

Facilities Committee Meeting

Tuesday, March 5, 2024 6:30 PM

Town Campus Hammonasset Room/Zoom, 10 Campus Drive , Madison, CT 06443

I. Indoor Air Quality (IAQ) Report

II. Update on DHHS Roof Units

III. Update on Polson Bathrooms project

IV. Public Comment

V. The Town of Madison does not discriminate on the basis of disability, and the meeting facilities are ADA accessible. Individuals who need assistance are invited to make their needs known by contacting the Town ADA/Human Resources Director, Debra Ferrante, at 203-245-6310 or by email at ferranted@madisonct.org at least five (5) business days prior to the meeting.



**MADISON BOARD OF EDUCATION
TOWN OF MADISON, CONNECTICUT**

FACILITIES OFFICE

William H. McMinn
Director of Facilities



For the last 15 years, Madison Public Schools has been utilizing the EPA's 'Tools for Schools' program. This program was originally designed to assist schools in improving their indoor air quality, or IAQ. As a result of COVID-19, the program has become a state mandated program, requiring two submissions or reports. The first submission should be an annual self-checklist that must be submitted by January 1st of each year.

The annual checklists are an important part of the facilities maintenance program as they catch any potential problems before they can cause an IAQ health issue in the buildings.

These are the checklist: *(I've included copies of each in your packet)*

- Building and Grounds Maintenance
- Food Service
- IPM (integrated pest management)
- Ventilation
- Walkthrough
- Waste Management

The second report is more involved and must be completed by a licensed hygienist, balancing engineer, or HVAC engineer. The purpose of this report is to ensure that the HVAC system at each school is operating as designed. The district must plan for this expense, which is approximately \$25,000 per school building. School districts that fail to submit or complete these reports will be removed from receiving state grants or reimbursements for any projects until the report is filed with the Department of Administrative Services. The last time we did this report was on July 30, 2020.

What do we do if a concern has been filed?

If a staff member files an IAQ concern with the IAQ committee, the concern will get vetted through the school's IAQ committee, principal, school nurse, teacher, and finally district maintenance. If additional resources are needed, the director of facilities and the health director will be brought in to resolve the problem.

I'm happy to answer any questions at any time.

Peter Anderson
Director of Facilities

Indoor Air Quality Backgrounder: The Basics

Indoor air quality (IAQ) is an increasingly important issue in schools across the nation. IAQ can directly affect the health and comfort of students and staff. There are many ways that school occupants can help to improve air quality. EPA developed the *Indoor Air Quality Tools for Schools (IAQ TFS)* Program to help schools address many IAQ issues using practical and often low-cost measures (such as unblocking ventilation supply vents to improve airflow).

By simply reviewing this *Indoor Air Quality Backgrounder* and completing the IAQ checklists, occupants can learn how to make a significant impact on IAQ and provide a healthy learning and working environment.

This guidance is based on the following principles:

- Most IAQ problems can be prevented and resolved by school staff through simple, inexpensive measures.
- The cost and effort needed to **prevent** most IAQ problems is significantly less than the cost and effort required to **resolve** problems after they develop.

WHY IAQ IS IMPORTANT TO YOUR SCHOOL

Most people are aware that outdoor air pollution can impact their health, but indoor air pollution can also have significant, harmful effects. EPA studies of human exposure to air pollutants indicate that indoor levels of pollutants may be two to five times—and occasionally more than 100 times—higher than outdoor levels. EPA and its Science Advisory Board consistently rank indoor air pollution among the top five environmental health risks to the public.

This is especially important to schools, as children may be more susceptible to air pollutants.

Failure to prevent or respond promptly to IAQ problems can:

- Increase potential for long- and short-term health problems for students and staff.
- Negatively impact student attendance, comfort, and performance.
- Reduce teacher and staff comfort and performance.
- Accelerate deterioration and reduce efficiency of school facilities and equipment.
- Increase potential for school closings or relocation of occupants.
- Strain relationships among school administration, parents, and staff.
- Create negative publicity.
- Impact community trust.
- Create liability problems.

UNDERSTANDING IAQ PROBLEMS AND SOLUTIONS

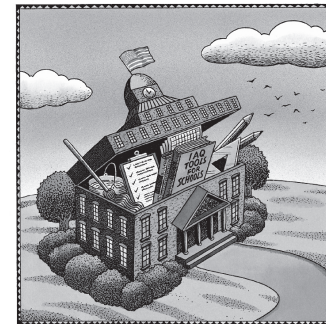
To understand IAQ problems and solutions, it is important to know what factors affect IAQ. These include:

- Sources of indoor air pollutants.
- Heating, ventilation, and air conditioning (HVAC) systems.
- Building occupants.
- Pollutant pathways.

SOURCES OF INDOOR AIR POLLUTANTS

Indoor air contaminants can originate within the building or be drawn in from outdoors. Air pollutants consist of numerous particulates, fibers, mists, bioaerosols, and gases. It is important to control air pollutant sources (see the table on the next page), or IAQ problems can arise—even if the HVAC system is properly operating.

Indoor Air Quality



Tools for Schools

Good IAQ helps to provide a healthy and productive environment for students, teachers, and staff in order to assist a school in its core mission—educating children.

A complicating factor is that indoor air pollutant concentration levels can vary by:

- Time (for example, weekly, during floor stripping); and
- Location (within a school or even within a single classroom).

