loss and insulation problems.
- The free mould surveyor will usually sell a fan or paint
- The lab that sells swabs and settle plates know this analysis and their report is worthless. "Serious limitations" (World Health Organisation)
- At Building Forensics, we have qualified in every aspect of Indoor Environmental health and follow USA Indoor Environmental Professional guidelines (IEP) and these are focused on building related illness.
- Jeff Charlton has written a "Mould Inspection Failures" paper which shows why most of the typical sampling methods used in the UK are WORTHLESS please see https://cms.pm/uploads/files/buildingforensics.co.uk_-_561520495.pdf

The following examples show just a snapshot of issues we identify daily and every single survey has different problems and solutions.



Investigation isn't as simple as it may seem. The property on the left incredibly wasn't as serious a health hazard as the photo on the right.

While the photo on the left shows heavy *Stachybotrys* growth, it wasn't producing mycotoxins. However, the right-hand picture shows the floor in my daughters brand new en suite bathroom. She developed chronic fatigue within 3 months of buying this new property and was diagnosed by University College Hospital London with advanced stages of Leukaemia. She got better and was back to normal within 3 weeks terminating exposure

Unfortunately, we are often hired after people have exhausted every other option and we are sometimes seen as a last resort usually because they used free or low cost surveyors. In the following case a tenant lived in a new property and all the family developed Chronic Fatigue, brain fog and most known symptoms of (Chronic Inflammatory Response) CIRS.

The landlord blamed "Lifestyle" (cooking peas without a lid on the saucepan) Our investigation quickly identified extremely toxic mould at very high levels. This resulted in the intrusive investigation which exposed the building construction/design defect below.



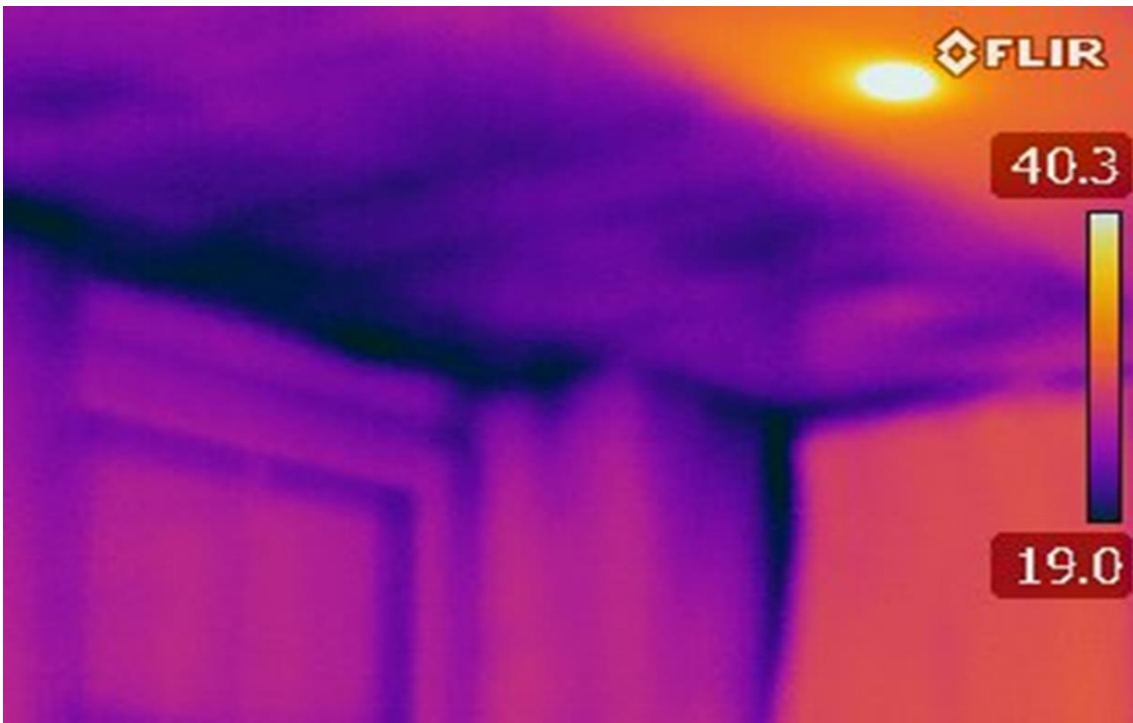
There was no insulation between the internal plasterboard and the outside metal facade and “Dew point” condensation and mould growth was inevitable. The family has been evacuated and the whole tower block now has a Class 1 hazard certification in force.



