



HOSPITAL EPIDEMIOLOGY AND  
INFECTION CONTROL:  
**GUIDELINES FOR  
CONSTRUCTION/RENOVATION/DEMOLITION  
PROJECTS AND ENVIRONMENTAL CONTROL OF  
ASPERGILLOSIS AND OTHER NOSOCOMIAL  
INFECTIONS**

**POLICY 5.1**  
**Issued: 12/06**  
**Last Approval: 12/15**

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Office of Origin: Department of Hospital Epidemiology and Infection Control (HEIC) and Facilities Management

**I. PURPOSE**

- A. Dust and debris generated from construction/demolition activities can contain a mold or fungus, which, if inhaled by immune-compromised patients, can cause disease and even death. To provide parameters for safe design, construction, maintenance and sustainability in the healthcare environment for our patient population, visitors, and employees, dust mitigation measures must be utilized during all construction activities at the Medical Center. Dust-generating construction activities that disturb existing dust or create new dust must be conducted in enclosures that prevent the flow of particles into patient areas.

**II. REFERENCES**

- A. Guidelines for the Design and Construction of Healthcare Facilities, 2014 Edition Facilities Guidelines Institute.
- B. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Handbook. 2004.
- C. Vogel RA., ed. Infection Prevention for Construction and Renovation. Association for Professionals in Infection Control and Epidemiology. 2015.
- D. California Code of Regulations, Title 22.
- E. Schulster, L., et al. CDC Guidelines for Environmental Infection Control in Health Care Facilities. June 6, 2003.
- F. UCSF Medical Center [Environment of Care Manual \(EOC\) Policy 5.1.2 Interim Life Safety Measures](#).

**III. DEFINITIONS**

A. Construction Activity Types

The construction activity types are defined by the amount of dust that is expected to be generated, the duration of the activity, and the amount of shared HVAC systems (**Table A**). For questionable activity, contact the construction site project manager (name and contact number posted at the construction site), UCSF Medical Center Facilities: (415) 514-3570 or Hospital Epidemiology and Infection Control (HEIC) (415) 353-4343.

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Table A. Types of Construction Activities

Type A	<p><b>Inspection and non-invasive activities.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• removal of ceiling tiles for inspection (up to 4 square feet)</li> <li>• movement of equipment, building structures, etc. for visual inspection</li> <li>• painting (but not sanding)</li> <li>• putting up wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.</li> </ul>
Type B	<p><b>Small scale, short duration activities that create minimal dust.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• installing telecommunications cabling</li> <li>• accessing chase spaces</li> <li>• cutting of walls or ceiling where dust migration can be controlled.</li> </ul>
Type C	<p><b>Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies (e.g., counter tops, cupboards, sinks).</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• sanding of walls for painting or wall covering</li> <li>• removing of floor and wall coverings, baseboards, ceiling tiles and casework</li> <li>• new wall construction</li> <li>• minor duct work or electrical work above ceilings</li> <li>• major cabling activities</li> <li>• any activity which cannot be completed within a single work shift.</li> </ul>
Type D	<p><b>Major demolition, construction and renovation projects.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• activities which require consecutive work shifts</li> <li>• heavy demolition or removal of a complete cabling system required</li> <li>• new construction.</li> </ul>

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B. Infection Control Risk Groups

Patients and employees have been grouped according to their relative risk of being affected by the project because of its physical proximity or potential exposure to the activity (**Table B.**)

Table B. Population and Geographic Risk Groups\*

<b>GROUP 1 LOWEST RISK</b>	<b>GROUP 2 MEDIUM RISK</b>	<b>GROUP 3 HIGH RISK</b>	<b>GROUP 4 HIGHEST RISK</b>
<ul style="list-style-type: none"> <li>• Office areas</li> <li>• Administrative areas</li> <li>• Areas not used for patient care, patient holding or transport of patients</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby</li> <li>• Cafeteria</li> <li>• Clinical Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Department</li> <li>• Radiology/CT scan</li> <li>• Labor and Delivery</li> <li>• Well Baby Nurseries</li> <li>• Pediatrics Med/Surg</li> <li>• Nuclear Medicine</li> <li>• Admission/Discharge area</li> <li>• Rehabilitation Therapy</li> <li>• Echocardiography</li> <li>• General Medical/Surgical Units</li> <li>• Outpatient Care Clinics</li> </ul>	<ul style="list-style-type: none"> <li>• All Critical Care areas</li> <li>• Comprehensive Cancer Center</li> <li>• Peri-operative areas (including L&amp;D OR, PACU)</li> <li>• Sterile Processing</li> <li>• Cardio-Pulmonary Acute Care Units</li> <li>• Cardiac Catheterization &amp; Angiography areas</li> <li>• Dialysis areas</li> <li>• Inpatient Oncology &amp; Bone Marrow Transplant Units</li> <li>• Endoscopy areas</li> <li>• Pharmacy admixture areas</li> <li>• Ambulatory Surgery Center</li> <li>• Pediatric Treatment Center</li> </ul>

\*Designation of grouping for any location may be changed at the discretion of HEIC.



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**CONSTRUCTION ACTIVITY/ INFECTION CONTROL MATRIX**

Determine the level of infection control classification necessary for the work by matching the construction activity with the designated risk group in the matrix below (**Table C**). Plan for and use the associated infection control barriers as determined in conjunction with HEIC and Project Managers.

A copy of the Infection Control Risk Assessment and Infection Control Mitigation Plan must be submitted to HEIC when the matrix indicates that Class III or Class IV preventive measures are required. Adaptations to the prevention measures may be made only after HEIC staff have provided approval. HEIC personnel will be consulted when construction activities are placed in hallways adjacent to Group 3 or Group 4 areas (see **Table B** above).

Table C. Construction Activity and Risk Group Matrix

CONSTRUCTION ACTIVITY→ RISK LEVEL ↓	TYPE “A”	TYPE “B”	TYPE “C”	TYPE “D”
Group 1	Class I	Class II	Class II	Class III/IV
Group 2	Class I	Class II	Class III	Class IV
Group 3	Class II	Class III	Class III/IV	Class IV
Group 4	Class III	Class III/IV	Class III/IV	Class IV

A copy of the Infection Control Risk Assessment and Infection Control Mitigation Plan checklist must be sent to HEIC for review when the matrix indicates that Class III or Class IV preventive measures are required.

**IV. POLICY**

The guidelines are designed to maintain air quality and dust control in the Medical Center during construction, demolition, or renovation projects.

**V. PROCEDURES**

NOTE: Not all dust mitigation measures described on this form are required for each project. Each project will be assessed independently.

- A. The Construction Sub-Committee of the Infection Control Committee oversees these procedures.
- B. Infection Control Components for Construction/Renovation/Demolition Projects

**Infection Control Risk Assessment (ICRA) and Infection Control Mitigation Plan (ICMP).** Infection risks, interventions, and control strategies must be considered in planning for new construction and/or renovation of healthcare facilities. An Infection Control Risk



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Assessment (ICRA) is developed for all projects that may impact the health of patients. The ICRA/ICMP multidisciplinary, documented assessment process intended to proactively identify and mitigate risks from infection that could occur during construction activities. The scope of the project will dictate others who may be involved. The ICRA/ICMP shall be a part of integrated facility planning, design, construction, and commissioning activities. A risk assessment and mitigation plan form ([Appendix A](#)) will be completed by the project manager during the planning phase of the project, prior to the bidding process.

