



Owner EH&S	DOC. NO. ENV-IAQ	REV. 01	DATE 05/10/2019
DOC. TITLE Indoor Air Quality Management Plan			

Indoor Air Quality (IAQ) Policy

Standard Operating Guidelines

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Policy

- This policy on **Indoor Air Quality (IAQ)** has been developed and maintained to provide a healthy and safe working environment for the faculty, staff, students and visitors of Amherst College. This policy shall include multiple aspects of indoor air quality, including, but not limited to asbestos, chemical sensitivities, construction and renovation activities, humidity, HVAC equipment, mold, particulates, pests, radon, smoking, temperature, as well as outside environmental conditions.

Regulatory Authority

- Although there are no regulatory requirements, other than building and mechanical code compliance, which is included here-in, Amherst College has opted to follow the applicable guidelines of the federal Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Centers for Disease Control (CDC), as well as the Americans Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the National Institute of Occupational Safety and Health (NIOSH).

Regulations Applicable

- Not Applicable

Enforcement and Non-Compliance

- Not Applicable



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Purpose

- The purpose of the **Indoor Air Quality Program** is to provide the College with a resource to best manage potential environmental risks in and around buildings that can and will have the potential to cause health and safety concerns for faculty, staff, students and visitors at Amherst College. The Indoor air quality program has been designed to properly maintain indoor air quality through building design, established performance standards on cooling, heating, humidity, lighting, noise and odors, as well as through maintenance activities and emergency response to identified moisture issues, leaks, odors, spills and other applicable areas of concern.

Applicability

- The **Indoor Air Quality Program** can and shall be used in and around all academic, residential and support buildings on campus, as well as in residential housing for faculty. Construction, maintenance and emergency response activities are all included in the Indoor Air Quality Program.

Responsibilities

- The responsibility for the **Indoor Air Quality (IAQ) Program** resides with the following departments; Design and Construction, Environmental Health & Safety, Facilities (building trades, custodial, electrical, mechanical, service center) and Rental Housing, depending on the area, building or concern(s) identified.

Definitions

- HVAC** – (Heating, Ventilation and Air Conditioning)

PCB's – (Polychlorinated Biphenyls) – are artificially made organic chemicals consisting of carbon, hydrogen and chlorine atoms that were used in the manufacture of electrical, heat transfer and hydraulic equipment, as well as plasticizers, paints, pigments, dyes and rubber products such as caulking. PCB's were banned by the EPA in 1979, because of their toxicity.

ILSM's – Interim Life Safety Measures are building or pathway interruptions/separations that are utilized to prevent the migration of hazards, including, but not limited to; chemical odors, dusts, fire, occupational noise and/or weather into adjacent buildings or protected areas of or around the construction site(s).

Multi-Media Inspections – are all-inclusive area, building and grounds inspections that include, but are not limited to; asbestos, building, chemical, electrical, environment, fire, hazardous materials and waste, health and sanitation, housekeeping, indoor air quality, laboratory, lead paint, pest, plumbing, roofing and safety.

VOC's – (Volatile Organic Compound) - any compound of carbon, excluding carbon monoxide, carbon dioxide etc.) which participates in atmospheric photochemical reactions, except those designated by EPA. They are organic chemical compounds whose composition allow them to evaporate under normal indoor atmospheric conditions of temperature and pressure. VOC's are generated from burning of fuels such as gas, wood and kerosene and tobacco products, as well as decaying vegetation, mold, personal care products such as perfume and hair spray, cleaning agents, dry cleaning fluid, paints, lacquers, varnishes, hobby supplies and from copying and printing machines.



