

Source Control and Integrated Pest Management

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Indoor Air Quality (IAQ)

Making the Grade: Healthy Schools Nurturing Healthy Kids



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Healthy Schools: Effectively Implementing an
Indoor Environmental Quality Management
Program
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Indoor Air Quality (IAQ)

Aggressive Source Control

- Conduct regular building walkthrough inspections
- Test for radon; mitigate if necessary
- Implement a hazardous materials plan (use, label, storage and disposal)
- Establish a school chemical management and inventory plan
- Implement Smoke-Free policies
- Establish an anti-idling school bus policy
- Use walk-off mats at building entrances
- Conduct pollutant-releasing activities when school is unoccupied



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Overview

- What could be in the air we breathe?
- What factors contribute to the quality of our schools' air?
- Indoor Pollutants
- Controlling the Sources
- Helpful Resources



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What are They Breathing? Common Pollutants

- Molds and allergens
- VOCs
- Particles (dust)
- Carbon Monoxide
- Carbon Dioxide
- Ozone
- Radon



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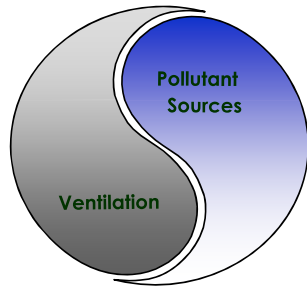
Pollutants' Effects Magnified in Children

- Breathe 5x the volume of air that adults do
- Lower to the ground
 - Exposed to more particulates and allergens
- 80% of brain development occurs after birth



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Two Primary Factors Control Indoor Air Pollution



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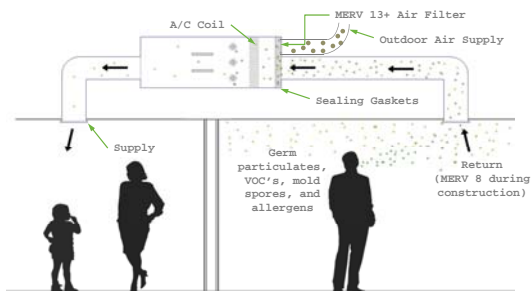
Proper Ventilation



- Bring in and condition outdoor air
- Circulate air throughout the building
- Warm and cool air while maintaining a relative humidity level of 30-60% (ASHRAE 55)
- Know the difference between relative and absolute humidity

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Air Cleaning



on diagram provided by the U.S. Environmental Protection Agency, Mission of Measures to Indoor Air - 2009

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Source Control

- Moisture Management Plan
- High performance cleaning systems



- Walk-off mats
- Low-emitting materials



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Why Moisture Management?



Cleaning Yes – But it can be polluting



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A Study of 2 Atlanta Schools Cleaning Effectiveness



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Primary Allergens Found



School 1
Dust mite
Dog
Mouse
Cat
Cockroach

School 2
Cat
Dog



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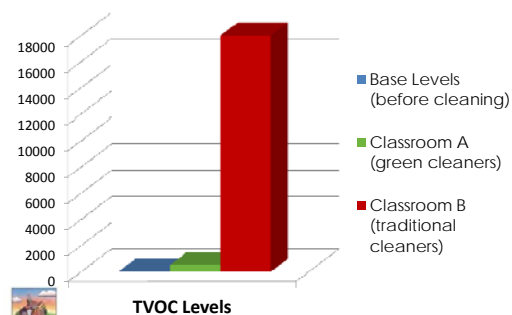
Overall Study Conclusions

- Contaminants higher in School with limited cleaning processes
- Cleaning effective in allergen removal
 - 70% in carpet
 - 30% from VCT
- Chemical exposure from cleaning can extend beyond the process
- Low VOC chemicals result in less pollution
- Data trend over time shows less air and dust pollution with routine cleaning



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Chemical levels measured in classrooms 2 hrs post-cleaning



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Everyday items in the classroom contribute to VOCs:



Toluene



Formaldehyde



Acetone



Acetaldehyde



Electronics



Flooring



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Most VOCs Related to Materials, Furnishings and Equipment

- Formaldehyde: Furniture, ceilings, and textiles
- Styrene: Printers and copiers
- Pinene: Wood furniture, cabinetry
- Phenylcyclohexene: Carpet
- Limonene, Acetaldehyde: Maintenance
- Acetone: Markers



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Survey of more than 200 Schools

