






# Welcome!

## Healthy School Environments Across Texas

Garland, Texas  
April 23 and April 24, 2012




Indoor Air Quality (IAQ)

## Leadership Voices

- Dr. Curtis Culwell, Superintendent, Garland ISD
- Mr. Preston Edwards, Mayor Pro Tem of Garland
- Dr. Al Armendariz, EPA Region 6 Regional Administrator



Indoor Air Quality (IAQ)

## Leadership Voices



Dr. Curtis Culwell, Superintendent, Garland ISD




Indoor Air Quality (IAQ)

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Mr. Preston Edwards, Mayor Pro Tem of Garland

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## Leadership Voices



Dr. Al Armendariz, EPA Region 6 Regional Administrator

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## Action Planning

- What leadership messages did you hear from the opening speakers?

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## Twitter Information

- We will be live tweeting at the event and encourage those who are on Twitter to follow us @HealthySEAT2012. You can also tag @HealthySEAT2012 in your Tweets to let us know how you're enjoying the event.



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## Thank You!

THE  
CADMUS  
GROUP, INC.



Dallas  
Independent  
School  
District



REPUBLIC  
SERVICES



Indoor Air Quality (IAQ)

## Goal of Training

- To provide information and tools to help you create healthy indoor environments in schools.

## Learning Objectives

- Understand the elements of maintaining a green and healthy school.
- Discover how improved IEQ leads to academic success.
- Be equipped to create an effective IEQ management program.
- Develop an action plan.



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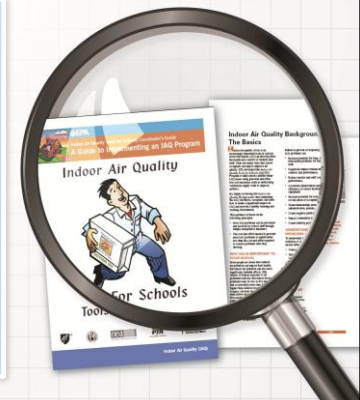
## Hat Trick

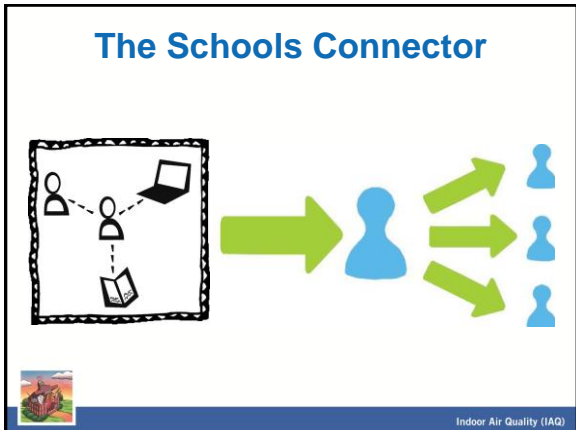
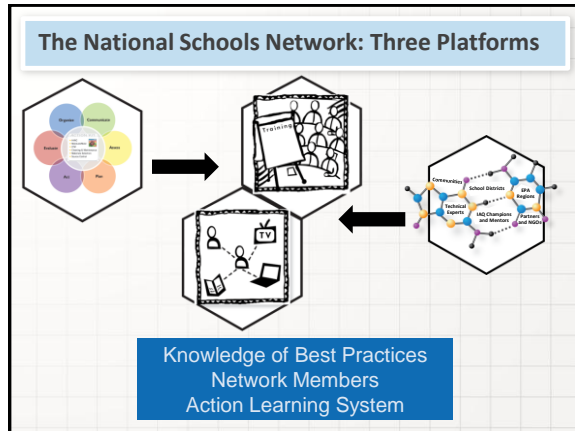
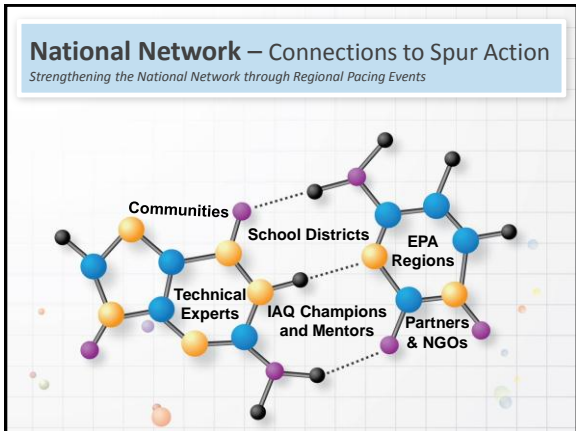
- Grounding in a Firm IEQ Knowledge Base**
  - Effective Framework for Success
  - Technical Expertise
- Action Learning Approach**
  - Peer-to-Peer Learning
  - Action Learning
- Powerful National Network**
  - Mentoring
  - Ongoing Support