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Policies and Procedures

- **Design and Construction (D&C)**
 - The initial responsibility for construction, demolition and renovation activities, as it pertains to indoor air quality is the charge of the D&C department.
 - Through building and facility design, code compliance and continued goals to construct facilities that are energy efficient, functional and easy to maintain, D&C integrates plans and specifications that incorporate appropriate indoor air quality practices that include, but are not limited to the selection of HVAC equipment, air quality monitoring systems (when applicable) as well as prudent selection of finishes and furnishings to reduce contaminants such as VOC's.
 - During all alterations, renovations and repair activities, building occupants will be protected from all indoor air quality issues, which include, but are not limited to asbestos, construction materials, dusts, furniture and material off-gassing, lead, paint and roofing materials.
 - During projects, existing and newer HVAC systems are filtered or shut-down, or left in the off position to prevent the transmission of contaminants or doing damage to the HVAC equipment. If necessary, exhaust fans or dehumidification will be installed.
 - In addition, construction site inspections are performed on daily or weekly basis, depending on the scope of work. Projects that involve the potential for release of hazardous materials, such as asbestos, chemicals, lead and PCB's are inspected more frequently for reasons of compliance and liability.
 - EH&S can monitor for several contaminants, including particulates on the job site, and can make the necessary modifications to prevent the spread of indoor air quality pollutants into the area(s) to best protect the occupants, as well as the contractors on the site.
 - Amherst College uses low or non-VOC products for all construction related projects, including general building maintenance for reasons of health and safety. This would include; adhesives, carpets, paints, stains and sealants.
 - When the use of something other than low or no VOC products is required, such as for epoxy coatings (without suitable alternative), EH&S will implement one or more of the following requirements;
 - Use of exhaust fan(s)
 - Physical separation of area(s)
 - Relocation of affected person(s)
 - Change(s) in application times, such as to nights and/or weekends
 - During inspections, regardless of products being used, EH&S inspects all storage and work areas for compliance with the Clean Air Act (CAA), and require all contractors, as well as Amherst college Facilities departments to keep containers, both products and waste) covered to prevent emissions.
 - When necessary, scheduling modifications can/will be made to further reduce indoor air quality concerns for affected Amherst College faculty, staff and students, as well as for visitors and contractors on or adjacent to the construction site.
 - Scheduling changes can be made for reasons of odor and off-gassing.



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Environmental Health & Safety

- In compliance with the Amherst College Contractor Health and Safety Guidelines, any work that could or will involve a potential relocation of IAQ concerns shall require implementation of our ILSM to separate areas or buildings to best protect the adjacent occupants.
 - Housekeeping is also included in the inspection process of all construction sites. All areas are evaluated for hazardous material storage and use, as well as proper disposal. Sites are inspected for general housekeeping, moisture issues, pest control and other indoor air quality issues.
 - Forced Off-Gassing / Flush Out for problematic VOC issues can/has been used to reduce indoor air quality concerns that occur after the construction work has been completed, furnishing have been installed and the final cleaning has been performed prior to occupancy. Forced off-gassing and flush out protocols include the use of one or more of the following; high heat with low humidity, system ventilation with filtering, exhaust fans.
- **New Science Center**
 - Amherst College has installed an **Aircuity** environmental monitoring system in our New Science Center, completed in August 2018. This system monitors the internal environment of the building and adjusts the HVAC system (exhaust and supply) based on the contaminants identified. The system provides input to the overall building ventilation system to optimize environmental air quality and energy efficiency. The system monitors for carbon dioxide, carbon monoxide, TVOC's and particulates.
- **Facilities Maintenance Operations** (building trades, electrical, HVAC, mechanical and plumbing)
 - The Facilities department inspects, maintains, repairs and responds to all types of incidents on a daily and emergency basis, including those related to indoor air quality, both independently, as well as with EH&S.
 - Any person on campus, including faculty, staff, students and visitors, including outside contractors can report concerns to the Facilities Department Service Center and/or the Amherst College Police Department (off-hours). Both the Service Center and the Amherst College Police Department can initiate an immediate response for both EH&S and/or Facilities personnel, even off-hours for odors, leaks, spills and other types of emergencies. As a minimum, the Amherst College Police Department can also respond to assess the concerns to determine if immediate or delayed response is appropriate.
 - The **Building Trades** (Carpenter and Paint Shops) frequently inspect roofing and associated items such as, but not limited to gutters and downspouts, and have preventative work orders in place to clean these items, as well as roof top drains.
 - The Building Trades department also responds immediately to reports of ceiling and roof leaks and either refers them to the most appropriate department or shop, or makes the necessary repairs to correct the issues.
 - The Building Trades department also has a program in place to monitor and address building deficiencies that could create an indoor air quality issues, and will either repair or defer, depending on significance, after consultation with EH&S.
 - Any identified moisture and/or mold problems are immediately corrected through removal of compromised materials such as carpet, sheetrock and wood, and dehumidification and other corrective measures are initiated to further reduce humidity and moisture within the area or building.
 - See Mold Guidelines - https://www.amherst.edu/offices/enviro_health_safety/occupational-and-environmental-health/mold



