

**BALTIMORE COUNTY PUBLIC SCHOOLS**

**DATE:** May 8, 2007

**TO:** **BOARD OF EDUCATION**

**FROM:** Dr. Joe A. Hairston, Superintendent

**SUBJECT:** **INDOOR AIR QUALITY TOOLS FOR SCHOOLS PROGRAM**

**ORIGINATOR:** J. Robert Haines, Deputy Superintendent

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**INFORMATION**

In September 2005, the Board of Education endorsed the Superintendent's recommendation to implement the Indoor Air Quality *Tools for Schools* program in a pilot at forty schools. The program was proposed as part of the initiatives from the Environmental Assessment Advisory Committee.

The Environmental Assessment Advisory Committee suggested strategies to be included in the proposed Indoor Air Quality (IAQ) Program from the Baltimore County Public Schools (BCPS) Department of Physical Facilities. Initiatives proposed by the committee and endorsed by the Board of Education in September 2005 included the following:

- Publish the *Protocol for Environmental Health Investigations*.
- Provide a proactive program at each school for environmental communication through the Indoor Air Quality *Tools for Schools* program as a pilot in forty schools.
- Increase funding for preventive maintenance including air filters and effective housekeeping practices.
- Provide watertight buildings in renovations or modernizations through Capital programs, and upgrade ventilation systems to meet current standards of the American Society of Heating Refrigerating and Air Conditioning Engineers.

The Superintendent committed to publish the environmental protocol and provide a proactive IAQ program through the continuation of an advisory committee. The Environmental Program Oversight Committee was established which includes outside stakeholders and expert staff from the Department of Physical Facilities. The committee developed a reference guide to IAQ management through a five-part program.

After the implementation of the *Tools for Schools* pilot program in the 2006 school year, the committee recommended that it be an integral part of the Department of Physical Facilities new IAQ Program handbook. This reference guide will be available through the BCPS website.

The next 40 schools received training in January 2007 to continue the success of the Indoor Air Quality *Tools for Schools* program as sponsored by the American Lung Association through an Environmental Protection Agency (EPA) Grant. There are eighty schools participating in the program this year, and BCPS was awarded the Great Start Award by the EPA for implementing the program. The remaining schools will implement the program over the next two years.

**BALTIMORE COUNTY PUBLIC SCHOOLS**  
**Department of Physical Facilities**

**IAQ TOOLS FOR SCHOOLS**

Southwest	Northwest	Central	Northeast	Southeast
Baltimore Highlands Elementary	Deer Park Elementary*	Fifth District Elementary	Eastern Technical High	Colgate Elementary
Edmondson Heights Elementary	Deer Park Middle Magnet	Hereford Middle	Gunpowder Elementary	Deep Creek Middle
Lansdowne Middle*	Glyndon Elementary	Jacksonville Elementary	Kingdale Elementary	Dundalk Middle
Relay Elementary	New Town High	Padonia International	Parkville Middle	Dundalk High*
Southwest Academy*	Old Court Middle*	Pot Springs Elementary	Parkville High*	Holsted Middle
Western School of Technology	Owens Mills High*	Seventh District Elementary	Perry Hall High	Oliver Beach Elementary
Winfield Elementary	Timber Cove Elementary	Towson High	Pine Grove Middle	Sandalwood Elementary*
Woodrow Elementary	Wissard Elementary	Warren Elementary	Strommen Run Middle	Solers Point Technical High
		ORIGINAL PILOT SCHOOLS		
Southwest	Northwest	Central	Northeast	Southeast
Arbutus Elementary*	Cedarside Elementary	Creswell Valley Magnet	Glenn	Berkshire Elementary
Arbutus Middle	Franklin Middle	Dulaney High	Joppa View Elementary	Chesapeake High*
Catonville High	Milford Mill Academy*	Dumbarton Middle	Kennelwood High	Hawthorne Elementary
Fontaine Elementary	Nicorville Middle	Holstead Academy	Marin Boulevard Elementary	Marx Estate Elementary
Riverview Elementary	Randalltown Elementary	Hereford High	McCormick Elementary	Northwood Elementary
Woodbridge Elementary	Randalltown High*	Lock Faves Technical Academy	Middle River Middle	Patapsco High*
Woodlawn High*	Riverton Elementary	Morgan State Elementary	Perry Hall Middle	Sparrows Point Middle/High
Woodlawn Middle*	Summit Park Elementary	Stonleigh Elementary	Strommen Run Middle*	Sweet Elementary

\*Schools in Improvement Status as outlined at the Division of Curriculum and Instruction's August 7, 2005 Retreat

# **INDOOR AIR QUALITY PROGRAM**



**DEPARTMENT OF PHYSICAL FACILITIES**

**Dr. Joe Hairston, Superintendent**  
**J. Robert Haines, Esquire, Deputy Superintendent**  
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# **A. Summary**

## A. Summary

The Baltimore County Public Schools (BCPS) has developed the Indoor Air Quality Program (IAQP) in response to increasing concerns about the quality of the environment within our schools and support facilities. The IAQP will ensure that the environment provided in our facilities will be conducive to learning and comfort while working.