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## The IAQ Tools for Schools Guidance





### Agenda Design:

Monday, April 23, 2012  
12 – 7 p.m.

12:00 – 12:15 p.m. Opening Remarks – Leadership Voices	□ The IAQ Tools for Schools Model
12:15 – 12:30 p.m. Meeting Overview	□ Apply knowledge
12:30 – 1:30 p.m. Children’s Environmental Health and Risk Management	□ How to get it done... Key Drivers
1:30 – 1:45 p.m. Break	□ Be part of national collaborative
1:45 – 3:45 p.m. Cycle of Implementation – Six Key Drivers to Success	
4:00 – 5:00 p.m. Exhibitor Expo	
5:00 – 7:00 p.m. Reception/Dinner	

### Agenda Design:

Tuesday, April 24, 2012  
8 a.m. – 12:30 p.m.

8:00 – 8:30 a.m. Technical Solutions & Best Practices	□ How to do it ... Technical Solutions
8:30 – 9:45 a.m. Virtual Walkthrough	□ Leave with leadership mindset
10:00. – 10:50 a.m. Technical Solutions & Best Practices:	
• HVAC	• Construction and Design
• Moisture/Mold	• Energy Efficiency and IEQ
• Asthma in Schools	
11:00 a.m. – 11:50 p.m. Concurrent Sessions Repeat	
12:00– 12:30 p.m. Leaving in Action: Leadership Voice	

- ### How to “Be”
- Focused on identifying the defining actions you will take.
  - Willing to speak in the language of IEQ success.
  - Open to Assuming a Leadership Role in the movement for safer, greener, healthier more productive schools.
  - Excited to apply a successful Framework to your work.
  - Leaders in Service to One Another.

## Leaders in Service

- Seek Permission to Serve.
- Grant Permission to be Taught.
- Use Effective Questions.
- Listen with Authority.
- Create the Future with Powerful Requests and Offers.
- Generate Action and Outcomes with Bold Declarations.



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## Your Leadership Story

*I am in service to helping communities make every school a Pristine Palace of Learning.*

*What is the IEQ story you are in service to?*



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## Personal testimonial from Victor Melton, CFBISD



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## Children's Environmental Health and Risk Management



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## Speakers

- Irene Nigaglioni, Partner, PBK Architects, Inc. and CEFPI
- Tracy Bramlett, President, Industrial Hygiene Safety and Technology
- Diane Rhodes, Director of Environmental Health, North East ISD



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## Action Planning

- Please record the leadership strategies and "Call to Action" messages you hear from these speakers. Listen for strategies related to the environment, health and education.




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## Action Planning


Irene Nigaglioni, Partner, PBK Architects, Inc. and CEFPI

PBK



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• “I will be a **fierce** advocate for excellence in student learning environments.”



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## ADVOCACY



**My role:**

- **Architect/Planner**
  - 20 years dedicated to the design, planning, and construction of educational facilities
  - Advocate for the connection between learning and facilities
- **Mom**






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## ADVOCACY


**My role:**




• **Vice Chair**

**Vision:**  
CEFPI is the advocate for excellence in student learning environments






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## ADVOCACY



**•NO SURPRISE:**  
Improving the quality of our school environments can have a powerful effect on productivity and student achievement.