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- The Building Trades department also maintains building appearance by painting with low or no-VOC paints and stains.
 - In the event an oil base product has to be used, prior notification of occupants is provided and exhaust fans, or modifications to the HVAC systems are incorporated to aid in the elimination of problematic odors within the building.
- The **Electrical Shop** will report any problems that could create an indoor air quality concern to the most appropriate department or shop through the work order system, or notify EH&S to investigate
 - Burning type odors that are identified by, or reported to the electrical shop are immediately addressed, or referred to another department, if the concern should be addressed by other.
- The **Mechanical Shop** (HVAC, Mechanical and Plumbing shops) have an inspection and maintenance program in place through the work order system.
 - Depending on the building and the equipment that serves that building, the mechanical shop could be performing inspections and maintenance activities on a daily basis for chillers, or less frequently on other equipment.
 - Weekly inspections are performed on fire pumps
 - Monthly inspections and maintenance are performed on smaller chillers
 - Quarterly inspections and maintenance are performed on fans, filters and motors
 - Semi-annual inspections and maintenance are performed on bearing maintenance
 - Annual inspections and maintenance are performed on coils, CAV/VAV boxes, condensing boilers, condensing units for A/C, humidifiers,
 - The Mechanical Shop also responds immediately to reports or leaks, odors and spills, both independently, as well as with EH&S.
 - As soon as the problem has been identified, all appropriate actions are taken immediately, which can include any or all of the following;
 - Repair of the condition or damage by one or multiple departments/shops
 - Placement of one or more dehumidifiers with discharge directly to drain
 - Removal and replacement of any wet porous materials, such as, but not limited to carpets, sheetrock, wood and insulation.
- **Custodial Operations**
 - The **Custodial Department** is responsible for many different aspects of the IAQ program, which includes housekeeping in both academic and residential buildings on campus.
 - Amherst College has introduced several initiatives through the custodial department to aid in the elimination of chemical cleaning agents, moving towards the more environmental-friendly cleaning options utilizing tap water infused with ozone to create a cleaning product that eliminates germs, mildew, mold, odors and stains, eliminates bacteria and viruses and then converts it back to water and oxygen when disposed of.
 - The Custodial Department, working with EH&S reviews all chemical cleaner Safety Data Sheets (SDS's) identifying the most environmentally-friendly cleaning agents and materials to reduce health and physical concerns for our employees, as well as to reduce odors within the building for faculty, staff and students. This review process has significantly reduced the number of odor related concerns from occupants, while improving indoor air quality.
 - Cleaning products are kept as close to pH neutral as is possible
 - The above department empties waste containers frequently, if not daily depending on building use and occupancy.
 - Restroom are cleaned and sanitized daily, and depending on the building inclusive of weekends



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- Hard floors are wet mopped as needed
 - Carpets are vacuumed frequently, if not daily, and when required the use of HEPA vacuums are incorporated into the cleaning process, mainly for allergen and particulate issues
 - The custodial department also responds immediately with EH&S to any custodial related indoor air quality issues, including housekeeping concerns, illness, pest control and other public health issues.
- **Grounds and Landscaping**
 - The Grounds and Landscaping Department follows the requirements of our IPM programs on campus, for both Building and Grounds, as well as Woodside Childcare
 - https://www.amherst.edu/offices/enviro_health_safety/pest-management
 - Grounds and Landscaping also maintains lawns, trees and vegetation to reduce pest related issues as referenced in the above attachment
 - Grounds and Landscaping works with EH&S on removal of waste around buildings, including debris (i.e. leaves etc.) groundcover to reduce pest and moisture issues, and will also remove vegetation and repair downspouts and attach extensions to direct water away from the building.
- **Environmental Health and Safety (EH&S)**
 - EH&S performs routine multi-media inspections of academic, residential and associated buildings at Amherst College, including Rental Properties at times of turn-over. These inspections include all aspects of indoor air quality such as building deficiencies, housekeeping, moisture, pest control and waste.
 - EH&S also responds to indoor air quality concerns, both emergency and non-emergency and utilizes the services of the Facilities Department, depending on the situations found.
 - As soon as a problem has been identified, the required services are requested with immediate response. Services are provided by one or all of the following Facilities departments, including building trades, custodial, grounds and landscaping, mechanical shop (HVAC and plumbing), requested through the Service center.
 - Moisture issues are identified, dehumidification is brought in and, when necessary, carpets, sheetrock, insulation and associated materials are removed and replaced.
 - In areas subject to moisture, such as condensate, carpets are replaced with a non-absorbent material such as replaceable floor tile and dehumidification or HVAC system modifications are installed, if equipment and ductwork is available.
 - EH&S also has monitoring equipment, both hard-wired and hand-held portable to conduct both routine and complaint/emergency indoor quality assessments. This equipment includes;
 - Ammonia detection for anhydrous ammonia systems at Central Energy Plant and Orr Rink
 - RaeGuard VOC detection, specific to areas that utilize chemicals and gas
 - AirCuity system in the New Science Center
 - HVAC Controlled equipment, which is monitored by the building automation systems
 - Portable Equipment includes;
 - 2 - GrayWolf Indoor Air Quality (IAQ) Advanced Sense Monitors which detects for
 - Ammonia, Carbon Dioxide, Carbon Monoxide, Humidity, Hydrogen Sulfide, Oxygen, Particulates, Sulfur Dioxide, Temperature and VOC's, which can be monitored remotely.
 - 4 – Confined Space Gas Detectors
 - 1 – Ammonia Gas Badge
 - 2 – Moisture meters
 - 2 – Combustible Gas detectors
 - 1 - pH meter