The IAQP is divided into five parts. The first section addresses the guidelines being used in the engineering and construction of new schools, and in air handling system renovations to ensure that schools have good air quality. The second section addresses the actions that are being taken to ensure a quality indoor environment through the *Comprehensive Maintenance Plan*. These actions include the proper maintenance of mechanical and electrical systems which are vital to providing good air quality, proper housekeeping and cleaning activities, and the integrated pest management program. The third section addresses how these activities are being monitored and the effectiveness of these activities in providing good air quality. The monitoring is done through the implementation of the EPA *Tools for Schools* program in each building, audits by the Office of Environmental Services, and through proactive measures taken by the Environmental Action Team. The fourth section addresses how occupants with air quality concerns should report their concerns most effectively. The fifth section addresses how the Department of Physical Facilities will address these concerns.

These efforts will provide the best possible environments within BCPS facilities. It is also recognized that procedures can always be upgraded; therefore, the Department of Physical Facilities will continue to evaluate and improve this plan as the needs of our system evolve.

## **B. Components Of The Indoor Air Quality Program**

## B. Components of the Indoor Air Quality Program

The components of the Indoor Air Quality Program (IAQP) have been selected based on the need to provide good air quality, monitor the effectiveness of the program, and to respond to concerns raised about air quality in facilities. This program references other programs already in use in the Department of Physical Facilities, as well as procedures developed specifically for this program.

### 1. Engineering and Construction

Providing good air quality starts with the proper design and installation of air supply and conditioning equipment. New construction and air handling system renovation projects will use the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) guidelines for outside air ventilation, filtration, temperature and relative humidity, for design and installation of air conditioning systems. The guidelines are recognized as effective industry standards for providing a quality indoor environment.

### 2. Air Quality Maintenance

The following activities are detailed in the *Comprehensive Maintenance Plan (CMP)* which is available on the BCPS Website.

#### a. Preventive Maintenance

Maintenance items for mechanical and electrical systems and the general building that are critical to a good indoor environment were identified. Preventive maintenance (PM) schedules and associated checklists were developed. Schedules have been prioritized which identify which Maintenance section is responsible for each maintenance task. A Maintenance Customer Services Representative will review anticipated schedules at each school site with school-based administrators, Building Operations Supervisors, and/or their designee. All scheduled work will be completed. The work will be documented and a copy placed in the building file, as well as in the central file maintained by the Department of Physical Facilities. Operations Field Representatives and Customer Services Representatives will routinely review scheduled PM work with Building Operations Supervisors as required for improved quality control. If deficiencies are discovered, a work order will be generated identifying the necessary maintenance activity. The work order will be “flagged” as being indoor environment sensitive so that it can be assigned a higher priority.

b. Housekeeping

A list of housekeeping items that relate to a good indoor environment was developed. The Operations staff will follow this list on the prescribed schedule following procedures that have also been developed. The Operations Field Representatives will check the quality of work monthly. A written set of criteria and checklists have been developed to perform the facility evaluation.

c. Integrated Pest Management

All pest control work will follow the Integrated Pest Management (IPM) procedures that are included in the CMP. The techniques, materials, and schedules are an integral part of the IAQP and include logs of pest sightings, site inspections, interviews with facility administrators, pest exclusion work, and, as a last resort, pesticide application. The IPM program also includes notification of staff and parents prior to pesticide application as required by law. All pest control work will be fully documented.

3. Indoor Air Quality Monitoring

a. EPA *Tools for Schools*

The Indoor Air Quality (IAQ) *Tools for Schools* (TfS) program is a voluntary program that encourages schools to carry out a practical plan of action to improve indoor air quality at little or no cost using common-sense activities and in-house staff.

The program is implemented by the school staff using a *Tools for Schools* kit that provides simple-to-follow checklists, background information, sample memos and a helpful IAQ Problem Solving Wheel.

The program provides

- voluntary activities;
- no/low cost projects;
- common sense solutions;
- easy-to-use checklists;
- flexibility for who, how, and when; and
- common problem targeting.