Ventilation, Temperature, Natural Light, Acoustics, Color, Lighting, Maintenance




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## ADVOCACY

**ASTHMA**

- Disease Control and Prevention finds that reducing indoor air pollution could prevent more than 65 percent, or two in three asthma cases among elementary school-age children.





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EPA

# IT'S NOT FAIR




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# IT'S NOT FAIR

**"A healthier environment is also a more equitable one."**  
*"Underserved students are more likely both to attend schools with poor indoor environments. They desperately need more time in school, not less."*  
 Arne Duncan






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# IT'S NOT FAIR

## WHY DON'T WE ASK THE KIDS?

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# SCHOOL of the FUTURE DESIGN COMPETITION



SUBMITTAL CRITERIA

- Create healthy, high performance learning environment
- Demonstrate community involvement
- Incorporate sustainable features
- Support all different learning styles
- Incorporate technology to encourage "learning anytime-anywhere" philosophy
- Foster connections and collaboration



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# SCHOOL of the FUTURE DESIGN COMPETITION




- Project-based learning exercise
- Explore real world problems and offer solutions
- Bridge the gap between conceptual theory and real life skills
- Award-winning green curriculum
- Develop knowledge base
- Conduct research and interpret information
- Utilize 3-D computer-aided design software



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EPA

# Seneca Middle School

SCHOOL of the FUTURE DESIGN COMPETITION




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**EPA**  
**Seneca Middle School**  
 SCHOOL ENVIRONMENTAL DESIGN COMPETITION

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**EPA**  
**IT CAN BE DONE**

**It is easy...**

- Make it part of your daily routine
- Look at each task through healthy colored glasses
- Join others in action
  - EPA
  - CEFPI
- Involve the students!!
  - They get it!

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**Action Planning**

Record any "Defining Leadership Moments" you heard and "Call to Action" messages.

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**Managing Indoor Air Quality**

Tracy K. Bramlett, CIH, CSP  
 Industrial Hygiene and Safety Technology, Inc.

Indoor Air Quality (IAQ)

**Managing Indoor Air Quality**

- Over the past few years, managing indoor air quality has become one of the more demanding challenges facing school professionals.

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**Texas Schools**

- 8,856 school buildings in Texas
- 4,599,509 students
- 616,155 employees in schools
- 60% of schools have at least one unsatisfactory environmental factor

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## Healthy School Buildings

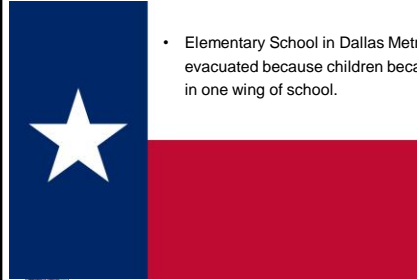
- Increase ability of students to learn
- Reduce health issues
- Reduce operating costs
- Increase attendance



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## Case Study

- Elementary School in Dallas Metroplex evacuated because children became ill in one wing of school.



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- Most important aspect of Indoor Air Quality (IAQ)

»Be Proactive



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## Prepare today for better school tomorrow



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## Action Planning

Record any "Defining Leadership Moments" you heard and "Call to Action" messages.

Defining Leadership Moments	Call to Action Messages



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**Diane Rhodes, BBA, RRT, AE-C, RCP**  
 Director, Department of Environmental Health  
 North East Independent School District

*Asthma Awareness Education Program  
 Indoor Air Quality Program*





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**EPA**  
**NEISD Department of Environmental Health**  
**Mission Statement:**

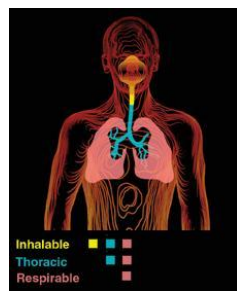
- The Department of Environmental Health will address the needs of students and staff by creating a healthy environment and by providing technical and educational resources for the students and staff on air quality and asthma management. We utilize a four component approach to achieve a healthy environment for all students.
- Our commitment to classroom indoor air quality and asthma management 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.