HVAC System Design and Operation

Properly designed HVAC equipment in a school helps to:

- Control temperature and humidity to provide thermal comfort.
- Distribute adequate amounts of outdoor air to meet ventilation needs of school occupants.
- Isolate and remove odors and pollutants through pressure control, filtration, and exhaust fans.

Not all HVAC systems accomplish all of these functions. Some buildings rely only on natural ventilation. Others lack mechanical cooling equipment, and many function with little or no humidity control.

The two most common HVAC designs in schools are unit ventilators and central air-handling systems. Both can perform the same HVAC functions, but a unit ventilator serves a single room while a central air-handling unit serves multiple rooms.

The diagrams on page 5 of this *Indoor Air Quality Backgrounder* show how three typical HVAC designs circulate air through classrooms. As shown in the diagrams, it is important that all rooms have both an air supply and exhaust.

TYPICAL SOURCES OF INDOOR AIR POLLUTANTS

Outdoor Sources	Building Equipment	Components and Furnishings	Other Indoor Sources
<p>Polluted Outdoor Air</p> <ul style="list-style-type: none"> • Pollen, dust, fungal spores • Industrial emissions • Vehicle emissions <p>Nearby Sources</p> <ul style="list-style-type: none"> • Loading docks • Odors from dumpsters • Unsanitary debris or building exhausts near outdoor air intakes <p>Underground Sources</p> <ul style="list-style-type: none"> • Radon • Pesticides • Leakage from underground storage tanks 	<p>HVAC Equipment</p> <ul style="list-style-type: none"> • Microbiological growth in drip pans, ductwork, coils, and humidifiers • Improper venting of combustion products • Dust or debris in ductwork <p>Other Equipment</p> <ul style="list-style-type: none"> • Emissions from office equipment (volatile organic compounds, ozone) • Emissions from shop, lab, and cleaning equipment 	<p>Components</p> <ul style="list-style-type: none"> • Microbiological growth on or in soiled or water-damaged materials • Dry traps that allow the passage of sewer gas • Materials containing volatile organic compounds, inorganic compounds, or damaged asbestos • Materials that produce particles (dust) <p>Furnishings</p> <ul style="list-style-type: none"> • Emissions from new furnishings and floorings • Microbiological growth on or in soiled or water-damaged furnishings 	<ul style="list-style-type: none"> • Science laboratory supplies • Vocational art supplies • Copy/print areas • Food prep areas • Smoking lounges • Cleaning materials • Emissions from trash • Pesticides • Odors and volatile organic compounds from paint, chalk, adhesives • Occupants with communicable diseases • Dry-erase markers and similar pens • Insects and other pests • Personal care products

Building Occupants

The effects of IAQ problems on school occupants—including staff, students, and others—are often non-specific symptoms rather than clearly-defined illnesses. Symptoms commonly attributed to IAQ problems include:

- Headache, fatigue, and shortness of breath.
- Sinus congestion, cough, and sneezing.
- Eye, nose, throat, and skin irritation.
- Dizziness and nausea.

These symptoms could be caused by air quality deficiencies, but may also be linked to other factors—poor lighting, stress, noise, and more. Due to varying sensitivities among school occupants, IAQ problems may affect a group of people or just one individual. In addition, IAQ problems may affect people in different ways. Individuals that may be particularly susceptible to effects of indoor air contaminants include, but are not limited to, people with:

- Asthma, allergies, or chemical sensitivities.
- Respiratory diseases.
- Suppressed immune systems (due to radiation, chemotherapy, or disease).
- Contact lenses.

Pollutant Pathways and Driving Forces

Airflow patterns in buildings are determined by the combined forces of mechanical ventilation systems, human activity, and natural effects. Air pressure differences created by these forces move airborne pollutants from areas of higher pressure to areas of lower pressure through any available openings in building walls, ceilings, floors, doors, windows, and HVAC systems. For instance, as long as the opening to an inflated balloon is kept shut, no air will flow. When opened, however, air will move from the inside (area of higher pressure) to the outside (area of lower pressure).

Even if the opening is small, air will move until the inside pressure is equal to the outside pressure.

SIX BASIC CONTROL STRATEGIES

There are six basic control methods that can lower concentrations of indoor air pollutants. Specific applications of these basic control strategies may be noted in the attached checklist(s).

1. Source Management - Management of pollutant sources includes:

- **Source removal** - Eliminating pollutant sources or not allowing them to enter the school. Examples include not allowing buses to idle, not placing garbage in rooms with HVAC equipment, and replacing moldy materials.
- **Source substitution** - Replacing pollutant sources. Examples include selecting less- or non-toxic art materials or interior paints.
- **Source encapsulation** - Placing a barrier around the source so that it releases fewer pollutants into the indoor air. Examples include covering pressed wood cabinetry with sealed or laminated surfaces or using plastic sheeting to contain contaminants when renovating.

2. Local Exhaust - Removing point sources of indoor pollutants (through exhausting fume hoods and local exhaust fans to the outside) before they disperse. Examples include exhaust systems for restrooms and kitchens, science labs, storage rooms, printing and duplicating rooms, and vocational/industrial areas (such as welding booths and firing kilns).

3. Ventilation - Lowering pollutant concentrations by using cleaner (outdoor) air to dilute polluted (indoor) air. Local building codes likely specify the quantity (and sometimes quality) of outdoor air that should be continuously supplied in your school, as do voluntary standards set by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). Temporarily increasing ventilation coupled with proper use of the exhaust system while painting or applying pesticides, for example, can be useful in diluting the concentration of noxious fumes in the air.

