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# UNIFORM INDOOR AIR QUALITY ASSESSMENT AND EVALUATION REPORT

for

**Lawrence Elementary School  
Kaplan Drive  
Middletown, Connecticut 06457**

*Prepared for:*

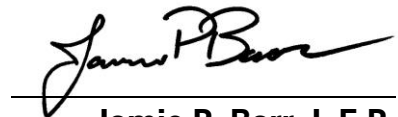
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**LANGAN**

**29 December 2024  
140305401**

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## 1.0 INTRODUCTION AND BACKGROUND

Middletown Public Schools (Middletown) engaged Langan CT, Inc. (Langan) to conduct a limited indoor air quality (IAQ) document review and visual assessment throughout Lawrence Elementary School (the School) at Kaplan Drive, Middletown, CT. The document review and visual assessment were conducted to address the State of Connecticut's recent revisions to IAQ inspection and evaluation requirements for Connecticut public schools in Connecticut General Statutes § 10-220(d) (the IAQ Statute) and the 14 categories of IAQ considerations set forth therein.

Documents reviewed included Middletown's completed "Tools for Schools" (TFS) checklists, which are forms published by the U.S. Environmental Protection Agency (EPA) as guidance for conducting IAQ assessments, as TFS is now mandated by the IAQ Statute.

The following sections include a summary of Langan's visual assessment and document review.

### PROJECT INFORMATION

|                               |  |                      |  |
|-------------------------------|--|----------------------|--|
| Client Name:                  | Middletown Public Schools                                | Property Visit Date: | 26 November 2024                       |
| Professional's project #:     | 140305401  | Construction Dates:  | 1972                                   |
| Consultant's Project Manager: | Matthew A. Myers   | No. Buildings:       | One                                    |
| Phone No.:                    | 203-562-5771   | No. of Stories:      | One (Approximately 48,500 Square Feet) |
| Email:                        | <a href="mailto:mmyers@langan.com">mmyers@langan.com</a> |                      |  |
| Property Address:             | Kaplan Drive   |                      |  |
| Property Town, State:         | Middletown, Connecticut                                  | Property Use:        | Public Elementary School               |

## 2.0 SUMMARY OF VISUAL ASSESSMENT (CATEGORY L OF IAQ STATUTE)

Langan inspectors, Andrew P. Rolinger, Hilton Hernandez and Jeffrey Glass visually assessed representative interior and exterior locations of the School on 26 November 2024. The following items were noted on the day of the visual assessment:

### Interior Areas

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection and Building and Grounds Checklists.

- Ceiling tiles/sheetrock ceilings exhibited evidence of dried, historic water staining/damage at approximately ten (10) locations in nine (9) rooms/corridors throughout the School. Dry water staining was also observed on a bulletin board in classroom 16.
- Dried, historic water staining was observed inside a fluorescent light fixture located in the art room.
- One area of possible mold growth on a ceiling tile was observed in the teachers' lounge.
- A disconnected heating, ventilation and air conditioning (HVAC) duct was observed above the teachers' lounge suspended ceiling.
- Classrooms 6 and 23 toilet rooms appear to have small leaks at the toilet bases where they contact the floors.
- "Dirty" ceiling air diffusers were observed in several locations throughout classrooms 16 - 21.

### Exterior Areas

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection and Building and Grounds Checklists.

- Fascia boards at the roof eaves/drip edges/corners were rotted in limited areas. Upper wood siding materials were deteriorated in limited areas.
- Rain downspouts were disconnected or damaged in limited areas.
- Solid waste containers (e.g., dumpsters) were observed in an area to the northeast of the School. Solid waste containers were not observed near the School HVAC air intake systems.

## **3.0 MECHANICAL/HVAC SYSTEMS (CATEGORIES A AND H OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection and Ventilation Checklists.

The School is heated with natural gas fired HVAC units located on the roofs. Supplemental heat is provided by electric baseboard or unit ventilator heaters in some areas. Air conditioning (AC) units were observed above the kitchen, intervention room and server room suspended ceilings.

#### **4.0 CHEMICAL STORAGE (CATEGORIES D AND G OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection and Building and Grounds Checklists.

Various custodial cleaning chemicals were observed in custodial closets and storage areas of the School, including within the hot water heater utility room, laundry room, and custodial work bench room. The custodial work bench room had stored paint containers. The art room has a kiln with a dedicated exhaust, ceramic glazes and paints. A rear shed to the north of the School contains lawn mowers, leaf/snow removal equipment and containers of gasoline.

Langan did not identify the presence of substances/products containing significant quantities of volatile organic compounds (VOCs), that are commonly attributed to adverse IAQ in schools. Langan also did not identify any substances considered "extremely hazardous substances" referenced in Section 302 of the federal Emergency Planning and Community Right-to-Know Act, 42 USC § 9601 et seq.

#### **5.0 RADON (CATEGORY B OF IAQ STATUTE)**

Langan reviewed the State of Connecticut Department of Public Health (DPH) Radon Program "School Radon Re-Evaluation Report Form" for the School that was provided by to Langan by Middletown.

The re-evaluation form indicates that radon measurement activities were conducted at the School in accordance with EPA protocols and the Connecticut DPH Radon Program's *School Radon Testing Guidance*. The testing was performed by Environmental Transactions, Inc. of River's Edge, New Jersey (Radon Measurement Professional Louis Esposito (NRSB# 5SS0001)). Nine locations (rooms) within the School were tested over a 48-hour period (March 12 – 14, 2024). None of the rooms tested exhibited indoor radon concentrations exceeding the EPA action level of 4.0 picocuries per liter (pCi/L).

