Health & Safety Problems Commonly Found in Health Care Construction & Renovation

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First Adequate Separation of Construction Area/ Zone
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Provides:

- Fire Separation
- Control of Dust
- Limits Noise
- Confinement of Construction Hazards
First Adequate Separation of Construction Area/ Zone
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- Walk off mats
- 1 Hour Separation
- No gaps or Open above ceiling
- Use of zip walls
- ICRA often dictates need for maintaining negative pressure in construction zone
All Ductwork Protected from Dust

- Non-operational ducts sealed
- Active return ducts filtered
Controlling Dust
Controlling Dust

- Construction related problems with fungal spores such as Aspergillus
- Avoid disturbing dust above ceilings & in ducts that may contain fungal spores/pathogens without proper control/barriers to protect patients
- Aspergillus in soil disturbed by excavation site work
- Again, key is proper barriers, negative pressure and/or HEPA filtration
Controlling Dust

National Guidelines for the Prevention of Nosocomial Invasive Aspergillosis During Construction/Renovation Activities

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Controlling Dust

- A one-year surveillance project extensive indoor renovation and extensive demolition/building at several nearby sites.
- Mean total aspergillus was 6.8 cfu/m³ outdoors, 12.1 cfu/m³ in all indoor samples and 7.3 cfu/m³ in the bone marrow transplant patient rooms.
- Three major incidents involved increased hospital aspergillus concentrations
- A. niger levels reached 680 cfu/m³ in an organ transplant room after a water leak from a ceiling pipe. Total aspergillus concentrations rose to 77 cfu/m³ in a bone marrow transplant patient room after improper sealing and water infiltration of the unit’s dedicated high-efficiency particulate air filter system. Total aspergillus levels of 160 cfu/m³ were recorded in a renovation area during wood cutting. The higher concentrations of aspergillus seen inside the hospital compared with outdoors and the various moisture/HEPA filter/renovation incidents suggest that numerous small to moderate sources of aspergillus exist in the hospital.

Lead, Mercury, Asbestos & Other Hazardous Materials

- **Lead:**
  - Lead based paint (any bldg prior to 1978)
  - Lead shielding (handling, cutting with knife, cutting w/ power tools)
  - Sampling to document lead exposure levels
Lead, Mercury, Asbestos & Other Hazardous Materials

- **Mercury:**
  - Demo includes proper recovery of mercury products, or Hg contaminated bldg materials (lab drain pipes, etc.)
  - Ensure that new mercury products not installed (e.g. Hg thermometers, Hg thermostats, etc.)
Mercury (Hg)
Lead, Mercury, Asbestos & Other Hazardous Materials

- **Asbestos:**
  - Proper abatement prior to construction – particular attention to small in-house projects.

- **PCB Transformers:**
  - Proper disposal
Misc
Construction
Related
Problems
Water Intrusion During Construction – A BIG Problem
Water Intrusion – A BIG Problem

- Many opportunities for water intrusion in new construction project – Be vigilant!
- **Plumbing Leaks**
  - Sprinkler system in OR (one bad joint)
  - QC workmanship
Water Intrusion – A BIG Problem

- Roofing
  (particularly in Renovation)
  - Three Nursing
    Homes evacuated – one permanently closed
Water Intrusion – cont’d
Nursing Home # 2
Common Safety & Health Problems
Identified at Opening Surveys
HVAC Problems

- Air Handling Unit Filter Problems
  - Filters not proper % efficiency (dust spot or MERV)
Fiberglass

2 Inch Pleated
HVAC Problems

- **Air Handling Unit Filter Problems**
  - Filters not proper % efficiency (dust spot or MERV)
  - Filters damaged or very dirty (no evidence of maintenance)
HVAC Problems

- Air Handling Unit Filter Problems
  - Filters not proper % efficiency (dust spot or MERV)
  - Filters damaged or very dirty (no evidence of maint)
  - Gaps in housing allows air to bypass filters
HVAC Problems

- **Rooms required by design standards to have pos/neg pressure NOT properly balanced**
  - Exhaust fan not operational
  - Room missed by air balance service
  - Design with not enough CFM differential for a discernable air flow (Recommend min 50 CFM per door)
CLEAN
UTILITY
MISCELLANEOUS HVAC ISSUES
One Way to Get Exhaust up & out of Roof Wells
Kitchen Exhaust
Maintain 25ft Separation Exhaust from Outdoor Air Intake
Pharmacy Clean Room
EMERGENCY EYEWASH
Complies With ANSI Z 358.1
Not Hands Free Once Activated
No Drain Makes Weekly Testing More Difficult

(note: Tempering valve is behind wall)
Hand Wash Sinks
Proper Temperature

105 – 120 F ?
SAFE PLUMBING

Double Check Valve VS.
Isolation Exhaust
Not Identified
F-16 Serves Isolation Rooms
4D, 40, 41, 42, 43, 44, 45
Check with 4D Nurse Station before servicing fan.
Alcohol Hand Sanitizers
MISCELLANEOUS
Unobstructed View
Nurse Call Lights Blocked
CLEANABILITY
The Inanimate Environment Can Facilitate Transmission


~ Contaminated surfaces increase cross-transmission ~
HOT SURFACES

Must be $< 125 \, \text{F}$
QUESTIONS?