

CT School Indoor Environment Resource Team

**First
Training
Session**



Welcome!

***Indoor Air Quality
Tools for Schools***



Agenda:

1. Welcome and Introductions

2. Overview of Training

Why School IAQ Is Important

Video: Taking Action

3. Indoor Air Quality Health Issue

Exercise

IAQ Health Overview

Short Break

4. Overview of Tools for Schools Kit: What's in the Box?

- Role of the Coordinator
- Implementation Summary
- Using the Checklists
- Importance of Communication Plan
- Developing a Group Plan

5. Next Steps?





“In the construction of buildings, whether for public purposes or as dwellings, care should be taken to provide good ventilation and plenty of sunlight. ...schoolrooms are often faulty in this respect. Neglect of proper ventilation is responsible for much of the drowsiness and dullness that ...make the teacher’s work toilsome and ineffective.”

Date?





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Health Reformer, 1871





Consequences of Poor IAQ

- ◆ Health Problems
- ◆ Reduced Learning and Productivity
- ◆ Higher Costs to Fix Problems than to Prevent
- ◆ Poor Public Relations
- ◆ Liability Issues





Unique Aspects of Schools

- ◆ **Budgets are Tight**
- ◆ **Space is Densely Populated**
- ◆ **Buildings May be Old and Suffer from Deferred Maintenance**
- ◆ **Special Sources of Pollution and Odors**
- ◆ **Space Utilization**
- ◆ **Additions and Temporary Space**





Tools for Schools Building Team Training

Video:

“Taking Action”





What is Indoor Air Quality?

in-door (in'dôr') *adj.* **air** (er,ar) *n.* **quality** (kwô'i'tē) *n.*

1. the temperature, humidity, ventilation, and chemical or biological contaminants of the air inside a building.





Tools for Schools Building Team Training

Symptoms & Sources Exercise





School Indoor Air Contaminants (1)

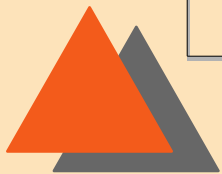
<u>Contaminant</u>	<u>Potential Health Effects</u>
Bioaerosols <ul style="list-style-type: none">✓ Molds✓ Dander✓ Dust Mites✓ Cockroach Droppings✓ Bacteria/Viruses	<ul style="list-style-type: none">• Upper Respiratory Tract Symptoms• Asthma Triggers• Colds• Allergic Reactions
Formaldehyde <ul style="list-style-type: none">✓ Building Materials✓ Carpets [?]	<p><u>Low Level Exposure:</u></p> <ul style="list-style-type: none">• Eye, Nose, Throat Irritation• Dermatitis <p><u>Long-Term Exposure</u></p> <ul style="list-style-type: none">• Headache, Dizziness• Coughing• Chronic Upper Resp. Infections
Other Volatile Organic Compounds <ul style="list-style-type: none">✓ Cleaning Solvents✓ Wood Preservatives✓ Phenols	<ul style="list-style-type: none">• Eyes, Upper Respiratory Tract• Potential Carcinogenic, Reproductive Effects





School Indoor Air Contaminants (2)

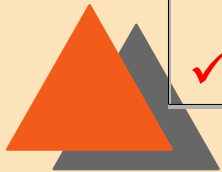
<u>Contaminant</u>	<u>Potential Health Effects</u>
Nitrogen Oxides ✓ Bus fumes ✓ Combustion appliances	<ul style="list-style-type: none">• Eye, throat, respiratory system irritations• Special risks to asthmatics, children < 2
Carbon Monoxide ✓ Bus fumes ✓ Combustion appliances	<ul style="list-style-type: none">• Fatigue• Headache• Nausea• Flu-like symptoms
Particulates ✓ Bus exhaust ✓ Pollen ✓ Construction Debris	<ul style="list-style-type: none">• Eye, throat, respiratory system irritations• Asthma Triggers





School Indoor Air Contaminants (3)

<u>Contaminant</u>	<u>Potential Health Effects</u>
Environmental Tobacco Smoke	<ul style="list-style-type: none">• Multiple Health Effects• Group A Carcinogen
Lead ✓ Older Elementary Schools	<ul style="list-style-type: none">• Delays In Development• Lower IQ Levels• Shortened Attention Spans• Behavioral Problems• > Doses: Kidney, Cns Damage
Radon	lung cancer
Pesticides ✓ See Pesticide Law ✓ IPM Important	<u>Specific symptoms:</u> <ul style="list-style-type: none">• Type Of Pesticide• Dose• Sensitivity Of Exposed
Dust, Dirt ✓ Everywhere!	<ul style="list-style-type: none">• Eye, Upper Respiratory Tract Irritation• Asthma Trigger