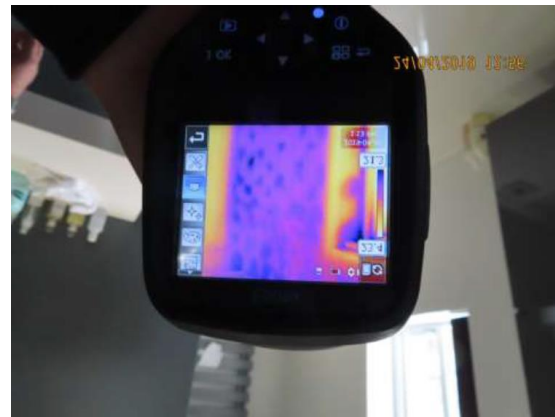
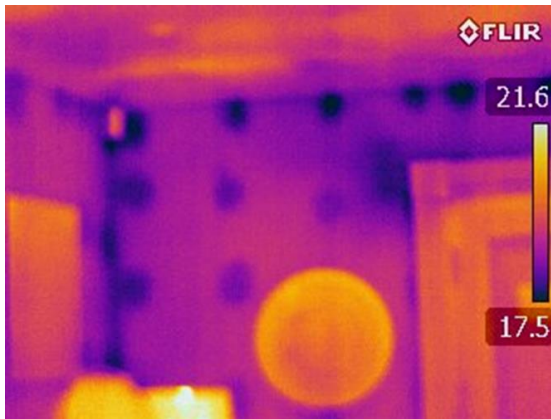
Checking for moisture isn't just a moisture meter or measuring relative humidity. A large selection of specialist equipment is sometimes required.



This property was in excellent order, but Infra-red survey coupled to moisture mapping showed serious hidden mould risks confirmed by sampling



Free installation of loft insulation isn't always a good thing. In this case we identified that the free contractors hadn't installed the insulation properly and this resulted in the family developing CIRS from mould growth caused by the contractors incompetence.



In this IR scan we identified Dot and dab construction which led to mould growth in the cavities which leached out to occupied spaces



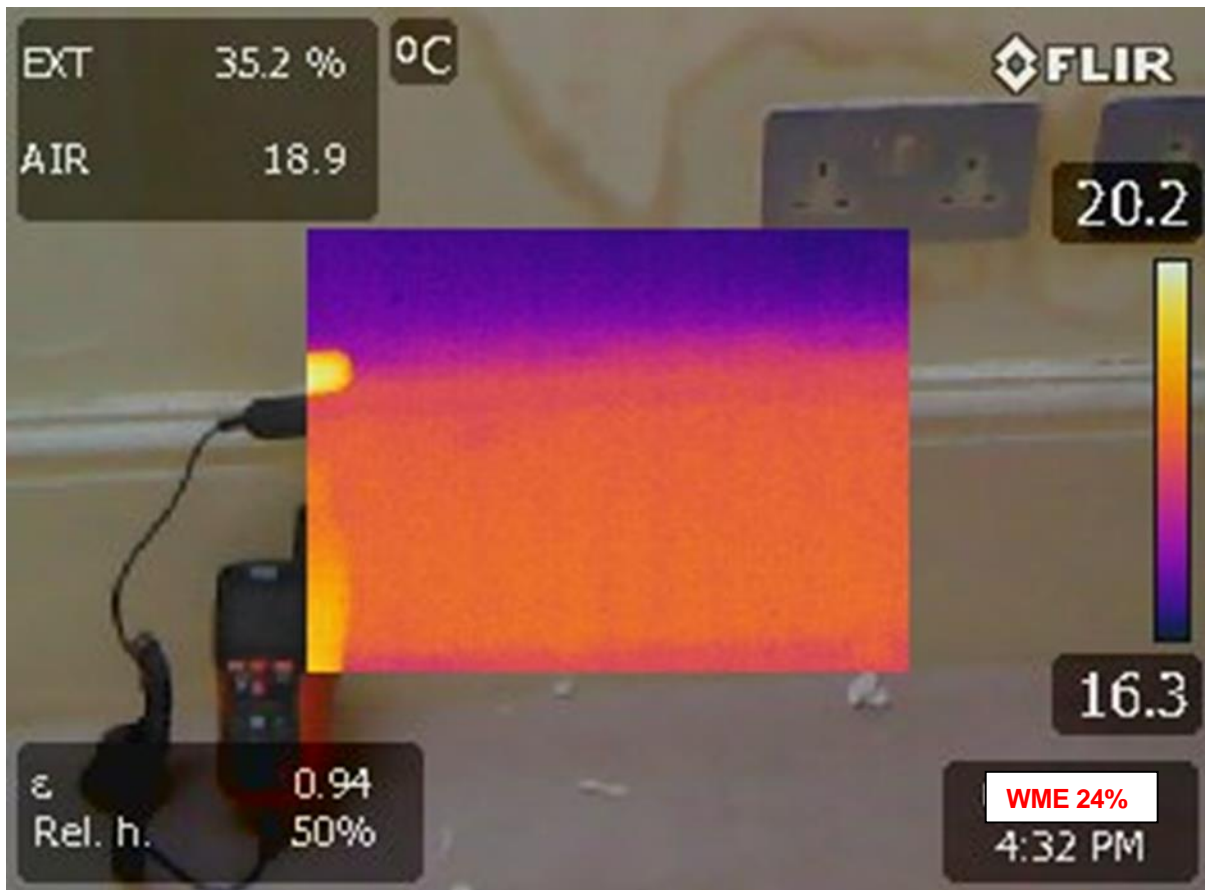
This shows the result of FREE Loft insulation which resulted in dew Point condensation and mould growth leaking into the bedroom. The insulation wasn't homogenous and led to dew point condensation and resultant mould growth