4. Exposure Control - Adjusting the time and location of pollutant exposure. An example of time control is scheduling floor stripping and waxing (with the ventilation system functioning) for Friday after school. This allows products to off-gas over the weekend while the school is unoccupied. Location control involves moving the pollutant source away from occupants or even relocating susceptible occupants.

5. Air Cleaning - Filtering particles and gaseous contaminants as air passes through ventilation equipment. In most cases this type of system should be engineered on a case-by-case basis.

6. Education - Teaching and training school occupants about IAQ issues. People in the school can reduce their exposure to many pollutants by understanding basic information about their environment and knowing how to prevent, remove, or control pollutants.

Some solutions, such as major ventilation changes, may not be practical to implement due to lack of resources or the need for long periods of non-occupancy to ensure the safety of the occupants. Use temporary measures to ensure good IAQ in the meantime. Other solutions, such as anti-idling programs, offer low-cost options that can be easily and quickly implemented.

YOUR ROLE IN THE IAQ TEAM

As a school occupant, your activities and decisions have an impact on the quality of the school's indoor air. You can participate by completing the appropriate checklist and by continuing to apply these principles on a daily basis. Your school's IAQ Coordinator serves as a focal point for collecting IAQ information and handling IAQ concerns.

HOW TO KNOW IF YOU HAVE AN IAQ PROBLEM

Diagnosing IAQ-related symptoms can be tricky, especially because acute (short-term) symptoms are similar to those from colds, allergies, fatigue, or the flu. There are clues, however, that can help link symptoms to IAQ problems:

- Symptoms are widespread within a class or school.
- Symptoms disappear when the students or staff leave the school building for a day or for extended periods of time.
- Onset is sudden after some change at school (such as painting or pesticide application).
- Reactions occur indoors but not outdoors.
- Symptoms have been identified by a doctor as being IAQ-related.

It is not safe to assume that a lack of symptoms means that the IAQ in your school is acceptable. Symptoms of long-term health effects (such as lung cancer due to radon) often do not become evident for many years.

IF YOU THINK YOU HAVE AN IAQ PROBLEM

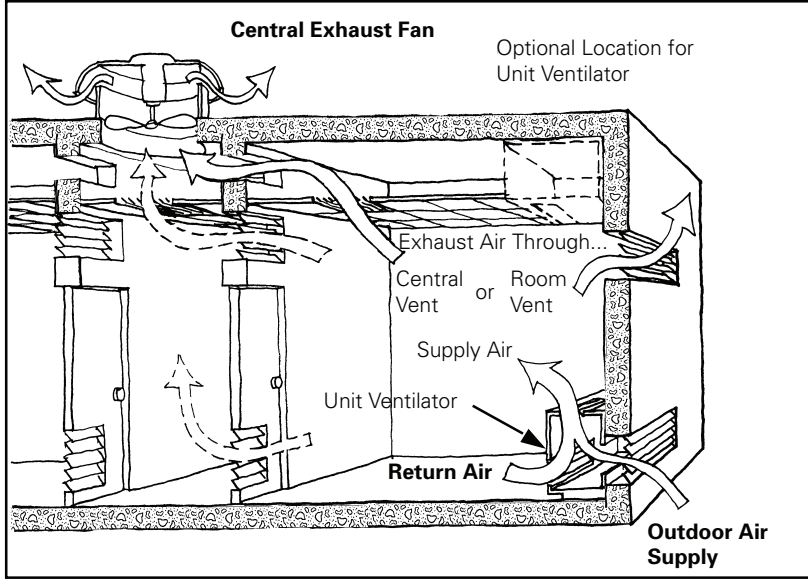
If you have a potential IAQ problem in your school or area that requires a simple solution or action, correct the problem. If the problem cannot be easily corrected or if the complaint seems to indicate a potentially severe IAQ problem, contact the IAQ Coordinator immediately. The IAQ Coordinator will investigate the problem further, either using in-house resources or by calling in help from outside the school.

COMMUNICATION

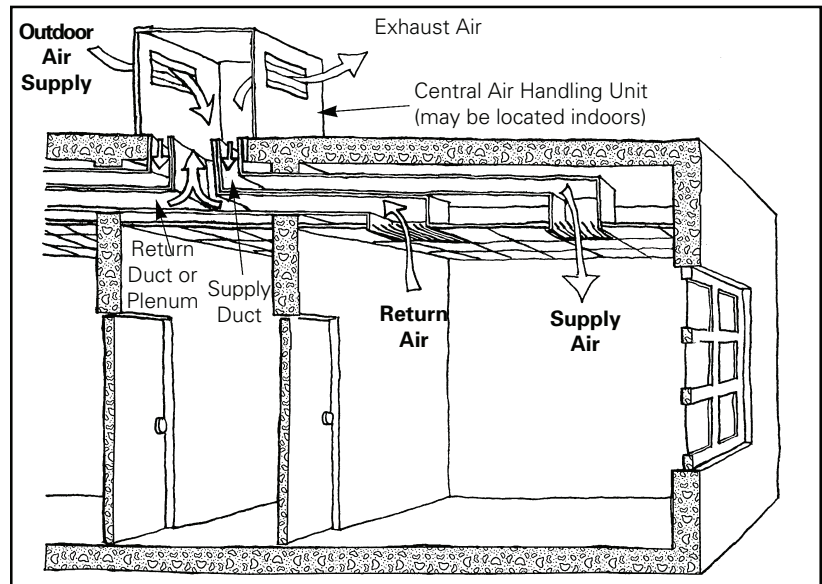
Because of the health risks involved, parents, the community, and media may react strongly to reports of poor indoor air quality in your school. It is recommended that you follow your school's IAQ communications guidelines. This typically involves referring all questions and inquiries to one central source—the IAQ Coordinator. This is the best way to avoid incomplete, incorrect, or conflicting information regarding the quality of the air in your school and any actions necessary to improve IAQ. For more information, refer to the *IAQ TFS Communications Guide*, posted on EPA's Web site: www.epa.gov/iaq/schools