This risk assessment is based on these factors of the project:

- Nature and scope of project and expected dust generation
- Location
- Duration
- Patient populations likely to be affected

Based on the ICRA and ICMP, dust mitigation strategies during the entire project are reviewed during the Interim Life Safety Measures meeting (see section IV.C). HEIC must review and approve the risk assessment and mitigation plan prior to the beginning of any construction activities.

Based on preconstruction ICRA/MP, the owner shall provide the following recommendations to incorporate into the program:

1. Design recommendations generated by the ICRA.
2. Infection control risk mitigation recommendations (ICRMP).

ICRA Design Elements:

1. Number, location, and type of airborne isolation and protective environment rooms.
2. Number, location, and type of plumbed hand-washing stations, hand sanitation dispensers, and emergency first-aid equipment (eyewash stations and deluge showers).
  - The number and location of hand-washing stations and hand-sanitation dispensers shall be determined by the functional program and the ICRA.
  - Hand-washing stations will be convenient and accessible for healthcare personnel and all other users.
3. Special HVAC needs to meet the functional program and accommodate the services included in or affected by the project (e.g., surgical services, airborne isolation rooms, laboratories, pharmacies, and other special areas).
4. Water systems to limit Legionella and other waterborne opportunistic pathogens.

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Surfaces and Furnishings:

1. Existing code requirements are to be met.
2. Easy to maintain, repair, and clean.
3. Does not support microbial growth.
4. Nonporous and smooth.
5. See “FGI Design p. 18 A1.2–3.2.1.5 Surface selection characteristics and criteria” for additional detail.

Construction Elements: When conducting the ICRA and developing the mitigation requirements for building and site areas anticipated to be affected by construction, the following shall be addressed:

1. The impact of disrupting essential services to patients and employees.
2. Determination of the specific hazards and protection levels for each designated area.
3. Location of patients according to their susceptibility to infection and the definition of risks to each.
4. Impact of movement of debris, traffic flow, spill cleanup, and testing and certification of installed systems.
5. Assessment of external as well as internal construction activities.
6. Location of known hazards.

Compliance Elements:

1. ICRA Documentation: The written record shall remain an active part of the project documents for the duration of the construction project and through commissioning. The ICRA is filed into the master file for the specific project.
2. ICRMRs (infection control risk mitigation recommendations). Written plans that describe the specific methods by which transmission of air- and waterborne biological contaminants will be avoided during construction as well as during commissioning, when HVAC and plumbing systems and equipment are started/restarted.

C. Interim Life Safety Meeting

To address situations in which Life Safety Code deficiencies cannot be corrected during periods of construction or other impairment and to provide guidance on type and extent of special measures to compensate for increased life safety risk.

1. Before on-site construction begins, the project manager shall hold mandatory Interim Life Safety Measures (ILSM) meetings. Refer to EOC Policy 5.1.2 Interim Life Safety Measure  
[https://ucsfpolicies.ucsf.edu/Environmental%20Safety%20Manual/5%201%202%202015EC-ILSM%20\(RcvMay2015\).pdf](https://ucsfpolicies.ucsf.edu/Environmental%20Safety%20Manual/5%201%202%202015EC-ILSM%20(RcvMay2015).pdf)

- D. Annual Training for Design & Construction: Project Managers and Inspectors of Record (IOR) will attend an annual in-service training covering current dust mitigation measures. This in-service is sponsored by HEIC ([Appendix B](#)).



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E. Pre-construction Infection Control Inspection

1. After dust mitigation measures are in place and before demolition begins, the project manager, with HEIC and the contractor at the job site, schedules an inspection of the job site. The “PRE-CONSTRUCTION INFECTION CONTROL SURVEY” form ([Appendix C](#)) will be completed at the time of this walk-through.
2. When the PRE-CONSTRUCTION INFECTION CONTROL SURVEY form is completed, it will be faxed to the attention of the project manager at the Office of Design and Construction or Facilities Management.
3. While UCSF Design and Construction and Facilities Management staff regularly inspect the project site for adherence to dust mitigation measures ([Appendix F](#)), HEIC staff may visit the project site at will. If dust mitigation measures are either not in compliance or barriers and/or measures fail, it is the responsibility of the observer to notify the Project Manager and construction supervisor for immediate remedy. The Project Manager shall then communicate the non-compliance or failure to the Inspector of Record for inspection and documentation.
4. Large projects may require several phases of demolition and/or construction. Each phase may require a separate pre-construction Infection Control inspection.
5. Major exterior construction, demolition or remodeling projects performed in the vicinity of Medical Center buildings also require contractor compliance with dust mitigation measures. These include but are not limited to partial or total building demolition adjacent to UCSF controlled properties. ([Appendix D](#))

F. Air Sampling: HEIC may order air sampling, including monitoring for airborne mold spores, which will be performed by the Office of Environmental Health and Safety and culturing for mold counts by UCSF Medical Center Microbiology Lab or designee. ([Appendix E](#))

**VI. HISTORY OF POLICY**

Reviewed by:

Infection Control Committee
Quality Improvement Executive Committee
Construction Subcommittee of the ICC

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**Appendix A**  
**Infection Control Risk Assessment and Infection Control Mitigation Plan including  
Preventive Measures Checklist for Medical Center Construction and Renovation**

**Instructions for Completing the Checklist**

The Risk Assessment and Plan including the Preventive Measures Checklist will be completed during the design planning phase of the construction/renovation project by the multidisciplinary planning group. Infection Control personnel must be involved in each phase of the project to ensure that the appropriate prevention measures are initiated and maintained.

**Table A** describes the type of construction activity. The type of “Construction Activity” is first identified by selecting the level of activity that best describes the project being planned.

**Table B** identifies the “Population and Geographic Risk Group” that may be affected by the project because of its physical proximity or potential exposure to the activity.

**Table C** identifies the appropriate class of infection prevention measures by matching the construction activity with the population risk group. As indicated in Table C, the appropriate dust mitigation measures for the project are identified. A copy will be reviewed and approved by HEIC and filed by Design and Construction or Facilities Management for all Class III and IV categories. Adaptations to the prevention measures may be made only after approval has been provided by HEIC.

**Construction compartment negative air monitoring**

- A. If required for the project, negative air pressure must be monitored at all times during the duration of the project and documented daily by Design and Construction.
- B. If positive or neutral air pressure is identified, work must be suspended, barrier investigation must be completed, and negative air pressure restored before resuming work.
- C. When the option to vent the exhaust of the HEPA filter unit is determined either not to be feasible or necessary, the Project Manager in consultation with HEIC and Facilities Management may conclude that the HEPA unit be used as a “scrubber only”.

