

Aspergillus: a hidden killer in hospital refurbishment

Aspergillus:

- A genus of mitosporic fungi containing about 100 species and eleven different teleomorphs in the family Trichocomaceae. A few species are pathogenic for humans, birds, and other animals.
- Aspergillosis is primarily an infection of the lungs caused by the inhalation of airborne spores of the fungus Aspergillus.
- Due to their small size (2-3.5 microns), about 70% of Aspergillus fumigatus spores are able to penetrate into the trachea and primary bronchi. In IPA (Invasive pulmonary aspergillosis), the aspergillus mould can spread through the bloodstream from the lungs to the brain, eyes, heart or kidneys.

A growing problem

- The number of primary diagnoses of aspergillosis in the UK rose from 428 to 1467 between 1999 and 2015.
- There is increasing antifungal drug resistance in pathogenic fungal species, including Aspergillus.

What is Aspergillus?

Aspergillus is a fungus. Its spores are present in the air around us, both indoors and out. Most people, with healthy immune systems, breathe in Aspergillus spores every day without getting sick. However, people with weakened immune systems, allergies or lung diseases are at risk from aspergillosis.

Aspergillosis is a group of diseases which can result from aspergillus infection. Some types are mild, but some are very serious.



What is the risk?

Aspergillus can cause significant health problems when breathed in during certain construction work, especially by vulnerable persons. Demolition or refurbishment work, especially when it involves older buildings such as hospitals, can release the spores. Therefore, special care should be taken when carrying out works to older buildings, and none more than in hospitals and care homes.

Where is the danger from *Aspergillus* greatest?

- Hospital demolition / refurbishment
- Heating systems
- Air conditioning units
- Buildings – especially older ones – being demolished or refurbished
- Compost heaps
- Grain stores
- Rotting vegetation
- Piles of dead leaves
- Wood chippings
- Marshland and bogs
- Forests

History

- 1729 – *Aspergillus* first identified and catalogued by Italian biologist/priest Micheli. He named it for its resemblance to an aspergillum, the device used to sprinkle holy water.
- 1815 – *Aspergillus* first observed in birds
- 1842 – first case of pulmonary aspergillosis in humans discovered by British physician John Hughes Bennett .

The different types of aspergillosis

- Allergic bronchopulmonary aspergillosis [ABPA] most often occurs in people who have cystic fibrosis or asthma. It causes inflammation in the lungs and allergy symptoms such as coughing and wheezing.
- Chronic pulmonary aspergillosis typically occurs in people who have other lung diseases, including tuberculosis, chronic obstructive pulmonary disease [COPD], or sarcoidosis. It is a long-term condition [3 months or more] which can result in cavities in the lungs. One or more fungal balls [aspergillomas] may also be present in the lungs.
- Invasive aspergillosis is a serious infection that usually affects people who have weakened immune systems, such as those who have had a stem cell or organ transplant, are receiving chemotherapy for cancer, or are taking high doses of corticosteroids. It most commonly affects the lungs, but it can also spread to other parts of the body.



Further information

The Aspergillus Website

<http://www.aspergillus.org.uk/>

Support for People with Aspergillosis

<http://www.nacpatients.org.uk/>

Video: John Guto:
Chronic Pulmonary Aspergillosis (John's experience of this condition)

<https://www.youtube.com/watch?v=P-1dhjK7qrY>

How can RVT help?

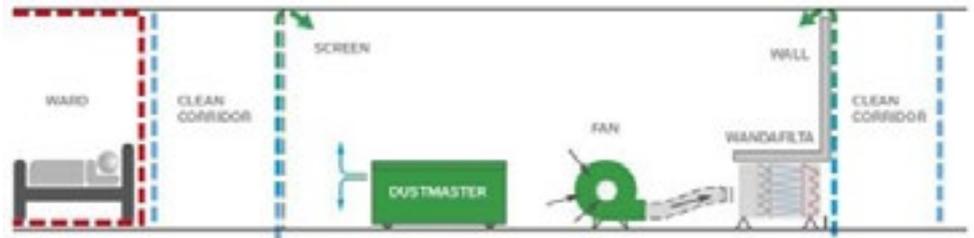
RVT's free site assessments quickly identify what control measures are needed for every individual situation, and tailored solutions are recommended.

Source for facts contained on page 01:
National Aspergillus Centre, University Hospital of South Manchester

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Assessing and controlling the risk

It is almost impossible to avoid the aspergillus mould completely, but there are precautions you can take to reduce your exposure if you're at risk of aspergillosis. HSE guidance follows the Assess, Control and Review model.



Model of effective negative pressure system to control dust and prevent migration to critical adjoining areas.

1. Assess

Is work being carried out in areas where Aspergillus spores are likely to occur in high concentrations, or in areas close to people likely to be vulnerable?

2. Control

Where the assessment identifies a significant risk from Aspergillus, specialist advice should be obtained. Appropriate control measures might include:

- Dust control – managing dust at source, before becoming airborne, as well as efficient extraction. Due to the size of Aspergillus spores, HEPA filtration is strongly recommended.
- Extra precautions to be taken by workers, such as wearing respiratory protective equipment (RPE) or suitable face mask.
- Ensuring ventilation systems are well maintained / decontaminated before recommissioning.
- If a room does not have an outlet to create negative pressure, a double entry door system under positive pressure should be created within the work area to prevent dust escaping.

3. Review

Ensure that the controls put in place are effective and used by the workers.