IAQ Checklists Available

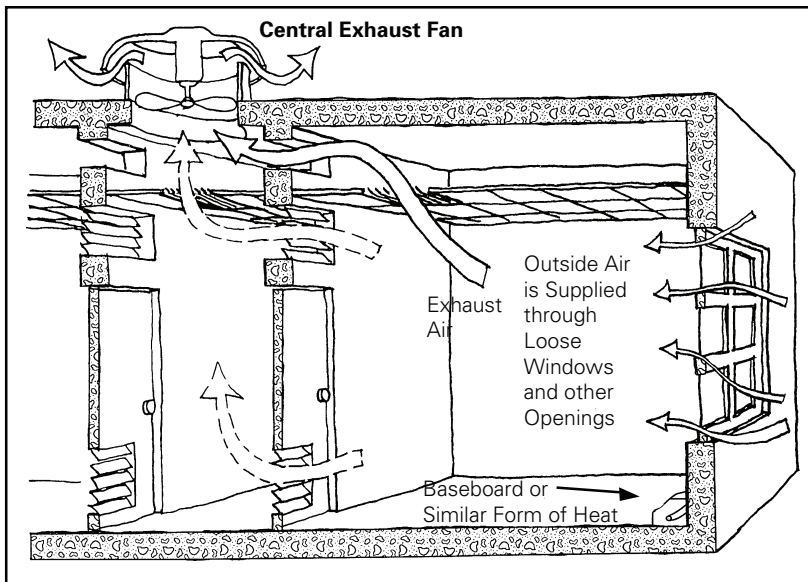
- Teacher's
- Administrative Staff
- School Official's
- Health Officer's
- Ventilation
- Building Maintenance
- Food Service
- Waste Management
- Renovation and Repairs
- Integrated Pest Management
- Walkthrough



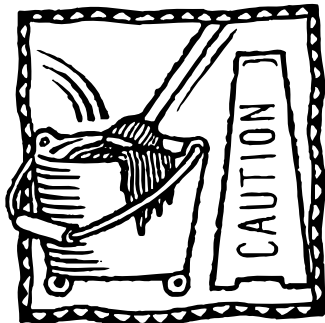
Air Supply through a Unit Ventilator



Air Supply in a Central Air Handling System



Air Supply in an Exhaust-only System



Building and Grounds Maintenance Checklist

Name: _____
 School: _____
 Room or Area: _____ Date Completed: _____
 Signature: _____

Instructions

1. Read the *IAQ Backgrounder* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of the checklist for future reference.
3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. BUILDING MAINTENANCE SUPPLIES

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 1a. Developed appropriate procedures and stocked supplies for spill control | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Reviewed supply labels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1c. Ensured that air from chemical and trash storage areas vents to the outdoors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Stored chemical products and supplies in sealed, clearly labeled containers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1e. Researched and selected the safest products available | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1f. Ensured that supplies are being used according to manufacturers' instructions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Ensured that chemicals, chemical-containing wastes, and containers are disposed of according to manufacturers' instructions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1h. Substituted less- or non-hazardous materials (where possible) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Scheduled work involving odorous or hazardous chemicals for periods when the school is unoccupied | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1j. Ventilated affected areas during and after the use of odorous or hazardous chemicals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

2. GROUNDS MAINTENANCE SUPPLIES

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 2a. Stored grounds maintenance supplies in appropriate area(s) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Ensured that supplies are used and stored according to manufacturers' instructions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Established and followed procedures to minimize exposure to fumes from supplies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Reviewed and followed manufacturers' guidelines for maintenance | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Replaced portable gas cans with low-emission cans | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2f. Stored chemical products and supplies in sealed, clearly-labeled containers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2g. Ensured that chemicals, chemical-containing wastes, and containers are disposed of according to manufacturers' instructions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3. DUST CONTROL

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3a. Installed and maintained barrier mats for entrances | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Used high efficiency vacuum bags | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3c. Used proper dusting techniques | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3d. Wrapped feather dusters with a dust cloth | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3e. Cleaned air return grilles and air supply vents | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

4. FLOOR CLEANING

- | | Yes | No | N/A |
|--|--------------------------|--------------------------|--------------------------|
| 4a. Established and followed schedule for vacuuming and mopping floors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4b. Cleaned spills on floors promptly (as necessary) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4c. Performed restorative maintenance (as necessary) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

5. DRAIN TRAPS

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 5a. Poured water down floor drains once per week (about 1 quart of water) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5b. Ran water in sinks at least once per week (about 2 cups of water) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5c. Flushed toilets once each week (if not used regularly) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6. MOISTURE, LEAKS, AND SPILLS

