Welcome!

A Comprehensive Approach to Healthy and Sustainable School Environments

Presented by EPA’s Indoor Environments Division, Healthy Indoor Environments in Schools
Goal of the Session

To share a proven framework for building and sustaining comprehensive school environmental health management programs.
Learning Objectives

• Gain technical knowledge, tools and resources to help you create a green and healthy school environment.
• Discover a framework for building and sustaining environmental health management programs in schools.
• Learn how effective IAQ management programs can increase attendance and lower costs.
• Identify strategies for securing funding and administrative and community buy-in.
• Explore the resources available through the National Schools Network and learn how to join.
Introductions

• Stacy Murphy, U.S. EPA Region 6
• Frank Di Nella, Keller Independent School District, Keller, TX
• Diane Rhodes, North East Independent School District, San Antonio, TX
We Want to Hear From You!

Who’s in the room?

- Architects/Engineers
- Building Managers
- School District Representatives (e.g., administrators, teachers)
- Other
We Want to Hear From You!

What do you think makes a school facility green and healthy?
We Want to Hear From You!

What characteristics come to mind?
We Want to Hear From You!

What do you hope to gain from this session?
Action Planning
Creating Green and Healthy Schools

The What, The Why and The How
Creating Green and Healthy Schools

“When it comes to greening a district, there is something in it for everyone. This value equation is commonly referred to as the triple bottom line – a truly sustainable solution that integrates people, planet and prosperity.”

– August 2010 *The School Administrator* article, “The Road to a Green District”
Creating Green and Healthy Schools
The Framework for Effective School IAQ Management: Key Drivers
The Framework for Effective School IAQ Management: Key Drivers

**ORGANIZE**
- Develop Systematic Approach
- Identify Existing Assets
- Design Standard Operating Procedures
- Empower an IAQ Leader
- Build an Effective Team
- Create Champions
- Secure Senior Buy-In

**EVALUATE**
- Solicit Feedback
- Capture Return on Investment

**ACT**
- Educate Staff About IAQ to Change Behavior
- Train Occupants to Address IAQ Risks
- Address the Source of Problems

**COMMUNICATE**
- Share Your Goals
- Make IAQ Meaningful
- Be Transparent & Inclusive
- Communicate Results

**ASSESS**
- Walk the Grounds
- Listen to Occupants
- Use Technology
- Determine a Baseline
- Keep Customers Satisfied
- Identify and Prevent Risks

**PLAN**
- Prioritize Actions
- Put Goals in Writing
- Start Small
- Work in Stages
- Plan for the Future
The Framework for Effective School IAQ Management: Technical Solutions

- HVAC
- Moisture/Mold
- IPM
- Cleaning & Maintenance
- Materials Selection
- Source Control
The Framework for Effective School IEQ Management:
Six Technical Solutions

Quality HVAC
- Inspect HVAC systems regularly
- Establish a maintenance plan
- Change filters regularly and ensure condensate pans are draining
- Provide outdoor air ventilation according to ASHRAE Standard or local code
- Clean air supply diffusers, return registers, and outside air intakes
- Keep unit ventilators clear of books, papers, and other items

Effective Cleaning & Maintenance
- Conduct routine inspections of school environment
- Develop a preventative maintenance plan
- Train cleaning/maintenance staff on protocols
- Ensure material safety data sheets (MSDS) are available to staff
- Clean and remove dust with damp cloth
- Vacuum using high-efficiency filters

Control of Moisture/Mold
- Conduct routine moisture inspections
- Establish mold prevention and remediation plan
- Maintain indoor humidity levels between 30% and 60%
- Address moisture problems promptly
- Dry wet areas within 24-48 hours

Smart Materials Selection
- Maintain products inventory
- Develop low-emitting products purchasing and use policies
- Use only formaldehyde-free materials
- Use only low-toxicity and low-emitting paint
- Select products based on product rating systems
- Use least toxic cleaners possible (only those approved by the district)

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

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
Creating Green and Healthy Schools
The Framework for Effective School IAQ Management

- Organize
- Communicate
- Evaluate
- Assess
- Act
- Plan

ACTION KIT
- HVAC
- Moisture/Mold
- IPM
- Cleaning & Maintenance
- Materials Selection
- Source Control
The IAQ Tools for Schools Action Kit

http://epa.gov/iaq/schools/actionkit.html
<table>
<thead>
<tr>
<th>School District</th>
<th>Successes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baltimore County Public Schools, Maryland</strong></td>
<td>✓ Reduced average expenditures on mold remediation from $513,000 to $150,000 in one year.</td>
</tr>
<tr>
<td><strong>Blue Valley School District, Kansas</strong></td>
<td>✓ Rise in test scores every year since program began (highest ACT scores in the state; four of the six top-ranked schools in the state are in BVSD).</td>
</tr>
<tr>
<td><strong>The School Board of Broward County, Florida</strong></td>
<td>✓ Achieved a 50-percent decrease in IAQ complaints, and continues to observe a steady decline.</td>
</tr>
<tr>
<td><strong>Charlotte-Mecklenburg Schools, North Carolina</strong></td>
<td>✓ Early identification and prompt response to IAQ concerns have reduced response costs: items costing $150,000+ in the past are safely handled for less than $10,000 today.</td>
</tr>
<tr>
<td><strong>Hartford Public Schools, Connecticut</strong></td>
<td>✓ Decrease in asthma visits to school health rooms over the initial three years of systematic data collection.</td>
</tr>
<tr>
<td><strong>Katy Independent School District, Texas</strong></td>
<td>✓ Walkthrough assessments of all schools show continuous improvement from baseline.</td>
</tr>
<tr>
<td><strong>Newark Public Schools, New Jersey</strong></td>
<td>✓ Observed decrease in missed school days since IAQ program implementation and asthma-friendly policy changes.</td>
</tr>
<tr>
<td><strong>West Carrollton School District, Ohio</strong></td>
<td>✓ Increased voter support: converted a fixed-term levy to a permanent one to provide guaranteed funds for capital improvements and operations.</td>
</tr>
</tbody>
</table>
The Framework in Action: IAQ Results