Asbestos

- ☞ All Schools Built Before the 1970's Probably Contain Asbestos
- ☞ Schools Required to Have Written Asbestos Management Plan, Designated Planner
- ☞ Touch Base W/ Asbestos Management Planner
- ☞ Questions: Call Local Health Department, or CT DPH Asbestos Program (860-509-7367)
- ☞ ***Asbestos Should Not Become a Focus of TfS Team!!!***
BUT – Assure Responsible People are Aware





Non-Specific Building-Related Symptoms

(Sick Building Syndrome)

- **Health Symptoms Diminish, Go Away Outside Building**
- **Symptoms:**
 - Headaches
 - Lethargy
 - Eye, Ear, Nose Irritations
 - Stuffy/runny Nose
 - Dizziness
- **Due to Ventilation Problems, Contaminants, Temp./Humidity**





Building Related Illnesses

- **Rhinitis**
- **Sinusitis**
- **Laryngitis**
- **Asthma**
- **Hypersensitivity Pneumonitis**
- **Infectious Diseases (e.g., Colds, Flu)**
- **Carbon Monoxide Poisoning**





Asthma

➤ **Burden of Asthma**

- **Chronic, Serious Respiratory Disease**
- **88,000 Children in CT Diagnosed (CTDPH, 2008)**
- **Leading Childhood Chronic Disease**
- **Leading Health-Related Cause of School Absences**

➤ **Attacks Triggered By:**

- **Dust**
- **Biological Agents**
- **ETS**
- **Some VOCs**



What About “Testing the Air”?



Usually Not the First Move:

- You Have to Know What You Are Looking for
- There Are No Appropriate Standards for IAQ
- There Are No Standards for Indoor Molds Levels
- Results May Be Hard to Interpret
- Can Lead to Confusion, Mistrust

A Comprehensive Building Evaluation Is 1st Step





Tools for Schools Building Team Training

“Take A

Break!





Tools for Schools Building Team Training

Tools for Schools Kit:

What's In The Box?

