Procedure: Inspection, cleaning and disinfection of fan-coil room ventilation units

Overview:

A fan-coil unit is a room ventilation device that contains:

a. One or more blowers;
b. A copper tube with aluminum fins that circulates hot water, chilled water or refrigerant gas for heating and chilling air that passes across the tube and fins;
c. Air dampers on the outside air intake and on the recirculation entry that controls the amounts of outdoor and indoor air that enter the unit to be heated or cooled;
d. Air filters on the outdoor air intake and on the recirculated air entry to remove insects and airborne dirt particles;
e. A blower speed control and a thermostat to control the room temperature-this can be automated or controlled manually or both;
f. A condensate catch pan to hold the water that drips off the chilled water tube and fin from the condensed humidity;
g. A sanitary drain connection to drain the condensate water to prevent the water from stagnating in the condensate pan and providing a source of microbes (mold, bacteria).

Problem:

Dirt, dust, fibers and other solid airborne particles collect on all the surfaces inside the fan-coil unit. Some of this dirt is organic and provide nutrients for microbes. In addition, collected dirt on surfaces causes:

1. The blower and housing to become dirt crusted thus reducing speed;
2. The dampers and mechanical connections to become dirt crusted thus preventing normal operation;
3. The tube and fins to become coated with dirt thus minimizing heating and cooling effectiveness;
4. The filters become dirt filled and need to be replaced before microbial growth occurs.

Corrective Actions:

Inspection, cleaning and disinfection (if necessary) must be performed at least twice per year before the winter season and before the summer season.

There are two levels of cleaning: light and heavy.
Light Cleaning:

Light cleaning is when inspection demonstrates dirt that can be removed using a bristle brush or low pressure air and a HEPA filtered vacuum cleaner to remove airborne dirt before it enters the occupied space. Light cleaning can be performed during normal work hours since it creates no to minimal noise, odors and airborne hazardous materials.

A. Blower wheel, blades, housing and electric motor
   - First, use damp (water + detergent) rag to remove dirt from accessible surfaces
   - Use low pressure air to dislodge dirt while holding the HEPA exhaust hose downwind to collect the dirt removed.

B. Dampers and mechanical connections
   - First, use damp (water + detergent) rag to remove dirt from accessible surface
   - Use low pressure air to dislodge dirt while hold HEPA exhaust hose downwind to collect the dirt removed

C. Tube and coil unit
   - Using a damp rag will push surface dirt into the coils and make cleaning more difficult. Use a low pressure air gun to blow air through the coil and collect using the HEPA vacuum cleaner.

D. Filters
   - Vacuum (HEPA) surfaces of filters.
   - Remove and check using a light source. If no light is visible, replace filter.

E. Condensate pan and drain
   - Vacuum all dry materials from condensate pan (dry pan);
   - If the pan is wet, use a rag to clean all materials from pan. Avoid pushing any material into drain. Using small amount of water, confirm that the drain is working and unobstructed.

Use of water and chemicals should be avoided during most light cleaning. In the event chemicals are needed, use low toxicity and low odor chemicals. Consult the Material Safety Data Sheet prior to use.

Heavy Cleaning and Disinfection:

Heavy cleaning should be conducted in off hours or when employees, students or guests can be relocated for 1-2 hrs.

Chemical use:
   - Do not use corrosive chemicals on any surface that cannot be rinsed as damage to the metal will occur over time.
   - Do not use corrosive disinfectants for the same reason.
• Do not use aerosol cans or odorants to mask microbial odors (clean units will not produce an odor).
• Any solutions used must be controlled and not allowed to wet room materials including carpets.
• Use low odor chemicals and avoid creating mists that coat room surfaces. Material Safety Data Sheets must be present and read prior to use of any chemicals.

Electrical safety:
• Disconnect electric power before using water around electric circuits. Lockout tagout protection should cut power and prevent unplanned operation that could cause injury.

A. Blowers, blower wheel blades and electric motors
   • Use low corrosion chemicals, steam or high pressure water or air. If water is used, use wet dry vac to clean up water.

B. Dampers and mechanical connections
   • Use low corrosion chemicals, steam or high pressure water to remove heavy grease, oil and dirt.
   • Re-oil and re-lubricate all connections as necessary when dry.

C. Tube and coil unit
   • These units can become heavily plugged with oil, grease and dirt; surface cleaning is useless; high pressure water or air may be required to dislodge dirt-use with caution and provide high levels of ventilation to remove any airborne materials.

D. Filters
   • Replace filters

E. Condensate pan and drain
   • If mold is visible, soak in disinfectant before removal to prevent spreading of mold spores; never use high pressure water when bacterial or mold contamination is visible or likely! Check drainage from condensate pan and replace pan and piping if there is ANY leakage.