Read more at the *IAQ Tools for Schools* Case Studies website: http://epa.gov/iaq/schools/casestudies.html

Envisioning Excellence: Lessons from Effective School Indoor Air Quality Programs — A Snapshot of Profiles in IAQ Excellence

Healthy Schools

Keller ISD’s Focus on Environmental Quality
Keller ISD at a Glance

• Serves 9 Communities
• 33,000 Students
• 3,500 Employees
• 2,100 Teachers
• 39 Campuses and 4 Additional Facilities
• Fast Growth District – 18 New Campuses in the previous 10 Years
IAQ Tools for Schools

- Organize
- Communicate
- Evaluate
- Assess
- Act
- Plan

ACTION KIT:
- HVAC
- Moisture/Mold
- IPM
- Cleaning & Maintenance
- Materials Selection
- Source Control
Why IAQ Tools for Schools?
Sobering Statistics

- 50% of all illness is caused or aggravated by poor IAQ
- About 20% of all schools have problems linked to IAQ
- Children in the U.S. miss more than 10.5 million days each year because of asthma due to poor IAQ
- Average productivity loss due to poor IAQ is between 3 – 7%
- 80% of parents believe that poor IAQ can have a direct negative effect on a student’s academic performance
- IAQ is consistently ranked as a top five environmental risk to public health:
  - Impacts student and teacher attendance and performance
  - Can strain relationships among school administration, parents and staff
  - Can create negative publicity and be a liability
National Studies

• Improved health translates into an enhanced educational experience for students
  • 70% reported that students perform better and have fewer absences in green schools
  • Related studies show improved standardized test scores and other educational markers
## Attendance vs. Performance

<table>
<thead>
<tr>
<th>Campus</th>
<th>Rating</th>
<th>Att.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keller-Harvel ES</td>
<td>R</td>
<td>97.3</td>
</tr>
<tr>
<td>Bear Creek IS</td>
<td>E</td>
<td>97.3</td>
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<tr>
<td>Florence ES</td>
<td>E</td>
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</tr>
<tr>
<td>Shady Grove ES</td>
<td>E</td>
<td>97.2</td>
</tr>
<tr>
<td>Liberty ES</td>
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<td>97.2</td>
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<tr>
<td>Timberview MS</td>
<td></td>
<td>97.1</td>
</tr>
<tr>
<td>Hidden Lakes ES</td>
<td>E</td>
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<tr>
<td>Keller MS</td>
<td>E</td>
<td>97.0</td>
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<tr>
<td>Heritage ES</td>
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<tr>
<td>Willis Lane ES</td>
<td>E</td>
<td>97.0</td>
</tr>
<tr>
<td>Park Glen ES</td>
<td>E</td>
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<tr>
<td>South Keller IS</td>
<td>R</td>
<td>96.9</td>
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<tr>
<td>Independence ES</td>
<td>R</td>
<td>96.9</td>
</tr>
<tr>
<td>Lone Star ES</td>
<td>E</td>
<td>96.8</td>
</tr>
<tr>
<td>Bette Perot ES</td>
<td>E</td>
<td>96.8</td>
</tr>
<tr>
<td>Woodland Springs ES</td>
<td></td>
<td>96.8</td>
</tr>
<tr>
<td>Parkview ES</td>
<td>R</td>
<td>96.7</td>
</tr>
<tr>
<td>Parkwood Hill IS</td>
<td>R</td>
<td>96.7</td>
</tr>
<tr>
<td>Eagle Ridge ES</td>
<td>E</td>
<td>96.7</td>
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<table>
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<th>Att.</th>
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<tr>
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<td>R</td>
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<tr>
<td>Chisholm Trial IS</td>
<td>R</td>
<td>96.5</td>
</tr>
<tr>
<td>Trinity Meadows IS</td>
<td>R</td>
<td>96.5</td>
</tr>
<tr>
<td>Basswood ES</td>
<td></td>
<td>96.5</td>
</tr>
<tr>
<td>Hillwood MS</td>
<td>R</td>
<td>96.4</td>
</tr>
<tr>
<td>Trinity Springs MS</td>
<td></td>
<td>96.4</td>
</tr>
<tr>
<td>Bluebonnet ES</td>
<td>R</td>
<td>96.4</td>
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<tr>
<td>Freedom ES</td>
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<tr>
<td>Whitley Road</td>
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<td>95.7</td>
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<tr>
<td>Friendship ES</td>
<td></td>
<td>96.3</td>
</tr>
<tr>
<td>Fossil Hill MS</td>
<td>R</td>
<td>96.0</td>
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<tr>
<td>Caprock ES</td>
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<td>95.9</td>
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<tr>
<td>North Riverside ES</td>
<td></td>
<td>95.8</td>
</tr>
<tr>
<td>Keller HS</td>
<td>R</td>
<td>95.6</td>
</tr>
<tr>
<td>Central HS</td>
<td></td>
<td>95.2</td>
</tr>
<tr>
<td>Timber Creek HS</td>
<td></td>
<td>95.2</td>
</tr>
<tr>
<td>Fossil Ridge HS</td>
<td></td>
<td>93.2</td>
</tr>
<tr>
<td>Keller ELC</td>
<td></td>
<td>92.7</td>
</tr>
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</table>
Results over Three Years

• Increase in test scores
  • 14.8% increase in state assessment scores

• Increase in scholarships offered
  • 68.4% increase

• Reduce cost of operating facilities
  • 008% decrease in operating cost per square foot
The Culture Changes

• Cross Functional IAQ Team’s Impact
  • All department heads exposed to IAQ program benefits
    • Core of the business, educational excellence
• Business Functions Focused on Educational Excellence
  • Functions become part of the educational system
• Board Includes Green Initiatives in 5 Year Strategic Plan
  • Buy-in at the highest level
  • IAQ becomes over-arching umbrella for all “green initiatives”
• Test Scores Increase Annually
  • Widespread improvement across the district
  • Publicize, publicize, publicize!
• Spending Patterns Change
  • Departments seek cost effective “green solutions”
Energy Management