<http://www.epa.gov/iaq/schools/toolkit.html>

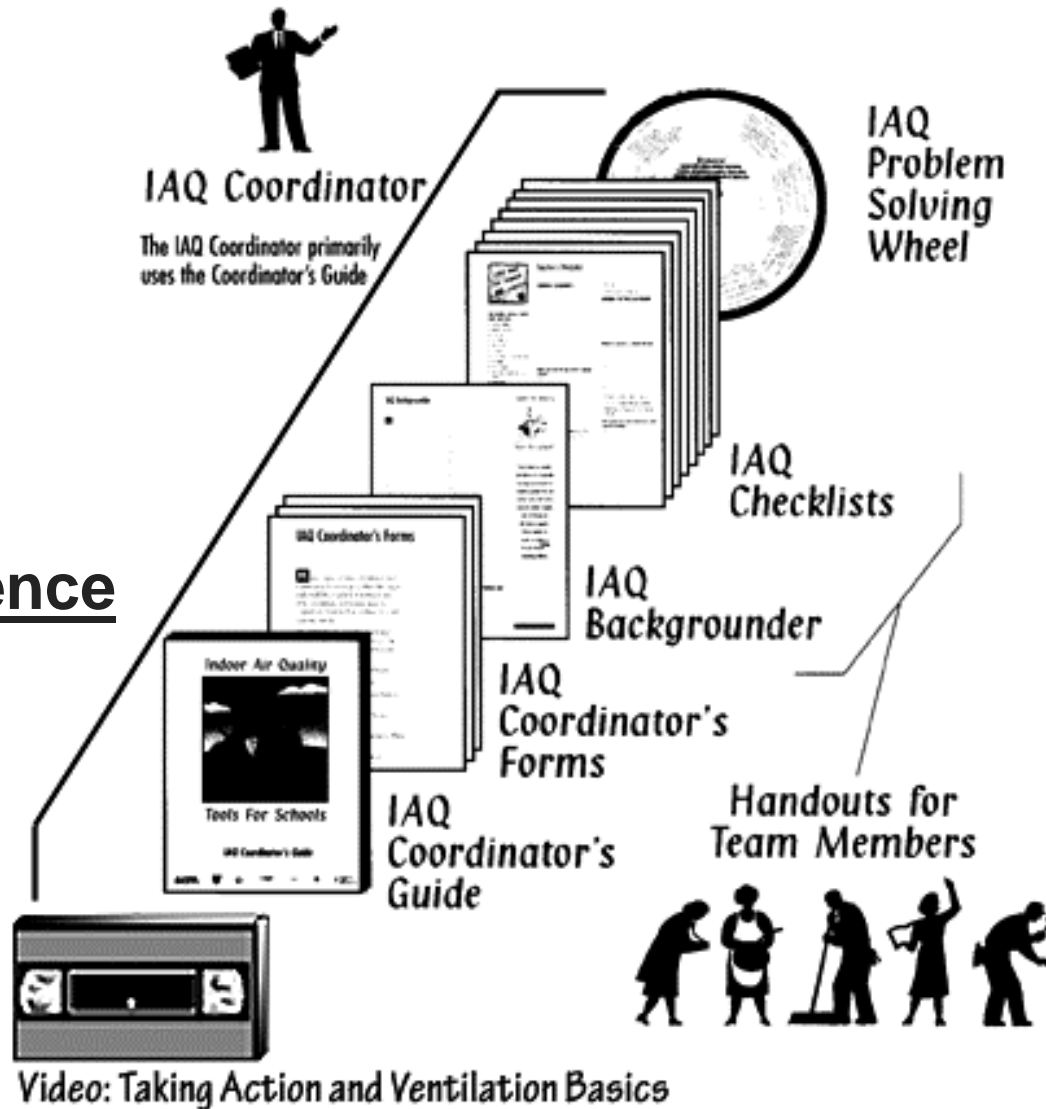




IAQ Tools for Schools Action Kit

New:

IAQ Reference Guide





IAQ Tools for Schools Action Kit

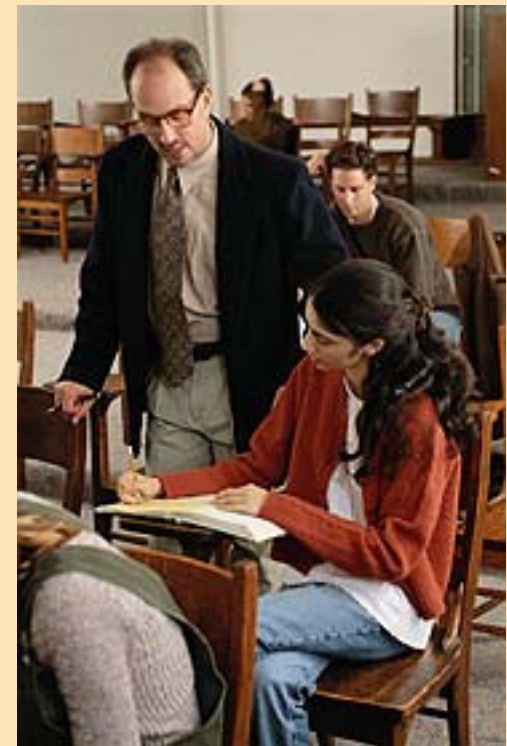
IAQ Checklists

- ✓ **Teachers**
- ✓ **Administrative Staff**
- ✓ **School Nurse**
- ✓ **Building Maintenance**
- ✓ **Food Service**
- ✓ **IPM**
- ✓ **Renovations & Repairs**
- ✓ **School Officials**
- ✓ **Ventilation**
- ✓ **Walkthrough Inspection**
- ✓ **Waste Management**



Role of IAQ Coordinator

- ◆ **Disseminates IAQ Information**
- ◆ **Creates and Coordinates IAQ Team**
- ◆ **Implements IAQ Management Plan**
- ◆ **Coordinates IAQ Activities**
- ◆ **Communicates to All Constituents**
- ◆ **Facilitates Resolution of IAQ Problems**





Coordinator Materials

Packet

CD Materials

Resource Contact List	TfS Checklists and Backgrounders
EPA booklet "Pest Control in the School Environment"	Training Session Slides
Examples of TfS Building Team Reports	Bus Idling Materials
EPA: Communications Guide booklet	Green Schools/Product Information
Fact Sheet: "Indoor Air Quality Testing Should Not Be the First Move"	EPA N.E. IAQ Tools for Schools" Summer Maintenance Tips for Schools"
EPA booklet: "Mold Remediation in Schools and Commercial Buildings"	Radon: "CTDPH School Testing Program for Radon"
Activating the IAQ Management Plan	Maintaining Acceptable IAQ During School Renovation
Sustaining Your TfS Program	ARC What's That Smell" brochure
	2003 School Indoor Air Quality Law
	Asbestos in Schools Regulations
	Healthy SEAT software tool



