

IAQ Hygiene Duty of Care and Accountability



One of the key occupational health and safety risks facing the hospitality industry today, is maintaining the quality of indoor air and the minimisation of potential fire risks associated with commercial kitchen exhaust systems, explains **BRETT STEPHENS** of Ductclean Australia.

The impact on the indoor environment due to neglect can be catastrophic, however these hazards can be addressed and successfully managed by ensuring ductwork and ventilation systems components and accessories are inspected, cleaned and maintained according to Australian Standards.

There has been much discussion lately within the industry about OH&S responsibilities, and accountability. The level of pressure placed on anyone who has a 'duty of care' for their employees, visitors and customers who use their facilities are instantly in the spotlight.

The scope of responsibility is wider than most think, extending to all levels of management where there is a delegated "duty of care". Not only must an employer ensure the health, safety and welfare of all the employees of the employer, they must also ensure that visitors are not exposed to hazards and risks that occur due to the 'conduct' of the employer whilst visiting the place of work.

For hotel visitors, prolonged exposure to poor indoor air quality, particularly where guests stay for a number of days, increases the risk of being exposed to airborne particulate and contaminants penetrating from the air conveyance systems into the occupied space.

Facilities Risk Management

Ductwork that services bathrooms, toilets and shower accessories in particular provides a rich environment where microbial agents can flourish. Fungi, mould and mildew thrives in temperature ranges above 4.4 degrees Celsius to 37.8 degrees Celsius and with a moisture RH greater than 70%. These microbial agents can contribute to a range of allergies, asthmatic reactions, skin disease and parasites in lungs.

Accumulation of particulate, debris and the presence of mould and bacteria within and on HVAC systems components and accessories can most certainly contribute to health issues within the indoor environment. In almost all circumstances it will have

a direct impact on the air flow efficiency through out the air conveyance system not to mention additional unwanted running costs. In most cases the hard or sheet metal ductwork surfaces and related components and accessories such as coils, drip pans, plenums, fans, housing, turning veins etc. can be cleaned effectively using industrial cleaning fluids and disinfectants that have been developed and EPA approved for this particular purpose. The use of inappropriate cleaning fluids can actually add to the threat of microbials, including Legionnaires.

Where flexible ducting is used, it may be more effective to replace the ducting entirely to aid in avoiding possible cross contamination caused by airborne microbial spores. HEPA filtered vacuums; commercial negative air units and containment are essential requirements during the cleaning and remediation processes.

"The most practical approach to identify whether HVAC systems may be contaminated by residual deposits or have mould growth and or other, is to carry out a thorough site assessment and inspection on the existing air conveyance ductwork and accessories, in turn documenting and highlighting areas of concern along with rectification procedural tasks (Hygiene Responsive Report)," explains Brett Stephens, Ductclean Australia's Manager in Victoria.

"This may include a microbiological analysis of air quality, ductwork and air handling unit surfaces and related components, together with full photographic report of internal conditions. The report can be used to demonstrate compliance with "duty of care" responsibilities, or assist in prioritising areas that need attention."

The degree of difficulty of the HVAC cleaning and remediation process will depend largely upon the nature and extent of the restoration requirements. Remediation work should commence as soon as a hazard or potential hazard is identified, whether it be the identification of excess build up of contaminants, blocked coils, evidence of bacteria or mold, interior insulation break up, rust, corrosion, poor filtration or anything else that may have a direct impact on the indoor environment or the mechanical performance of the system. In the extreme case where Legionnaires is identified in the cooling towers of a HVAC system, remediation must be extended throughout the entire system, right down to the filters and ductwork. Dust from ductwork has the potential to contain up to 50,000 bacteria per gram of dust, while dirty HVAC filters can contain up to 6,700 bacteria per gram of dust.

Fire Risks associated with Kitchen Exhausts

The second potential risk area for ventilation in hotels comes from the commercial kitchen. The purpose of ventilation within a commercial kitchen is to minimise the possibility of the contamination of food by airborne contaminants while removing smoke, steam, odours and fumes from the food preparation area. It is also to provide clean, fresh air to occupants and provide a 'positive pressure' to prevent particulates from entering the environment.