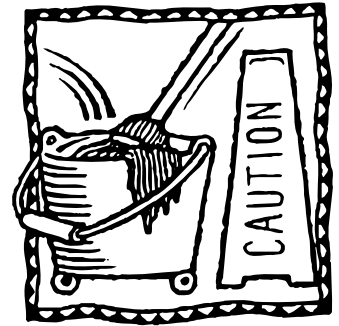
- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 6a. Checked for moldy odors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6b. Inspected ceiling tiles, floors, and walls for leaks or discoloration (may indicate periodic leaks) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6c. Checked areas where moisture is commonly generated (e.g., kitchens, locker rooms, and bathrooms) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6d. Checked that windows, windowsills, and window frames are free of condensate | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6e. Checked that indoor surfaces of exterior walls and cold water pipes are free of condensate | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6f. Ensured the following areas are free from signs of leaks and water damage: | | | |
| Indoor areas near known roof or wall leaks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Walls around leaky or broken windows | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Floors and ceilings under plumbing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Duct interiors near humidifiers, cooling coils, and outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. COMBUSTION APPLIANCES

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 7a. Checked for odors from combustion appliances | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7b. Checked appliances for backdrafting (using chemical smoke) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7c. Inspected exhaust components for leaks, disconnections, or deterioration | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7d. Inspected flue components for corrosion and soot | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8. PEST CONTROL

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 8a. Completed the <i>Integrated Pest Management Checklist</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|



NOTES



Food Service Checklist

Name: _____

School: _____

Room or Area: _____ Date Completed: _____

Signature: _____

Instructions

1. Read the *IAQ Backgrounder* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of the checklist for future reference.
3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. COOKING AREA

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 1a. Determined that local exhaust fans operate properly (note if fans are excessively noisy) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Checked for odors near cooking, preparation, and eating areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1c. Ensured that exhaust fans are used whenever cooking, washing dishes, and cleaning | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Determined that gas appliances function properly | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1e. Verified that gas appliances are vented outdoors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1f. Ensured there are no combustion gas or natural gas odors, leaks, back-drafting, or headaches when gas appliances are used | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Ensured that kitchen is clean after use | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1h. Checked for signs of microbiological growth in the kitchen, including the upper walls and ceiling (for example, mold, slime, and algae) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Selected biocides registered by EPA (if required), followed the manufacturer's directions for use, and carefully reviewed the method of application | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1j. Verified the kitchen is free of plumbing and ceiling leaks (signs include stains, discoloration, and damp areas) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

2. FOOD HANDLING AND STORAGE

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 2a. Checked food preparation, cooking, and storage areas for signs of insects and vermin (for example, feces or remains) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Stored leftovers in well-sealed containers with no traces of food on outside surfaces | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Ensured that food preparation, cooking, and storage practices are sanitary .. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Disposed of food scraps properly and removed crumbs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Cleaned counters with soap and water or a disinfectant (according to school policy) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2f. Swept and wet mopped floors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3. WASTE MANAGEMENT

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 3a. Selected and placed waste in appropriate containers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Ensured that containers' lids are securely closed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3c. Separated food waste and food-contaminated items from other wastes, if possible | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3d. Stored waste containers in a well-ventilated area | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3e. Ensured that dumpsters are properly located (away from air intake vents, operable windows, and food service doors in relation to prevailing winds) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

4. DELIVERIES

- | | Yes | No | N/A |
|--|--------------------------|--------------------------|--------------------------|
| 4a. Instructed vendors to avoid idling their engines during deliveries | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4b. Posted a sign prohibiting vehicles from idling their engines in receiving areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4c. Ensured that doors or air barriers are closed between receiving area and kitchen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



NOTES



Integrated Pest Management Checklist

Name: _____

School: _____

Room or Area: _____ Date Completed: _____

Signature: _____

Instructions

1. Read the *IAQ Backgrounder* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of the checklist for future reference.
3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. OFFICIAL POLICY STATEMENT

Yes No N/A

- 1a. Developed or located the school's official policy statement for integrated pest management (IPM)

2. DESIGNATING PEST MANAGEMENT ROLES

- 2a. Assigned and trained a qualified person to be the pest manager
- 2b. Involved decision makers in the IPM program
- 2c. Educated students and staff (the occupants of the building) about IPM and asked them to keep their areas clean and free of clutter
- 2d. Encouraged parents to learn about IPM practices and implement them at home
- 2e. Developed a program to educate and train all IPM participants
- 2f. Included language about IPM into contracts with pest management professionals

3. SETTING PEST MANAGEMENT OBJECTIVES

- 3a. Set appropriate pest management objectives for school buildings (such as preventing pests from interfering with students' learning environment and preserving the integrity of the building structure)
- 3b. Set appropriate pest management objectives for school grounds (such as providing safe playing areas and the best athletic surfaces possible)

4. INSPECTING, IDENTIFYING, AND MONITORING

- 4a. Inspected all buildings and grounds for pest evidence, entry points, food, water, and harborage sites
- 4b. Identified potential pest habitats in buildings and grounds
- 4c. Pinpointed the source of any current pest problems
- 4d. Monitored to determine the extent of pest problems and to estimate pest populations
- 4e. Developed plans to modify habitat (for example, exclusion, repair, and sanitation efforts) to prevent or resolve any pest problems
- 4f. Established a monitoring program that consists of routine inspections to estimate pest population levels and identify evidence of pests and potential habitat

5. SETTING ACTION THRESHOLDS

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 5a. Evaluated all available data obtained through inspecting, identifying, and monitoring | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5b. Determined how many pests the school buildings, grounds, and occupants can tolerate | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5c. Set action thresholds | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