The program is not

- another costly regulatory program;
- a technical manual requiring specialized training; or
- a guidance that requires pollutant measurements.

BCPS has developed two checklists to use with the TfS program, the *Walk-through Checklist* and the *Good Practices Checklist*. The *Walk-through Checklist* is for use by the TfS teams during the semi-annual school walk-through. The *Good Practices*

*Checklist* is for use by school staff to evaluate their particular spaces. These checklists are included in Appendix 1.

b. Environmental Services Audits

Environmental Services regularly visits BCPS facilities to conduct investigations of environmental concerns, to assist with the *Tools for Schools* Program and to conduct proactive environmental evaluations. IAQ Audits will be conducted during these visits as well as during independent visits. At least fifteen audits will be conducted quarterly until all schools have been audited. Follow up audits will occur at the discretion of Environmental Services. The audit will consist of examining the various completed checklists, facilities-related concerns, and all pertinent documentation on file. The information will be checked to make sure it is up-to-date. The actual condition of the building cleanliness, mechanical systems maintenance, and pest control will also be reviewed to determine if they are consistent with the information contained in the building documentation.

c. Environmental Action Team

An interdisciplinary Environmental Action Team has been formed to review, diagnose, and resolve persistent environmental problems. The team has members from Environmental Services, Mechanical Services, Electrical Services, Energy Management, Contract Maintenance, Engineering and Construction, and Operations. The team meets at least once per month to discuss progress on projects and to develop new projects based on emergent concerns.

4. Indoor Air Quality Reporting Process

All indoor air quality concerns should first be brought to the attention of the Principal of the school, or the employees' supervisor in other facilities. These concerns should then be directed to the Office of Environmental Services at 410-887-6300.

5. Indoor Air Quality Response Process

The Office of Environmental Services will utilize the resources available to investigate, diagnose, and correct indoor air quality problems. The resources include maintenance supervisors, engineers, environmental specialists, health care professionals, risk management professionals, licensed trades professionals, and housekeeping specialists. These resources possess knowledge in those areas that are relevant to indoor environments such as industrial hygiene, engineering, maintenance, health effects, housekeeping, and building operations.

If an air quality complaint includes concerns about occupant health, then the "Protocol for Environmental Health Issues" will be followed. A copy of the protocol is found in Appendix 2.

# **Appendix 1:**

## ***IAQ Tools for Schools* Checklists**

**a. Walk-through Checklist**

**This checklist is an aid during an Indoor Air Quality walk-through of the school.**

**The checklist includes considerations both inside and outside the school building.**

***Instructions:***

1. For each area, use the checklist hints to guide your observations. Note any obvious potential problems, including description and location. Use additional paper if necessary.
2. Return the checklist to the IAQ Coordinator and keep a copy for future reference.

School: \_\_\_\_\_  
Room or Area: \_\_\_\_\_  
Date Completed: \_\_\_\_\_  
Signature(s): \_\_\_\_\_

The walk-through inspection is not intended to be an intensive, detailed, or costly inspection, but rather a quick overview of the conditions that affect the quality of air within your school. You should have someone who is familiar with the operation of the building, such as the Building Operations Supervisor, assist you during the inspection.

During your walk-through inspection, you can learn a lot by using your senses of sight, smell, feeling, and hearing to gain information on factors which affect indoor air quality. You may even be able to make immediate corrections. BCPS has a variety of resources to address problems discovered during this walk-through. There are professionals on the staff with the ability to assess, measure, and repair virtually any building or environmental problems. The information provided by this inspection will be channeled to the appropriate staff member(s) for action.

**Observe** the general level of cleanliness in classrooms and other public spaces. Look for pollutant sources such as mold, improperly stored chemicals, and chemicals not on the BCPS approved list, or excessively dirty air filters, louvers, and ducts. Look for signs of water damage which may point to an underlying problem that could increase the chance of biological contaminants. Also, look for blocked airflows such as those caused by books or papers on top of unit ventilators or plywood covering outdoor air intakes.

**Smell** for unique or objectionable odors, including mold, mildew, and chemical smells, as you move from room to room. Note any potential sources of these odors.

**Feel** for uncomfortable air temperatures, drafts, and high or low humidity, and feel for air flowing into and out of grilles and air vents.

**Listen** to the concerns of school occupants regarding IAQ. Do they provide clues to problems such as using their own pest spray, air fresheners or other non-approved products or turning off the unit ventilator because it is too noisy during class time? Do you hear unusual equipment noises which may indicate potential problems? Do you hear air blowing out of supply vents?