## **6.0 INTEGRATED PEST MANAGEMENT AND DEGREE OF PESTICIDE USAGE (CATEGORIES E AND F OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection, Waste Management, Food Service and Integrated Pest Management Checklists.

EPA recommends that schools use Integrated Pest Management (IPM), which is an effective and environmentally sensitive approach to pest management that uses a combination of common-sense practices. IPM can reduce the use of chemicals and provide economical and effective pest suppression. Middletown utilizes and adheres to an IPM policy pursuant to EPA's recommendation and in compliance with Connecticut General Statutes §§ 10-231a-10-231d and § 22a-66l. Middletown reported that they employ J.P. Bellamo & Sons Pest Controls Inc., Cromwell CT to perform their pest management and pesticide applications and that pesticides are used minimally and avoided where possible.

Rodent droppings were noted in multiple locations above suspended ceiling tiles (where present) throughout the interior of the school.

Evidence of bird nests was observed in damaged wood siding/soffits/roof eaves in several locations and limited wood siding appeared to have woodpecker damage. A bird feeder was present at classroom 22 exterior window and a bird nest is present beside the rain gutters at this location. A bird box and bird feeder were present at the art room exterior window. Other bird feeders and boxes were observed on a pole and in a tree near the dumpster area.

Mud dauber wasp nests and paper wasp nests were observed at several exterior entrances and soffits/eaves.

Notable excerpts from Middletown's IPM policy statement are as follows:

- *It is the policy of the Middletown Board of Education to implement an integrated pest management plan to reduce the amount of pesticides applied in any building, or on the grounds of any Middletown public school, by using available pest control techniques including judicious use of pesticides, when warranted, to maintain a pest population at or below an acceptable level, while decreasing the use of pesticides.*
- *The decision to apply pesticide in any building, or the grounds of any Middletown public school is dependent on results of periodic monitoring for pest populations to determine*

*if a pest problem exists that exceeds acceptable threshold levels.*

- No application of pesticide shall be made in any building, or on the grounds of any Middletown public school during regular school hours or during planned activities at any school, except as provided by Connecticut statute or regulation.*
- Parents or guardians of children in any school may register for prior notice of pesticide application at their school.*
- The Superintendent may direct that an emergency application of a pesticide be made during regular school hours or during planned activities at school without prior notice to parents or guardians of children in any school in the event of an immediate threat to human health, subject to applicable Connecticut statutory and regulatory provisions.*
- There shall be no application of any lawn pesticide on the grounds of any school with students in Grade 8 or lower, except on an emergency basis, subject to applicable Connecticut statutory and regulatory provisions.*
- The Middletown Board of Education's entire policy governing pesticide application is Policy No. 3524.1.*

## **7.0 POTENTIAL FOR EXPOSURE TO MICROBIOLOGICAL AIRBORNE PARTICLES, INCLUDING, BUT NOT LIMITED TO, FUNGI, MOLD AND BACTERIA (CATEGORY C OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection, Food Service and Building and Grounds Checklists.

Please see Section 2.0 Summary of Visual Assessment and Section 13.0 Conclusions and Recommendations for additional information.

## **8.0 PLUMBING, INCLUDING WATER DISTRIBUTION SYSTEMS, DRAINAGE SYSTEMS AND FIXTURES (CATEGORY I OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection, Food Service and Building and Grounds Checklists.

The visible plumbing and drainage systems appeared to be in working order.

## **9.0 MOISTURE INCURSION (CATEGORY J OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection, Food Service and Building and Grounds Checklists.

Please see Section 2.0 Summary of Visual Assessment and Section 13.0 Conclusions and Recommendations for additional information.

## **10.0 OVERALL CLEANLINESS OF THE FACILITIES (CATEGORY K OF IAQ STATUTE)**

As part of its assessment, Langan reviewed Middletown's TFS General Walkthrough Inspection, Waste Management, Food Service and Integrated Pest Management Checklists.

The overall cleanliness of the School generally appeared to be relatively good and typical of school buildings in the State of Connecticut.

## **11.0 USE OF SPACE (CATEGORY M OF IAQ STATUTE)**

Spaces for occupied and unoccupied areas of the School are being used as constructed and intended.

## **12.0 TRAINING (CATEGORY N OF IAQ STATUTE)**

Middletown has informed Langan that their custodial leads and custodial managers have received training for IAQ and have the TFS checklists at the School. They also have internal work orders that can be completed for IAQ concerns that may occur and require corrective action. An IAQ training class for all custodial staff is to be scheduled for 2025.

## **13.0 CONCLUSIONS AND RECOMMENDATIONS**

Based on the annual IAQ assessment and evaluation of the School, the following was noted and recommended:

- Middletown should assess and eliminate possible sources of water infiltration. This includes, but may not be limited to, repairing roofing materials and exterior wood siding/soffits/roof eaves.
- The visual survey noted water impacted ceiling tiles in limited locations (dried, historic water staining). These should be removed and replaced under controlled conditions (to

avoid spreading possible dust/possible mold). Investigate above impacted ceiling tiles to see if localized water infiltration is on-going.