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## The Air we Breathe affects our health and ability to learn

In one day...  
 We take 20,000 breaths  
 = 3,400 gallons  
 = 450 cubic feet

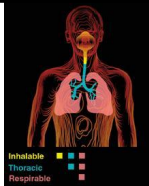


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Over the course of the day...

- Breathe in 20 billion particles
- Consists of dirt/dust, volatile organic compounds, irritants, allergies, and microbes.
- The nose traps and filters up to 70 % of these particles.
- Particles are too small to be trapped by the nose enter the airway.


Air particulate exposure and air pollutants exert adverse effects directly on the lungs and heart, (respiratory and cardiovascular conditions, asthma symptoms, acute bronchitis, and atherosclerosis).



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## Brain

- The healthy brain is well-protected against toxins by a specialized membrane that usually allows entry only to beneficial substances.
- However, recent studies suggest that inhaled ultrafine particles may be capable of bypassing this barrier, especially in children where their brains are still developing, which then affects their ability to learn.

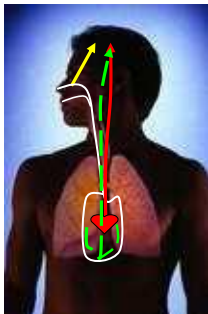


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When we breathe, air enters our lungs and nasal passages: white line represents airflow.

Effects of ultra fine particulates can enter the brain either directly or indirectly

- May *physically* enter brain (ultrafine PM)
  - Transported along nerves in the nasal passages to brain
  - Carried from lungs to brain via bloodstream
- May affect brain *indirectly* (PM2.5 and ozone)
  - Inflammatory factors released in lungs, travel to the brain



<http://www.arb.ca.gov/research/health/healthup/dec07.pdf>  
Indoor Air Quality (IAQ)

### Asthma Remains a Serious Health Risk in the US

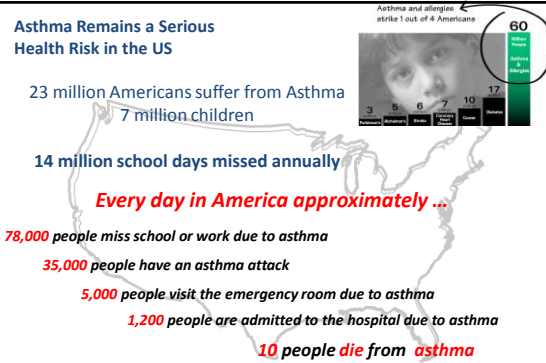
Asthma and allergies strike 1 out of 4 Americans