It's easy to detect when a kitchen canopy requires cleaning or the grease arresting filters needs to be cleaned or exchanged – you can see the grease build up and the oil dripping down the hood or filters not to mention the oil and cooking fats sitting within the drip pans. However a kitchen ventilation system cleaning procedure goes much deeper than what can be visually seen.

Accumulation sites for a myriad of flammable substances such as cooking fats, grease and oil levels in simple terms is just a fire waiting to happen. It's essential that the entire ventilation system be cleaned thoroughly and regularly incorporating canopy interior and exterior stainless steel surfaces, grease arresting filters, interior surfaces of grease laden ducts, and fans and discharges to minimise the fire risk associated with build up levels of combustible grease and oils.

Many Australian insurance companies recommend that regular monthly cleaning of the kitchen canopy and filters is vital in minimising fire risk. Fatty fumes should be cleaned before they have a chance to solidify and provide fuel for ignition when exposed to gas flames.

Some insurers offer discounted premiums if they have evidence that the exhaust systems in a kitchen have been maintained according to Australian Standards and the relevant State or Territory OH&S standards. They go so far as to recommend that kitchens under heavy use should have their exhaust systems cleaned biannually or even quarterly to ensure accountability.

What businesses should be doing is making sure that they act responsibly under the Australian Standard and ensure that there are no fire risks associated with their exhaust systems. The best way to be responsible and complaint is to have the system or systems cleaned on a regular routine maintenance program by a specialist cleaning contractor. The degree of difficulty of the exhaust systems cleaning and decontamination process will depend upon accessibility, nature and extent of the cleaning requirements.

"You'll find that many businesses will clean the external surfaces or visual areas of their kitchen canopies and are of the understanding that this is all that they need to do on a regular basis to be seen to be compliant with industry standards, but what some businesses fail to realize is the risks lie beyond the obvious areas (canopy and filters) such as within the associated interior ductwork surfaces and fans, where major accumulations of contaminants are at hand," explains Ian Veltman, National Manager for Ductclean Australia.

"In order to ensure that your hotel is compliant with Australian Standards, an audit must be taken of all assets and worksheets should be signed off showing that the systems are compliant and not in breach of any legal requirements," Ian continued. ■

Ductclean Australia Pty Ltd has branches located in NSW, ACT and Victoria. With origins dating back to 1966, Ductclean Australia has established itself as the industry leading contractor in their markets, providing the specialised services of HVAC hygiene cleaning, kitchen canopy and exhaust cleaning, air filter service and replacement.

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Australian Standard AS3666.2 specifically relates to the operation and maintenance of air handling systems of buildings (Microbial control) and states that inspections and cleaning of a range of air handling system components should be completed according to schedule:

Air intakes and exhaust outlets – monthly inspection, clean when necessary

Air filters – annual inspection, clean or replace as required

Evaporative air cooling equipment – inspected quarterly and cleaned as described:

- Sumps – drained and cleaned
- Wetted pads – cleaned and replaced when required
- water strainer – cleaned when necessary
- air filter – replaced
- drainage system - flushed with clean fresh water.

Evaporative air conditioning equipment should also be drained when not in use for periods over one month

Ducts and components – inspected and maintained in accordance with AS1851.6 and NFPA 90A, and serviced as indicated:

Coils – monthly inspection, clean when necessary

Trays and Sumps – monthly inspection, clean when required.

Condensate drains, tundishes, and traps – monthly check to ensure effectiveness; flush clean and drainage lines.

Ductwork – annual inspection near moisture producing equipment and selected access points; clean when necessary

Fans – annual inspection for corrosion, wear on flexible connections and drive belts and other deterioration; cleaned or repaired when necessary.

Terminal Units – annual inspection and cleaning when required.

Air Outlets – components inspected annually and cleaned when necessary.

Registers and Exhaust Grilles – annually Inspected and cleaned when necessary.

Filter efficiency for hotels/motels as suggested by ASHRAE:

Bedrooms 20%-30%

Suites 20%-30%

Lobbies 20%-30%

Conference 20%-30%

Assembly Hall 20%-30%

Restaurant/Nite-club 35%-40%

Smoking Room 80%