- “Dirty” ceiling air diffusers in classrooms 16 – 21 should be cleaned.
- Clean the art room water-stained fluorescent light fixture. Clean the water-stained bulletin board in classroom 16 and investigate for the possible cause of water damage.
- Reconnect the teachers’ lounge HVAC duct (above suspended ceiling).
- Investigate the cause of the leaking toilets in classrooms 6 and 23 toilet rooms and take corrective action.
- Repair/reconnect downspouts that are disconnected from their associated gutters and repair or remove and replace damaged downspouts.
- Clean up/remove the rodent droppings on top of limited suspended ceilings throughout. Conduct further investigation throughout to determine how mice are entering the School and take corrective action to prevent future rodent intrusion. Remove the exterior entrances and soffit/eaves wasp nests. Remove the bird nests in the exterior damaged wood siding/soffits/roof eaves and repair (close the nest entrances). Remove bird feeders and boxes throughout.

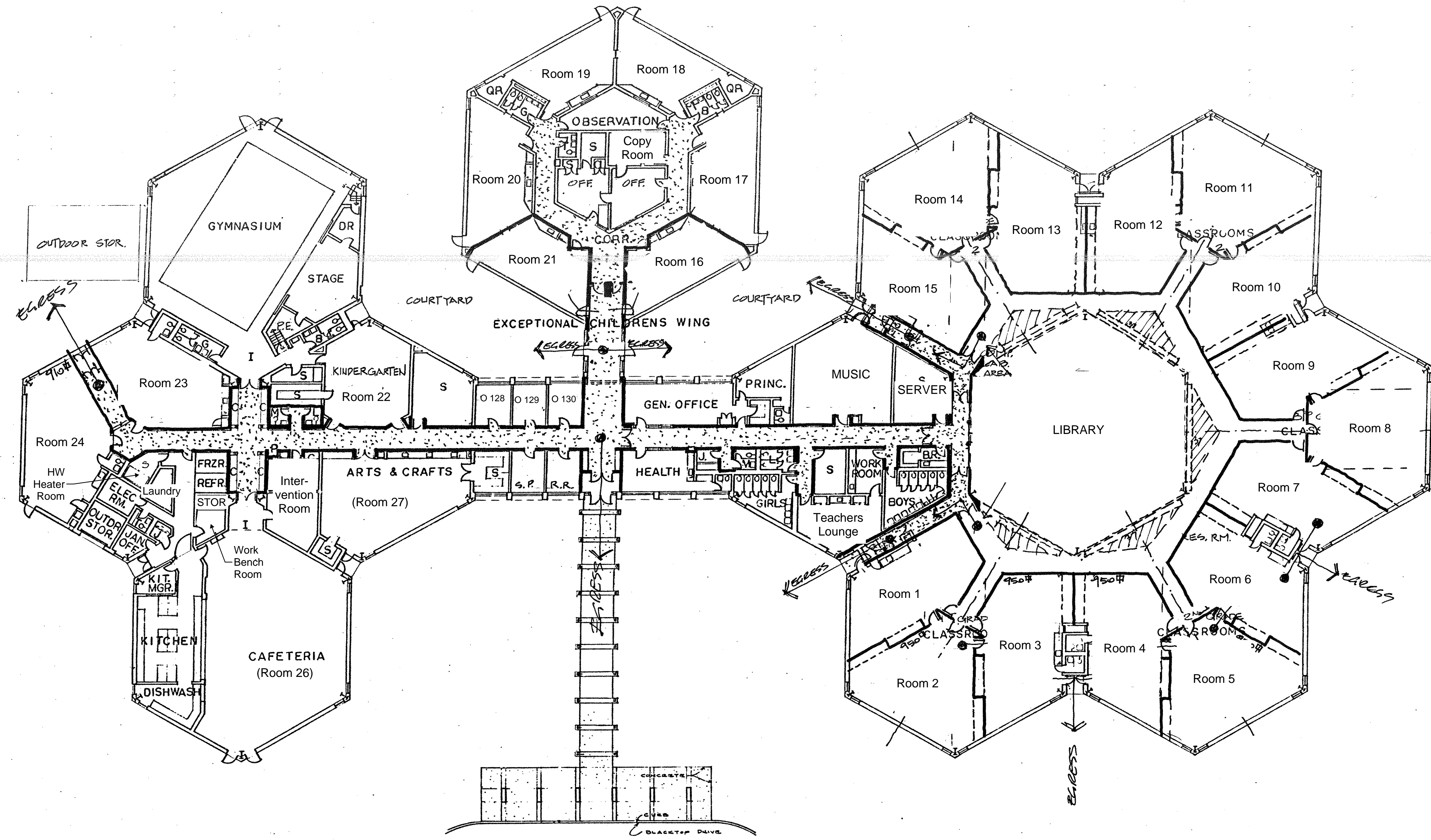
#### **14.0 LIMITATIONS**

The conclusions and recommendations presented in this report are professional opinions based solely upon Langan’s visual observations, document review and current legal/regulatory requirements. These conclusions and recommendations are intended exclusively for the purpose stated herein, at the site indicated, and for the project indicated.