**➔ A copy of the Infection Control Risk Assessment and Mitigation Plan must be sent to HEIC when matrix indicates Class III or Class IV preventive measures are required.**



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**Infection Control Risk Assessment**

Project # and Location:	Project Start Date:	Estimated Duration:
Project Manager (PM):	Contractor(s):	Infection Control Practitioner (ICP):
PM's phone number:	Contractor's phone number:	ICP's phone number:

Comments:

**Table A Type of Construction Activity**

Type A	<p><b>Inspection and non-invasive activities.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> removal of ceiling tiles for inspection (up to 4 sq. feet)</li> <li><input type="checkbox"/> movement of equipment, building structures, etc. for visual inspection</li> <li><input type="checkbox"/> painting (but not sanding)</li> <li><input type="checkbox"/> putting up wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.</li> </ul>
Type B	<p><b>Small scale, short duration activities that create minimal dust.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> installation of telecommunications cabling</li> <li><input type="checkbox"/> access to chase spaces</li> <li><input type="checkbox"/> cutting of walls or ceiling where dust migration can be controlled.</li> </ul>
Type C	<p><b>Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies (e.g., counter tops, cupboards, sinks).</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sanding of walls for painting or wall covering</li> <li><input type="checkbox"/> removal of floor and wall coverings, baseboards, ceiling tiles and casework</li> <li><input type="checkbox"/> new wall construction</li> <li><input type="checkbox"/> minor duct work or electrical work above ceilings</li> <li><input type="checkbox"/> major cabling activities</li> <li><input type="checkbox"/> any activity which cannot be completed within a single work shift.</li> </ul>
Type D	<p><b>Major demolition, construction and renovation projects.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> activities which require consecutive work shifts</li> <li><input type="checkbox"/> heavy demolition or removal of a complete cabling system is required</li> <li><input type="checkbox"/> new construction.</li> </ul>

**Table B Population and Geographic Risks Groups\***

GROUP 1 LOWEST RISK	GROUP 2 MEDIUM RISK	GROUP 3 HIGH RISK	GROUP 4 HIGHEST RISK
<input type="checkbox"/> Office areas <input type="checkbox"/> Administrative areas <input type="checkbox"/> Areas not used for patient care, patient holding or transport of patients	<input type="checkbox"/> Lobby <input type="checkbox"/> Cafeteria <input type="checkbox"/> Clinical Labs	<input type="checkbox"/> Emergency Department <input type="checkbox"/> Radiology/CT scan <input type="checkbox"/> Labor and Delivery <input type="checkbox"/> Well Baby Nurseries <input type="checkbox"/> Pediatrics Med/Surg <input type="checkbox"/> Nuclear Medicine <input type="checkbox"/> Admission/Discharge area <input type="checkbox"/> Rehabilitation Therapy <input type="checkbox"/> Echocardiography <input type="checkbox"/> General Medical/Surgical Units <input type="checkbox"/> Outpatient Care Clinics	<input type="checkbox"/> All Critical Care areas <input type="checkbox"/> Comprehensive Cancer Center <input type="checkbox"/> Peri-operative areas (including PACU, L&D OR) <input type="checkbox"/> Sterile Processing <input type="checkbox"/> Cardio-Pulmonary Acute Care Units <input type="checkbox"/> Cardiac Catheterization & Angiography areas <input type="checkbox"/> Dialysis areas <input type="checkbox"/> Inpatient Oncology & Bone Marrow Transplant Units <input type="checkbox"/> Endoscopy areas <input type="checkbox"/> Pharmacy admixture areas <input type="checkbox"/> Ambulatory Surgery Center <input type="checkbox"/> Pediatric Treatment Center

Permit Request By: _____ (PM)	Permit Authorized By: _____ (ICP)
Date: _____	Date: _____



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**Infection Control Risk Mitigation Plan and Preventive Measures Checklist**

Project # and Location:	Project Start Date	Estimated Duration:
Project Manager (PM):	Contractor(s):	Infection Control Practitioner (ICP):
PM's phone number:	Contractor's phone number:	ICP's phone number:
<b>Please check the ICRM Plan for the project determined by the ICRA</b>		
CLASS I  <input type="checkbox"/>  Initial	1. Execute work by methods that minimize generating dust from construction operations. 2. Immediately replace ceiling tile displaced for visual inspection.	3. Immediately remove incidental dust using HEPA vacuum or damp dusting. 4. Clean work area upon completion of task.
CLASS II (includes Class I)  <input type="checkbox"/>  Initial	1. Obtain infection control permit before construction begins. 2. Provide active means to prevent dust from dispersing into atmosphere 3. Water mist work surfaces to control dust while cutting. 4. Seal unused doors with tape. 5. Air vents may require sealing; consult w/ Facilities Mgmt. 6. Wipe surfaces with disinfectant.	7. Construction workers will vacuum clothes with HEPA Vacuum before leaving work area. 8. Contain construction waste before transport in covered containers. 9. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 10. Place adhesive walk-off mats inside work area (and outside of work area if safety allows). 11. Ceiling or wall access outside construction zone may require separate enclosure (permit required).
CLASS III (includes Class II)  <input type="checkbox"/>  Initial	1. Seal air vents and Isolate HVAC system in area where work is being done. Consult with project specifications. 2. Complete all critical barriers or implement portable mitigation unit before construction begins. 3. Seal all holes, pipes, conduits and penetrations appropriately. 4. Maintain negative air pressure within work site utilizing HEPA-equipped air filtration units.	5. Do not remove barriers from work area is thoroughly cleaned. 6. Vacuum work with HEPA filtered vacuum 7. Wet mop with disinfectant. 8. Remove barrier materials to minimize dirt and debris. 9. Moisten construction waste before transport in tightly covered containers.
CLASS IV (includes Class III)  <input type="checkbox"/>  Initial	1. If walls are not full height, exposed wall or ceiling space must be sealed. 2. Construct vestibule and require all personnel to vacuum off in this room using a HEPA vacuum cleaner before leaving work site. Alternatively, they can wear cloth or paper coveralls that are removed each time they leave the work site.	3. Do not remove barriers from work area until completed project is inspected by Design and Construction or Facilities Management representatives and thoroughly cleaned. Remove barrier materials to minimize dust and debris. 4. Upon completion of work, remove isolation of HVAC system in areas where work is being performed. Follow established procedures for re-starting HVAC or water. 5. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.
___ Exceptions/Additions to this permit are noted below or by attached memoranda		<b>Date</b> <b>Initials</b>
Permit Request By:	(PM) Date:	Permit Authorized By:                      (ICP) Date:



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**Table C: Construction Activity and Risk Group Matrix**

CONSTRUCTION ACTIVITY→	TYPE “A”	TYPE “B”	TYPE “C”	TYPE “D”
RISK LEVEL ↓				
Group 1	Class I	Class II	Class II	Class III/IV
Group 2	Class I	Class II	Class III	Class IV
Group 3	Class II	Class III	Class III/IV	Class IV
Group 4	Class III	Class III/IV	Class III/IV	Class IV

\*Designation of Grouping for any location may be changed at the discretion of HEIC

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## **Appendix B**

### **Dust Mitigation Training Syllabus Outline for Contractors**

Construction/Demolition/Renovation can generate dust and debris that may contain germs that can be transmitted by dust.

- People with healthy immune systems are generally not at risk for dust-related disease.
- Patients can be infected by mold and other germs by breathing in contaminated air.
- UCSF Medical Center proudly cares for solid organ transplant patients, bone marrow transplant patients, cancer patients, and other patients with compromised immune systems and who are exquisitely susceptible to dust-related disease.
- Dust can cause life-threatening disease in immune compromised patients such as pneumonia or brain infection.