Do a walk-through inspection in all special-use areas, such as the cafeteria, art rooms, and industrial arts areas. Do not include the boiler room or roof in the inspection.

**EXTERIOR INSPECTION**

Begin the walk-through inspection outside. You are looking for anything which might impact the air indoors. Considerations include ventilation inlets, outdoor sources of pollution such as vehicle exhaust or pesticides, site drainage, holes in the building shell, and evidence of pests. Use the checklist to guide your inspection and note any relevant observations on this sheet or on a floor plan of the school.

**EXTERIOR – GROUND LEVEL**

**LOCATION/OBSERVATION**

Ventilation units on and air flowing into outdoor air intakes?

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Outdoor air intakes free from blockage or obstruction (boards, leaves, vegetation, snow, etc.)?

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No bird or animal nests or droppings near outdoor air intakes?

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No garbage dumpsters located near doors, windows, or outdoor air intakes?

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No potential sources of air contamination in the vicinity of the building (chimneys, stacks, industrial plants, exhaust from nearby buildings)?

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No vehicle engine (auto, truck, bus) exhaust near outdoor air intakes? Vehicles left idling when parked at loading zones or docks?

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Roof downspouts and scuppers drain water away from the building?

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Good site drainage away from the building?

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Sprinklers do not water excessively near building or over-spray onto building or into outdoor air intakes, etc.?

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Clean walk-off mats at every exterior entrance?

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**INTERIOR INSPECTION**

Continue the walk-through inspection inside. You are looking for noticeable temperature and humidity concerns, indications that the ventilation system is functioning, general cleanliness, evidence of pollutant sources including mold and mildew, or anything which might impact the air indoors. Use the checklist to guide your inspection and note any relevant observations on this sheet or on a floor plan of the school.

**GENERAL CONSIDERATIONS IN CLASSROOMS AND OTHER AREAS**

**LOCATION/OBSERVATION**

Do temperatures and humidity feel acceptable?

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Can you feel air flowing out of air supply diffusers and into air return grates?

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Are supply and exhaust vents free from blockage or obstruction?

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Is the area free of objectionable odors?

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Are there plants in the room? Are they properly watered and cared for? Are there signs of water damage around the plants?

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Are there pets in the room?

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Are animals used for curriculum purposes maintained in safe, sanitary condition?

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Are there signs of water damage/infiltration?

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Are there signs of unresolved or ongoing water damage?

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Is the area generally clean?

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Is the area free of evidence of pests (especially mice, cockroaches, ladybugs/lady beetles), obvious food sources, and entryways?

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Is food stored in rodent proof containers?

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Are all supplies labeled and stored properly?

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Are air fresheners present (including plug-ins)?

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Are all supplies and chemicals on the BCPS approved list?

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Do the room occupants report any concerns or problems?

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**BATHROOMS AND GENERAL PLUMBING**

**LOCATION/OBSERVATION**

Do bathrooms and restrooms have operating exhaust fans? (check for flow)

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Do all drains have traps?

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Are drain traps filled with water (floor drains, sinks, toilets)?

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**MAINTENANCE SUPPLIES**

**LOCATION/OBSERVATION**

Are odorous or hazardous chemicals used with adequate ventilation and only when building is unoccupied?

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Is air exhausted from chemical (e.g., custodial closets) and trash storage areas?

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**COMBUSTION APPLIANCES**

**LOCATION/OBSERVATION**

Are combustion gas or fuel odors ever detected?

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Do combustion appliances have flues (e.g., exhaust hoods, kitchen ranges, kilns)?

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Are flue components free from leaks, disconnections, deterioration, or soot?

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Is soot on outside of flue components?

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## **b. Good Practices Checklist**

## **Good Practices Checklist for Staff**

The “Good Practices Checklist for Staff” is a listing of things to do, things to look for, and things to avoid ensuring a good environment in the classroom setting. If concerns are raised while working through the checklist, consult with the school administration for assistance. Use the “Problem Report Form” for this purpose. Make copies of the form as needed.

**PROBLEM REPORT FORM**

School \_\_\_\_\_  
Name \_\_\_\_\_

Area \_\_\_\_\_  
Date \_\_\_\_\_

General Cleanliness	
Animals in the Classroom	
Floor Drains and Traps in the Classroom	
Excess Moisture In Classrooms	
Thermal Comfort	
Ventilation	
Art Supplies	
Science Supplies	
Industrial and Vocational	
Locker Room	
Kitchen/Cafeteria	

# Good Practices Checklist for Staff

*Note:* Conduct the following activities as appropriate to your work area.

