



What's Eating Your Collection?

Further advice: Damp

What is damp?

“Damp” is used to indicate a range of conditions all connected with excess moisture. The O.E.D. defines damp as *diffused moisture, especially as inconvenience or danger*. This is an accurate definition for “damp” in a museum or historic house context.

How do I know if I have damp?

Damp may be seen as:

Condensation on windows or walls

Mould on organic objects, especially paper, wood or textiles

Stains on walls or ceilings

Patches of ‘blowing’ paint or plaster on walls

Active infestations of insects, especially wood borers see [Woodworm/Death Watch beetle fact sheets](#)

All of these occur when the RH (relative humidity) exceeds 65/70% for a prolonged period.

What is RH?

RH, relative humidity, is a way of measuring the moisture content of the air at a particular temperature. Air acts like a sponge and the warmer the air, the bigger the sponge it becomes and the more moisture it can hold. Cold air is a small sponge and it can only hold small quantities of water.

One way to control RH is with heating. By increasing the temperature but not changing the amount of moisture in the air, the RH goes down. Conversely, decreasing the temperature causes the RH to go up. “Damp” often occurs in cold areas, where the RH is high.

What causes damp?

Damp may be very localised, e.g. behind a picture or in a corner, usually because there is no air flow in a specific area. Stagnant air allows the moisture to build up and this can result in mould growth or staining.

Damp may be more wide spread, i.e. affecting a whole room, for several reasons.

- Unheated rooms allow the RH to rise, providing a moisture-rich environment.
- Cellars/basements may be below ground level. Moisture from the ground passes through

the walls and floor giving a high RH.

- Leaks may allow water to run down walls or penetrate floors giving a high RH.
- Floods and water from fire suppression will saturate the building fabric, leading to high RH

In these conditions many objects may be affected.

Rising damp describes a condition where moisture is able to penetrate porous building structures and is wicked up through the structure. The water brings salts with it and may dissolve salts from the building structure. These are carried through walls etc and eventually crystallise on the surface leaving a white crust or fine crystals. This may occur just below the surface, in which case the crystallisation can force off the surface causing damage to plaster, brick and stonework. This water may originate from a breach of the damp proof course or it may be caused by poor drainage, which can allow water to build up at the base of the building structure. The presence of water in the structure may cause damage to wooden elements or other damage as described above. A tidemark of salts may be seen, but this may indicate that there were problems in the past and should not be relied upon as an indicator of rising damp.

Some damp walls are the result of the air condensing on a cold, usually external, wall. Warm air that hits a cold wall (or other cold surface) will undergo rapid cooling until it reaches the dew point. At this point, the air can no longer hold the water it contains and it condenses out as liquid water. This condition can be aggravated by sporadic heating as may occur if a museum is only open for one or two days a week and only has heating when open. Condensation can contribute to all of the problems mentioned above and it is often the primary cause of damp in the base of walls.

It is advisable to seek advice from a reliable source, such as a conservation architect or building surveyor, rather than a "damp specialist". Some helpful advice can be found at www.buildingconservation.com. Remedies usually involve the provision of soakaways, improving the damp proof course or isolating objects from the damp areas.

What can be done to control damp?

If damp is localised, increasing the air flow can often be enough to remove the problem. For pictures and other wall mounted objects, fitting spacers (small blocks of wood or plastazote) to the mounting system means that an air gap (c. 5mm, ¼") is produced behind the object, lifting it out of the stagnant air. Objects standing on floors with constant moisture penetration can be placed on blocks to lift them away from the moisture source (2.5-5cm, 1-2"). Alternatively, a fan can be used to force air to circulate.

It is also important to ensure that natural ventilation systems are functioning i.e. ventilation grills, air bricks, vented chimney caps, as this allows air to flow through spaces and may be enough to prevent the build up of moisture.

Rooms below ground level may be constantly damp due to the presence of soil and thus moisture in constant contact with the structure of the room. Some steps can be taken to

improve ventilation to prevent moisture from building up and the installation of heaters can help to keep the RH at an acceptable level. It may not be possible to reduce the RH sufficiently to prevent condensation, mould growth or insect infestation. In this instance, it is recommended that these types of spaces are not used for collections that are vulnerable to the problems illustrated above.

Temporary damp problems

RH levels may be increased on a temporary basis as a result of leaks or floods. If a leak has occurred, it is imperative that the cause of the leak should be found and dealt with to prevent a recurrence. Floods may be caused by burst pipes or other failures of the building, fire suppression or by natural means, such as rivers overflowing. In these circumstances, it is imperative to start the drying process as quickly as is practicable. It is generally better to allow the building to dry naturally by using fans to encourage air movement rather than heat. The building should then be monitored for at least 12 months so that any of the issues highlighted above can be detected and treated rapidly.