Implementation Guide Summary



- 1. Initial School Team training**
- 2. Present TfS to Faculty/Staff**
- 3. Assemble/Distribute Action Packets**
- 4. Summarize Checklists/ Map Findings**
[View Ventilation Basics Video](#)
- 5. Training on conducting a walkthrough investigation**
- 6. Walkthrough Investigation**
- 7. Prioritize Results of Investigation**
- 8. Taking Action**

TfS Action Packet



- **Memo To Staff**
- **IAQ Backgrounder**
- **Appropriate TfS Checklist**





Teacher's Checklist



Teacher's Classroom Checklist

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

Assess the status of the following:

1. GENERAL CLEANLINESS

	Yes	No	N/A
1a. Rooms are dusted and vacuumed regularly.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1b. Rooms are free of clutter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1c. Trash is removed daily.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1d. All food is stored in tightly sealed containers.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1e. Room is free of pests and vermin.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1f. Unscented, school-approved cleaners and air fresheners, if any, are used in rooms.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. ANIMALS IN THE CLASSROOM

2a. Exposure to animal allergens is minimized.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2b. Animals are kept in cages (as much as possible).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2c. Cages are cleaned regularly.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2d. Animal cages are placed away from supply and return vents.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2e. School nurse is consulted about student allergies or sensitivities (privacy laws may limit the information that health officials can disclose).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2f. Potential allergies of students are identified.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2g. Sensitive students are moved away from animals and habitats.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. DRAIN TRAPS IN THE CLASSROOM

3a. Water is poured down floor drains once per week (approx. 1 quart of water).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3b. Water is run in sinks at least once per week (about 2 cups of water).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3c. Toilets are flushed once each week, especially if not used regularly.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. EXCESS MOISTURE IN CLASSROOMS

4a. Condensate is wiped from windows, windowsills, and window frames.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4b. Cold water pipes are free of condensate.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4c. Indoor surfaces of exterior walls are free of condensate.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4d. Areas around and under classroom sinks are free of leaks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4e. Classroom lavatories are free of leaks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4f. Ceiling tiles and walls are free of leaks (discoloration may indicate periodic leaks).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4g. Spills are cleaned promptly.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Instructions

- Read the IAQ Background and the Background Information for this checklist.
- Keep the Background Information and make a copy of the checklist for future reference.
- 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.
- Return the checklist portion of this document to the IAQ Coordinator.





Tools for Schools Building Team Training

Teachers Checklist Exercise



Summarizing the Checklists



<i>Floor/Room</i>	<i>General Cleanliness</i>	<i>Animals in Classroom</i>	<i>Drain Traps in Classroom</i>	<i>Excess Moisture</i>	<i>Thermal Comfort</i>	<i>Ventilation</i>	<i>Local Exhaust Fans</i>
1st - 101	Dusty shelves	None	N/A		Too hot	Books on unit ventilator	
1st- 102			Yes	-Under sink -Near windows			-dirt around fan opening
1st- 103		Iguana in cage					
1st- 104					Too hot		
1st- 105		Bird cage		Wet ceiling tile	Too hot	Books on unit ventilator	
1st- 106					Too hot		