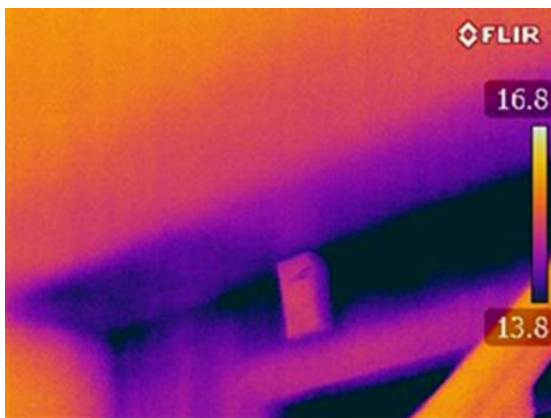
Rising damp issues caused by DIY actions



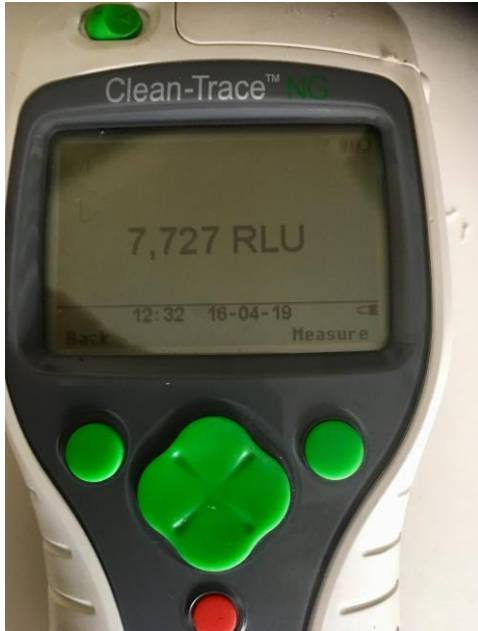
This bathroom has poor ceiling insulation and dew point condensation within ceiling cavity causing mould growth and poor health for occupants



The Infra-Red camera also provides temperature, humidity and moisture content. This photo shows a serious damp issue in the wall and behind skirting board



Infra red scan from hall indicated possible leaks from bathroom above. This was confirmed by other testing and resulted in strip out to facilitate remediation and decontamination



The ATP meter can identify the presence of soiling and organic matter which includes bacteria and mould



This next generation ATP meter can identify sewerage and typical black water contaminants such as E Coli



Moisture evaporating from basement ends up in loft and condenses on cooler surfaces and here we see mould growth



Following health complaints, this Infra red scan of a “New Build” identified something wrong with the construction at the low level of the wall (under the desk). Critical barriers with negative pressure was installed to enable intrusive investigation without releasing contaminants. Investigation identified construction defect, water damage and potentially toxic mould.



After opening the wall, we found the Damp Proof Course (DPC) had been installed above the floor. This led to moisture being absorbed into the floor, and wall through capillary bridging of dot and dab



Simple construction defect where party brick wall has bridged DPC and capillary action caused internal damp & mould growth



A minor leak from poor window installation led to major mould growth in ceiling cavity which leached out through downlighters etc



Sometimes the floor is wet from previous water damage or poor construction. The wet floor can cause failure of laminate floors, vinyl and of course carpet and cause bio contamination and or chemical exposure



Mums at this basement play school knew children got sick during the week while attending the school. Inspection caused concern of ceiling and intrusive inspection revealed the true condition above the false ceiling. Air analysis showed extremely high levels of several toxic moulds present and the leaking pavement lights confirmed just one of the sources.



Sometimes contamination is within walls and in this “New Build” we were allowed to install a blower door to create a negative pressure in the home. This caused contamination to be revealed as it was pulled from wall cavities under the skirting.



This bedroom was beautifully decorated, but the little girl had severe CIRS illness which developed within 2 years of moving in. Moisture mapping and IR dictated high risk and the following lab analysis gave great concern

Genus	Katie bedroom m ³	Ambient m ³
Penicillium/Aspergillus	180,000	360
Chaetomium	1900	BDL
Stachybotrys	14,500	BDL

- *BDL Below Detection Limits*



This new build £5million home had a gymnasium in the lower ground. The family were very sick especially after training .



Part of our basic inspection is Thermal imaging and here we see a house with major insulation issues which resulted in dew point condensation and mould growth



This is the ceiling of a £3 million property conversion flat. The occupants identified building related illness within 6 months of moving in. Our investigation found a suspended ceiling had been overlaid against an historic mouldy ceiling and bio toxins were leaking into the occupied spaces.