- Last out Lights Out
- Remove Personal Appliances
- HVAC Control Upgrades
- Lighting Retrofits
# Actual Measures

## Test Scores Increase

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>% INC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75</td>
<td>79</td>
<td>82</td>
<td>85</td>
<td>87</td>
<td>88</td>
<td>14.8%</td>
</tr>
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</table>

## Scholarships Increase (in millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>% INC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$12.7</td>
<td>$16.9</td>
<td>$24.3</td>
<td>$30.7</td>
<td>$37.2</td>
<td>$40.2</td>
<td>68.4%</td>
</tr>
</tbody>
</table>

## Enrollment Increase

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>% INC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23756</td>
<td>25873</td>
<td>27905</td>
<td>29458</td>
<td>30299</td>
<td>31569</td>
<td>32.9%</td>
</tr>
</tbody>
</table>

## Reduced Cost per sq ft (Operations)

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>% DEC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NA</td>
<td>$.234</td>
<td>$.243</td>
<td>$.227</td>
<td>$.232</td>
<td>$.232</td>
<td>.008%</td>
</tr>
</tbody>
</table>
In alignment with its core documents, the District commits to providing a healthy and safe environment for students, faculty, staff, and visitors. In addition, the District has determined that environmentally responsible practices can lead to financial efficiencies.

The District shall practice environmental stewardship by:

- Implementing responsible environmental processes;
- Increasing awareness and engagement in sound environmental policies and procedures amongst staff, students, partners, and vendors;
- Promoting practices consistent with environmental protection, both within and outside the District, to model societal responsibility;
- Conducting continual improvement assessments and making data-driven decisions to minimize the impact of District facilities and operations on the environment;
- Participating in local, regional, and national initiatives to improve the quality of the environment; and
- Researching, developing, and integrating best practices to build capacity and expertise that ensure environmental sustainability.

The Superintendent or designee shall oversee the implementation of this policy through a comprehensive environmental stewardship plan including measurable goals, periodic evaluations, and analysis of performance against industry leaders inside and outside of education.
A Comprehensive Approach to Healthy and Sustainable School Environments

Leading by Example

Diane Rhodes, BBA, RRT, AE-C, RCP
North East Independent School District
Administrative Cost Ratio
(for districts over 10,000 students)
NEISD 5.14%
State Standard 11.05%
The Perfect Storm was brewing....
**STUDENT ATTENDANCE**

Texas public schools receive state funding based on student attendance, not enrollment. Here are some local examples.

<table>
<thead>
<tr>
<th>2006-07</th>
<th>SAISD</th>
<th>Edgewood</th>
<th>Judson</th>
<th>Northside</th>
<th>Harlandale</th>
<th>North East</th>
<th>South San</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enrollment</strong>*</td>
<td>55,322</td>
<td>11,801</td>
<td>19,903</td>
<td>80,526</td>
<td>13,899</td>
<td>60,178</td>
<td>9,602</td>
</tr>
<tr>
<td><strong>Attendance</strong></td>
<td>51,698</td>
<td>11,165</td>
<td>18,873</td>
<td>76,413</td>
<td>13,199</td>
<td>57,308</td>
<td>9,154</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td>3,624</td>
<td>636</td>
<td>1,030</td>
<td>4,113</td>
<td>700</td>
<td>2,870</td>
<td>448</td>
</tr>
<tr>
<td><strong>1 percent increase in attendance equals...</strong>*</td>
<td>$2.4 million</td>
<td>$514,640</td>
<td>$917,784</td>
<td>$3.9 million</td>
<td>$602,712</td>
<td>$3.1 million</td>
<td>$424,304</td>
</tr>
</tbody>
</table>

*Represents daily average for year

**Represents daily average; actual funding figure lower in most cases due to adjustments for pre-kindergarten students

***Minimum increase and is based on target revenue per student

Source: Texas Education Agency, school districts

MONTE BACHIMBACH@EXPRESS-NEWS.NET
Asthma Remains a Serious Health Risk in the US

23 million Americans suffer from Asthma
7 million children

10.5 million school days missed annually

Every day in America approximately ...

78,000 people miss school or work due to asthma
35,000 people have an asthma attack
5,000 people visit the emergency room due to asthma
1,200 people are admitted to the hospital due to asthma
10 people die from asthma

“NEISD expects more intellectually and in order to achieve this we must have healthy students,” “It is education’s responsibility to ensure children are able to excel. **A healthy child is an effective learner.**”

Dr Richard Middleton, NEISD Superintendent of Schools 1990 - 2011
Organize
- Develop Systematic Approach: NAEPP Guidelines
- Create Buy-In
- Recruit Champions

Evaluate
- Feedback
- Capture ROI

Communicate
- Goals and Expectations

Assess
- Determine a baseline
- Identify risks

Act
- Educate and Train
- Identify sources of problems

Plan
- Prioritize Actions
- Start Small
- Work in Stages

Six Key Drivers Framework

Asthma Awareness Education Program
- Awareness
- Medication & Tools
- Environment
- Education

Awareness
Medication & Tools
Environment
Education

Identify risks
Determine a baseline

Prioritize Actions
Start Small
Work in Stages

Educate and Train
Identify sources of problems

Feedback
Capture ROI

Goals and Expectations
Communication

Recruit Champions
Create Buy-In

Systematic Approach
Develop Systematic Approach

Awareness
Medication & Tools
Environment
Education

Communicate

Organize

Evaluate

Act

Plan

Assess
Attendance Funding

Number of asthmatics in NEISD schools: 11.735%  8,061

Average number of school days missed by those with asthma (CDC): 8

Attendance daily rate by state: $32.00

Potential revenue LOST: $2,063,616.00
Asthma Awareness Education Program

The Asthma Awareness Education Program will address the needs of students and staff by creating a healthy environment and by providing technical and educational resources for the students and staff on air quality and asthma disease management.

Our commitment to classroom indoor air quality and asthma management education results in higher student/staff productivity and attendance which benefit the district with increased state funding, lower healthcare costs, and increased student performance.