23 million Americans suffer from Asthma  
 7 million children

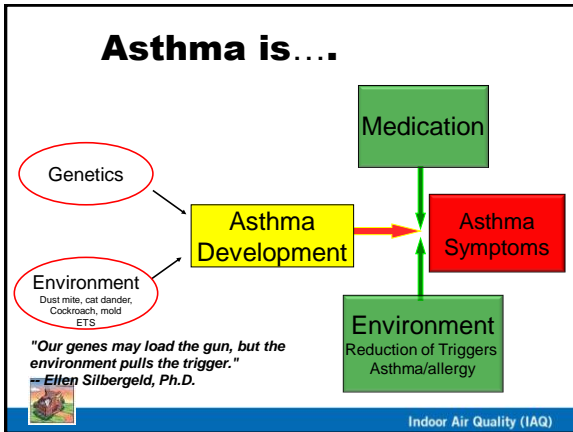
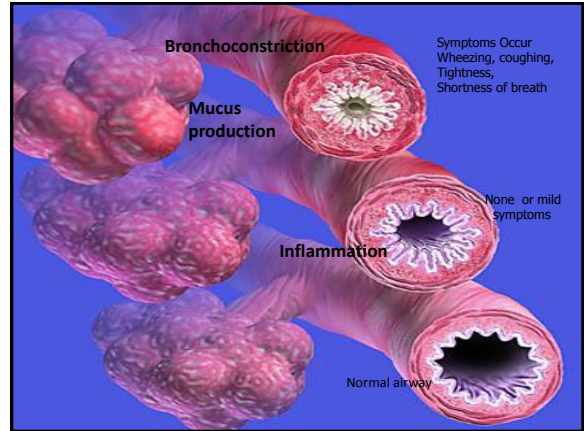
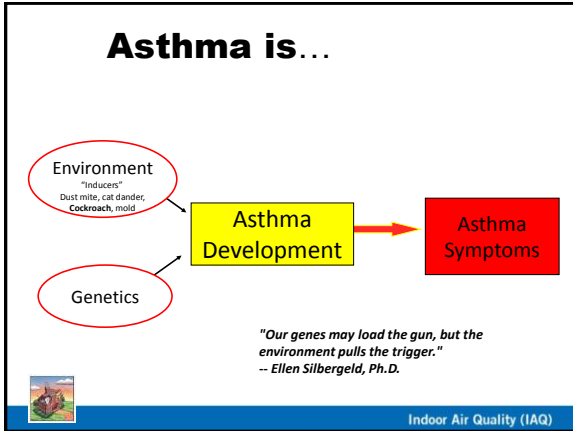
14 million school days missed annually

**Every day in America approximately ...**

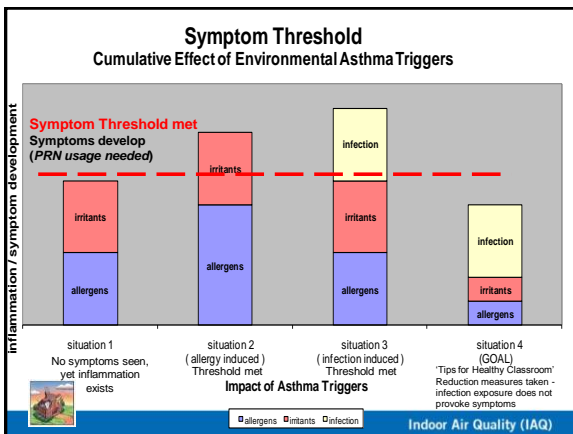
- 78,000 people miss school or work due to asthma
- 35,000 people have an asthma attack
- 5,000 people visit the emergency room due to asthma
- 1,200 people are admitted to the hospital due to asthma
- 10 people die from asthma



American Lung Association Epidemiology & Statistics Unit Research Program Services. Trends in Asthma Prevalence and Mortality, February 2010. [www.lungusa.org](http://www.lungusa.org)  
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- ### Asthmatics should have....
- Normal activity level
  - Ability to engage in desired activities
  - No school days missed
  - Reliever inhaler use **less than** twice per week
  - Night-time cough **less than** twice per month
  - Normal (or "near normal") pulmonary function
  - No Emergency Room / Urgent Care visits
  - No Hospitalizations
- Indoor Air Quality (IAQ)