## GENERAL CLEANLINESS

Regular and thorough cleaning of the work area is important to ensure a healthy environment. While custodians typically clean these areas, you can also play an important role in promoting and maintaining classroom cleanliness. Food not kept in containers or not cleaned up properly can lead to problems from animal or insect allergens.

Reminder: Clean spills promptly

- For spills on carpets, contact custodial staff immediately (carpets need to be cleaned properly, and dried within 24 hours to prevent mold growth).
- Request that the unit ventilator be cleaned and filter replaced if spilled liquid goes into the unit.
- Report previous spills on carpets or in unit ventilators because they can affect current indoor air quality.

## CHECKLIST

- Area is clean.
- Area is dusted and vacuumed thoroughly and regularly.
- Trash is removed daily.
- Food is kept in pest proof containers.
- Room is free of pests, especially mice, cockroaches, and ladybugs/lady beetles.
- All products in room are on BCPS approved list (cleaners, disinfectants, air fresheners, plug-in air fresheners, etc.)
- Spills are cleaned.
- No devices are in area unless approved by BCPS (fans, air cleaners, dehumidifiers, humidifiers, etc.)

## ANIMALS

Certain individuals, in particular those with asthma, are sensitive to animal fur, dander, body fluids, and feces, and may experience reactions to these allergens. Furthermore, individuals can become sensitized (made allergic) by repeated exposure to animal allergens.

## CHECKLIST

- Only curriculum-related animals are in the room.
- Exposure to animal allergens is minimized.
- Animals are kept in cages as much as possible and not allowed to roam.
- Cages are cleaned regularly.

- Animals are located away from ventilation system vents to avoid circulating allergens throughout the room or building.
- Use alternatives to animals when possible.

**Take special care with asthmatic or other sensitive individuals.**

### **CHECKLIST**

- School nurse is consulted about student and staff allergies or sensitivities.
- Sensitive individuals are located away from animals and habitats.
- Use alternatives to animals when possible.

### **DRAIN TRAPS**

Drain traps, if present, can become a problem when the water in the drain trap evaporates due to infrequent use allowing sewer gases to enter the room.

### **CHECKLIST**

- Drains are free from odors.
- Drain traps are filled regularly.
- Water is poured down floor drains once per week (approximately one quart of water).
- Water is run in sinks at least once per week (about two cups of water).
- If not regularly used, toilets are flushed once each week.

### **EXCESS MOISTURE**

Excess moisture contributes to mold growth. Mold can trigger allergic reactions and asthma in sensitive individuals. Mold can also cause odors and other IAQ problems. Excess moisture is the result of condensation on cold surfaces, leaking or spilled liquid, or excess humidity. Note any signs of moisture that exist now or that recur.

### **CHECKLIST**

- Windows, window sills, and window frames are free of condensate.
- Cold water pipes are free of condensate.
- Indoor surfaces of exterior walls are free of condensate.
- Area around and under sinks is free of leaks.
- Windows and pipes are not leaking (check especially for moisture or leaks into unit ventilators)
- Lavatories are free of leaks.
- Ceiling tiles or walls are leak-free (discoloration may indicate periodic leaks).

### **THERMAL COMFORT**

Temperature and relative humidity can affect comfort and IAQ. Changing thermostat settings or opening windows to try to control temporary fluctuations in temperature can worsen comfort

problems and also have an adverse effect on other parts of the school.

### **CHECKLIST**

- Temperature and humidity are maintained in a comfortable range.
- Room is usually comfortable.

### **VENTILATION**

Ventilation is the process by which stale indoor air is exhausted to the outside and outside air is drawn into the building. You may either have mechanical ventilation (supplied by fans) or natural ventilation (operable windows).

### **CHECKLIST**

- Unit ventilator is on.

If you have mechanical ventilation, confirm that air is flowing into the room from the air supply vent(s).

Check for airflow by holding a piece of tissue paper near the air supply vent(s); if air is flowing, the tissue will flutter away from the supply vent. Make sure that the airflow is not diverted or obstructed by books, papers, furniture, or other obstacles. Never place anything on top of unit ventilators.

**If you have mechanical ventilation, confirm that air is flowing from the room into the air return grille(s).**

Check for airflow at air return grille(s) in the same manner as with the previous activity. If air is flowing, the plastic or tissue will be pulled toward the return. A piece of plastic that nearly covers the grille will stick to the face of the grille if air is flowing. Make sure airflow is not obstructed by books, papers, furniture, or other obstacles.

### **CHECKLIST**

- Air is flowing without obstruction

**Check for unexplained odors.**

Improperly operated, or poorly maintained ventilation systems, may cause IAQ problems. Odors, or the need to use scented air fresheners, may indicate a ventilation problem. The ventilation system can carry air contaminants from another location in the school to your area.