# **Appendix A**

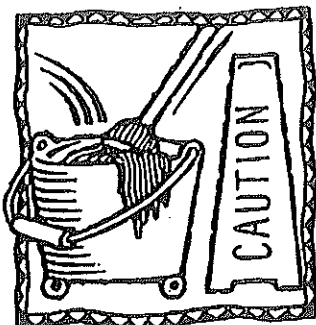
## **School Diagram**

LAWRENCE ELEMENTARY SCHOOL FLOOR PLAN



## **Appendix B**

### **Tools for Schools Checklists**



# Building and Grounds Maintenance Checklist

Name: \_\_\_\_\_  
 School: Lawrence Elementary  
 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. BUILDING MAINTENANCE SUPPLIES

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

## 2. GROUNDS MAINTENANCE SUPPLIES

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

## 3. DUST CONTROL

|   |                                     |                          |                                     |
|---|-------------------------------------|--------------------------|-------------------------------------|
| 3a. Installed and maintained barrier mats for entrances ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 3b. Used high efficiency vacuum bags .....                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 3c. Used proper dusting techniques .....                      | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 3d. Wrapped feather dusters with a dust cloth .....           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3e. Cleaned air return grilles and air supply vents .....     | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4b. Cleaned spills on floors promptly (as necessary) .....                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4c. Performed restorative maintenance (as necessary) .....                   | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5b. Ran water in sinks at least once per week (about 2 cups of water) .....     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5c. Flushed toilets once each week (if not used regularly) .....                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### 6. MOISTURE, LEAKS, AND SPILLS

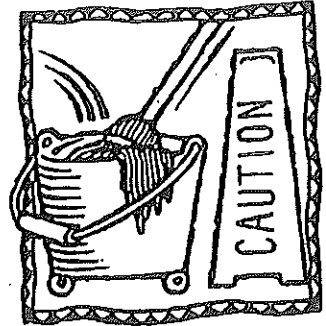
- |   |                                     |                          |                          |
|---|-------------------------------------|--------------------------|--------------------------|
| 6a. Checked for moldy odors .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6b. Inspected ceiling tiles, floors, and walls for leaks or discoloration (may indicate periodic leaks) ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6c. Checked areas where moisture is commonly generated (e.g., kitchens, locker rooms, and bathrooms) .....    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6d. Checked that windows, windowsills, and window frames are free of condensate .....                         | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Walls around leaky or broken windows .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Floors and ceilings under plumbing .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Duct interiors near humidifiers, cooling coils, and outdoor air intakes .....                                 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### 7. COMBUSTION APPLIANCES

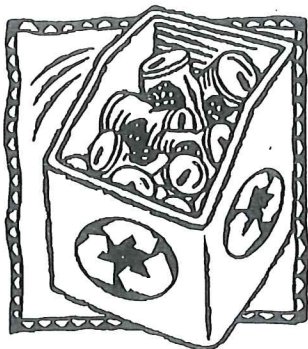
- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 7a. Checked for odors from combustion appliances .....                             | <input checked=""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

#### 8. PEST CONTROL

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



#### NOTES



# Waste Management Checklist

Name: \_\_\_\_\_  
 School: Lawrence Elementary  
 Room or Area: \_\_\_\_\_ Date Completed: \_\_\_\_\_  
 Signature: \_\_\_\_\_

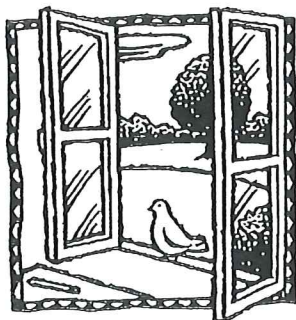
## Instructions

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. WASTE MANAGEMENT

|  | Yes                                 | No                                  | N/A                      |
|--|-------------------------------------|-------------------------------------|--------------------------|
| 1a. Ensured that waste containers are appropriate for use (for example, food waste containers should have lids) .....                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1b. Ensured that waste containers are lined .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> |
| 1d. Labeled recycling bins clearly .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1e. Ensured number of bins and dumpsters is adequate .....   | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1g. Ensured waste containers are emptied regularly .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1h. Ensured appropriate waste removal schedule .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1i. Ensured waste is stored in a well-ventilated room .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1j. Ensured any exhaust fans in the room are operating properly .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 1k. Checked waste storage areas for odors, contaminants, or signs of vermin .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

## NOTES



# Ventilation Checklist

Name: \_\_\_\_\_  
 School: LAWRENCE ELEMENTARY SCHOOL  
 Unit Ventilator/AHU No: RTU 1-9, 11  
 Room or Area: CLASSROOMS 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 checked="" type="checkbox"/> |
| 1b. Ensured that the ventilation system was on and operating in "occupied" mode .....                               | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> |

### ACTIVITY 2: POLLUTANT SOURCES

- |   |                                     |                          |                          |
|---|-------------------------------------|--------------------------|--------------------------|
| 1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas) .....   | <input checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Confirmed that outdoor air is entering the intake appropriately .....          | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 2. SYSTEM CLEANLINESS

### ACTIVITY 4: AIR FILTERS

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 2a. Replaced filters per maintenance schedule .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream) ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Vacuumed filter areas before installing new filters .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Confirmed proper installation of filters (correct direction for airflow) .....                         | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2g. Cleaned drain pans .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2h. Checked drain pans for mold and mildew .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### ACTIVITY 6: COILS

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

### ACTIVITY 8: MECHANICAL ROOMS

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 2l. Checked mechanical room for unsanitary conditions, leaks, and spills .....                                     | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Ensured that minimum position provides adequate outdoor air for occupants ..... | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|