Healthier Children Learn Better.
Six Key Drivers at Work

Organize

Assess

Assessing NEISD’s Asthma Prevalence

Control of Asthma* is defined as:

1. No absences from school /work
   - 53% were experiencing absenteeism
     - one cluster - 10 or more days - 6%

2. No interruptions of class time due to symptoms
   - 70,000 trips to the school nurse

3. No use of inhaler more than 2 times per week
   - Healthy Environments for ALL students

4. No interrupted with coughing during the
   - 77% were limiting physical activity

5. Participation in all physical activities
   - 25% had visited ED or urgent care

6. No emergency or urgent care visits
   - 120 EMS calls

*National Asthma Education Prevention Program

Evaluate

Plan

Take Action

Communicate

1200 parents surveyed / 362 responded ‘yes’ to
   diagnosis of asthma on parent portal.
NEISD Four Components of Control: Planning and Action Implemented

**Organize**
- Stakeholders: students, parents, staff, community
- Assess Culture and reduce environmental risks
  - Education and Removing Triggers from home / school environments
  - Indoor Environment Quality Best Practices
  - T f S Six Technical Solutions
  - Tips for Healthy Learning Environment
- Facility Assessment
  - Facility scores

**Awareness**
- Coordinated Approach to Child Health
- Asthma Curriculum
- Environmental Curriculum
- Webinar/Podcasts to staff
- Staff Development /AFC
- Website
- Asthma Blow Outs
- Education and Removing Triggers from home / school environments
- Indoor Environment Quality Best Practices
- T f S Six Technical Solutions
- Tips for Healthy Learning Environment

**Medication & Tools**
- Asthma Action Plans
- Health Check data
- EMS incidents
- Inhaler usage tracking
- Asthma Control Test
- Emergency Nebulizer Policy

**Environment**
- NEISD Four Components of Control: Planning and Action Implemented
- Bring an understanding of prevalence and assess needs for improved processes district wide
  - School District impact
  - Quality of Life Surveys
  - Parent /Staff expectations
  - Recruit champions (custodial, nurses, PE staff, administrators)
  - Data, data, data feedback

**Education**
- Provide tools/educational resources to reduce healthcare barriers
  - Emergency Nebulizer Policy
  - Asthma Action Plans
  - NIHLI EPR 3 guidelines
  - Health Check data
  - EMS incidents
  - Inhaler usage tracking
  - Asthma Control Test
- Identify gaps and provide disease management information to improve quality of life
  - Coordinated Approach to Child Health
  - Asthma Curriculum
  - Environmental Curriculum
  - Webinar/Podcasts to staff
  - Staff Development /AFC
  - Website
  - Asthma Blow Outs

**Stakeholders:** students, parents, staff, community
Asthma is...

"Our genes may load the gun, but the environment pulls the trigger."
-- Ellen Silbergeld, Ph.D.
**Symptom Threshold**

Cumulative Effect of Environmental Asthma Triggers

- **Situation 1**: No symptoms seen, yet inflammation exists
- **Situation 2**: (allergy induced) Threshold met
  - Allergens
  - Irritants
- **Situation 3**: (infection induced) Threshold met
  - Allergens
  - Irritants
  - Infection
- **Situation 4**: (GOAL)
  - ‘Tips for Healthy Classroom’ Reduction measures taken - infection exposure does not provoke symptoms

- **Symptom Threshold met**
  - Symptoms develop
    - (PRN usage needed)

**Impact of Asthma Triggers**

- **Allergens**
- **Irritants**
- **Infection**
Prevalence - Allergy

An estimated over 50 million Americans suffer from all types of allergies (1 in 5 Americans)

- Allergy prevalence overall has been increasing since the early 1980s across all age, sex and racial groups
- Allergy is the 5th leading chronic disease in the U.S. among all ages
- 3rd most common chronic disease among children under 18 years old
- Approximately 10 million people are allergic to cat dander, the most common pet allergy
- The most common indoor/outdoor allergy triggers are: tree, grass and weed pollen; mold spores; dust mite and cockroach allergen; and, cat, dog and rodent dander
- An allergic reaction can produce the same symptoms in response to substances that are generally harmless, like dust, dander or pollen
Symptom Threshold: Allergy

Situation 1:
- Allergy 1
- Allergy 2
- Allergy 3

Situation 2:
- Allergy 1
- Allergy 2
- Allergy 3

Situation 3:
- Allergy 1
- Allergy 2
- Allergy 3

Most individuals are sensitive to more than one allergen.

Tips for Healthy Classroom:

- Exposure reduction measures taken, third allergy does not provoke symptoms.
- Department of Environmental Health
- Recruit Champions - Custodians
- Six Key Drivers ‘Tools for Schools’ program
- Six Technical Solutions

- Create Asthma Friendly Campus
- Facilities trades cross-training
- Custodial training
- Administrators awareness
- Staff development

- Inhaler usage
- IAQ symptoms
- Walk thru
- Facility Assessments
- Attendance
- Work Order system

- Agreed upon District Standards
- “Tips” for healthy classroom
  (Technical Solutions for teachers)
- Green Cleaning Program
- Anti Idling
- Hand Hygiene
- Filter Crew
- Air Quality Health Alert monitoring

- Administrators (campus & facilities)
- Teachers
- Website/ Webinars/ Podcasts

**Environment**

- HVAC
- Moisture/Mold
- IPM
- Cleaning & Maintenance
- Materials Selection
- Source Control

**Custodian’s Nightmare**

**Symptoms**

- Symptom Threshold
- Cumulative Effect of Environmental Asthma Triggers
Inhaler usage (separate scheduled from PRN, excel spreadsheet)

Software application (asthma and IAQ symptoms)

Targeted asthma and IAQ symptoms (by classroom)

Student Health (Medication)

Assessment Driver - 2006 to 2012

Reactive assessment only (work order)

Health check data driven walk through

Agreed upon district standards Software Application

Building Health (Environment)
<table>
<thead>
<tr>
<th>Campus Name</th>
<th>Asthma</th>
<th>IAQ</th>
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<td>CAMELOT E.S. student population 576 – 15% asthma prevalence rate</td>
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## NEISD Health Check Data