### **CHECKLIST**

- No room deodorizers or sanitizers are being used.
- No objectionable or unexplained odors are present.

## **LOCAL EXHAUST FANS**

Local exhaust fans and fume hoods can be used to prevent air pollutants and moisture from accumulating in, or spreading beyond, the local area or classroom. Local exhaust fans may be used to exhaust entire rooms (bathrooms or locker rooms). Fume hoods are appropriate for activities that generate significant quantities of pollutants in a local area within a room (science experiments, spray painting, and welding).

### **CHECKLIST**

- Determine if your activities generate air pollutants and whether your area is equipped with local exhaust fans and/or fume hoods.
- If there are no activities that generate air pollutants, you do not need a local exhaust fan or fume hood.

### **Confirm that fume hoods and local exhaust fans function properly.**

Check for airflow when fans are on (hold a piece of paper near the fan, or within the space of the fume hood, to see whether it is pulled away from the room). Train students and others who use the area or equipment on when and how to use the fume hoods and fans.

### **CHECKLIST**

- Check that fume hoods are in good repair (not cracked, broken or pulling away from the ceiling or wall).
- Confirm that fans and fume hoods are used whenever activities that generate pollutants take place. Note if fans are not operating because of noise.
- Check that fume hoods and exhaust fans are preventing odors from escaping from the work area.

## **ART SUPPLIES AND PHOTOLAB SUPPLIES**

Art supplies and photography chemicals may emit odors during use and storage. In addition, certain activities, such as firing ceramic kilns, may generate odors or heat up the area causing thermal discomfort to occupants.

Although potentially toxic supplies have had appropriate labeling since a 1990 federal law took effect, it is still up to teachers to see that safety precautions are followed. Examples of art supplies and activities that may contribute to IAQ problems include solvents, inks, adhesives, and glues; wax, varnishes and lacquers; powdered pigments, acids, clays, paints, photography chemicals; and firing kilns.

### **Learn about your supplies.**

Check to see whether your supplies (noted above) are listed as toxic or nontoxic. Supplies that are nontoxic will be labeled AP Nontoxic, CP Nontoxic, or Health Label (without warning

conditions) by the Art and Craft Materials Institute or the Center for Safety in the Arts.

Read labels and identify precautions regarding fumes or ventilation. If you make purchase decisions or recommend products for purchase, confirm that supplies are safe to use.

### **Minimize exposure to hazardous materials.**

Substitute less, or non-hazardous materials, where possible. Use local exhaust fans. Isolate contaminant producing activities or operations. Use moist, premixed products rather than powdered products. Use techniques that require the least amount of materials.

## **SCIENCE SUPPLIES**

Some supplies used as teaching aids in science laboratories may contribute to IAQ problems. Science experiments should be conducted in well-ventilated rooms using fume hoods and local exhaust systems whenever appropriate. Basic safety precautions can prevent spills or other mishaps that cause air contamination and should be followed at all times. Examples of science supplies that may contribute to IAQ problems include solvents, acids, flammables, caustics, biological products, and compressed gasses.

Learn about your supplies. Read labels and identify precautions regarding fumes ventilation. Request information and Material Safety Data Sheets (MSDS) from suppliers and manufacturers.

### **Follow good safety, handling, and storage practices.**

### **If you need guidance, contact the science department chair.**

Have appropriate procedures developed and supplies available for spill control (i.e., absorbent materials to control the spread of spills).

## **CHECKLIST**

- Spill procedures are in place.
- All chemicals are labeled accurately with date of receipt/preparation and pertinent precautionary information.
- Supplies are stored according to manufacturers' recommendations.
- Recommended procedures for disposal of used substances are understood and followed.
- Compressed gas cylinders are secured.
- Storage areas are separate from main classroom area and ventilated separately.

### **Minimize exposure to hazardous materials.**

## **CHECKLIST**

- Diluted substances rather than concentrates are used whenever possible.
- Techniques that require the least quantity of hazardous materials are used.
- Fume hoods capture respirable particles, gases, and vapors released within them.

- Exhaust fans operate.

## **INDUSTRIAL AND VOCATIONAL EDUCATION SUPPLIES**

Industrial and vocational education materials and operations can create IAQ problems. Examples of the kinds of activities and supplies that may contribute to IAQ problems include machining, solvents, grinding, fuels, painting, soldering, welding, baking/heating, and adhesives.