### ACTIVITY 10: CLOCKS, TIMERS, SWITCHES

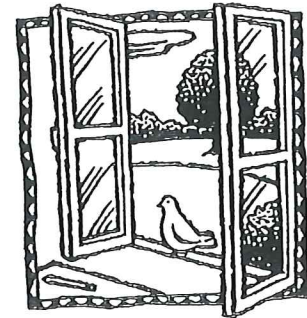
- |   |                                     |                          |                                     |
|---|-------------------------------------|--------------------------|-------------------------------------|
| 3d. Turned summer-winter switches to the correct position .....                                       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3e. Set time clocks appropriately .....   | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) ..... | <input checked="" 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 checked="" type="checkbox"/> |
| 3h. Checked that the line dryer prevents moisture buildup .....  | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| • Moving parts are free of impediments (e.g., rust, corrosion) .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| • Electrical wire or pneumatic tubing connects to the damper actuator .....   | <input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|
- 3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting .....
- |                                     |                          |                          |
|-------------------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------|--------------------------|--------------------------|

#### ACTIVITY 15: ECONOMIZERS

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

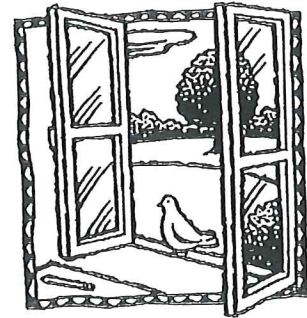
*NOTE: Economizers use varying amounts of cool outdoor air to assist with the cooling load of the room or rooms. There are two types of economizers, dry-bulb and enthalpy. Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature, and enthalpy economizers vary the amount of outdoor 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 ..... ☒ Yes ☐ No ☐ N/A
- 4b. Ensured that passive gravity relief ventilation systems and transfer grilles between rooms and corridors are functioning ..... ☐ Yes ☐ No ☒ N/A

*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) ..... ☒ Yes ☐ No ☐ N/A
- 4d. Ensured that supply and return vents are open and unblocked ..... ☒ Yes ☐ No ☐ N/A

*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 ..... ☐ Yes ☐ No ☒ N/A
- 4f. Modified existing HVAC systems to incorporate any room or zone layout and population changes ..... ☒ Yes ☐ No ☐ N/A
- 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 ..... ☐ Yes ☐ No ☒ N/A
- 4h. Ensured that unit ventilators are quiet enough to accommodate classroom activities ..... ☒ Yes ☐ No ☐ N/A
- 4i. Ensured that classrooms are free of uncomfortable drafts produced by air from supply terminals ..... ☒ Yes ☐ No ☐ N/A

#### 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) ..... ☐ Yes ☐ No ☒ N/A

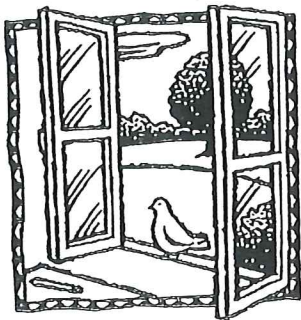
### 5. EXHAUST SYSTEMS

#### ACTIVITY 19: EXHAUST FAN OPERATION

- 5a. Checked (using chemical smoke) that air flows into exhaust fan grille(s) ..... ☐ Yes ☐ No ☒ N/A

*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                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

*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 ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

### 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 ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

## 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 ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|
- 6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|
- 6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c) ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

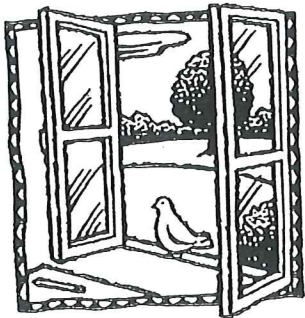
### ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES

- 6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1 ..... 

|                                     |                          |                          |
|-------------------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------|--------------------------|--------------------------|
- 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 ..... 

|                                     |                          |                          |
|-------------------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------|--------------------------|--------------------------|

NOTES



# Ventilation Checklist

Name: \_\_\_\_\_  
 School: LAWRENCE ELEMENTARY SCHOOL  
 Unit Ventilator/AHU No: AC-4  
 Room or Area: OFFICE 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 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 checked="" type="checkbox"/> |
| 1b. Ensured that the ventilation system was on and operating in "occupied" mode .....                               | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> |

### ACTIVITY 2: POLLUTANT SOURCES

- |   |                                     |                          |                          |
|---|-------------------------------------|--------------------------|--------------------------|
| 1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas) .....   | <input checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Confirmed that outdoor air is entering the intake appropriately .....          | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 2. SYSTEM CLEANLINESS

### ACTIVITY 4: AIR FILTERS

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 2a. Replaced filters per maintenance schedule .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream) ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Vacuumed filter areas before installing new filters .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Confirmed proper installation of filters (correct direction for airflow) .....                         | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2g. Cleaned drain pans .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2h. Checked drain pans for mold and mildew .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### ACTIVITY 6: COILS

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

### ACTIVITY 8: MECHANICAL ROOMS

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 2l. Checked mechanical room for unsanitary conditions, leaks, and spills .....                                     | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Ensured that minimum position provides adequate outdoor air for occupants ..... | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> |
| 3e. Set time clocks appropriately .....   | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

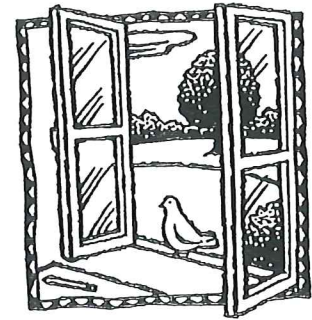
### ACTIVITY 11: CONTROL COMPONENTS

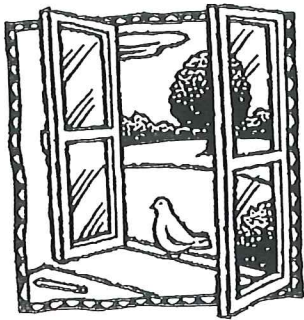
- |  |                                     |                          |                                     |
|--|-------------------------------------|--------------------------|-------------------------------------|
| 3g. Ensured appropriate system pressure by testing line pressure at both the occupied (day) setting and the unoccupied (night) setting .....                       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3h. Checked that the line dryer prevents moisture buildup .....  | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| • Moving parts are free of impediments (e.g., rust, corrosion) .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| • Electrical wire or pneumatic tubing connects to the damper actuator .....   | <input checked="" 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 checked="" 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 .....
- OR
- 3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped) .....
- 3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats .....