#### *Dust mitigation for Indoor Construction Projects*

The extent of the specific measures employed for dust mitigation in a project will depend on the anticipated amount of dust generation, the location(s) of the project, duration of the project and patient populations in the vicinity of the project.

- The contractor and University's project manager will complete a risk assessment.
- Adjacent units' managers must be notified of the project and updated when needed.
- Construction barricades must be sealed from floor to underside of floor above.
- When space is available a vestibule will be created adjacent the barricade.
- Barricades will have gasketed door frames (or zipper doors at plastic barricades) with self-closures and access controls.
- All penetrations into construction areas will be sealed (around piping, windows closed) and air ducts will be capped as determined in the pre-construction meeting.
- Signage with the University's project manager's name and 24-hour contact information must be posted outside the construction zone. The signage will include the approved Infection Control Risk Assessment and Mitigation Plan, Pre-Construction Survey and all required ILSM documents.
- Adhesive walk off mats shall be placed inside the construction barricade and outside the barricade door.
- Most projects will require the use of High Efficiency Particulate Air (HEPA) filter units to maintain negative pressure within the construction barricade. The HEPA units will be certified within the last year, contain clean filters, have discharge hoses vented to the outside when possible, and create a negative air pressure within the barricade with door open and an air flow of at least 100 feet per minute at all times.
- When the option to vent the exhaust of the HEPA filter unit is determined either not to be feasible or necessary, the Project Manager in consultation with HEIC and Facilities Management may conclude that the HEPA unit be exhausted to an adjacent internal space using a filtered diffuser, or used as a "scrubber only".
- A clean jobsite must be maintained. All dust must be contained within the construction barrier. Any dust tracked outside the barricade must be removed by wet mop or HEPA vacuum immediately. Debris removal will be performed in clean containers with covers, along a pre-determined route. Exterior and wheels of container must be wiped down prior to transporting.

- Construction activities outside the barricades require the use of a full height polyethylene sheet barrier, completely taped at the edges and seams. A zipper flap is required for access. Negative air may be required at the opening.
- When ceiling/wall access is required outside the construction barricades, a polyethylene enclosure must be utilized in areas where patients are housed or transported. Negative air containment may be required. A ceiling/wall access permit is required and must be obtained from UCSF Facilities Parnassus Room L210 (353-1120) or Mount Zion Room 06 (885-7576).
- Depending on the scope of the project, HEIC and the University's Project Manager may require construction workers leaving the construction barricades to vacuum the outside of their clothing with a HEPA vacuum or will put on a clean disposable paper suit just prior to leaving the barricade.
- Air sampling will be collected at strategically important locations (as requested by HEIC) Pre and Post demolition and during the construction phases of projects to assess the effectiveness of dust mitigation at the project site.
- The Department of Hospital Epidemiology and Infection Control (HEIC), Design and Construction and Facilities staff will regularly inspect the project site for adherence to dust mitigation measures. Any breach of compliance with dust mitigation measures may be subject to a fine or stop work order until acceptable particulate levels are restored and compliance measures are in place, as per project specifications.
- If dust mitigation measures are either not in compliance or barriers and/or measures fail, it is the responsibility of the observer to notify the Project Manager and construction supervisor for immediate remedy. The Project Manager shall then communicate the non-compliance or failure to the Infection Control/Interim Life Safety Measures monitor for inspection and documentation.
- All on-site workers involved in any type of demolition, construction, or remodeling work must attend an in-service sponsored by HEIC. Material reviewed includes: reasons for dust mitigation measures during demolition and construction projects in and around the medical center, patient populations served at UCSF, infectious agents of concern, air sampling for mold spores, and specific measures for dust mitigation. Contractors must retain a list that documents workers who have attended an in-service. This in-service must be completed at least annually. HEIC and Facilities Management reserve the right to require anyone to complete the training again.
- The contractor shall inform all workers on the jobsite not to enter the Medical Center if they suspect they have a symptomatic illness that could spread to others.
- Painting activities may involve dust generation (sanding, removing base coving, etc.). Evaluate each project per Risk Assessment.
- Floor covering removal may generate dust. Evaluate each project per Risk Assessment.
- Per the approved project Infection Control Risk Assessment and Mitigation Plan, HEIC and Facilities Management must approve the progression of cleaning order in which barrier removal.

*Dust Mitigation for Major Outdoor Construction Projects*

- Windows on units facing outdoor construction must be shut and disabled.
- Signs will be placed on doors leading to outside stairwells that face external construction projects to limit non-emergency traffic.
- Facilities Management will monitor air filters attached to building supply fans or air handling units. Increased dust generation related to construction may require increased maintenance.
- A letter will be sent by Patient Care Services advising patients and visitors of the disruptions and the hazards of dust.

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- The Project Manager will inform UCSF Medical Center staff via email as to the procedures in place for dust mitigation as well as construction activity schedules.
- All activities that create dust must be continuously hosed down with water.
- Soil must also be kept moist as soil may contain germs that may be aerosolized.
- Loose debris will be moist when loaded for hauling.
- Debris to be hauled away by trucks will be moist and covered prior to hauling.
- Roadways will be free of dirt and washed daily.
- Soil containing *Legionella* may enter plumbing system through cracked pipes. Report any disturbed, cracked or broken pipes to the project manager.
- The University's Infection Control/Interim Life Safety Measures Monitor will complete a checklist to ensure above dust mitigation measures are performed each day. Any breach of compliance with dust mitigation measures may be subject to a fine, as specified in the project specifications.
- Contractor to cease dust-producing activities if water is not available or if a situation arises leading to uncontrollable dust generation.
- UCSF HEIC, Design and Construction, and Facilities management staff reserve the right to inspect the project site for adherence to dust control measures.
- Construction workers working on outdoor projects may not enter the Medical Center unless free of dust.
- Air sampling will be completed at strategically important locations Pre and Post demolition and construction phases of projects. The purpose of the air sampling is to assess dust mitigation at the project site.
- If deemed necessary by the Safety Officer, the University's Project Manager, or HEIC, a traffic attendant may be stationed near the project site to direct traffic.
- All on-site construction workers must attend an in-service sponsored by HEIC. Materials to be reviewed include rationale for dust mitigation measures in demolition and construction projects in and around the medical center, patient populations served at UCSF, infectious agents of concern, air sampling for mold, and specific measures for dust mitigation.
- A contact phone number will be provided to Medical Center staff, patients, and visitors by the University's Project Manager to answer general questions regarding the project.