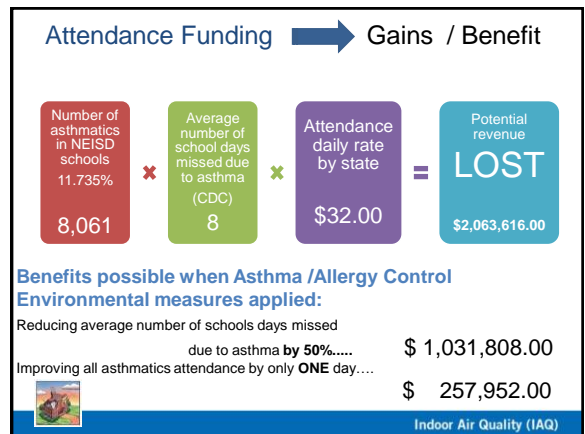
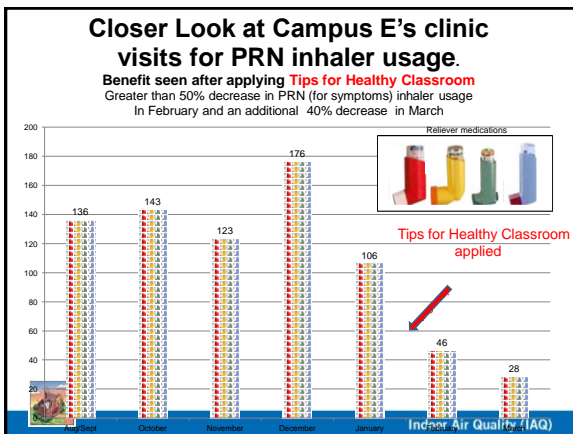
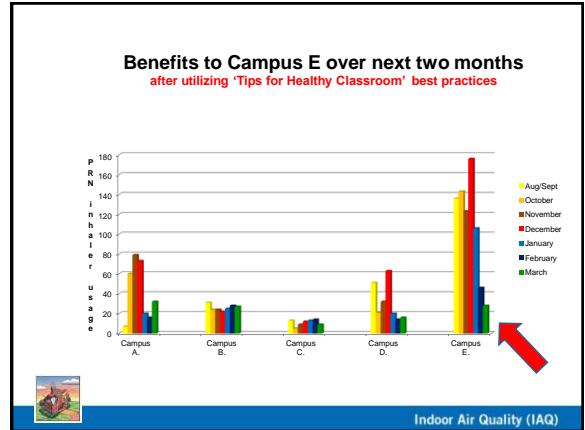
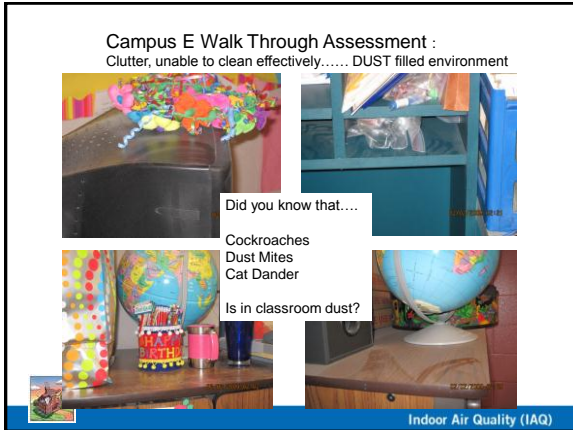
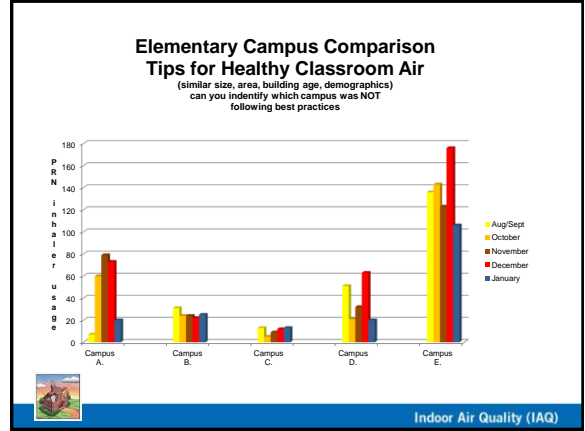
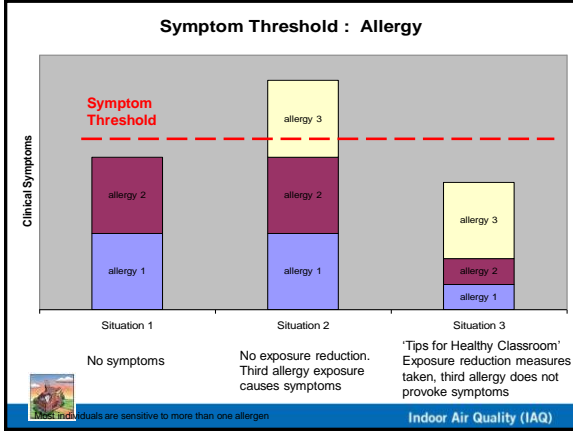


