Table of Contents

I. Program Description (Purpose)

A. The purpose of this document is to provide guidance for Project Support Personnel who remove materials contaminated with microbial growth. It is the intent of the document to provide specific health and safety protocols based on job size (area of contaminated building materials).

II. Scope

A. The protocols specified herein shall be the removal of microbial contaminants by competent persons knowledgeable in the techniques of microbial removal and handling of microbial contaminants, and the subsequent cleaning of contaminated areas. All visible microbial growth shall be removed.

III. Definitions

A. Critical Barriers- plastic sheeting or other approved materials installed on doorways, windows, etc to prevent the movement of contaminated air from the work area to adjacent, clean and uncontaminated areas.

B. Project Support Personnel- workforce engaged in a microbial abatement project. These may include, but are not limited to, Facilities Management staff, trained Maintenance personnel, contractors acting on behalf of UC Irvine, and others tasked with removal of contaminated material. Generally, projects exceeding 30 square feet (contiguous) in area are delegated to UCI-approved Contractors who have expertise in microbial remediation.

C. Quality Assurance Testing- the evaluation method performed prior to allowing reoccupation of the project area by its usual occupants. The method is determined and approved by Environmental Health and Safety (EH&S). Typical methods include tape lift samples and air sampling.

D. Susceptible Groups- a population defined by age or health condition, though not exclusively, who may be inclined to adverse reaction to microbial mitigation. An example of such a group are persons who:

- have asthma, chronic pulmonary disorder, etc.;
- are immuno-suppressed;
- are children or elderly.

IV. Responsibilities

A. Environmental Health and Safety - An Industrial Hygienist or representative shall make decisions on all matters relating to the execution of the work or the interpretation or intent of this protocol. The Industrial Hygienist's decision will be final in all matters relating to the interpretation of these specifications. In the event the work area isolation procedures required in these specifications are not deemed feasible by the project personnel for any

particular work area because of unusual conditions (e.g., inaccessibility, special equipment requirements), the project personnel must submit a written work plan for review and approval by the UCI EH&S Industrial Hygienist. The project personnel shall abide by all directions and decisions of the Industrial Hygienist relative to microbial removal.

Project Support Personnel- shall supply all labor, materials, services, insurance, permits, and equipment necessary to carry out the work in accordance with applicable federal, state, and local regulations, and these specifications. The Project Support Personnel shall inform other personnel on site of the nature of the microbial work and the measures taken to ensure that exposure to microbial contaminants are minimized.

All employers of employees exposed to microbial hazards are responsible for protecting their employees.

V. General: Specific Program Components

A. MICROBIAL REMOVAL PROTOCOLS

Non-porous materials that are structurally sound and have visible microbial contamination can be cleaned and reused. Cleaning may be accomplished using a detergent solution. Porous materials, such as ceiling tiles, insulation, and wallboards, that are grossly contaminated should be removed and discarded. Generally, a moisture meter or other testing equipment is used to determine the moisture content of affected wallboard or other materials.

Porous materials that can be cleaned, can be reused, but should be discarded as warranted. All materials designated for reuse should be dry and visibly free of microbial contamination.

The following protocols address the appropriate microbial removal procedure. Each procedure is dependent upon key specific factors. These factors are the area/density of microbial contamination and/or the location of the contamination or the material contaminated. The protocols are a guide and are subject to modification to fit each unique case. Follow the protocol that best fits the condition.

1. Protocol 1: (may be performed by trained UCI personnel)

Area/density of contamination: Small isolated areas 10 square feet or less

Requirements:
Respiratory Protection: N95 Disposable respirator
Personal Protective Equipment: Gloves, Eye protection
Relocation from-
- Affected area: Yes
- Adjacent spaces: Recommended if occupied by susceptible groups

Containment Required: No
HEPA-filtered Negative Air: No
Bag Contaminated Porous Material: Yes; waste disposal through regular means
Post-remediation Cleaning of work area and egress: Clean non-porous items with damp cloth and/or mop with detergent solution
Quality Assurance Testing: No

2. Protocol 2: (may be performed by trained UCI personnel)

Area/density of contamination: Mid-sized isolated areas 10 to 30 square feet (or greater area if density is light)

Requirements:
Respiratory Protection: N95 Disposable respirator
Personal Protective Equipment: Gloves, Eye protection
Relocation from-
Affected area: Yes
Adjacent spaces: Recommended if occupied by susceptible groups
Containment Required: Critical Barriers
HEPA-filtered Negative Air: No
Bag Contaminated Porous Material: Yes; waste disposal through regular means
Post-remediation Cleaning of work area and egress: Clean non-porous items with damp cloth and/or mop with detergent solution
Quality Assurance Testing: No

3. Protocol 3: (Contractors recommended for heavy density)

Area/density of contamination: Large isolated areas 30 to 100 square feet (or greater area if density is light)

Requirements:
Respiratory Protection: N95 Disposable respirator
Personal Protective Equipment: Gloves, Eye protection
Relocation from-
Affected area: Yes
Adjacent spaces: Recommended if occupied by susceptible groups
Containment Required: Critical Barriers
HEPA-filtered Negative Air: No
Bag Contaminated Porous Material: Yes; waste disposal through regular means
Post-remediation Cleaning of work area and egress: Clean non-porous items with damp cloth and/or mop with detergent solution

Quality Assurance Testing: No

4. Protocol 4: (Contractors recommended)

Area/density of contamination: Extensive contamination greater than 100 contiguous square feet of high density

Requirements:
Respiratory Protection: Respirators with HEPA cartridges
Personal Protective Equipment: Gloves, Eye protection, Protective clothing
Relocation from-
Affected area: Yes
Adjacent spaces: Yes
Containment Required: Critical Barriers, Air Locks, Decontamination Room within critical barriers
HEPA-filtered Negative Air: Yes
Bag Contaminated Porous Material: Yes; waste disposal through regular means
Post-remediation Cleaning of work area and egress: Clean non-porous items with damp cloth and/or mop with detergent solution

Quality Assurance Testing: Yes

B. HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) SYSTEMS PROTOCOL

Microbial contamination in ducts and associated heating, ventilating, and air conditioning (HVAC) systems requires a protocol that is developed specifically for the case. The protocol shall be developed by the service performing the project and shall be submitted to UCI EH&S for review and comment prior to commencing with the work.

C. LIFE SAFETY REQUIREMENTS

Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy identification from anywhere in the work area. They shall be secured to prevent access from uncontaminated areas and still permit emergency exiting. These exits shall be properly sealed with fire resistant polyethylene sheeting that can be cut to permit egress if needed. These exits may include the worker decontamination enclosure system, the waste container pass-out enclosure system, and/or other alternative exits satisfactory to appropriate officials and the UCI.

The Project Support Personnel shall provide at least one 2-A minimum rated portable fire extinguisher for every 6,000 square feet (maximum 3,000 square feet floor area per unit of A), with a maximum floor area per extinguisher of 11,250 square feet. Consult the National Fire Protection Association (NFPA) 10-1984 for detailed information on types and capacities of fire extinguishers.

VI. Reporting requirements

A. The Project Support Personnel shall be fully responsible to notify, when applicable, all federal, state, and local authorities, and to obtain all necessary authorizations in accordance with applicable regulations and campus policies and procedures, including but not limited to the following:

Obtaining any Facilities inspections or approvals required for construction activities.

Obtaining any EH&S documentation or surveys regarding asbestos-containing, presumed asbestos-containing, lead-containing materials.

Obtaining any UCI Campus permits or approvals required for any equipment or vehicles to be located on the streets or parking lots on campus.

B. The Project Support Personnel shall conduct a safety conference onsite prior to the commencement of any microbial removal work that shall include all members of the removal crew. UCI's representative(s) and the Industrial Hygienist's onsite representative shall be informed of the date and time of the meeting and who was invited to attend and who attended. The project personnel shall discuss procedures specific to the job, such as removal methods and emergency procedures. This meeting, as well as other safety meetings held throughout the duration of the project, shall be documented by the Project Support Personnel in his daily project log.

VII. Information and external references

A. All work shall be performed in accordance with all applicable federal, state, and local regulations, standards and codes governing microbial removal, and any other trade work done in conjunction with the microbial removal.

B. The most recent editions of any relevant regulations, standard, document, or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply. Such documents include, but are not limited to, the following:

U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

- Personal Protective Equipment (29 CFR, Subpart I, 1910.132 through 134)
- Hazard Communication (29 CFR 1910.1200)
- Specifications for Accident Prevention, Signs, and Tags (29 CFR 1910.145)
- California Division of Occupational Safety and Health (DOSH)
- Respiratory Protective Equipment Standard (8 CCR GISO 5144)
- Hazard Communication Standard (8 CCR GISO 5194)
- Accident Prevention Program (8CCR GISO 3203)
- Access to Employee Exposure and Medical Records (8 CCR GISO 3204)
- Accident Prevention Signs (8 CCR GISO 6003)
- Emergency Action Plan (8 CCR GISO 3220)
- Fire Prevention Plan (8CCR GISO 3221)
- Electrical Safety Orders (Chapter 4, Subchapter 5)
- Construction Safety Orders (Chapter 4, Subchapter 4)

New York City Department of Public Health Guidelines on Remediation of Fungi in Indoor Environments

American National Standards Institute (ANSI) Standard Z88.2-1980, Practices for Respiratory Protection

ANSI Z9.279-Fundamentals Governing the Design and Operation of Local Exhaust Systems

National Electric Code - NFPA No. 70-1984

Fire Extinguishers - NFPA No. 10-1984

VIII. Competency assessment and training requirements

A. Contractors retained to perform the microbial remediation work shall have all applicable licenses and training. EH&S must be consulted when choosing the remediation contractor.

B. Recommended training for UCI Project Support Personnel would be “HAZCOM for Building, Facilities, and Custodial Personnel”, “Mold Awareness Training”, and respirator approval and fit test and training through EH&S. These courses are available on www.ted.uci.edu.