### **Learn about your supplies.**

Read labels and identify precautions regarding fume ventilation. Request information and Material Safety Data Sheets (MSDS) from suppliers and manufacturers. Keep the information accessible in case of emergency.

### **Follow good safety, handling, and storage practices.**

Develop appropriate procedures and have supplies available for spill control (e.g., absorbent materials to control the spread of spills).

### **CHECKLIST**

- Spill procedures are in place.
- Supplies are stored according to manufacturers' recommendations.
- Recommended procedures for disposal of used substances are understood and followed.
- Compressed gas cylinders are secured.
- Storage areas are separate from main classroom area and ventilated separately.

### **Minimize exposure to hazardous materials.**

### **CHECKLIST**

- Instructional techniques that require the least quantity of materials are used.
- Fume hoods capture respirable particles, gases, and vapor released within them.
- Exhaust fans operate.

## **LOCKER ROOM**

Locker room conditions that affect indoor air quality include: standing water, high humidity, warm temperatures, and damp or dirty clothing. In addition, some of the methods necessary to control germs and odors in the locker room, such as use of disinfectants, may themselves contribute to indoor air quality problems if used improperly (e.g., if sprayed into the air instead of directly onto surfaces).

### **Verify that showers and other locker room areas are cleaned regularly and properly.**

Limit use of chemical cleaners and disinfectants to times when areas are unoccupied. Run exhaust fans to remove moisture and odors.

## **Maintain cleanliness and reduce excess moisture in the locker room.**

Remove wet towels regularly. Wash and dry soiled practice uniforms regularly. Encourage students to take soiled clothes home regularly. Operate exhaust fans to remove moisture.

### **CHECKLIST**

- Soiled clothes and towels are removed regularly.
- Locker room and showers are cleaned regularly and properly using BCPS approved products.

## **KITCHEN CAFETERIA**

Cooking activities generate odors, moisture, food waste, and other trash, all of which must be managed carefully to avoid indoor air quality problems.

### **CHECKLIST**

- Check for cooking odors or smoke in areas adjacent to the cooking, preparation, and eating areas.
- Do not allow delivery vehicles to idle their engines in the receiving area. Kitchen exhaust fans will pull the fumes into the building.
- Confirm that local exhaust fans are operating properly.
- Keep door air barriers closed between receiving area and kitchen.
- Use exhaust fans whenever cooking, dishwashing, and cleaning.
- Confirm that gas appliances function properly.
- Verify that gas appliances are vented outdoors.
- Clean kitchen and cafeteria after use.
- If biocides are used, make sure they are on the BCPS approved list of materials. Follow all label instructions.
- Check for signs of insects or rodents.
- Maintain general cleanliness.
- Make sure dumpsters are placed properly to prevent odors from entering the building. Locate well away from windows, doors, air intake vents, and food service doors.

## **Appendix 2:**

# **Protocol for Environmental Health Issues**

# BALTIMORE COUNTY PUBLIC SCHOOLS

## Protocol for Environmental Health Issues

The health and safety of students and staff is a priority. Protocols have been established to ensure that any complaints or concerns related to environmental health are systematically and thoroughly investigated. The protocols shall be followed when a student, parent, or employee alleges or produces one or more of the following:

- That building environment is causing illness or ongoing symptoms.
- That building environment is causing loss of work/school time.
- A statement from his/her health care provider that the building environment is causing illness or symptoms.

### **Protocol**

1. An Environmental Health Issues Team (EHIT) will be responsible for investigating complaints and/or concerns. The team will be comprised of the Supervisor and the Industrial Hygienist of the Office of Environmental Services, the Coordinator of Health Services, and the Risk Manager.
2. The office receiving the original complaint will initiate a file on the complaint in the designated computer program and email all members of the EHIT.
3. The EHIT member receiving the complaint will notify the school based administrator or office head.
4. Depending on the emergent nature of the concern, the Supervisor or Industrial Hygienist will investigate the concern immediately or will give the school-based administrator a timeline for the investigation. The Supervisor or Industrial Hygienist will keep the school-based administrator and the EHIT apprised of all investigative activities and remediation efforts.
5. The Supervisor/Industrial Hygienist, Office of Environmental Services, responding to the concern may respond alone, or if the nature of the complaint warrants (lost time from work or school, media involvement, exposure incident, etc.), enlist the assistance of other offices as deemed necessary.
6. When responding to a complaint, the members of EHIT will be responsible for the following:

### **Office of Environmental Services**

- a. Distributing the Employee Information and Data Form to complainant. No investigation will be conducted without the completed form
- b. Inspecting the building, including the interior, exterior, plumbing systems, and mechanical equipment as necessary.
- c. Conducting any testing deemed necessary due to the results of the inspection.
- d. Interviewing the complainant, and any additional personnel identified during the investigation, of current, existing health problems which they are attributing to the indoor environment.

