Archives and Records Management Conservation Sheet: 1/2010

Mould Prevention and Procedures for Recovery

What is Mould?

Moulds are members of the Fungi Kingdom. Most Fungi derive their energy by feeding solely on and digesting the substrate, i.e. (the surface) on which they grow. A few are parasitic and live symbiotically with a host. Their growth is called mould. Mildew, is often used to describe mould in the home; it is a parasitic fungus that grows on plants.

Under a microscope mould looks like a network of threadlike filament called 'hyphae' woven into another network called 'mycelium'. Moulds grow from microscopic spores. The shape is determined by the species. A spore can be round, elongated, oblong, cylindrical, sickle shaped- single-called or multi-cellular etc., and even the largest spores are buoyant enough to be carried long distances by air currents.

In general, the species found inside a building are the same as those found outdoors.

Controlling Mould growth

Nutrients, moisture & temperature are the critical factors for controlling mould growth

(a) Nutrients required for mould growth are supplied by organic materials-e.g. the page of a book. The fungi produce an enzyme which breaks down and digests the substrate.

(b) Moisture is however, requisite for the spore to swell and begin to germinate. Water vapour in the air, measured as relative humidity (RH) influences the moisture in the substrate material.

(c) Temperature

Mould is able to grow under a wide range of temperatures, as exemplified by mouldy food in the refrigerator. The rate of mould growth can be regulated by temperature. Mould spores will grow in temp. from 39F-86F. Ironically, heritage collections are maintained at (59-77^0), ideal for mould growth. Short term exposure to lower or higher than optional temperature makes mould dormant. Freezing temperatures kill growth.

(d) Air Circulation

Air Circulation is important to maintain an even RH level. If water damage occurs, a good flow of dryer air facilitates rapid evaporation and drying; and prevents the retaining of moisture which would otherwise encourage fungal growth in the substrate material.

All spores originate from outdoors. Spores in the air fall on artefacts, books etc…artefacts are never completely free from spores – therefore deterrent from developing growth is important.

Light is not a critical factor for controlling mould growth. However, in dark storage areas, there is usually less natural air circulation, which fact may contribute to growth.

Viability

Dormant (inactive) spores wait for the right amount of water and nutrients before they can grow. Their viability decrease during the waiting period; some are however, viable for many years, while others can survive only a few hours.

Environmental conditions, fluctuations in temperature, Relative Humidity and radiation are all factors of viability.

Species of mould differ according to what part of the world it is located and what season it is. In tropical regions, Aspergillus and Penicillium are dominant.

Fungal amplifier- indoor source growing inside the building or collection these high levels may indicate a moisture problem or conditions favourable to mould growth.

How to prevent mould growth in a Collection

The most effective strategy to prevent damage to artefacts and to prevent adverse effects for humans is to ensure that the environment and other conditions inhibit mould growth

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