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Environmental Assessment

Assessment score of each classroom based on predetermined, agreed upon standards by area:

- 100 – (acceptable) no action required
- 50  – (ok) room for improvement
- 0   – (concern) education/action needed (work order generated)

Five possible areas:

**Occupant**
- clutter, stuffed animals, plants, furry animals, blocking of ERUs etc

**Custodial**
- high touch cleanliness, dust practices, infection control measures, etc

**Facilities**
- plumbing leaks, HVACs, exhaust fans, grounds, pests, etc

**Chemical Storage** (NIOSH high school lab standards)

**Air Summaries**
- Particle counts, CO2 levels, humidity

Average score for each classroom and overall campus score.
## Campus Environmental Assessment

**Campus:** WEST AVENUE E.S.

**Inspected By:** NICHOLAS KELLAR

### Room Assessment(s):

<table>
<thead>
<tr>
<th>Room No</th>
<th>Inspected Date</th>
<th>Teaching Env</th>
<th>Custodial</th>
<th>Facility</th>
<th>Chemical Storage</th>
<th>Air Summary</th>
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Academic Success

Attendance

Healthier children learn better

Assess student health

Assess building health

Data drives change
Six Key Driver Framework

Adaptations

Organize
- Develop Systematic Approach
- Create Buy-In Champions

Evaluate
- Feedback
- Capture ROI

Communicate
- Goals and Expectations

Students

Staff

Students

Staff

Community

Act
- Educate and Train
- Identify sources of problems

Assess
- Determine a baseline
- Identify risks

Plan
- Prioritize Actions
- Start Small
- Work in Stages
Six Key Driver Framework

Organize
Health Initiatives Committee
Mission

Communicate
3 Approaches
Healthy Child Learns Better

Assess
Aggregate Data
Asthma prevalence
Fitness Gram
Pacer Scores
Staff MS

Plan
Disease Management Outreach
Health/Movement Curriculum
Staff MS program

Act
Creates Culture of staff/student Wellness
Expansion of Disease Wellness Outreach
Implement HL Curriculum

Evaluate
Aggregate Data performance, healthcare costs, attendance, Quality of Life

Asthma
Diabetes
Allergy
Obesity
Mental Health
Sleep Apnea
Wellness – Three Approaches

Disease Management*  
Students  
Families/Community  
Employee

Physical Activity  
Students  
Families/Community  
Employee

Healthy Lifestyle  
Students  
Families/Community  
Employee

Better Practices

Improve Quality of Life

Decrease absenteeism
Decrease work time missed

Increase Capacity to
LEARN

Increase Productivity

*Asthma  
*Diabetes  
*Mental Wellness  
*Metabolic Syndrome
North East Independent School District
Health Initiatives Committee

Mission Statement: The North East Wellness Committee strives to foster a culture of health and wellness that will positively impact learning and productivity. We will motivate the NEISD community to value all aspects of wellness for the purpose of creating a strong educational environment. In doing so, we will empower individuals with the tools to function at their peak performance levels.

Organize
NEISD established the Health Initiatives Committee to provide a collaborative approach to the District's Wellness goals to benefit students and staff in hopes to improve student/staff productivity and attendance which benefit the district with increased state funding, lower healthcare costs, and increased student/staff performance.

Purpose: Provide tools for students, families, community, and staff to take an active role in their personal health and wellness.

Vision: To educate and motivate the North East Independent School District community to dedicate themselves to the pursuit of a healthy lifestyle.

Assess
Assess the health issues that impact the health and quality of life of students and staff.
- More than 61 percent of Texas adults and 40 percent of children are considered overweight or obese.
- A child who is obese by age 12 has more than a 75 percent chance of becoming an obese adult.
- Co-morbidities of obesity include type-2 diabetes, fatty liver disease, increased asthma severity, hypertension (high-blood pressure), sleep apnea, gallstones, gastroesophageal reflux, and osteoarthritis.

Aggregate Data was gathered on students/staff to assess health/wellness educational needs. Results indicated the following:
- District Asthma Prevalence rate of 11%
- District Pacer Score (measurement of cardiovascular health) Average: 50.39% of NEISD students achieving healthy fitness zone
- District Overall Fitness Gram Scores Average: 77% of NEISD students achieving healthy fitness zone
- District Overall BMI Score Average: 75% of NEISD students reaching healthy fitness zone
- 17% of the 2200 staff members screened were identified as having 3 of the 5 risk factors for Metabolic Syndrome

Plan
Plan short and long term goals utilizing current data and assessments.
- Disease Management Community Outreach Asthma Blow Out events: locations identified based on health needs of high school cluster/community awareness medication environment education
- Employee Benefits to make improvements based on data collected on staff needs, feedback, and cost effectiveness.
- Wellness, Technology, and Accountability: targeted Superintendent's NEISD Goals for Change
- Healthy Lifestyles Curriculum development as a health course requirement for all students during freshman year and required for graduation
- Voluntary Metabolic Syndrome Lifestyle program offered to employees who meet 3 of the 5 risk factors of Metabolic Syndrome
- Raise Awareness of 8th grade – projected year when all Texas adults will be overweight/obese if we continue with current obesity growth rates

Selected Resources
Wellness in NEISD Landing Page
http://staff.niet.org/Wellness/864.html

Communicate
Share Wellness program's intent, activities, results, and next steps with NEISD's entire school community and engage our community as participants and program supporters.
- Wellness in NEISD Landing Page access on district website
- Raise Awareness to district staff/employees
- Promoting success and continuation of Metabolic Syndrome Program
- Community Outreach Events for Disease Management

Share our Wellness program beyond the borders of the NEISD community.
- NEISD was an invited presenter to share our Wellness Program at the Texas Association of School Business Officials convention (TASBO)
- NEISD was an invited presenter to share our Wellness Program at the American Association of School Administrators national conference (AASA)
- Provided testimony to the Texas House Public Education Committee on our Healthy Lifestyles Curriculum as possible state-wide model