- e. Conferring with the Risk Manager to determine if an authorization form is needed to allow a Board-designated health care provider to discuss the situation with the employee and the employee's health care provider.
- f. Coordinating and implementing remediation if a problem is identified through the building investigation.
- g. Updating the file in the designated computer database throughout the course of the investigation.
- h. Notifying the chain of command in the Department of Physical Facilities and the site administrator as necessary.

#### **Office of Health Services**

- a. Consulting with school nurse to gather more health related information and visiting the site as necessary.
- b. Consulting with parent(s)/guardian(s).
- c. Requesting consent form for permission to speak with child's physician.
- d. Consulting with the student's health care provider.
- e. Notifying the Executive Director of Student Support Services and the site administrator as necessary.

#### **Office of Risk Management**

- a. Sending Employee Information and Data form to the school to be completed by the employee.
  - b. Notifying the Claims Unit, Baltimore County Workers' Compensation.
  - c. Completing Employer's Claim form.
  - d. Contacting the employee
  - e. Requesting the employee to complete an "Authorization to Disclose Medical Information by Telephone" form.
  - f. Scheduling as necessary a medical consultation or examination with a Board-designated health care provider as approved by the County Claims Unit.
  - g. Notifying the Executive Director of Planning and Support Operations and the site administrator, as needed.
  - h. Maintaining the designated computer software database.
7. School-based administrators will be responsible for keeping the appropriate Area Assistant Superintendent apprised.
  8. The Office of Communications will be responsible for coordinating any information sent to parents and staff with school-based administrators, Area Assistant Superintendents, and EHIT members.
  9. All employee requests for accommodations related to environmental health issues shall be referred to the Office of Risk Management. The Risk Manager shall consult with appropriate personnel (school-based administrators, Physical Facilities, EEO, Claims Unit) to develop an action plan if required.
  10. Review Protocol for Environmental Health Issues annually or as needed.

## **Appendix 3:**

# **Department of Physical Facilities Contact Personnel**

## Department of Physical Facilities Contact Personnel

### Indoor Environmental Complaints

Environmental Services Section .....	410-887-6300
Bob Merrey, Supervisor, Environmental Services .....	410-887-6300
David Glassman, Industrial Hygienist, Environmental Services ....	410-887-6300
Sean Joyce, Industrial Hygienist, Environmental Services.....	410-887-6300

### Office Administrators

Dennis Elkins, Office of Maintenance and Grounds .....	410-887-6300
Richard Cassell, PE, Office of Engineering and Construction .....	410-887-6301
William Wingerd, Office of Operations .....	410-887-0430

### Office of Operations, Senior Operations Supervisors

Sean Lee, Southwest Area .....	410-887-0430
Kevin Roberts, Northwest Area .....	410-887-0430
David Gilotty, Central Area .....	410-887-0430
Mike Eppig, Northeast Area .....	410-887-0430
Cindy Titus, Southeast Area .....	410-887-0430

### Office of Maintenance, Customer Service Representatives

Wayne Fields, Southwest Area .....	410-302-4859
Bill Franklin, Northwest Area .....	410-245-9286
Doug Sibley, Central Area .....	410-812-8162
Fred Woodard, Northeast Area .....	410-302-1169
Ed Blusiewicz, Southeast Area .....	410-302-8067

## **Appendix 4:**

## **Additional Resources**

## **Additional Resources:**

U.S. Environmental Protection Agency

[www.epa.gov/iaq](http://www.epa.gov/iaq)

Maryland Department of the Environment

[www.mde.state.md.us/](http://www.mde.state.md.us/)

Centers for Disease Control and Prevention

[www.cdc.gov](http://www.cdc.gov)

American Lung Association of Maryland

[www.marylandlung.org](http://www.marylandlung.org)

Integrated Pest Management in Schools Website

[www.ifas.ufl.edu/~schoolipm/](http://www.ifas.ufl.edu/~schoolipm/)

National Association of School Nurses

[www.nasn.org](http://www.nasn.org)

American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)

[www.ashrae.org](http://www.ashrae.org)

American Academy of Allergy, Asthma, and Immunology

[www.aaaai.org](http://www.aaaai.org)

American College of Allergy, Asthma, and Immunology

[www.acaai.org](http://www.acaai.org)

Food Allergy and Anaphylaxis Network

[www.foodallergy.org](http://www.foodallergy.org)