

## **Appendix B**

### **Dust Mitigation and Water Safety 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.

- 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.
- 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.
- 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

#### *Water Safety During Construction/Renovation/Demolition*

- Soil containing or promoting the growth of *Legionella* bacteria may enter plumbing system through cracked or open pipes. Report any disturbed, cracked, broken or open pipes into which soil, dirt or debris could enter to the project manager.
- Contact the Water Management Team at Facilities Management and the Inspector of Record (IOR) for any projects that interrupt water to any area of the medical center for any length of time.
- Water stagnation encourages biofilm growth and reduces temperature and levels of disinfectant. Biofilm protects *Legionella* from heat and disinfectants. Common issues that contribute to water stagnation include renovations that lead to 'dead legs' in plumbing and reduced building occupancy. Stagnation can also occur when fixtures go unused, like a rarely used shower in a hospital room. More information available at the following link:  
<https://www.cdc.gov/legionella/downloads/toolkit.pdf>

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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.
27. If the project requires the water to be turned off, you must notify Facilities Management and your IOR if applicable to determine if water treatment, flushing, or testing must be completed before turning the water back on.  
TRUE    FALSE
28. If during the project you notice dead legs in the domestic water system, you must notify Facilities Management and your IOR for instructions on managing them.  
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
27. Si el proyecto requiere que se suspenda por completo el suministro de agua deberá informarlo al departamento de administración de las instalaciones (Facilities Management en inglés) y, si fuera el caso, al inspector de registro (IOR, Inspector of Record en inglés), para determinar si es necesario aplicar un tratamiento, unas pruebas o evacuar las aguas de la tubería antes de reiniciar el flujo de agua.  
VERDADERO FALSO
28. Si durante el proyecto encontrara algún tramo muerto (tubería con un extremo tapado) en el sistema de la fontanería doméstica, lo deberá informar al departamento de administración de las instalaciones (Facilities Management en inglés) y al inspector de registro (IOR, Inspector of Record en inglés) para que lo instruya en el manejo de estos tramos muertos.  
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 Leído Y YO CUMPLIRÉ Con el Vestimenta política en la sala de operaciones en el Centro Médico 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**