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**Post Test for Infection Prevention & Safety for Construction Personnel**

(Circle the best answer: True or False)

1. Dust containing mold and other germs can cause serious illness and even death to some patients.  
TRUE    FALSE
2. Construction, demolition, renovation and excavation can generate dust containing mold spores and other germs.  
TRUE    FALSE
3. If you find an injection needle in your work site you should pick it up and throw it out in the garbage.  
TRUE    FALSE
4. Utility services (water, gas, electric) must not be shut off without approval from Facilities Management, except in an emergency.  
TRUE    FALSE
5. It is acceptable to leave the work site and enter the hallway if your work clothes are covered in dust.  
TRUE    FALSE
6. Barriers placed around job sites help to prevent dust from entering patient care areas.  
TRUE    FALSE
7. Adhesive walk-off mats need to be changed only daily.  
TRUE    FALSE
8. For large construction projects, HEPA filtered fan units running in the job site are required to scrub the air and create negative pressure.  
TRUE    FALSE
9. Remove debris using an open container via any route and at times when patients are present.  
TRUE    FALSE
10. During outdoor demolition soil and debris should be kept dry.  
TRUE    FALSE
11. Air sampling during construction and demolition can help determine if Infection Control measures for dust control are working.  
TRUE    FALSE
12. All on-site construction workers must attend an Infection Control in-service. This in-service must be completed at least annually.  
TRUE    FALSE
13. Workers who are sick with a cold, flu or other communicable illness should not enter the medical center.  
TRUE    FALSE
14. You must turn off all HEPA negative air machines before leaving the jobsite at the end of each working day.  
TRUE    FALSE
15. It is permissible to open a ceiling hatch or ceiling tile in a corridor if you only need to look for less than 10 seconds.  
TRUE    FALSE

**CONTINUED ON OTHER SIDE**

16. If you are not sure if a utility line is live or dead you must contact job superintendent immediately.  
TRUE    FALSE
17. If you are in a service elevator and a patient needs to be transported in that same elevator, you **must** vacate the elevator even if there is enough room for both of you to ride, **with or without tools or materials, no exceptions.**  
TRUE    FALSE
18. You can use passenger elevators to transport materials and equipment.  
TRUE    FALSE
19. If construction dust needs to continually be removed in the corridors outside the project area, it is possible that there is airborne dust in the corridor and you should notify your job superintendent.  
TRUE    FALSE
20. A HEPA negative air machine unit running in a construction space will always produce negative air within the project site.  
TRUE    FALSE
21. Infection Control, Design and Construction, and Facilities Management can stop a job at any time for dust control violations.  
TRUE    FALSE
22. Ceiling and wall access permits are not required for portable barriers in the medical center.  
TRUE    FALSE
23. HEPA machine certification is good for 2 years.  
TRUE    FALSE
24. Interim Life Safety Measures are put in place to take the place of safety systems that may have been removed or disabled during construction.  
TRUE    FALSE
25. Corridors may be temporarily blocked by construction activity as long as worker is present and it can be cleared within 5 minutes.  
TRUE    FALSE
26. Before entering and after leaving a patient care area, you must wash your hands with either soap and water or an alcohol based hand rub.  
TRUE    FALSE

By signing below, I am confirming that I have viewed and understand all of the content presented in the training video. I also understand that Infection Control and Safety measures are important to safe patient care and UCSF Medical Center operations; I will adhere to all infection control and safety requirements.

Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Project #: \_\_\_\_\_ Contractor or Company Name: \_\_\_\_\_

[I have read and WILL COMPLY with the UCSF Medical Center Operating Room Attire Policy.](#)

[Print Name: \\_\\_\\_\\_\\_ Signature: \\_\\_\\_\\_\\_ Date: \\_\\_\\_\\_\\_](#)

**ORIGINAL TESTS MUST BE GIVEN TO FACILITIES MGMT AND COPIES RETAINED ON SITE BY CONTRACTOR**

**Examen posterior para prevención de infecciones y seguridad del personal de construcción**

**(Marque con un círculo la mejor respuesta: Verdadero o Falso)**

1. El polvo que contiene moho y otros gérmenes pueden causar serias enfermedades y hasta la muerte de algunos pacientes.  
VERDADERO FALSO
2. La construcción, demolición, renovación y excavación pueden generar polvo que contiene esporas de moho y otros gérmenes.  
VERDADERO FALSO
3. Si halla una aguja de inyección en su centro de trabajo debe recogerla y arrojarla a la basura.  
VERDADERO FALSO
4. Los servicios públicos (agua, gas, electricidad) no deben ser desconectados sin aprobación de la dirección de las instalaciones, excepto en caso de emergencia.  
VERDADERO FALSO
5. Es aceptable dejar el sitio de trabajo y entrar al pasillo si su ropa de trabajo está empolvada.  
VERDADERO FALSO
6. Las barreras puestas rodeando el centro de trabajo son para ayudar a prevenir que ingrese polvo en las áreas de atención al paciente.  
VERDADERO FALSO
7. Los felpudos adhesivos deben cambiarse diariamente.  
VERDADERO FALSO
8. En los grandes proyectos de construcción, los equipos de ventilación con filtrado HEPA que operan en el centro de trabajo son para limpiar el aire y crear una presión negativa.  
VERDADERO FALSO
9. Retire los escombros con un recipiente abierto por cualquier vía y cuando los pacientes estén presentes.  
VERDADERO FALSO
10. Durante una demolición al exterior, se deben mantener secos el suelo y los escombros.  
VERDADERO FALSO
11. El muestreo del aire durante la construcción y demolición pueden ayudar a determinar si están funcionando las medidas de control de infecciones por el polvo.  
VERDADERO FALSO
12. Todos los trabajadores de la construcción in situ en sitio deben asistir a un servicio interno de control de Infecciones. Este servicio interno debe completarse anualmente como mínimo.  
VERDADERO FALSO
13. Los trabajadores que padezcan de un resfriado, gripe u otras enfermedades contagiosas no deben ingresar al centro médico.  
VERDADERO FALSO
14. Debe apagar todas las máquinas de aire negativo HEPA antes de abandonar el centro de trabajo al fin de la jornada de trabajo.  
VERDADERO FALSO
15. No se permite abrir una escotilla o azulejo del techo en un pasillo si sólo necesita asomarse por menos de 10 segundos.  
VERDADERO FALSO
16. Si no está seguro de si una línea de servicio público está conectada o desconectada debe contactar al superintendente del trabajo INMEDIATAMENTE.  
VERDADERO FALSO

**CONTINUA EN EL OTRO LADO**

17. Si se halla en un ascensor de servicio y el paciente necesita ser transportado en el mismo ascensor, **debe** dejar el ascensor, incluso si hay suficiente espacio para que ambos lo utilicen, **Con o Sin instrumentos o materiales, ningunas excepciones!**  
VERDADERO    FALSO
18. Se puede usar los ascensores para transportar materiales, pasajeros y equipos.  
VERDADERO    FALSO
19. Si el polvo de la construcción necesita ser eliminado continuamente en los pasillos fuera de la zona del proyecto, es posible que haya polvo en el aire en el pasillo y usted debe avisar al supervisor de obra.  
VERDADERO    FALSO
20. Las máquinas de aire negativo HEPA que operan en un espacio de construcción generarán siempre aire negativo dentro del lugar del proyecto.  
VERDADERO    FALSO
21. . La dirección de control de infecciones, diseño y construcción, y la dirección de las instalaciones pueden detener la obra en cualquier momento por violaciones del control de polvo.  
VERDADERO    FALSO
22. Los permisos de acceso al techo y paredes no son necesarios para las barreras portátiles en el centro médico.  
VERDADERO    FALSO
23. La certificación de la máquina HEPA es válida para 2 años.  
VERDADERO    FALSO
24. Medidas de seguridad de vida provisionales son colocados en lugar de los sistemas de seguridad que puedan haber sido removidos o inhabilitados durante la construcción.  
VERDADERO    FALSO
25. Los pasillos pueden ser bloqueados temporalmente por la actividad de construcción, siempre y cuando el trabajador esté presente y puedan ser despejados dentro de 5 minutos.  
VERDADERO    FALSO
26. Antes de ingresar y salir de un área de atención del paciente, debe lavarse las manos con agua y jabón o un desinfectante de manos o con cualquier frotación desinfectante con alcohol.  
VERDADERO    FALSO

Al firmar a continuación, confirmo que entiendo y he visto todo el contenido que se presenta en el video de entrenamiento. Entiendo que las medidas de control de infecciones y seguridad son importantes para la atención al paciente y las operaciones del Centro Médico de UCSF bajo condiciones de seguridad; y voy a cumplir con todos los requisitos de control de infecciones y seguridad.