VOC	Types/Use of Products	VOC	Types/Use of Products
1,4 dioxane	Spot removers	Isobutene	Aerosol cleaners
Acetaldehyde	Fragrance/disinfectants	Limonene	Lemon fragrance
Acetic acid esters	Surface cleaners	Methoxy ethanol	Surface cleaners
Butoxyethanol	Surface cleaners	Methoxyethoxyl ethanol	Surface cleaners
C6 - C10 substituted alkanes	All cleaners/polishers	Naphthalene	Disinfectants/moth repellants
Dichlorobenzene	Deodorizers	Phenol	Disinfectants
Dipropylene glycol	Surface cleaners	Pinene	Pine fragrance
Ethanol	Disinfectants	Siloxanes	Waxes/polishes
Formaldehyde	Biocides	Tetrachloroethylene	Dry cleaners
Isobutane	Aerosol cleaners	Trichloroethylene	Degreaser/spot removers

Key Sources of Pollutants in Schools

- Furniture (desks, bookcases)
- Flooring
- Paints
- Ceiling tiles
- Computers & Printers
- Cleaners



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What To Look For In Low Emitting Healthy Products ...

- Look for VOC emissions
- Is the product mold resistant?
- Free of Lead and Phthalates?
- Has product been tested using reproducible, scientific methods within the past 12 months?
- Has the product received independent third-party certification?
- Is the product readily available?
- Is the product competitively priced?



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Be Aware... GreenWashing



- Beware "VOC-Free" Products!
"...does not participate in outdoor atmospheric photochemical reactions"
- Does NOT mean it does not emit VOCs (most do!)
- "Natural" ... "Alternative" ... "Generic" ...



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Must Use Low-Emitting and Non-Toxic Mold Resistant Products



- Independent Third Party Certification with emission testing
 - Provides a label to certified products for easy identification
 - Provides specification confidence of final product
 - Requires ongoing verification



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When should Source Control techniques be employed?

Yesterday, Today, and Tomorrow

- Schematic Design
- Construction/Renovation
- Design Development
- Operations and Maintenance



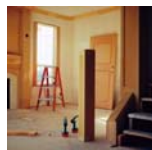
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Schematic Design Design Development for Low Emitting Products



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Use Healthy Guidelines for Construction/Renovation



Considerations to Minimize Indoor Pollutants:

- Specify low emitting products / materials
- Scheduling: allow wet materials to dry / cure before installing porous materials (secondary sources or "sinks"), and before re-occupancy (paints, adhesives)
- Flush-out
- Test Air before Occupancy



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Manage Source Control in Operations and Maintenance



- Green procurement guidelines
- Low-emitting chemicals and cleaners
- Moisture management plan
- HVAC maintenance plan
- Air quality testing



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Resources



U.S. Environmental Protection Agency;
IAQ Tools for Schools
<http://epa.gov/iaq/schools/>



American Lung Association
www.lungusa.org/



GREENGUARD Environmental Institute
www.greenguard.org



Healthy Schools Network, Inc.
www.healthyschools.org/

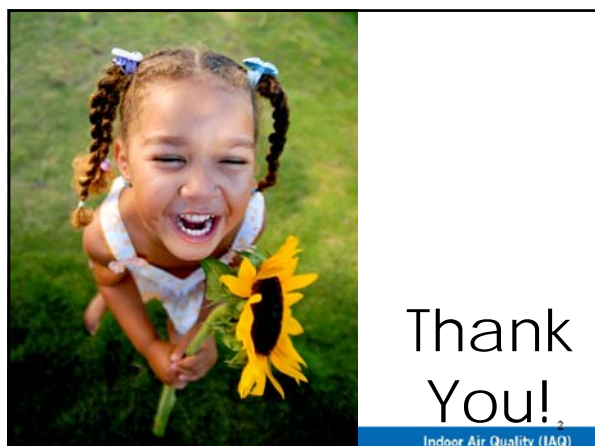


Healthy Schools Campaign
www.healthyschoolscampaign.org/



Green Charter Schools Network
www.greencharterschools.org/

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Strong Integrated Pest Management (IPM)

- Inspect and monitor for pests
- Establish an IPM plan
- Use spot treatments and baits
- Communicate with occupants prior to pesticide use
- Mark indoor and outdoor areas treated with pesticides

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What is IPM and why is it important in schools?

- IPM is a team approach to managing pests that focuses on eliminating the reasons pest are present. Eliminate available food, water, shelter and access.
- IPM program reduces exposure for students and staff to pest and pesticides.
- IPM is cost effective.
- School practices influence community practices, therefore IPM in schools is imperative.

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IPM Best Practices

- Inspect facilities for pest conducive conditions, pest and over the counter pesticides.
- Identify, log and monitor to detect problems early.
- Know your pest-vulnerable areas: where are food, water and shelter present?
- Clean from a pest's perspective.
- Designate an IPM Lead for each building or site.

