

# **APPENDIX J Ventilation Checklist**

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

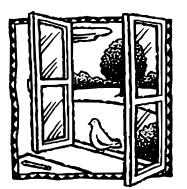
#### **Instructions**

- Read the IAQ
   Backgrounder and
   the Background
   Information for
   this checklist.
- 2. Keep the
  Background
  Information and
  make a copy of
  the 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.

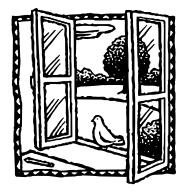
#### 1. OUTDOOR AIR INTAKES

1a.	Marked locations of all outdoor air intakes on a small floor plan (for example, a fire escape floor plan)	Yes □	No	N/A
1b.	Ensured that the ventilation system was on and operating in "occupied" mode			
AC'	FIVITY 1: OBSTRUCTIONS			
1c.	Ensured that outdoor air intakes are clear of obstructions, debris, clogs, or covers	П	П	П
1d.	Installed corrective devices as necessary (e.g., if snowdrifts or leaves frequently block an intake)			_
ልሮ፣	FIVITY 2: POLLUTANT SOURCES			
1e.	Checked ground-level intakes for pollutant sources (dumpsters, loading docks, and bus-idling areas)	🗖		
1f.	Checked rooftop intakes for pollutant sources (plumbing vents; kitchen, toilet, or laboratory exhaust fans; puddles; and mist from air-conditioning cooling towers)	🗖		
1g.	Resolved any problems with pollutant sources located near outdoor air intakes (e.g., relocated dumpster or extended exhaust pipe)			
AC:	FIVITY 3: AIRFLOW			
1h.	Obtained chemical smoke (or a small piece of tissue paper or light plastic)			
1i.	Confirmed that outdoor air is entering the intake appropriately	🗖		
2.	SYSTEM CLEANLINESS			
AC'	FIVITY 4: AIR FILTERS			
	Replaced filters per maintenance schedule	🗖		
2b.	Shut off ventilation system fans while replacing filters (prevents dirt from blowing downstream)	🗖		
2c.	Vacuumed filter areas before installing new filters	🗖		
	Confirmed proper fit of filters to prevent air from bypassing (flowing around) the air filter			
2e.	Confirmed proper installation of filters (correct direction for airflow)			_

	2SYSTEM CLEANLINESS (continued)			
2f.	Ensured that drain pans slant toward the drain (to prevent water from accumulating)		No	N/A
_	Cleaned drain pans			
	FIVITY 6: COILS  Ensured that heating and cooling coils are clean	□		
	FIVITY 7: AIR-HANDLING UNITS, UNIT VENTILATORS			
	Ensured that the interior of air-handling unit(s) or unit ventilator (air-mixing chamber and fan blades) is clean	П		
2k.	Ensured that ducts are clean			
_	TIVITY 8: MECHANICAL ROOMS			
	Checked mechanical room for unsanitary conditions, leaks, and spills Ensured that mechanical rooms and air-mixing chambers are free of trash,			
	chemical products, and supplies	<b>⊔</b>		
3.				
	Ensured that air dampers are at least partially open (minimum position) Ensured that minimum position provides adequate outdoor air	□		
	for occupants	□		
AC!	TIVITY 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)	⊔		
	TIVITY 10: CLOCKS, TIMERS, SWITCHES			
	Turned summer-winter switches to the correct position			
3f.	Ensured that settings fit the actual schedule of building use (including night/weekend use)	□		
	Ensured appropriate system pressure by testing line pressure at both the			
_	occupied (day) setting and the unoccupied (night) setting			
	Checked that the line dryer prevents moisture buildup	⊔		
2:	compressor manufacturer's recommendation (for example, when you blow down the tank)	□		
3].	Set the line pressure at each thermostat and damper actuator at the proper level (no leakage or obstructions)	□		
AC'	TIVITY 12: OUTDOOR AIR DAMPERS			
	Ensured that the outdoor air damper is visible for inspection	□		
	Ensured that the recirculating relief and/or exhaust dampers are visible for inspection	□		
3m.	Ensured that air temperature in the indoor area(s) served by each outdoor air damper is within the normal operating range	□		



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

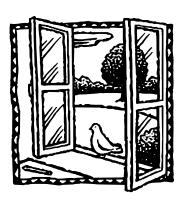


3.	CONTROLS FOR OUTDOOR AIR SUPPLY (continued)	)		
3n.	Checked that the outdoor air damper fully closes within a few minutes of shutting off appropriate air handler	Yes	No	N/A
	Checked that the outdoor air damper opens (at least partially with no delay) when the air handler is turned on			
	If in heating mode, checked that the outdoor air damper goes to its minimum position (without completely closing) when the room thermostat is set to 85°F	🗆		
•	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	🗖		
31.	<ul> <li>The damper actuator links to the damper shaft, and any linkage set screws or bolts are tight</li></ul>	🗆		
Pro	ceed to Activities 13–16 if the damper seems to be operating properly.			
	Disconnected power to controls (for automatic reset only) to test continuity across terminals	🗖		<b>-</b>
	Confirmed (if applicable) that depressing the manual reset button (usually red) trips the freeze stat (clicking sound indicates freeze stat was tripped)			_ _
clos	TE: HVAC systems with water coils need protection from the cold. The freezese the outdoor air damper and disconnect the supply air when tripped. The tyge is $35^{\circ}F$ to $42^{\circ}F$ .			
AC!	FIVITY 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	🗖		
	Confirmed proper economizer settings based on design specifications or local practices	🗖		<b>-</b>
NO	TE: The dry-bulb is typically set at 65°F or lower.			
-	Checked that sensor on the economizer is shielded from direct sunlight Ensured that dampers operate properly (for outside air, return air, exhaust/relief air, and recirculated air), per the design specifications			
load Dry and	TE: Economizers use varying amounts of cool outdoor air to assist with the cold of the room or rooms. There are two types of economizers, dry-bulb and envelub economizers vary the amount of outdoor air based on outdoor temperal enthalpy economizers vary the amount of outdoor air based on outdoor temperal humidity level.	thalpy iture,	•	

#### 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 Yes No N/A hours (even when room thermostat is satisfied) 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) 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 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		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	🗖				
AC:	FIVITY 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					
AC:	FIVITY 22: OUTDOOR AIR MEASUREMENTS AND CALCULATION	NS				
NO	TE: Refer to "How to Measure Airflow" for techniques.					
	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)	🗖				
AC:	FIVITY 23: ACCEPTABLE LEVELS OF OUTDOOR AIR QUANTI	<b>TIES</b>				
	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	П	П	П		

## **NOTES**