Nombre en letra de molde: \_\_\_\_\_ Firma: \_\_\_\_\_ Fecha: \_\_\_\_\_

Proyecto #: \_\_\_\_\_ Nombre de contratista o empresa: \_\_\_\_\_

[He Leido Y YO CUMPLIRA Con el Vestimenta politica en la sala de operaciones en el Centro Medico de UCSF](#)

Nombre en letra de molde: \_\_\_\_\_ Firma: \_\_\_\_\_ Fecha: \_\_\_\_\_

**LOS EXÁMENES ORIGINALES DEBEN ENTREGARSE A LAS INSTALACIONES MGMT Y LAS COPIAS DEBEN MANTENERSE EN LA OBRA POR EL CONTRATISTA**



HOSPITAL EPIDEMIOLOGY AND INFECTION CONTROL: GUIDELINES FOR CONSTRUCTION/RENOVATION/DEMOLITION PROJECTS AND ENVIRONMENTAL CONTROL OF ASPERGILLOSIS AND OTHER NOSOCOMIAL INFECTIONS

POLICY 5.1C Issued: 12/06 Last Approval: 12/15

Appendix C Pre-Construction Survey

Risk Assessment and Plan for Dust Mitigation Measures Completed \_\_\_/\_\_\_/\_\_\_ Class I II III IV (circle one)

Project Title/No.:

Project Location:

Project Manager: \_\_\_\_\_

Contractor: \_\_\_\_\_

Phone:

Phone:

Fax: 885-3572 (D&C) 353-1134 (FM)

Fax:

A final survey of Infection Control measures as described in Contract Specification Section 01021 was conducted. The following Infection Control measures have been incorporated in this report and approval is hereby given to proceed with demolition and/or construction activities as described in the contract documents. Contractor is responsible to ensure that the Infection Control dust mitigation measures attested to in this document remain in effect for the duration of the project.

MEASURES IN PLACE and Confirmed / Completed by Project Manager:

- 1. Infection Control dust mitigation education in-service provided with contractor and construction workers. This education must be completed at least annually for every on-site worker. It is the responsibility of the contractor to maintain a record of attendance; these records may be requested by HEIC at any time.

DATE HELD: \_\_\_/\_\_\_/\_\_\_

- 2. Date negative air machines certified by DOP test (within one year) \_\_\_/\_\_\_/\_\_\_

- 3. Construction space has negative air pressure with barricade door fully open (≥100fpm)

DATE \_\_\_/\_\_\_/\_\_\_

MEASURES IN PLACE and Confirmed / Completed by HEIC Representative:

- 1. Infection Control Compliance Survey sheet attached.

DATE OF SURVEY: \_\_\_/\_\_\_/\_\_\_ DATE OF FOLLOW-UP SURVEY: \_\_\_/\_\_\_/\_\_\_ or TBD

REMARKS: \_\_\_\_\_

- 2. Air sample ordered during early demolition phase: Date \_\_\_/\_\_\_/\_\_\_

For lengthy projects, resample. Date \_\_\_/\_\_\_/\_\_\_

- 3. Verify Date negative air machines certified by DOP test (within one year) \_\_\_/\_\_\_/\_\_\_

Project Manager: \_\_\_\_\_

Date: \_\_\_/\_\_\_/\_\_\_

HEIC Representative: \_\_\_\_\_

Date: \_\_\_/\_\_\_/\_\_\_

Contractor: \_\_\_\_\_

Date: \_\_\_/\_\_\_/\_\_\_

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HOSPITAL EPIDEMIOLOGY AND  
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**GUIDELINES FOR CONSTRUCTION/RENOVATION/DEMOLITION  
PROJECTS AND ENVIRONMENTAL CONTROL OF ASPERGILLOSIS  
AND OTHER NOSOCOMIAL INFECTIONS**

**POLICY 5.1C**  
**Issued: 12/06**  
**Last Approval: 12/12**

**OFFICE OF DESIGN AND CONSTRUCTION & FACILITIES MANAGEMENT  
INFECTION CONTROL COMPLIANCE SURVEY**

Project No.: \_\_\_\_\_ Location: \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Initial Survey prior to start of construction/demo.  Follow-up Survey

1. <i>Construction Barricade</i>	Yes	No	N/A
• Barricades sealed, no penetrations	___	___	___
• Walk-off mats in place, clean	___	___	___
• Barricade doors have closers	___	___	___
• Door frames gasketed, doors close & seal properly	___	___	___
• Signs posted cautioning about dust hazards	___	___	___
• Infection Control Risk Assessment & Mitigation Plan	___	___	___
• Project Manager contact information posted	___	___	___
• Adjacent ceiling areas intact	___	___	___
• Adjacent floor area clean, no dust tracked	___	___	___
• Correct installation of wall/ceiling enclosure	___	___	___

Comments: \_\_\_\_\_

2. <i>Negative Air</i>	Yes	No	N/A
• Negative pressure at barricade entrance	___	___	___
• All windows and doors closed behind barricade	___	___	___
• Negative air machines running	___	___	___
• Negative air machines filters clean	___	___	___
• Negative air discharge hoses intact	___	___	___
• Project requires use of vestibule	___	___	___

Comments: \_\_\_\_\_

3. <i>Jobsite</i>	Yes	No	N/A
• Project area clean, debris removal path verified	___	___	___
• Debris removed in suitable containers	___	___	___
• Debris removed scheduled at time specified	___	___	___
• Adjacent areas been notified by Project Manager	___	___	___
• Patient/staff/visitor traffic diverted	___	___	___
• HEPA-filtered vacuum ready to use	___	___	___
• Disposable patient care items removed from jobsite	___	___	___

Comments: \_\_\_\_\_

4. <i>Occupied Areas</i>	Yes	No	N/A
• Work authorized and scheduled	___	___	___
• Polyethylene barricade in place, properly sealed	___	___	___
• Ceiling access tag posted	___	___	___
• Surrounding area clean	___	___	___