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Rules and Regulations

The Georgia Department of Agriculture regulates pest control in schools. 620-7-.03 (1) All pesticide application shall be made in a manner that minimizes the exposure of children or students to the pesticide.

- The time frame and frequency of treatment.
 - Treatment can not be applied unless sightings are documented in sighting log.
- The type of chemicals that can be used.
- Insecticide and rodenticide baits.
- Contractor must notify school of monthly scheduled visit, school must post signage with date and time.
- No treatment in areas where students are present.
- After school programs may have to be relocated to accommodate treatment. This will be coordinated through the principal.

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Caution

• No one is allowed to apply any restricted use pesticide in a school unless they have a pesticide license (GA Law).

• Household products such as Raid, should NOT be allowed to be used by anyone, anywhere in your facility. Require 3 hour re-entry delay and record keeping (GA Rule 620-7-.03 Treatment of Schools).

• This could be dangerous as well as counterproductive to treatments by the licensed professional.



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What are Pests and why do we want to keep schools Pests Free?

- Rodents, roaches, ants, wasp, termites, spiders, etc.
- Other "unwanted" visitors in schools such as snakes, lizards, raccoons, etc.
- Pests spread germs and diseases by contaminating surfaces.
- Pests can bites or sting students and staff.
- Studies show exposure to cockroaches and pesticides can trigger asthma attacks.



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How Can We Control Pests?

- Through Integrated Pest Management (IPM) which started in Fulton County Schools in 2003.
- FCS Maintenance administers contract with the licensed pest control company.
- Deny pests food, water, shelter and access.
- Practice cleaning and sanitation to make the building non-conducive for pests.
- Practice IPM for 12 months per year, not just when students are present.



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Cleaning and Sanitation

Careful cleaning eliminates the food supply, destroys insect eggs, and reduces the number of places pests can safely hide or nest.



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Document Sightings

All sightings are to be documented in sighting log every time pests are sighted.

Every school has two (2) sighting logs. One in the Kitchen and one in the Main Office.

Be specific with locations and type of pest.

Enter specific information in sighting log and SAP notification.

"Roaches in classroom 203 on the A hall under sink on left side of room when entering from hallway"



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Do Not Attract Pests – How?

- Limit areas within school that food and beverages are stored and consumed.
- Empty trash cans daily, do not reuse soiled bags
- Store food properly.
- Keep brooms, mops dustpans, etc. clean.



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Deny Pests Food, Water and Access – How?

Store food in proper containers.

Clean up spills and ensure no water is left standing at the end of the day.

Report water leaks and possible entry paths to Maintenance.

Keep doors and windows closed at all times. Unpack deliveries as soon as possible and discard boxes outdoors.



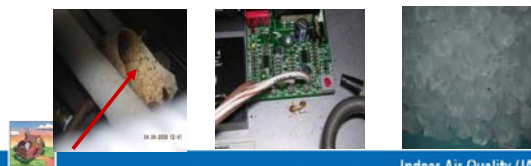
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Prevent Roach Habitation & Remove Dead

• Example of roach feces indicating to the roaches that this is a nesting area. Unless this area is cleaned they will continue to congregate and breed here.

• Dead roaches and their egg casings **MUST** be removed and discarded promptly. After the parent host dies, eggs can still hatch out and continue the cycle.

• Equipment must be sanitized



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Additional Treatment Notifications

• Within 3 working days of submitting the SAP notification for additional treatment, the school's designee that entered the notification should receive a response from maintenance or the pest control company.

• If a response is not received within three (3) days, the designee should follow-up via e-mail with the respective cluster foreman for their school.

If pest issues continue after treatment is made, an additional notification should be submitted.

• **ALL** RODENT SIGHTINGS should be submitted via SAP notification and documented in log book.

• **ANTS & CRAWLING BUGS** – If the problem still exists three (3) days after treatment, another notification should be submitted via SAP; continue to document in sighting log.

• **ROACHES** – After treatment, continue to document sightings in the log book. If after one (1) week the problem has not improved, submit another notification to maintenance.



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Working Together

- Keep all documentation left by Pest Control Contractor
- If you have specific concerns or questions following treatment, please feel free to talk with your maintenance contact for pest control.

South - Foreman –

North – Foreman –

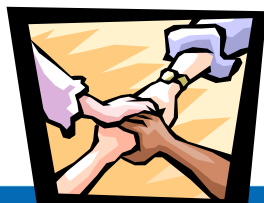


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Together

Together we will reach a common goal.

- Have a clean, safe, pest free environment for Fulton County students to Engage, Improve, Excel.



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Breakout Session Q&A

- Review your actions and strategies that you would like to apply to your own work.
- Please be ready to discuss these actions in your own words.



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