6. PREVENTIVE STRATEGIES

INDOOR SITES

- 6a. Implemented appropriate strategies to prevent pests from inhabiting the following areas:
- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| • Entryways | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Classrooms | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Gymnasiums | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Locker rooms | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Offices | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Staff lounges | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Bathrooms | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Food preparation and serving areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Rooms with extensive plumbing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Maintenance areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

OUTDOOR SITES

- 6b. Implemented appropriate strategies to prevent pests from inhabiting the following areas:
- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| • Playgrounds | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Parking lots | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Lawns and athletic fields | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Teaching gardens or greenhouses | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Loading docks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Dumpsters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Areas with ornamental shrubs and trees | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. PESTICIDE USE AND STORAGE

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 7a. Explored alternative pest management methods before concluding that pesticides were necessary | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7b. Ensured that pest management professionals integrate IPM into their pest management methods | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7c. Identified the least toxic, target-specific chemical (or pesticide formulation) that is the most effective to address the pest problem, preferably as baits and granules | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7d. Reviewed and followed all label instructions on pesticides and learned how to properly apply and handle these chemicals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7e. Used spot-treatment (or bait, crack, and crevice applications) to apply pesticides whenever possible and only treated the obviously infested plants in the area | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7f. Used protective clothing or equipment when applying pesticides | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7g. Placed all pesticides in tamper-resistant bait boxes or locations that are inaccessible to children and non-target species | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



7. PESTICIDE USE AND STORAGE (cont.)

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 7h. Locked or fastened lids of all bait boxes and placed bait away from the runway of the box | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7i. Applied pesticides when occupants were not present or in areas where they would not be exposed to the chemicals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7j. Ensured that school occupants (students and staff) are notified of upcoming pesticide applications through posted notices and/or letters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7k. Ensured that parents are notified of upcoming pesticide applications through letters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7l. Kept copies of current pesticide labels and information on pesticides easily accessible | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7m. Stored pesticides off site or in areas that are locked and accessible only to designated personnel | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7n. Ensured that storage areas are adequately ventilated and are located away from areas prone to flooding or where spills or leaks may contaminate the environment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7o. Ensured that flammable liquids are stored away from ignition sources | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7p. Ensured that pesticides are stored in their original containers and all lids are securely fastened | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7q. Ensured that air in the storage space cannot mix with the air in the central ventilation system | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8. EVALUATING RESULTS AND RECORD KEEPING

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 8a. Ensured that accurate, up-to-date records of IPM practices and a pest management log for each property are kept | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8b. Ensured that pesticide records necessary to meet all state, local, and school board requirements are maintained | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8c. Ensured that each log book contains the following items: | | | |
| • Copy of the pest management plan | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Service schedules for maintenance of buildings and grounds | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Current EPA-registered labels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Current Material Safety Data Sheets (MSDS) for each pesticide project | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Pest surveillance data sheets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Diagram noting the location of pest activity, traps, and bait stations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTES



Ventilation Checklist

Name: _____
 School: _____
 Unit Ventilator/AHU No: _____
 Room or Area: _____ Date Completed: _____
 Signature: _____

Instructions

1. Read the *IAQ Backgrounder* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of this checklist for **each** ventilation unit in your school, as well as a copy for future reference.
3. Complete the Checklist.
 - Check the “yes,” “no,” or “not applicable” box beside each item. (A “no” response requires further attention.)
 - Make comments in the “Notes” section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. OUTDOOR AIR INTAKES

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 1a. Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Ensured that the ventilation system was on and operating in “occupied” mode | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 1: OBSTRUCTIONS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1c. Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 2: POLLUTANT SOURCES

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1f. Checked rooftop intakes for pollutant sources (plumbing vents; kitchen, toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 3: AIRFLOW

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1h. Obtained chemical smoke (or a small piece of tissue paper or light plastic) .. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Confirmed that outdoor air is entering the intake appropriately | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

2. SYSTEM CLEANLINESS

ACTIVITY 4: AIR FILTERS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 2a. Replaced filters per maintenance schedule | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Vacuumed filter areas before installing new filters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Confirmed proper fit of filters to prevent air from bypassing (flowing around) the air filter | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Confirmed proper installation of filters (correct direction for airflow) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

2. SYSTEM CLEANLINESS (continued)

ACTIVITY 5: DRAIN PANS

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 2f. Ensured that drain pans slant toward the drain (to prevent water from accumulating) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2g. Cleaned drain pans | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2h. Checked drain pans for mold and mildew | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 6: COILS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 2i. Ensured that heating and cooling coils are clean | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|

ACTIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 2j. Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2k. Ensured that ducts are clean | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 8: MECHANICAL ROOMS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 2l. Checked mechanical room for unsanitary conditions, leaks, and spills | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2m. Ensured that mechanical rooms and air-mixing chambers are free of trash, chemical products, and supplies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3. CONTROLS FOR OUTDOOR AIR SUPPLY

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3a. Ensured that air dampers are at least partially open (minimum position) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Ensured that minimum position provides adequate outdoor air for occupants | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 9: CONTROLS INFORMATION

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3c. Obtained and reviewed all design inside/outside temperature and humidity requirements, controls specifications, as-built mechanical drawings, and controls operations manuals (often uniquely designed) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|

ACTIVITY 10: CLOCKS, TIMERS, SWITCHES

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3d. Turned summer-winter switches to the correct position | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3e. Set time clocks appropriately | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