Act
Take action to create a culture of wellness systematically for students and staff.
- Coordinated Approach To Child Health and "Crisis" (potential pitfalls of a science-based curriculum taught in the classroom that includes physical activity, movement and food nutrition education to help students make healthier choices.
- Committees on Wellness in NEISD
- Wellness in Schools Committee (Campus Representative, CATCH team)
- Employee Wellness Committee
- Four Component Disease Management events: using Asthma Blow Out model (now includes Asthma, Diabetes, Mental Wellness, and Metabolic Syndrome)
- Awareness Medication Environment Education
- Healthy Lifestyles Curriculum – NEISD Board approved 10/20/09 for 2010-2011 year
- Employee Health – Flu Shots, BG95 Incentives, Fitness Center (Broadway/Locations)

Evaluate
Continue to track and monitor assessment aggregate data by incorporating new technology by looking at the "whole person" in order to evaluate and target health and wellness educational initiatives and interventions to improve health outcomes of students and staff. Some data collection measures include:
- Student:
  - NEISD Health Check (* NEISD created student health software program)
  - Quality of Life Surveys (asthma control)
  - Student Attendance – tracking environmental health impact on students
  - Overall Campus Fitness Gram and Pacer Test data to evaluate programs and to target campuses with increased prevalence and offer program interventions
- Overall Campus Performance data and evaluating how health/wellness impacts student performance

Staff:
- Insurance Costs – providing wellness programs to control/reduce healthcare costs
- Staff Health Screenings (BMI, HDL, LDL, TlGlycerides, Glucose, Waist Circumference, Blood Pressure) to bring awareness to employees of possible health risks in order to proactively provide tools to reduce their health risks

Communicate
Share Wellness program's intent, activities, results, and next steps with NEISD's entire school community and engage our community as participants and program supporters.
- Wellness in NEISD Landing Page access on district website
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**Medication Tools**
Availability of tools
Creating processes to eliminate barriers to adequate medication / healthcare to improve quality life

**Environment**
Assessing culture
Reduce exposure to known environmental risk factors

**Education**
Providing information to all stakeholders
Reinforcing of all other components into daily lifestyle

Stakeholders: students, parents, staff, community
Know Your Numbers
Employee and Community Screenings

North East Independent School District
Health and Wellness Education Fair

Metabolic Syndrome is a condition that is known to increase your chances for Heart Attack, Diabetes, Stroke, and other diseases. Having 3 of the 5 identified risk factors increases your risk for Metabolic Syndrome. These risk factors are: HDL (part of total cholesterol), Blood Pressure, Waist Measurement, Glucose, and Triglycerides (derived from Total Cholesterol).
Employee Metabolic Syndrome Program

THE HEALTHY EATING PYRAMID

Department of Nutrition, Harvard School of Public Health

For more information about the Healthy Eating Pyramid:
WWW.THE NUTRITION SOURCE.ORG

Eat, Drink, and Be Healthy
by Walter C. Willett, M.D. and Marion J. Simmerman (2005)
Free Press/Simon & Schuster Inc.

Copyright © 2006
Healthy Lifestyles is an all encompassing freshman-level wellness course that ensures all students obtain the knowledge and skills to make healthy lifestyle decisions to last a lifetime. The course is designed to include a classroom and a physical activity lab component.
Evaluate Measurable Outcomes

- Initial
- Intermediate
- Long-term

Case studies

Healthcheck software program

Data Coaching

Attendance of student impacts student performance

Attendance of student impacts student performance
Results of student Inhaler/Nebulizer Usage after initiating ‘Tips for a Healthy Classroom’ and ‘Asthma Trigger Education’ began being communicated to staff and awareness information to parents. Data comes from the time period of first six weeks of school, which is when ‘most problematic’ allergy seasons are dormant.
Nebulizer Trends Over Past Three Years

Comparing three years during same time frame: Aug – end of April data

Nebulizer Usage

Month

Number Given

2006-07
2007-08
2008-2009
Emergency Nebulizer Protocol

Initial Impact

- Baseline: 40
- Year 1: 55
- Year 2: 70

No protocol

- Protocol followed no EMS transport
- EMS transports to ED: This include students who do not have the 'diagnosis' requirement to follow protocol
Green Cleaning Program

Improved attendance of custodial staff due to less respiratory related illnesses.

- Overtime costs reduced by 21.49% -
  - $157,000 savings

- Eliminated the need for temporary hires to cover employee absenteeism –
  - $470,000 savings

- Supply costs reduced by 27.54% -
  - $328,000 savings
Asthma/Allergy Triggers

- Stuffed things
- Carpet
- Over populated
- Clutter
- High Particle counts
- Odors/Smells
- Mold
- Infection Control
- Pests
- Passive Transmission of allergens
- Dust mite
- VOC’s

EPA Technical Solutions

- HVAC
- Moisture/Mold
- IPM
- Cleaning & Maintenance
- Materials Selection
- Source Control
**Elementary Campus Comparison**

**Tips for Healthy Classroom Air**

(similar size, area, building age, demographics)

Can you identify which campus was NOT following best practices

![Bar chart showing inhaler usage for different campuses and months.](chart.png)

- **Campus A.**
- **Campus B.**
- **Campus C.**
- **Campus D.**
- **Campus E.**

Legend:
- Yellow: Aug/Sept
- Orange: October
- Brown: November
- Red: December
- Blue: January
Did you know that....
Cockroaches
Dust Mites
Cat Dander
Is in classroom dust?

Campus E Walk Through Assessment:
Clutter, unable to clean effectively...... DUST filled environment

Benefits to Campus E Over Next Two Months

After Utilizing ‘Tips for Healthy Classroom’ Best Practices

- **Campus A.**
- **Campus B.**
- **Campus C.**
- **Campus D.**
- **Campus E.**

Bar chart showing inhaler usage over the months August to March for each campus.
Closer Look at Campus E’s clinic visits for PRN inhaler usage.

Benefit seen after applying Tips for Healthy Classroom

Greater than 50% decrease in PRN (for symptoms) inhaler usage

In February and an additional 40% decrease in March
Environmental Intervention

- Environmental assessment found that
  - overuse of aerosolized fragrances in dressing room
  - outside ventilation air unit was not in service.