*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 .....
- 3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting .....

#### ACTIVITY 15: ECONOMIZERS

- 3x. Confirmed proper economizer settings based on design specifications or local practices .....

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

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

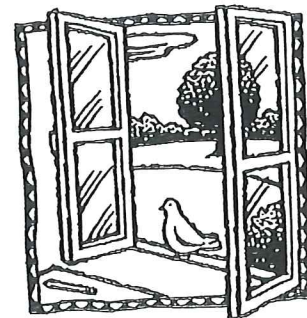
*NOTE: Economizers use varying amounts of cool outdoor air to assist with the cooling load of the room or rooms. There are two types of economizers, dry-bulb and enthalpy. Dry-bulb economizers vary the amount of outdoor air based on outdoor temperature, and enthalpy economizers vary the amount of outdoor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

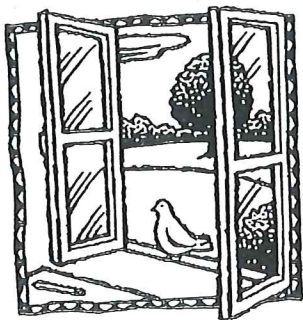
### 5. EXHAUST SYSTEMS

#### 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                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

*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 ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

### 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 ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

## 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 ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|
- 6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|
- 6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing quantity of outdoor air supply per person (22c) ..... 

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

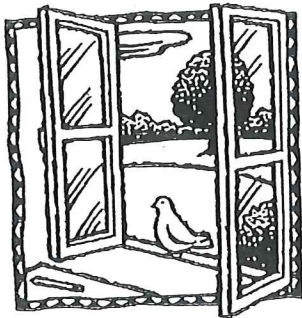
### ACTIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTITIES

- 6d. Compared the existing outdoor air per person (22c) to the recommended levels in Table 1 ..... 

|                                     |                          |                          |
|-------------------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------|--------------------------|--------------------------|
- 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 ..... 

|                                     |                          |                          |
|-------------------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------|--------------------------|--------------------------|

NOTES



# Ventilation Checklist

Name: \_\_\_\_\_  
 School: LAWRENCE ELEMENTARY SCHOOL  
 Unit Ventilator/AHU No: RTU - 10  
 Room or Area: Cym 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 checked="" type="checkbox"/> |
| 1b. Ensured that the ventilation system was on and operating in "occupied" mode .....                               | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> |

### ACTIVITY 2: POLLUTANT SOURCES

- |   |                                     |                          |                          |
|---|-------------------------------------|--------------------------|--------------------------|
| 1e. Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas) .....   | <input checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Confirmed that outdoor air is entering the intake appropriately .....          | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 2. SYSTEM CLEANLINESS

### ACTIVITY 4: AIR FILTERS

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 2a. Replaced filters per maintenance schedule .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream) ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Vacuumed filter areas before installing new filters .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Confirmed proper installation of filters (correct direction for airflow) .....                         | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2g. Cleaned drain pans .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2h. Checked drain pans for mold and mildew .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### ACTIVITY 6: COILS

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

### ACTIVITY 8: MECHANICAL ROOMS

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 2l. Checked mechanical room for unsanitary conditions, leaks, and spills .....                                     | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Ensured that minimum position provides adequate outdoor air for occupants ..... | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|

### ACTIVITY 10: CLOCKS, TIMERS, SWITCHES

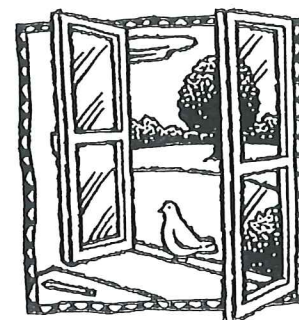
- |   |                                     |                          |                                     |
|---|-------------------------------------|--------------------------|-------------------------------------|
| 3d. Turned summer-winter switches to the correct position .....                                       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3e. Set time clocks appropriately .....   | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3f. Ensured that settings fit the actual schedule of building use (including night/weekend use) ..... | <input checked="" 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 checked="" type="checkbox"/> |
| 3h. Checked that the line dryer prevents moisture buildup .....  | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| • Moving parts are free of impediments (e.g., rust, corrosion) .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| • Electrical wire or pneumatic tubing connects to the damper actuator .....   | <input checked="" 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 checked="" 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 .....
- OR
- 3t. Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped) .....
- 3u. Assessed the feasibility of replacing all manual reset freeze-stats with automatic reset freeze-stats .....

*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 .....
- 3w. Ensured that the mixed air stat for cooling mode is set no lower than the room thermostat setting .....

#### ACTIVITY 15: ECONOMIZERS

- 3x. Confirmed proper economizer settings based on design specifications or local practices .....

