

Description

This information is provided to assist students with maintaining optimal indoor air quality in their college house rooms. There are several factors that students control that can influence indoor air quality discussed in detail below. EHRS is committed to assisting students maintain an optimal environment in Penn housing.

Mold Growth Prevention

Mold spores are normally found in the air and on surfaces, both indoors and out. The number and type of spores varies by location, time of day, season, and weather conditions. To grow and reproduce, spores need nutrients and water. Reductions in airborne mold spores can be achieved by keeping windows and doors closed and with routine housekeeping to remove spores that have been introduced from outdoors, including on shoes, clothing, and hair. Eliminating water leaks, wetting of food sources, and reducing humidity helps to control mold growth.

Use of Heating/Air Conditioning Unit

- The thermostat to adjust room temperature is either located on the wall or under an access panel on the top of the ventilation unit. Temperature should be set for comfort. During warm and humid weather, cooler air conditioning settings will reduce room humidity.
- **Windows must be closed when the air conditioning is on.** Open windows can increase room humidity while the air conditioning is on which may result in mold growth. If natural ventilation is desired, the air conditioning must be turned off.
- In addition, when windows are open, pollen, mold spores, and other allergens normally found in outdoor air will enter the room unfiltered and may trigger a response in those who suffer from allergies or asthma.

Humidity Control

It is important to control relative humidity (RH) in the rooms as much as possible to minimize the potential for mold to grow. Indoor RH between 40-60% is ideal. During summer, it can be difficult to maintain the RH below 60% during stretches of humid weather. During these times, it is important not to introduce additional sources of dampness in the room and to monitor cool surfaces for condensation. The use of air conditioning and the use of bathroom and kitchen exhaust fans will aid in maintaining acceptable indoor RH levels. The bathroom fan should be left on for a while after bathing or showering to aid in removing humid air.

Furniture Layout

- Many rooms are heated and cooled by a local ventilation unit that is either mounted to the ceiling or located under the exterior windows. The unit supplies conditioned air to only that room or suite. Room air is drawn into the bottom of the unit, through a filter, and heating and cooling coils condition the air prior to discharge back into the room. Space must be open near the unit for it to function properly. Cold air is highly moisture saturated near the discharge diffusers before it rapidly dries upon mixing with air in the room. Items like furniture or bedding directly in the air stream close to the unit can restrict airflow or become wet. If materials contain a nourishment source such as cotton, paper, leather, food remnants, dust, etc., mold can grow.
- Avoid adding area rugs in the room if allergic to dust, pollen, and mold spores, unless diligent about vacuuming them. Rugs trap allergens and release them upon disturbance.
- Maintain some air space between furnishings, contents, and the walls to allow air to circulate freely. This prevents condensation formation on the walls that can lead to mold growth.



Example of bed and bedding too close to the ventilation unit. Allow as much open space as possible around the unit.

Pest Management

Issues with pests can be minimized by reducing trash stored in the room and by keeping food stored in sealed containers. If pests are identified, submit a work request through the AiM system and notify a Residential Services Manager. A licensed pest control expert will quickly follow up.

Housekeeping

- Vacuum and dust regularly to minimize the volume of settled allergens. These materials can be a nutrient source for mold to grow if they become wet.
- Routine laundering of bedding and vacuuming of plush materials will aid in reducing allergens.
- Remove trash from the room at least daily.
- Avoid hanging or drying a large volume of damp items in the room. During the cooling season, this can elevate the humidity in the room and increase the potential for condensation to form on cool surfaces.
- Periodically wipe off the top of the ventilation unit air discharge diffusers to remove accumulated dust or spilled liquids that can be a nutrient source for mold to grow.



Examples of materials that can hold allergens. Minimize clutter and launder bedding routinely and vacuum plush materials and area rugs.

Maintenance Issues

Leaks or problems with the ventilation units and exhaust fans must be reported and repaired as soon as possible. Submit a work request in the AiM system and notify a Residential Services Manager. Areas impacted by leaks must be rapidly dried to avoid indoor air quality issues.

Seasonal Illnesses

It is common, especially for first year students who are adjusting to university life, to experience increased incidence of illness in the Fall semester. Increased social situations can provide opportunities for more person-to-person disease transmission. Often, these upticks in illness are incorrectly attributed to indoor air quality in housing. Students who are ill should be evaluated and treated by Student Health and Counseling where medical providers are familiar with the patterns of seasonal illness across campus and are in the best position to determine the potential cause or contributing factors. Students are discouraged from using their own instruments to evaluate their rooms as results are questionable without appropriate equipment and quality control.

Penn Indoor Air Quality Resources

Penn's Office of Environmental Health and Radiation Safety (EHRS) is a section of the Vice Provost for Research and staffed by highly qualified and experienced Certified Industrial Hygienists and Safety Professionals. EHRS staff work closely with Residential Services and Wellness at Penn and can evaluate indoor air quality concerns and provide recommendations to improve conditions if applicable. Please see EHRS resources listed below for more detailed information on Indoor Air Quality and Mold services.

Resources

Penn EHRS-Indoor Air Quality

<https://ehrs.upenn.edu/health-safety/general-health/indoor-air-quality>

Penn EHRS-Penn Mold Information Document

<https://ehrs.upenn.edu/sites/default/files/2023-06/Mold%20Information%2003-23.pdf>

Penn EHRS-Penn Mold Remediation Procedure

<https://ehrs.upenn.edu/sites/default/files/2023-06/Mold%20Program%202023.pdf>

Centers for Disease Control - Mold -

<https://www.cdc.gov/mold/default.htm>

American Industrial Hygiene Association – Mold

Resource Center - <https://www.aiha.org/public-resources/consumer-resources/disaster-response-resource-center/mold-resource-center>

EPA – Mold -

<https://www.epa.gov/mold>

AiM- Maintenance Request Portal

<http://www.collegehouses.upenn.edu/request>