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- EH&S responds immediately to all indoor air quality (IAQ) issues, identifies damage, deficiencies, allergens, moisture related concerns and other areas of concerns and immediately takes the necessary steps to mitigate the problems, through modifications in HVAC, installation of dehumidifiers, removal and replacement of porous surfaces, proper cleaning methods and elimination or repair of damage or other causes of identified concerns.
- Any person (faculty, staff, students, visitors and contractors) can report an indoor air quality issue directly to Amherst College Police Department, Facilities, or EH&S. Please use this [form](#) to report indoor air quality issues.
- **Asbestos**
 - Amherst College has an Asbestos Operations and Maintenance Plan for all areas of the College which includes; hazards and identification of asbestos, as well as requirements for maintenance operations, special work activities and emergency response procedures for incidents that could result in a release.
 - https://www.amherst.edu/offices/enviro_health_safety/occupational-and-environmental-health/Asbestos1/asbestos
 - Amherst College also has a testing process to check for the possibility of asbestos in new products being used in alteration, construction and renovation of projects, before installation of same occurs.
- **Lead**
 - Amherst College has a lead abatement, notification and painting policies for both interior and exterior painting on both academic and residential buildings.
 - https://www.amherst.edu/offices/enviro_health_safety/occupational-and-environmental-health/lead
- **Pest Management**
 - Amherst College follows our own Integrated Pest Management Program (IPM) for not just the Childcare facility, but for all buildings and grounds as well. The intent of the program is to improve housekeeping and exclude pests, including bugs and rodents from buildings and to use environmentally safe products, such as botanicals to aid in the elimination of the pest(s).
 - https://www.amherst.edu/offices/enviro_health_safety/pest-management
- **Smoking**
 - Smoking (inclusive of e-cigarettes) is not permitted in, or within 25' of any building.
 - The separation is required to prevent persons from having to inhale second hand smoke at the door, and to prevent smoke migration into the HVAC systems of the building.
 - Any person can report smoking related concerns to their supervisor and/or EH&S for corrective action.



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Training

- Training for Indoor Air Quality concerns is provide to Facilities departments by Environmental Health and Safety. Training is available on line, as well as in classroom. Faculty, staff, students, contractors and visitors have been trained to report any and all potential health and safety issues to the Facilities Service Center, Environmental Health & Safety (EH&S) or the Amherst College Police Department, during off-hours. Training is also available online for person(s) that would like to take additional training, but may not be required to.

Recordkeeping

- Environmental Health & Safety and the Facilities Service Center maintain all of the records associated with indoor air quality, including, but not limited to asbestos, building damage and deficiencies, health and safety concerns, lead paint, leaks, odors, monitoring, pest control, as well as training.

Program Evaluation and Review

- As is our standard operating practice, based mainly on OSHA code requirements, EH&S tries to review all of our policies and procedures on an annual basis and make the necessary or required modifications. However, if a concern within the policy is identified earlier that the one year timeframe, EH&S has the ability to make corrections and modifications as needed.