Actions:
- Restoring outside air unit to service provided dilution air to reduce asthma triggers
- fragrance overuse education addressed by trainers in dressing room

Results: Reduction in PRN usage

<table>
<thead>
<tr>
<th>Month</th>
<th>School Weeks</th>
<th>PRN Inhaler Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>February</td>
<td>4</td>
<td>41</td>
</tr>
<tr>
<td>March</td>
<td>4</td>
<td>41</td>
</tr>
<tr>
<td>April 5 to 9</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>April 12 to 16</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>April 19 to 23</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>April 25 to 30</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>May 3 to 7</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>May 10 to 14</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>May 17 to 21</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
What Did We Really Do?

SYMPTOM THRESHOLD

- allergens
- irritants
- infection

INFLAMMATION

HVAC
Moisture/Mold
IPM
Cleaning & Maintenance
Materials Selection
Source Control
Number of asthmatics in NEISD schools: 11.735% of 8,061 = 947.93

Average number of school days missed by those with asthma (CDC): 8

Attendance daily rate by state: $32.00

Potential revenue LOST: 947.93 * 8 * $32.00 = $2,063,616.00

Benefits possible when Asthma /Allergy Control Environmental measures applied:

- Reducing average number of schools days missed due to asthma by 50%..... $1,031,808.00
- Improving all asthmatics’ attendance by only ONE day.... $257,952.00
Healthy Lifestyles evaluation measurable in student benefits compared to the previous school year

- The ninth grade attendance rate district-wide showed a 2.3 percent gain
- 79 fewer discipline incidences in controlled substances
- 25 fewer in alcohol
- 9 fewer in tobacco products
- The FITNESSGRAM® scores showed a 15 percent gain in students passing all six test assessments

http://www.dshs.state.tx.us/schoolhealth/awardwinningprograms.shtm
**Employee Wellness**

**Clinical Lab Improvement**

All NEISD Participants

Prevalence of Specific Risk Factors

<table>
<thead>
<tr>
<th>Prevalence of Specific Risk Factors</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated Waist Circumference</td>
<td>75%</td>
<td>62%</td>
<td>-18%</td>
</tr>
<tr>
<td>Elevated Triglycerides</td>
<td>38%</td>
<td>26%</td>
<td>-31%</td>
</tr>
<tr>
<td>Reduced HDL [&quot;good cholesterol&quot;]</td>
<td>47%</td>
<td>45%</td>
<td>-5%</td>
</tr>
<tr>
<td>Elevated Blood Pressure</td>
<td>40%</td>
<td>37%</td>
<td>-9%</td>
</tr>
<tr>
<td>Elevated Fasting Glucose</td>
<td>38%</td>
<td>33%</td>
<td>-13%</td>
</tr>
</tbody>
</table>

N=224
Pre & Post BMI

BMI Categories Defined
- Normal: BMI \( \geq 18.5 \) and BMI < 25
- Overweight: BMI \( \geq 25 \) and BMI < 30
- Obese: BMI \( \geq 30 \) and BMI < 40
- Morbidly Obese: BMI \( \geq 40 \)

Pre BMI Category Distribution
- Normal, 4%
- Overweight, 25%
- Obese, 53%
- Morbidly Obese, 18%

Post BMI Category Distribution
- Normal, 11%
- Overweight, 27%
- Obese, 48%
- Morbidly Obese, 13%

N=224
<table>
<thead>
<tr>
<th>Texas Rating</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011***</th>
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<tbody>
<tr>
<td>Exemplary</td>
<td>9</td>
<td>19</td>
<td>28</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Recognized</td>
<td>28</td>
<td>28</td>
<td>25</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>Acceptable</td>
<td>23</td>
<td>15</td>
<td>11</td>
<td>8</td>
<td>25</td>
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<tr>
<td>Unacceptable</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

NEISD achieved the “Recognized” District Rating for the FOURTH year in a row.

***Among the notable changes in this year’s rating system was the system rated more students than in previous years. For example:
• All tested special education students are now factored into the formulas, which was not the case in years prior.
• Commended and English Language Learners (ELL) performances are also new factors used in determining campus and district ratings. (Percentage floor of achieving / passing must be reached)
• Standards for the academically acceptable rating increased for math and science by five points each.
“A healthy child is an effective learner.”
~ Dr. Richard Middleton, Superintendent, North East ISD

- System that gathers relevant data/information
- Data drives change
- Performance
- Attendance
- Healthier Children Learn Better
- Healthier Employees perform better

EPA Six Key Driver Framework

- Organize: Develop Systematic Approach: NAEPP Guidelines Create Buy-In Champions
- Communicate: Goals and Expectations
- Evaluate: Feedback Capture ROI
- Assess: Determine a baseline Identify risks
- Plan: Prioritize Actions Start Small Work in Stages
- Act: Educate and Train Identify sources of problems
- Act: Students Achievement Performance Closing Gaps Environment Academics Success Equity

Wellness Children

Health Quality of Life

Students

Children

Environment

Academics

Success

Equity
Tools for Schools Network

- Organize
  - Technical Experts
- Resources
  - Non Government Organizations
- Problem solving
  - Region EPA
- Insight
  - Mentors & Champions
- Sharing of ideas
  
  - HVAC
  - Moisture/Mold
  - IPM
  - Cleaning & Maintenance
  - Materials Selection
  - Source Control

Sharing of ideas
Create an environment conducive to learning

Healthier children learn better... and come to school


• March, Aaron G. (Fall 2011). Fixing Asthma Care in the U.S. *Allergy and Asthma Today, 9*(3), 31-32.


Takes a proactive and holistic approach to student and staff health by focusing on disease management, physical activity and healthy lifestyles.
North East Independent School District
Wellness Program

Organize: NEISD established the Health Initiatives Committee in order to meet the district’s goals of improving student and staff productivity and attendance.

Assess: Aggregate data was gathered on students/staff to assess their health/wellness educational needs. (For example: asthma prevalence rate, healthy fitness zone levels, etc.)

Plan: Plans short- and long-term goals, including community outreach events, healthy lifestyle curriculum in health courses, etc.