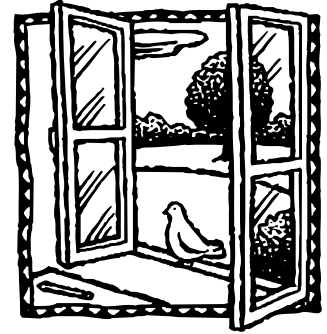
ACTIVITY 11: CONTROL COMPONENTS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 3g. Ensured appropriate system pressure by testing line pressure at both the occupied (day) setting and the unoccupied (night) setting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3h. Checked that the line dryer prevents moisture buildup | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3i. Replaced control system filters at the compressor inlet based on the compressor manufacturer's recommendation (for example, when you blow down the tank) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3j. Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 12: OUTDOOR AIR DAMPERS

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3k. Ensured that the outdoor air damper is visible for inspection | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3l. Ensured that the recirculating relief and/or exhaust dampers are visible for inspection | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3m. Ensured that air temperature in the indoor area(s) served by each outdoor air damper is within the normal operating range | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: It is necessary to ensure that the damper is operating properly and within the normal range to continue.





3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 3n. Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3o. Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3p. If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3q. If in cooling mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 60°F and mixed air thermostat is set to 45°F | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3r. If the outdoor air damper does not move, confirmed the following items: | | | |
| • The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Moving parts are free of impediments (e.g., rust, corrosion) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Electrical wire or pneumatic tubing connects to the damper actuator | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • The outside air thermostat(s) is functioning properly (e.g., in the right location, calibrated correctly) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Proceed to Activities 13–16 if the damper seems to be operating properly.

ACTIVITY 13: FREEZE STATS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 3s. Disconnected power to controls (for automatic reset only) to test continuity across terminals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| OR | | | |
| 3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: HVAC systems with water coils need protection from the cold. The freeze-stat may close the outdoor air damper and disconnect the supply air when tripped. The typical trip range is 35°F to 42°F.

ACTIVITY 14: MIXED AIR THERMOSTATS

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3v. Ensured that the mixed air stat for heating mode is set no higher than 65°F | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ACTIVITY 15: ECONOMIZERS

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 3x. Confirmed proper economizer settings based on design specifications or local practices | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|

NOTE: The dry-bulb is typically set at 65°F or lower.

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 3y. Checked that sensor on the economizer is shielded from direct sunlight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3z. Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: Economizers use varying amounts of cool outdoor air to assist with the cooling load of the room or rooms. There are two types of economizers, dry-bulb and enthalpy. Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature, and enthalpy economizers vary the amount of outdoor air based on outdoor temperature and humidity level.

3. CONTROLS FOR OUTDOOR AIR SUPPLY (continued)

ACTIVITY 16: FANS

- 3aa. Ensured that all fans (supply fans and associated return or relief fans) that move outside air indoors continuously operate during occupied hours (even when room thermostat is satisfied) **Yes** **No** **N/A**

NOTE: If fan shuts off when the thermostat is satisfied, adjust control cycle as necessary to ensure sufficient outdoor air supply.



4. AIR DISTRIBUTION

ACTIVITY 17: AIR DISTRIBUTION

- 4a. Ensured that supply and return air pathways in the existing ventilation system perform as required
- 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning

NOTE: If ventilation system is closed or blocked to meet current fire codes, consult with a professional engineer for remedies.

- 4c. Made sure every occupied space has supply of outdoor air (mechanical system or operable windows)
- 4d. Ensured that supply and return vents are open and unblocked

NOTE: If outlets have been blocked intentionally to correct drafts or discomfort, investigate and correct the cause of the discomfort and reopen the vents.

- 4e. Modified the HVAC system to supply outside air to areas without an outdoor air supply
- 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes
- 4g. Moved all barriers (for example, room dividers, large free-standing blackboards or displays, bookshelves) that could block movement of air in the room, especially those blocking air vents
- 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities
- 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals

ACTIVITY 18: PRESSURIZATION IN BUILDINGS

NOTE: To prevent infiltration of outdoor pollutants, the ventilation system is designed to maintain positive pressurization in the building. Therefore, ensure that the system, including any exhaust fans, is operating on the "occupied" cycle when doing this activity.

- 4j. Ensured that air flows out of the building (using chemical smoke) through windows, doors, or other cracks and holes in exterior wall (for example, floor joints, pipe openings)

5. EXHAUST SYSTEMS

ACTIVITY 19: EXHAUST FAN OPERATION

- 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s)

If fans are running but air is not flowing toward the exhaust intake, check for the following:

- Inoperable dampers
- Obstructed, leaky, or disconnected ductwork
- Undersized or improperly installed fan
- Broken fan belt



5. EXHAUST SYSTEMS (continued)

ACTIVITY 20: EXHAUST AIRFLOW

NOTE: Prevent migration of indoor contaminants from areas such as bathrooms, kitchens, and labs by keeping them under negative pressure (as compared to surrounding spaces).

- 5b. Checked (using chemical smoke) that air is drawn into the room from adjacent spaces **Yes** **No** **N/A**

Stand outside the room with the door slightly open while checking airflow high and low in the door opening (see "How to Measure Airflow").

- 5c. Ensured that air is flowing toward the exhaust intake

ACTIVITY 21: EXHAUST DUCTWORK

- 5d. Checked that the exhaust ductwork downstream of the exhaust fan (which is under positive pressure) is sealed and in good condition

6. QUANTITY OF OUTDOOR AIR

ACTIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATIONS

NOTE: Refer to "How to Measure Airflow" for techniques.