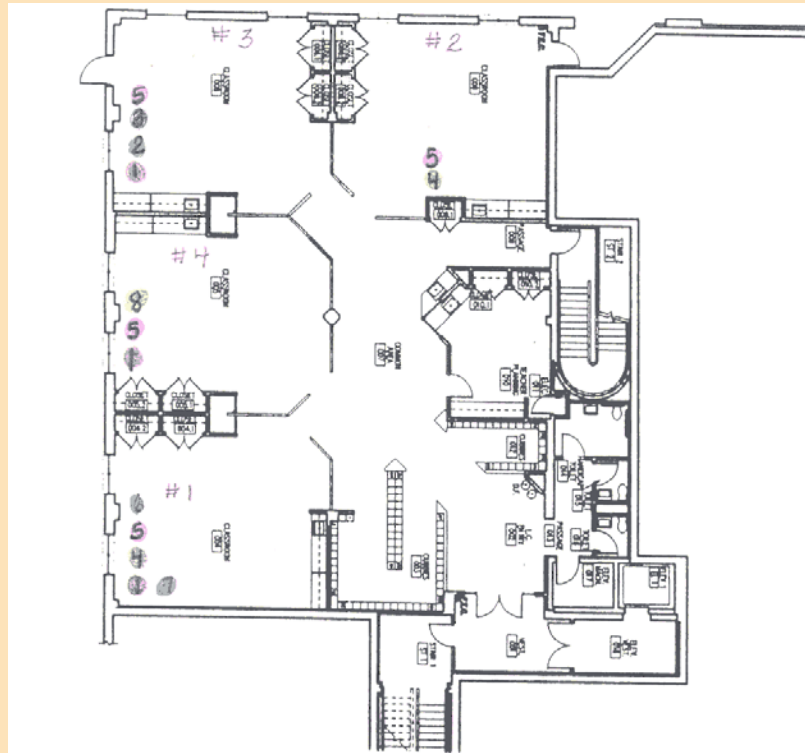
Data

Collect, summarize and analyze

- Paper plus manual summary
- Paper plus spreadsheet
- Web-based
 - Existing School system
 - Commercial Survey tool











Mapping the Checklist Results



GARDEN LEVEL

LOWER
LEVEL

-  = General Cleanliness
-  = Animals in the Classroom
-  = Drain Traps in the Classroom
-  = Excess Moisture in the Classroom
-  = Thermal Comfort
-  = Ventilation
-  = Local exhaust Fans
-  = Science Supplies





Walkthrough Investigation Training

- ◆ **2 Months After Today's Training**
- ◆ **Facilitated by Industrial Hygienist**
- ◆ **2 hour training at a School**
- ◆ **View Walkthrough Video Before W. Investigation**
- ◆ **Walkthrough Investigation**



Developing Priorities



IAQ Problem	Priority	Action	Completed By?	Responsible party	Cost
Bus fumes from parking area	High, Cat. A	Enforce Bus Idling Policy	ASAP	Bus Drivers	\$0
Moldy carpeting in Room 202	High, Cat. C	Replace w/ Floor tiles	End of Summer	School Main. Dept., Contractor	\$2000
High VOC floor stripper	Medium, Cat. B	Replace w/alternative	Start using in new school yr	School custodian/purchasing office	\$200





Put Together a Report

- **Survey Data**
- **Building Maps**
- **Findings**
- **Prioritized Recommendations**



Communication Plan



- **Make Sure You Have One!**
- **Encourage School Administration to Announce TfS**
- **Present Program at Staff Meeting**
- **Inform Parents**
- **Communicate Committee Activities:**
 - preliminary findings
 - final report
 - improvements made
- **Avoid Finger-pointing**



IAQ Management Plan

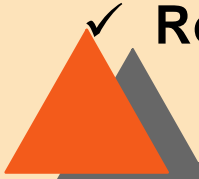


See IAQ Coordinator's Guide for Model Plan

Need District IAQ Coordinating Team W/ Coordinator

Important Components:

- ✓ **Mission Statement**
- ✓ **Background/IAQ Findings**
- ✓ **IAQ Policies & Plans**
- ✓ **Procedures**
- ✓ **Role of Coordinator/Team**
- ✓ **Staff Responsibilities**
- ✓ **Local, State Requirements, Regs**
- ✓ **Emergency Response**
- ✓ **Steps for Prevention**



Exercise:



Developing an Activation Plan

Objectives:

- **Develop, Implement Communication Plan**
- **Train Staff to Use the Checklists**
- **Dissemination of Action Packets**
- **Get the Checklists Back**
- **Tabulate the Results**



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Making TfS Successful!



- 1. Coordinators – Keep Everyone Informed**
- 2. Develop Written Report**
- 3. Board of Education Presentation**
- 4. District IAQ Management Plan/
Coordinating Structure**
- 5. Fall Kick-off Meetings**



Main Points



- 1. Don't Get Caught Up in "Testing the Air"**
- 2. Communication Very Important: Have Plan**
- 3. Use the TFS Process**
- 4. Tools for Schools Can Work!**



CT Success Stories



- **Waterford**
IAQ Health Complaints Decrease of 66% or Greater in 9 Out of 13 Elementary Classrooms After TfS Implemented
- **North Haven**
Decrease of 48% (256) of Reported Cases of Respiratory-related Illnesses After TfS
- **Chester**
Yearly Asthma-related Office Visits Decreased 463 Before TfS to 82 (Over 4 Yrs) After TfS
- **Hartford**
Of Asthma Incidents Declined 21% After TfS
- **EPA National Excellence Award Winners:**
 - Hamden
 - Norwich
 - Hartford
 - Waterford
 - North Haven
 - Amity Region 5
 - Ridgefield
 - Technical H.S. System
 - Westport





Tools for Schools Building Team Training

Parting Quote:

***“I Am He and You Are
We and We Are All
Together.”***

- John Lennon & Paul McCartney





Tools for Schools Building Team Training

Evaluations!

Thank You!