Act: Educates students on physical activity, movement and nutrition in order to help students make healthier choices.

Evaluate: Tracks and monitors assessment aggregate data, and evaluates health and wellness initiatives and interventions.

Communicate: Shares program’s intent, activities, results and next steps with community on the website and at events.
Q&A Discussion

How can you envision using the Framework in your work?
Q&A Discussion

Ask the speakers your questions!
National Schools Network — Connections to Spur Action
National Schools Network: Three Platforms

Knowledge of Best Practices
Network Members
Action Learning System
Keep in Touch!

- Mentorship
- Webinars
- Email and Newsletter Updates
- Email Discussion List
Resources

IAQ Tools for Schools Guidance: [www.epa.gov/iaq/schools](http://www.epa.gov/iaq/schools)

Stay Connected:

http://epa.gov/iaq/schools/connect.html

- Connector e-newsletters and emails.
- Email Discussion List.
- Calendar of Events.
- Webinars archives and resources.
- Videos and podcasts.

Green Ribbon Schools:

EPA’s IAQ Tools for Schools guidance is prominently featured as one of the recommended resources that schools can use to help meet the award criteria.
Thank you!
EPA’s *IAQ Tools for Schools* Program has been implemented successfully in tens of thousands of schools nationwide. The Framework for Effective School IAQ Management synthesizes the accumulated learning of more than 800 schools involved in a national survey of IAQ management practices; 200 applicants for *IAQ Tools for Schools* awards; and in-depth interviews, site visits and analysis of the five faculty school districts. The Framework provides a common language to describe the drivers of IAQ program success; detailed guidance on the proven strategies, organizational approaches, and leadership styles that are fundamental to program effectiveness; and a clear vision of the pathway to school IAQ excellence. Its highly flexible and adaptable structure allows any school, regardless of location, size, budget or condition, to use the Framework to launch, reinvigorate and sustain an effective IAQ management program.

**The Framework: Key Drivers**

The Six Key Drivers are the essential elements of effective and enduring IAQ management programs. Applying a cycle of continuous assessment, planning, action and evaluation, the Six Key Drivers work synergistically to deliver effective school IAQ management programs. The Six Key Drivers are:

- **Organize** for Success.
- **Communicate** with Everyone, All the Time.
- **Assess** Your Environments Continuously.
- **Plan** Your Short- and Long-term Activities.
- **Act** to Address Structural, Institutional and Behavioral Issues.
- **Evaluate** Your results for Continuous Improvement.

**The Framework: Technical Solutions**

The Six Technical Solutions define the most common issues that schools need to address to effectively manage IAQ risks. When addressed systematically and aggressively, an IAQ program that focuses on the Six Technical Solutions will deliver a healthier school environment. The Six Technical Solutions are grounded in the *IAQ Tools for Schools* Action Kit, the Center for Disease Control’s School Health Policies and Programs Study and the management practices of leading school IAQ programs. The Six Technical Solutions are:

- **Quality HVAC**.
- **Control of Moisture/Mold**.
- **Strong Integrated Pest Management (IPM)**.
- **Effective Cleaning & Maintenance**.
- **Smart Materials Selection**.
- **Aggressive Source Control**.

**The Framework in Action**

The *IAQ Tools for Schools* Framework: Six Key Drivers and Six Technical Solutions is designed to promote the proven approaches and strategies for IAQ management that advance environmental health in schools. This Framework can help everyone involved in your IAQ program understand the overarching purpose of the work your team does every day and how those day-to-day tasks translate into significant environmental health achievements in your schools. The tools and materials provided in the Action Kit will help you put the Six Key Drivers and Six Technical Solutions into action in your school district.

[http://www.epa.gov/iaq/schools/excellence.html](http://www.epa.gov/iaq/schools/excellence.html)
The Framework for Effective School IAQ Management:
Six Key Drivers

**ORGANIZE**
- Develop Systematic Approach
- Identify Existing Assets
- Design Standard Operating Procedures
- Empower an IAQ Leader
- Build an Effective Team
- Create Champions
- Secure Senior Buy-In

**EVALUATE**
- Solicit Feedback
- Capture Return on Investment

**ACT**
- Educate Staff About IAQ to Change Behavior
- Train Occupants to Address IAQ Risks
- Address the Source of Problems

**PLAN**
- Prioritize Actions
- Put Goals in Writing
- Start Small
- Work in Stages
- Plan for the Future

**ASSESS**
- Walk the Grounds
- Listen to Occupants
- Use Technology
- Determine a Baseline
- Keep Customers Satisfied
- Identify and Prevent Risks

**COMMUNICATE**
- Share Your Goals
- Make IAQ Meaningful
- Be Transparent & Inclusive
- Communicate Results

**ACTION KIT**
- HVAC
- Moisture/Mold
- IPM
- Cleaning & Maintenance
- Materials Selection
- Source Control
The Framework for Effective School IAQ Management: Six Technical Solutions

**Quality HVAC**
- Inspect HVAC systems regularly
- Establish a maintenance plan
- Change filters regularly and ensure condensate pans are draining
- Provide outdoor air ventilation according to ASHRAE Standard or local code
- Clean air supply diffusers, return registers, and outside air intakes
- Keep unit ventilators clear of books, papers, and other items

**Control of Moisture/Mold**
- Conduct routine moisture inspections
- Establish mold prevention and remediation plan
- Maintain indoor humidity levels between 30% and 60%
- Address moisture problems promptly
- Dry wet areas within 24-48 hours

**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

**Effective Cleaning & Maintenance**
- Conduct routine inspections of school environment
- Develop a preventative maintenance plan
- Train cleaning/maintenance staff on protocols
- Ensure material safety data sheets (MSDS) are available to staff
- Clean and remove dust with damp cloth
- Vacuum using high-efficiency filters

**Smart Materials Selection**
- Maintain products inventory
- Develop low-emitting products purchasing and use policies
- Use only formaldehyde-free materials
- Use only low-toxicity and low-emitting paint
- Select products based on product rating systems
- Use least toxic cleaners possible (only those approved by the district)

**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