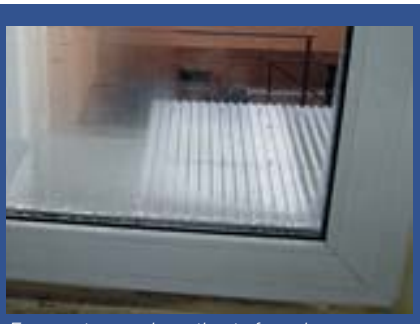
Preventing **fungal growth** in production areas



From water condensation to fungal contamination is a short step

In order to remove areas of fungal growth it is recommended that experts are called in

Behind a reference sample cupboard in the warehouse – hidden fungus

In the autumn and in the spring they start to build up – cases of increased fungal contamination in the ambient air and fungal growth on the surface of plant and equipment. The risks that this poses, such as the risk to products, is well known to even the smallest company. The way to ensure that no fungal growth occurs in the production area is explained here by Michael Pfeiffer of Pfeiffer Consulting, together with Michael Tscholak and Patrick Rüter of Ruetscho GmbH.

Fungal spores in the air pose a threat to employees' health. But that's not all. They can also represent a serious source of contamination for ingredients, bulk product and finished goods. This problem can be rooted in, amongst other things, poorly planned and executed changes to the plant layout or poor hygiene procedures.

It is very important here to arrange for clear divisions within the production area. Cosmetics GMP requires areas with special, high standards of hygiene to be separate from the rest of the production areas. For this reason it is generally regarded today as state-of-the-art to separate such areas with airlocks to give access for both people and materials, provided that the building and other technical requirements allow such an arrangement.

Companies that intend to build a new facility should take account of the need for effective ventilation and air extraction as part of a properly planned zonal concept. It is also important to meet the requirements of the relevant legislation, such as those of the Workplace Directive. Furthermore thermal bridges and areas of high air humidity should certainly be avoided. Optimised airflow is also an important factor in providing a good environment for the production area.

Correct zonal separation

If a building is destined for a new plant layout, or for decontamination, the problem is a different one. Here it may be that the areas are separated but often without giving due attention to the aspects mentioned within the zonal concept. One problem is that such measures are often put into place without adequate technical advice, i.e. from architects, construction engineers, or other expert services. The result is areas that may well be separate from a hygiene point of view, but there can be a high risk of significantly reducing the air quality, which in turn will have a detrimental impact on equipment and products.

Fungal spores build up everywhere that a damp atmosphere prevails. Moist air can occur, for example, in rooms where there are leaks in the equipment or damage to water pipes etc. The build-up of fungus is also very often the result of poorly insulated or damp-proofed building materials and inadequate ventilation. Depending on how rooms are used there will be more or less air humidity (relative humidity). Sufficient nutrients to permit fungus to grow can come via spores in the air, or from normal domestic dust. Once the fungus has taken hold it absorbs, via its own moisture, dirt and dust from the surrounding air, and starts to appear as dark specks. The fungus itself consist of a mixture of fungal fibres (mycelia). Fungus can also grow on substrates that themselves provide no nutrients, such as glass of tiles. In addition to the fusty smell, new spores and toxic substances can develop that are released into the surrounding atmosphere and irritate the mucosa, at times triggering allergic reactions.

photos: Pfeiffer Consulting GmbH/Ruetscho GmbH

Fungal growth destroys cosmetic products and also attacks surfaces and building materials that often have to be removed.

The formation of fungus in living rooms, offices and production areas can be avoided by carefully observing physical and climatic building guidelines. When cleaning and renovating existing buildings adequate insulation of the building shell is important, and individual decontamination measures should be carefully planned. Then the risk of fungal growth can be avoided, even in cases of high relative humidity, which itself is often inevitable. However, the additional precaution of controlled ventilation and air extraction equipment should also be included.

If fungus has nevertheless already built up on walls or floors etc., then it is important to determine how far it has spread. If the problem is in an areas less than 0.5 square metres the building can be adequately decontaminated by the operator of the factory. However, if the contamination is more widespread expert help should definitely called in. A company or specialist with experience in the removal of fungal growth is required. If the plant operator decides to remove the fungus himself it is recommended that the use of substances containing chlorine or hydrogen peroxide is avoided.

An important prerequisite for a safe production environment for cosmetics, especially where new or refurbished building are concerned, is to take great care that no fungal growth is allowed to develop.

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