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

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

*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.*

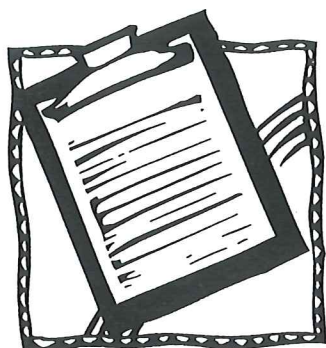
- 6a. Measured the quantity of outdoor air supplied (22a) to each ventilation unit ..... ☐ ☐ ☒
- 6b. Calculated the number of occupants served (22b) by the ventilation unit under consideration ..... ☐ ☐ ☒
- 6c. Divided outdoor air supply (22a) by the number of occupants (22b) to determine the existing 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: LAWRENCE ELEMENTARY 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Ensured there are no obstructions blocking air intakes .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1c. Checked for nests and droppings near outdoor air intakes .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Determined that dumpsters are located away from doors, windows, and outdoor air intakes .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1f. Ensured that vehicles avoid idling near outdoor air intakes .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Minimized pesticide application .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1h. Ensured that there is proper drainage away from the building (including roof downspouts) .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Ensured that sprinklers spray away from the building and outdoor air intakes .....   | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Checked for evidence of water ponding .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Checked that ventilation units operate properly (air flows in) .....                                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Ensured that exhaust fans operate properly (air flows out) .....                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Ensured that air intakes remain open, even at minimum setting .....                                 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2f. Checked for nests and droppings near outdoor air intakes .....                                      | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 3. ATTIC

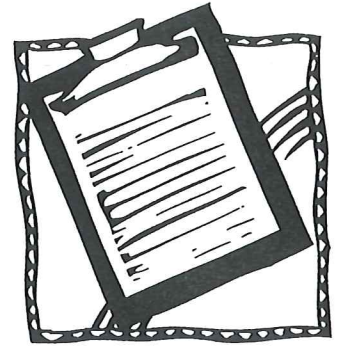
|   |                                     |                          |                          |
|---|-------------------------------------|--------------------------|--------------------------|
| 3a. Checked for evidence of roof and plumbing leaks ..... | <input checked="" type="checkbox"/> | <input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

## 4. GENERAL CONSIDERATIONS

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

#### 4. GENERAL CONSIDERATIONS (continued)

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



#### 5. BATHROOMS AND GENERAL PLUMBING

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 5a. Ensured that bathrooms and restrooms have operating exhaust fans .....       | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Water is poured into sinks at least once per week (about 2 cups of water) ....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Toilets are flushed at least once per week .....                                 | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6b. Ensured that vents in chemical and trash storage areas are operating properly .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6c. Ensured that portable fuel containers are properly closed .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### 7. COMBUSTION APPLIANCES

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 7a. Checked for combustion gas and fuel odors .....                        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7b. Ensured that combustion appliances have flues or exhaust hoods .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7c. Checked for leaks, disconnections, and deterioration .....             | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7d. Ensured there is no soot on inside or outside of flue components ..... | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8b. Determined date of last radon test .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### NOTES

In Recf AGE 20<sup>r</sup> YEARS

FD TEST TO BE PERFORMED FEBRUARY 2024



# Walkthrough Inspection Checklist

Name: \_\_\_\_\_  
 School: LAWRENCE ELEMENTARY 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Ensured there are no obstructions blocking air intakes .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1c. Checked for nests and droppings near outdoor air intakes .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Determined that dumpsters are located away from doors, windows, and outdoor air intakes .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1f. Ensured that vehicles avoid idling near outdoor air intakes .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Minimized pesticide application .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1h. Ensured that there is proper drainage away from the building (including roof downspouts) .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1i. Ensured that sprinklers spray away from the building and outdoor air intakes .....   | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Checked for evidence of water ponding .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Checked that ventilation units operate properly (air flows in) .....                                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Ensured that exhaust fans operate properly (air flows out) .....                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Ensured that air intakes remain open, even at minimum setting .....                                 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2f. Checked for nests and droppings near outdoor air intakes .....                                      | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 3. ATTIC

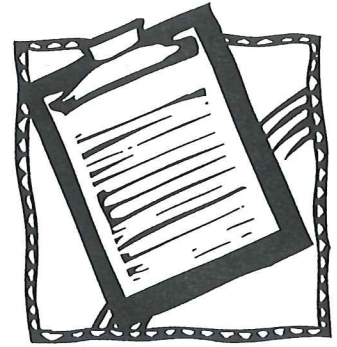
|   |                                     |                          |                          |
|---|-------------------------------------|--------------------------|--------------------------|
| 3a. Checked for evidence of roof and plumbing leaks ..... | <input checked="" type="checkbox"/> | <input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

## 4. GENERAL CONSIDERATIONS

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

#### 4. GENERAL CONSIDERATIONS (continued)

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



#### 5. BATHROOMS AND GENERAL PLUMBING

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 5a. Ensured that bathrooms and restrooms have operating exhaust fans .....       | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Water is poured into sinks at least once per week (about 2 cups of water) ....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Toilets are flushed at least once per week .....                                 | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6b. Ensured that vents in chemical and trash storage areas are operating properly .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6c. Ensured that portable fuel containers are properly closed .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### 7. COMBUSTION APPLIANCES