Comments: \_\_\_\_\_

HEIC Representative: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

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**Appendix D**

**Dust Mitigation Checklist for Major Exterior Projects**

<b>Dust Mitigation Measures for the Medical Center</b>	<b>Date Completed</b>
<b>Windows Facing Construction Site</b>	
Screwed/locked shut (includes south side of Long inpatient units, north side of floors 9, 11, and 14)	
Window film has been added to reduce heat gain	
Multilingual signs to remind patients and staff to keep windows closed posted on all windows	
<b>Doors</b>	
Multilingual signs attached to all doors leading to the southwest stairwell (near Long elevator) reminding staff, patients, and visitors not to use the doors except for emergency (during demolition only)	
Security will help monitor stairwell during land demolition phase	
All Long stairwell doors have been gasketed and have had closing devices installed	
Plastic curtains have been installed across the large openings; i.e., breezeways, stairwells, etc. on lower level	
<b>Elevators</b>	
During the hard demolition phase, staff will be encouraged to transfer immune-compromised patients using Moffitt elevators or to mask the patient	
A daily cleaning schedule is in place	
<b>Loading Dock</b>	
Doors and curtains are propped or tied open when not in use	
Elevator vestibule doors will be kept closed when not in use	
Fliers have been distributed by project manager to delivery drivers explaining loading dock procedures	
<b>Air Intakes</b>	
Filters will be monitored by Facilities Maintenance for more frequent replacement	
Air quality monitoring samples will be taken down stream of the supply fans to monitor air quality	
Additional pre filters will be installed as needed	
<b>Education</b>	
A letter will be sent by Patient Care Services to advise patients and visitors of the disruptions and hazards of dust	
Medical Center personnel will be educated on the procedures in place for the project via campus publications and fliers	

\_\_\_\_\_  
FACILITIES MANAGER

\_\_\_\_\_  
DEPARTMENT OF HOSPITAL EPIDEMIOLOGY  
AND INFECTION CONTROL

\_\_\_\_\_  
DATE

**Dust Mitigation Measures for Major Exterior Projects**

<b>Dust Mitigation Measures for the Project Site</b>	<b>Date Completed</b>
<b>Contractor</b>	
Any activity that creates dust will be kept continuously wet	
Loose debris will be wet when loaded	
Debris hauled away by trucks will be moist and covered prior to hauling	
Road ways will be kept free of dirt build-up, washed daily	
Construction workers will not be allowed to enter the Medical Center	
Contractor has established a daily check list (Appendix E) to be filled out by site personnel dealing with site cleanliness and dust control	
Avoid damaging the underground water system (i.e., buried pipes) to prevent soil and dust contamination of the water	
Contractor will stop all dust producing activities if water is not available or if a situation arises leading to uncontrollable dust creation	
<b>Education</b>	
Prior to beginning work, all on-site construction workers shall attend a mandatory in-service sponsored by the UCSF Department of Hospital Epidemiology and Infection Control (HEIC). Materials to be reviewed include rationale for dust mitigation measures in demolition and construction projects in and around the hospital, patient populations served at UCSF, infectious agents of concern, air sampling for mold, and specific measures for dust mitigation. Records of attendance will be maintained by the Contractor(s) and made available upon request.	
Contractor/Engineer shall attend Construction Advisory Committee meetings when requested.	
<b>Monitoring</b>	
Air sampling by Office of Environmental Health and Safety to monitor air quality and identify any dust mitigation problems	
Unannounced monitoring for dust compliance by HEIC, Facilities, and project site Manager	
Specific traffic control measures per individual project will be assessed and instituted as part of the Risk Assessment	
Concerns from the department managers who may be affected will be voiced to the contractor through Design and Construction and corrective action will be taken	
Hospital Operating Room personnel have been given the authority to halt the construction if an emergency situation related to vibration develops within the operating rooms	
A contact phone number is in place to answer general questions regarding the project. The phone number is:	

\_\_\_\_\_  
PROJECT MANAGER

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
DEPARTMENT OF HOSPITAL EPIDEMIOLOGY  
AND INFECTION CONTROL

\_\_\_\_\_  
DATE

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**Appendix E**  
**Air Sampling Requests and Report Form**

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**MICROBIOLOGY REQUISITION FORM FOR AIR SAMPLES .....6**

## AIR SAMPLING REQUESTS AND REPORT FORM

Air sampling for mold counts is collected on an ongoing basis, regardless of construction activities, in high-risk units in the hospital. Air sampling for mold counts may be collected at strategically important locations during the demolition and construction phases of projects. The purpose of air sampling is to assess dust and microbial mitigation at the project site. For lengthy projects, multiple air samplings may be required. If mold counts are found to be unacceptable, construction activities may be ordered stopped by HEIC. Air sampling for mold counts in areas exceeding acceptable ranges listed within this policy should be repeated after thorough project site evaluation and after corrections have been made in areas where mitigation of dust and microbial growth is compromised.

### Department Responsibility

#### Department of Hospital Epidemiology and Infection Control (HEIC):

1. Performs patient surveillance by reviewing microbiology and autopsy reports, investigating nurse/physician reports, and performing chart review as needed.
2. Identifies areas requiring air sampling prior to construction utilizing a walk-through assessment with Design and Construction Project Manager.
3. Monitors and inspects construction projects (or delegates to trained Facilities personnel), and plans concurrent meetings as needed. Requests additional air sampling related to construction as needed.
4. Orders additional event-related air sampling (e.g. post water leakage in ceilings, ceiling tile collapse, etc.).

#### Office of Environment, Health and Safety (OEHS):

1. Performs a pre-sampling walk-through assessment and documentation of findings utilizing report form(s). (See Forms attached.)
2. Performs fungal sampling using an approved bioaerosol sampler or other equipment deemed appropriate by the Industrial Hygiene (IH) team. Performs particle sampling using an approved handheld particle counter.
3. Obtains particle counts when appropriate or by request from HEIC.

#### Office of Design, Construction and Facilities Management:

1. Advises HEIC of upcoming construction or maintenance projects.
2. Advises HEIC of dates of specific construction and demolition phases to allow timely ordering of air sampling.

### Monitoring Strategy

#### Routine and Ad-hoc Air Sampling:

- a. **Routine sampling** will be performed on a monthly basis on the units providing care to our most at risk patient populations. Services designated for routine air sampling include adult and pediatric hematology/oncology, adult transplant services, and pediatric bone marrow transplant. A list of sites for routine sampling will be generated by HEIC and maintained in OEHS.

Changes or addition to these locations should be communicated using the MICROBIOLOGY REQUISITION FOR AIR SAMPLES form (see form at end of Appendix E).

- b. **Ad-hoc sampling** may be requested by HEIC as needed (i.e. in response to an identified case of healthcare-associated mycosis or a potential cluster of fungal disease, construction project – see below). Specific locations and requested date of sampling will be submitted to OEH&S via e-mail as described below using the “MICROBIOLOGY REQUISITION FOR AIR SAMPLES.”
- c. **Sampling** will be conducted and samples submitted to the microbiology laboratory by OEH&S personnel as described below.
  - 1. The completed “MICROBIOLOGY REQUISITION FOR AIR SAMPLES” form shall be returned via e-mail (preferred) or fax (353-4348) to HEIC within 3 days of sampling.
  - 2. The completed “MICROBIOLOGY REQUISITION FOR AIR SAMPLES” form shall be returned to the submitting staff person (preferred) or faxed (353-4348) to HEIC within 3 days of sampling.
- d. **Sampling Outside Air:** A sample of outside ambient air (e.g. ER parking lot and/or loading dock) shall be collected with each routine or ad-hoc sampling as a control for the testing media and device.