### Prevalence - Allergy

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


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Create an environment conducive to learning



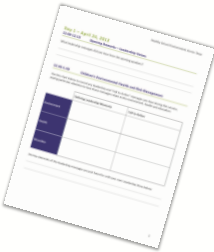

Healthier children learn better...  
and come to \$chool




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### Action Planning



Record any "Defining Leadership Moments" you heard and "Call to Action" messages.

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### Action Planning

- Please record your own leadership story in your Action Planning Guide.



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### Break

1:30 – 1:45




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## Cycle of Implementation - Six Key Drivers to Success



### Framework Overview



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### Creating Green and Healthy Schools

The Framework for Effective School IEQ Management

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### Applying the Framework

- Peggy Caruso, Assistant Environmental Director, Katy ISD
- Victor Melton, Environmental and Energy Manager, Carrollton-Farmers Branch ISD
- Diane Rhodes, Director of Environmental Health, North East ISD
- Frank DiNella, Director of Operations, Keller ISD
- Tiffany Delcour, Director of Environmental Quality, Louisiana Recovery School District

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## Applying the Framework: Action Planning Guide

As you listen to these school districts, record strategies about each of the Key Drives in your Action Guide.

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### KEY DRIVER: Organize for Success

**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

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## Applying the Framework

### Organize

**Peggy Caruso, Assistant Environmental  
Director, Katy ISD**

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## Organize

- Administrative Support
- Strong Leadership
- Develop a Team
- Standard Operating Procedures
- Make use of New Technologies
- Change

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## Where we are 2012

2003

2012

83  
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## Environmental Team 2012

84  
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## Strongholds

2006



2012



85  
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## Clutter

2003



2012



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## Creating a Healthy Environment

Removed paper and cloth



2012



87  
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## Mold and Moisture

2003



2012



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## Where we are 2012

2003



2012


- Standardized Program
- Recognized for Excellence
- Sustainable Healthy Schools
- Culture of Awareness
- District Priority

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## Applying the Framework: Action Planning Guide

**Rate how your own program shows up for the Organize Driver.**

1. No Action.
2. Planning.
3. Forming.
4. Well-Developed.



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**KEY DRIVER:**  
**Communicate with Everyone, All the Time**

**COMMUNICATE**

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

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## Applying the Framework

### Communicate

**Victor Melton, Environmental and Energy Manager,  
Carrollton-Farmers Branch ISD**

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## What we are going to cover

- TIMES IAQ Program
- Framework for Success
  - Key Driver: Communication
- Buy-In
- Results

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## C-FB TIMES program

**T**ools for Schools (IAQ)

**I**PM

**M**oisture Management

**E**nergy

**S**afety and **S**ecurity

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## TIMES Members

- Renee Putter - *Athletic Director*
- Susan Shipp - *Science Coordinator*
- Patty Jo Nierste - *Safety / PCL Insurance*
- Teresa Lyons - *Nurse Manager*
- Rosalie Getz - *Occupational Health Nurse*
- Johnny Hibbs - *Exec. Dir. Facilities/Trans*
- Tom Bell - *Construction Supervisor*
- Wade Lillie - *Dir. Security & Operations*
- Roland Donnell - *Maintenance Director*
- Melvin Beckham - *Custodian Dept Head*
- Terry Vandenberg - *HVAC Controls*
- Victor Melton - *Environmental and Energy*
- **Special members**
- James McClure (Estes, McClure & Associates, Inc)
- Trey Wamble (Commercial Risk Services)

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## Impacted by using the Framework

- Implemented our framework
- The program had to be holistic
- Myriad of departments had to participate
- The success and failures