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

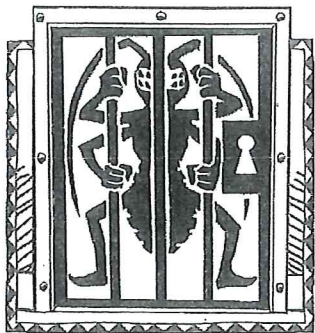
#### 8. OTHER

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

#### NOTES

In Recf AGE 20<sup>r</sup> YEARS

FD TEST TO BE PERFORMED FEBRUARY 2024



# Integrated Pest Management Checklist

Name: JP Bellamo And Sons Pest Control  
 School: Lawrence Elementary  
 Room or Area: \_\_\_\_\_ Date Completed: 12/18/24  
 Signature: [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 checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5b. Determined how many pests the school buildings, grounds, and occupants can tolerate .....   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5c. Set action thresholds .....   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## 6. PREVENTIVE STRATEGIES

### INDOOR SITES

- 6a. Implemented appropriate strategies to prevent pests from inhabiting the following areas:

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| • Entryways .....                          | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Classrooms .....                         | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Gymnasiums .....                         | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Locker rooms .....                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Offices .....                            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Staff lounges .....                      | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Bathrooms .....                          | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Food preparation and serving areas ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Rooms with extensive plumbing .....      | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Maintenance areas .....                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Other .....                              | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

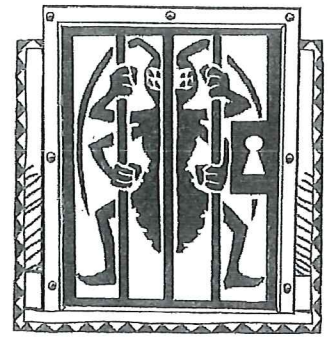
### OUTDOOR SITES

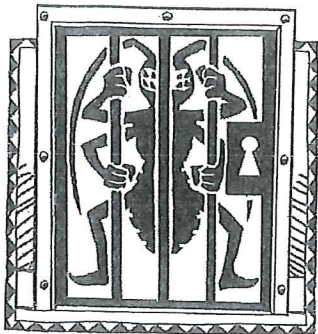
- 6b. Implemented appropriate strategies to prevent pests from inhabiting the following areas:

- |  |                                     |                                     |                                     |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| • Playgrounds .....                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| • Parking lots .....                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| • Lawns and athletic fields .....              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| • Teaching gardens or greenhouses .....        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| • Loading docks .....                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| • Dumpsters .....                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| • Areas with ornamental shrubs and trees ..... | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| • Other .....                                  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

## 7. PESTICIDE USE AND STORAGE

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 7a. Explored alternative pest management methods before concluding that pesticides were necessary .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7b. Ensured that pest management professionals integrate IPM into their pest management methods .....  | <input checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7f. Used protective clothing or equipment when applying pesticides .....   | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |





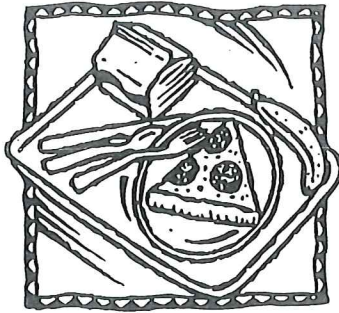
## 7. PESTICIDE USE AND STORAGE (cont.)

- |   | Yes                                 | No                       | N/A                                 |
|---|-------------------------------------|--------------------------|-------------------------------------|
| 7h. Locked or fastened lids of all bait boxes and placed bait away from the runway of the box .....   | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 7k. Ensured that parents are notified of upcoming pesticide applications through letters .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 7l. Kept copies of current pesticide labels and information on pesticides easily accessible .....   | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> |
| 7o. Ensured that flammable liquids are stored away from ignition sources .....  | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Service schedules for maintenance of buildings and grounds .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Current EPA-registered labels .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Current Material Safety Data Sheets (MSDS) for each pesticide project ....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Pest surveillance data sheets .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| • Diagram noting the location of pest activity, traps, and bait stations .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## NOTES



# Food Service Checklist

Name: Randall Mel  
 School: Lawrence Elementary  
 Room or Area: Cafe Date Completed: 11/14/24  
 Signature: [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. COOKING AREA

- |   | Yes                                 | No                       | N/A                      |
|---|-------------------------------------|--------------------------|--------------------------|
| 1a. Determined that local exhaust fans operate properly (note if fans are excessively noisy) .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1b. Checked for odors near cooking, preparation, and eating areas .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1c. Ensured that exhaust fans are used whenever cooking, washing dishes, and cleaning .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1d. Determined that gas appliances function properly .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1e. Verified that gas appliances are vented outdoors .....  | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1g. Ensured that kitchen is clean after use .....   | <input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2b. Stored leftovers in well-sealed containers with no traces of food on outside surfaces .....                                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2c. Ensured that food preparation, cooking, and storage practices are sanitary ..  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2d. Disposed of food scraps properly and removed crumbs .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2e. Cleaned counters with soap and water or a disinfectant (according to school policy) .....                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2f. Swept and wet mopped floors .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 3. WASTE MANAGEMENT

- |  |                                     |                          |                          |
|--|-------------------------------------|--------------------------|--------------------------|
| 3a. Selected and placed waste in appropriate containers .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. Ensured that containers' lids are securely closed .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3c. Separated food waste and food-contaminated items from other wastes, if possible .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3d. Stored waste containers in a well-ventilated area .....  | <input checked="" 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4b. Posted a sign prohibiting vehicles from idling their engines in receiving areas .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4c. Ensured that doors or air barriers are closed between receiving area and kitchen ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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#### NOTES