### Construction Projects

- a. **Air sampling** shall be based upon a completed Infection Control Risk Assessment for each project.
  - 1. Design and Construction shall submit an Infection Control Risk Assessment for each project to HEIC during a pre-construction meeting, in advance of initiation of the project.
  - 2. IC personnel will complete the air sampling request form and e-mail to personnel designated by OEH&S. OEH&S will notify HEIC of changes to designated personnel.
  - 3. Should air sampling be needed on an emergent basis, the Director of OEH&S shall be paged in addition to the e-mail submission of the request.
  - 4. Completed “MICROBIOLOGY REQUISITION FOR AIR SAMPLES” form shall be returned to HEIC as described above.
- b. **Locations for sampling** will be decided during construction/maintenance project planning and site walk through. Those locations will be detailed on the MICROBIOLOGY REQUISITION FOR AIR SAMPLES form submitted to OEH&S. In general, air sampling is obtained outside the barriers.
- c. **Outside ambient air sampling** a sample of the outside ambient air (ER parking lot and/or loading dock) will be collected with each routine sampling as a control for the testing media and device.
- d. **Timing of sampling:**
  - 1. Routine sampling throughout the construction phase in accordance with the recommendations of HEIC

2. IC may arrange in advance with OEH&S the desired testing dates for specific locations when repeat sampling will be needed during a construction project. Such arrangements shall be made in writing to the designated certified industrial hygienist.
  3. OEH&S desires 48-hour notice to plan accordingly, but will attempt to fulfill every request as reasonably feasible.
- e. *Submitting Samples:*  
Each sample or series of samples will be submitted to the microbiology laboratory and the completed request/report form returned via e-mail or fax (353-4348) to the HEIC office within three days of the sampling date.

Investigation of the air quality of room(s) of patient(s) diagnosed with or suspected of having a healthcare-associated fungal infection of the lower respiratory tract shall be requested by HEIC as follows:

- a single sample in the room(s) occupied by the patient at symptom onset
- inspection of fan room with filtration or any part of the mechanical ventilation system that supplies the involved patient care room(s).
  - a. HEIC will notify OEH&S of the area(s) to be sampled via the “AD-HOC AIR SAMPLING REQUEST FORM.” Sampling shall be scheduled to meet the needs of the specific unit/department involved.
  - b. Each sample shall be submitted to the microbiology laboratory and the completed “AD-HOC AIR SAMPLING REQUEST FORM” returned via e-mail or fax to the HEIC office within three days of the sampling date.

#### **Sampling Procedure:**

1. The involved unit/department(s) shall be notified by OEH&S of approximate date/time to expect sampling to occur.
2. Items to be addressed in the “Observations” section of the request/report form by the OEH&S staff person include physical condition of the area, amount of traffic, time and weather conditions, open vs. closed windows and doors, etc. Observations should include factors associated with increased risk of the presence of fungal spores such as plants, holes in ceilings or walls, or obviously dusty conditions.
  - a. Sampling with the equipment designated by the IH team will be completed according to the manufacturer’s instructions.
  - b. Unless otherwise specified, all air sampling requests by HEIC will include a particle count of the locations to be sampled as well as the outside ambient air sample for a control.
4. To assure proper result delivery, air sampling specimens submitted to the microbiology laboratory by OEH&S personnel will be accessioned under the physician code for OEH&S. HEIC will retrieve results directly from the laboratory information system.

**Equipment for Sampling:**

1. Bio-aerosol sampler
2. Handheld particle counter
3. Temperature and relative humidity meter

**Reporting of Results:**

1. Microbiology will report culture results after 5 days of incubation to HEIC via routine laboratory resulting methods.
2. Ranges of Acceptability:
  - a. Bio-air sampling results of 0-10 CFU will be considered within the acceptable range.
  - b. Results of greater than 10 CFU will be considered above the acceptable range. Areas with results of greater than 10 CFU shall be sampled again by OEH&S and investigated by HEIC for possible sources. OEH&S will be notified of the need for repeat sampling via the "AD-HOC AIR SAMPLING REQUEST FORM" as described above.
  - c. Should repeat air sampling again reveal elevated fungal counts, HEIC, OEH&S, the Project Manager and/or Facilities Management will investigate for possible sources and determine what, if any, interventions are to be taken. Elevated fungal counts and intervention strategies will be discussed at monthly ICC meetings. .
3. HEIC will maintain a database of accumulated fungal counts and relevant information collected at the time of sampling.
4. Regular reports, including walk-through assessments/plans, culture results, interventions and written evaluations will be completed by HEIC staff. As appropriate, these reports will be sent to the Infection Control Committee, Office of Environment, Health and Safety, or any other pertinent committee/ department.

**MICROBIOLOGY REQUISITION FOR AIR SAMPLES**  
(one copy for lab; one copy retained by EH&S)

MOP # 1641

If MOP is unknown, please provide the following:		Questions? Please contact:	
Bill-To Department	HEIC		415-502-7361
Budget Account # (ZZ Account #)			415-476-0547
PI or MD 5-Digit Code			

Collection Date		Collection Time	
SF Gate Weather	Temperature	Humidity	
Reason for Request:			

For Laboratory Use Only Order Code: SDES: AIR SREQ: Enter Site Sampled
---

SAMPLE # – LOCATION & TIME SAMPLED	TEMP (F°) & RELATIVE HUMIDITY (%)	Total Particle Count (>0.3 microns)	NOTES/OBSERVATIONS
1.	/		
2.	/		
3.	/		
4.	/		
5.	/		
6.	/		

FOR PARTICLE COUNTS: Flow rate (L/min): _____ Volume Collected (L)/Sample: _____
--

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**HOSPITAL EPIDEMIOLOGY AND  
INFECTION CONTROL:  
GUIDELINES FOR CONSTRUCTION/RENOVATION/DEMOLITION  
PROJECTS AND ENVIRONMENTAL CONTROL OF ASPERGILLOSIS  
AND OTHER NOSOCOMIAL INFECTIONS**

**POLICY 5.1F**  
**Issued: 12/06**  
**Last Approval: 12/15**

**Appendix F**  
**Office of Design and Construction Daily Checklist**

**UCSF Medical Center**  
**OFFICE OF DESIGN AND CONSTRUCTION**

Date: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Time: \_\_\_\_\_ Project Number: \_\_\_\_\_  
 Loc: \_\_\_\_\_ Contractor: \_\_\_\_\_

INFECTION CONTROL DAILY REPORT	INTERIM LIFE SAFETY DAILY REPORT																																																																																																
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CONSTRUCTION BARRICADE</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Barricade sealed properly; no penetrations</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Walk-off mats in place, clean</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Barricade doors have closers</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Door frames gasketed</td><td></td><td></td></tr> <tr><td>doors close &amp; seal properly</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Dust precautions signs in place</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Adjacent ceiling areas intact</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Adjacent floor areas clean, no dust tracked</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> </table> <p><b>Comments:</b></p> <hr/> <p><b>2. NEGATIVE AIR</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Negative pressure at barricade entrance</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>All windows and doors closed behind barricade</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Negative air machines running</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Negative air filters clean</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> <tr><td>Negative air discharge hoses intact</td><td style="text-align: center;">YES</td><td style="text-align: center;">NO</td></tr> </table> <p><b>Comments:</b></p> <hr/> <p><b>3. 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cc: Infection Control  
 Project Manager \_\_\_\_\_ Inspector: \_\_\_\_\_  
 File

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