- 6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit
- 6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration
- 6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c)

ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES

- 6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1
- 6e. Corrected problems with ventilation units that supplied inadequate quantities of outdoor air to ensure that outdoor air quantities (22c) meet the recommended levels in Table 1

NOTES



Walkthrough Inspection Checklist

Name: _____
 School: _____
 Room or Area: _____ Date Completed: _____
 Signature: _____

Instructions

1. Read the *IAQ Background* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of the checklist for future reference.
3. Complete the Checklist.
 - Check the “yes,” “no,” or “not applicable” box beside each item. (A “no” response requires further attention.)
 - Make comments in the “Notes” section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. GROUND LEVEL

Yes No N/A

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1a. Ensured that ventilation units operate properly | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Ensured there are no obstructions blocking air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1c. Checked for nests and droppings near outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Determined that dumpsters are located away from doors, windows, and outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1e. Checked potential sources of air contaminants near the building (chimneys, stacks, industrial plants, exhaust from nearby buildings) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1f. Ensured that vehicles avoid idling near outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Minimized pesticide application | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1h. Ensured that there is proper drainage away from the building (including roof downspouts) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Ensured that sprinklers spray away from the building and outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1j. Ensured that walk-off mats are used at exterior entrances and that they are cleaned regularly | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

2. ROOF

While on the roof, consider inspecting the HVAC units (use the Ventilation Checklist).

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 2a. Ensured that the roof is in good condition | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Checked for evidence of water ponding | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Checked that ventilation units operate properly (air flows in) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Ensured that exhaust fans operate properly (air flows out) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Ensured that air intakes remain open, even at minimum setting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2f. Checked for nests and droppings near outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2g. Ensured that air from plumbing stacks and exhaust outlets flows away from outdoor air intakes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3. ATTIC

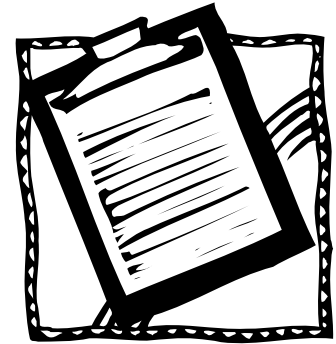
- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 3a. Checked for evidence of roof and plumbing leaks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Checked for birds and animal nests | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

4. GENERAL CONSIDERATIONS

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 4a. Ensured that temperature and humidity are maintained within acceptable ranges | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4b. Ensured that no obstructions exist in supply and exhaust vents | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4c. Checked for odors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4d. Checked for signs of mold and mildew growth | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

4. GENERAL CONSIDERATIONS (continued)

- | | Yes | No | N/A |
|--|--------------------------|--------------------------|--------------------------|
| 4e. Checked for signs of water damage..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4f. Checked for evidence of pests and obvious food sources | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4g. Noted and reviewed all concerns from school occupants | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



5. BATHROOMS AND GENERAL PLUMBING

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 5a. Ensured that bathrooms and restrooms have operating exhaust fans | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5b. Ensured proper drain trap maintenance: | | | |
| Water is poured down floor drains once per week (approx. 1 quart of water) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Water is poured into sinks at least once per week (about 2 cups of water) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Toilets are flushed at least once per week | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6. MAINTENANCE SUPPLIES

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 6a. Ensured that chemicals are used only with adequate ventilation and when building is unoccupied | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6b. Ensured that vents in chemical and trash storage areas are operating properly | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6c. Ensured that portable fuel containers are properly closed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6d. Ensured that power equipment, like snowblowers and lawn mowers, have been serviced and maintained according to manufacturers' guidelines | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. COMBUSTION APPLIANCES

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 7a. Checked for combustion gas and fuel odors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7b. Ensured that combustion appliances have flues or exhaust hoods | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7c. Checked for leaks, disconnections, and deterioration | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7d. Ensured there is no soot on inside or outside of flue components | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8. OTHER

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 8a. Checked for peeling and flaking paint (if the building was built before 1980, this could be a lead hazard) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8b. Determined date of last radon test | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTES



Waste Management Checklist

Name: _____
 School: _____
 Room or Area: _____ Date Completed: _____
 Signature: _____

Instructions

1. Read the *IAQ Backgrounder* and the Background Information for this checklist.
2. Keep the Background Information and make a copy of the checklist for future reference.
3. Complete the Checklist.
 - Check the "yes," "no," or "not applicable" box beside each item. (A "no" response requires further attention.)
 - Make comments in the "Notes" section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

1. WASTE MANAGEMENT

	Yes	No	N/A
1a. Ensured that waste containers are appropriate for use (for example, food waste containers should have lids)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1b. Ensured that waste containers are lined	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1c. Ensured that waste from art, science, vocational classes, etc., are handled separately	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1d. Labeled recycling bins clearly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1e. Ensured number of bins and dumpsters is adequate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1f. Ensured appropriate location of dumpsters (i.e., away from air intakes, doors, and operable windows in relation to prevailing winds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1g. Ensured waste containers are emptied regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1h. Ensured appropriate waste removal schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1i. Ensured waste is stored in a well-ventilated room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1j. Ensured any exhaust fans in the room are operating properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1k. Checked waste storage areas for odors, contaminants, or signs of vermin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTES