



INDOOR AIR QUALITY PROGRAM

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1.0 PURPOSE

The purpose of the USC Indoor Air Quality Program is to outline an effective plan to: (a) respond to unhealthy building concerns and (b) prevent unhealthy building conditions from occurring throughout the University.

2.0 APPLICABILITY AND SCOPE

This program applies to all work activities, including chemical use, maintenance, construction, demolition and/or renovation activities by all University departments.

3.0 REGULATIONS AND STANDARDS

Federal Title 29, Code of Federal Regulations 29 CFR 1910.1000 "Air Contaminants".

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 62-1999 "Ventilation for Acceptable Indoor Air Quality".

American Society for Testing and Materials (ASTM) D6245-98 "Standard Guide for Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation".

4.0 DEFINITIONS

EH&S – Environmental Health and Safety

FMS – Facilities Management Services

IAQ – Indoor Air Quality. A term used to characterize the acceptability of the indoor air and is defined as: "The nature of air that affects the health and well-being of occupants." Acceptable indoor air quality is defined by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) as: "Air in which there are no known contaminants at harmful concentrations and with which a substantial majority of the people exposed do not express dissatisfaction."

5.0 RESPONSIBILITIES

5.1 Employee Responsibilities

Employees shall:

- Notify their immediate supervisor if they have concerns about indoor air quality;
- Vacate the premises to the exterior of the building if they feel overcome by poor indoor air quality.

5.2 Supervisor Responsibilities

Supervisors shall:

- Notify EH&S upon receipt of IAQ complaints;
- Notify EH&S of activities (research or otherwise) that may generate air contaminants which may be odorous, irritating, or toxic;
- Implement controls such as ventilation, dust suppression, and containment to minimize the production of airborne contaminants if applicable;
- Not generate air contaminants in excess of American Conference of Governmental Industrial Hygienist (ACGIH) threshold limit values (TLVs) or OSHA permissible exposure levels (PELs), whichever is lower; and
- Maintains on-site material safety data sheets (MSDSs) for any chemical(s) used during academic and research activities.

5.3 Contractor Responsibilities

Contractors shall:

- Provide up-to-date safety plans to FMS;
- Notify FMS when performing work that may generate any air contaminant which may be odorous, irritating, or toxic;
- Implement controls such as ventilation, dust suppression, and containment to minimize the production of airborne contaminants;
- Not generate air contaminants in excess of American Conference of Governmental Industrial Hygienist (ACGIH) threshold limit values (TLVs) or OSHA permissible exposure levels (PELs), whichever is lower; and
- Maintain on-site material safety data sheets (MSDSs) for any chemical(s) used during construction/maintenance activities.

5.4 Facilities Management Services Responsibilities

FMS shall:

- Direct contractors and FMS personnel to minimize generation of airborne contaminants during maintenance, renovation, or construction activities;

- Require contractors and FMS personnel to implement controls such as ventilation, dust suppression, and containment to minimize the production of airborne contaminants;
- Notify EH&S when work will be performed that may generate air contaminants which may be odorous, irritating, or toxic;
- Not generate air contaminants in excess of American Conference of Governmental Industrial Hygienist (ACGIH) threshold limit values (TL Vs) or OSHA permissible exposure levels (PELs), whichever is lower;
- Provide contractor safety plans to EH&S for review prior to work commencement;
- Maintains readily accessible material safety data sheets (MSDSs) for any chemical(s) used during construction/maintenance activities;
- Provide indoor ventilation rates in accordance with ANSI/ ASHRAE 62-2001 "Ventilation for Acceptable Indoor Air Quality"; and
- Perform proper preventive maintenance on HVAC systems to prevent the growth of microbial contamination.

5.5 Environmental Health and Safety Responsibilities

EH&S shall:

- Determine if the IAQ problem is related to ventilation system operation, potential contaminant(s), or environmental hazard(s);
- Contact FMS if the problem is related to the ventilation system;
 - Conduct monitoring to determine airborne contaminant concentrations; and
 - Recommend corrective action(s) and method(s) to control air contaminants.

6.0 PROCEDURE

6.1 Buildings and Facilities

- Buildings and facilities are subject to the following indices as recommended by ASHRAE and OSHA:
 - Carbon dioxide (CO₂) levels below 1000 ppm per ASHRAE Standard 62-1989 (Ventilation for Acceptable Indoor Air Quality);
 - Carbon monoxide (CO) levels below the OSHA PEL of 50 ppm;
 - Temperature ranges of 73 F to 79 F during the winter months and 69 to 75 during summer months (ASHRAE); and
 - Relative humidity range from 20 to 60% per ASHRAE 55-1981.
- Routine inspection of heating, ventilation, and air conditioning system to assess air intakes, filters, coils/drain pans, and accessible ductwork shall be conducted by FMS;
- Standing water and other sources of moisture shall be eliminated to prevent stagnation and proliferation of microbiological growth; and
- Dried water traps will be refilled with water or mineral oil to prevent evolution of sewer gases and odors.

6.2 Construction and Maintenance

- Ingress of construction/maintenance generated contaminants must be mitigated by sealing doors, HV

AC supply & return grills, and any openings in floors or ceilings where contaminants can migrate from the construction zone to occupied areas;

- Construction/maintenance contaminants shall be exhausted out of buildings or facilities ensuring that the exhaust is not contaminating occupied areas through open doors, windows, or fresh air intakes. Such operations shall not conflict local, state, or federal statutes such as the Clean Air Act, Clean Water Act, or SCAQMD Title V;
- Containment vestibule(s) into the construction/maintenance zone will be provided to allow ingress and egress while controlling the exposure of contaminants to areas outside of the construction zone;
- The cleaning of construction or other equipment with solvents, degreasers, or other chemical solutions shall be conducted at the exterior of buildings or facilities where vapors from will not contaminate occupied areas. Cleaning operations shall not conflict with local, state, or federal statutes such as the Clean Air Act, Clean Water Act, or SCAQMD Title V; and
- Gas-powered equipment shall remain at the exterior of buildings or facilities. Care will be exercised to prevent exhaust from entering through open windows or fresh air intake vents.

6.3 Notification and Assessment

- Building or facilities occupants experiencing poor indoor air quality will notify their supervisors and/or EH&S.
- EH&S will interview occupants and conduct an IAQ assessment to determine the source of the problem. Factors affecting IAQ are listed below:
 - Inadequate ventilation;
 - Ozone from copiers and fax machines;
 - Cleaning agents and pesticides;
 - Unlawful tobacco smoking;
 - Sewer gas and odors from dry traps;
 - Motor vehicle exhaust;
 - Microbiological contamination (algae, fungi, etc.); and
 - Building materials (e.g. glues, adhesives, formaldehyde, etc.).
- EH&S will coordinate with FMS and/or contractors to mitigate or remove the factors contributing to poor indoor air quality.

7.0 PROGRAM APPROVAL AND REVIEW

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