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## The Key Drivers and Technical Solutions

- The TIMES program spilled over
- Staff gain confidence
- Staff can be focused



## Making the Case – Funding and Buy-in

- TIMES was not funded program
- Success is the Key
- Build credibility



## TIMES *Tools for Schools (IAQ)*

- What is IAQ?
  - Indoor Air Quality
    - Outside concentrations and inside concentration
    - Mold is everywhere 50 to 150,000,
    - V.O.C. off gassing / light / sound / temp / RH
    - Asthma is the leading cause of school absenteeism
    - allergic asthma triggers / Fabric furniture / deodorizers / fish-tanks / plants & pets / cooking odors / cold air / perfumes / mini-refrigerators
    - Asthma triggering mechanisms in your room
    - Create standard of care procedures
    - Don't ask the kids if they are sick too
    - C FB ISD EPA IAQ Tools for Schools National Excellence Award 2010
- Room questionnaire for staff
- FAQs
  - My doctor says I have environmental allergies – why do I only feel bad when I am at work?
  - Can you test the mold?



## TIMES SCHOOL INSPECTION

School \_\_\_\_\_ Room # \_\_\_\_\_ Date / /

✓ Appropriate answer

	YES	NO	N/A	PLEASE ANSWER ALL QUESTIONS
1.				I keep my classroom clean
2.				My classroom is dusted and vacuumed regularly
3.				Trash is removed daily from my classroom
4.				My classroom is free of pests
5.				My classroom is free of pets
6.				Do you have fire exit maps of your school in your room
7.				Indoor wall surfaces are free of condensation
8.				Areas under and around sinks are free of leaks
9.				Classroom bathrooms are free of leaks
10.				Ceiling tiles and walls are free of leaks (discoloration may indicate a leak)
11.				My classroom usually has a comfortable temperature
12.				I am the only teacher that uses my classroom



## Energy Efficiency

- C-FB Payroll / Utilities
- Who uses Energy? Who can save energy?
- Wasted energy = IAQ problems
- Start a (Green TEAM) an Integrated Waste Stream that creates a balance between waste and recycling service
- Light Fixtures on thermostats
- Educating our Kids / set a good example
- FAQs
  - Do I turn off my PC before I go home.
  - Do I turn off lights if I am only going to be gone a minute?



## Applying the Framework: Action Planning Guide

Rate how your own program shows up for the Communicate Driver.

1. No Action.
2. Planning.
3. Forming.
4. Well-Developed.



### KEY DRIVER: Assess Your Environments Continuously

**ASSESS**

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

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## Assess

**Diane Rhodes, BBA, RRT, AE-C, RCP**  
Director, Department of Environmental Health  
North East Independent School District

Asthma Awareness Education Program  
Indoor Air Quality Program

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### Six Key Drivers at Work

Organize

Assessing NEISD's Asthma Prevalence

Control of Asthma<sup>1</sup> is defined as:

- No absences from school /work  
**83% were experiencing absenteeism one cluster - 10 or more days - 6%**
- No interruptions of class time due to symptoms  
**70,000 trips to the school nurse**
- No use of inhaler more than 2 times per week  
**85% were using reliever medication**
- No coughing during the night  
**75% stated night was interrupted with coughing**
- Participation in all physical activities  
**77% were limiting physical activity**
- No emergency or urgent care visits  
**25% had visited ED or urgent care**  
**120 EMS calls**

1000 surveys completed / 100% response rate for 100000 of students on parent portal. \*National Asthma Education Preventive Program

Communicate, Evaluate, Take Action

Indoor Air Quality (IAQ)

### NEISD Four Components of Control: Implemented

- Awareness:** School District impact, Quality of Life Surveys, Parent /Staff expectations, Data, data, data feedback
- Medication & Tools:** Emergency Nebulizer Policy, Asthma Action Plans, NHLI EPR Sguidelines, Health Check -Y data, EMS incidents, Inhaler usage, Facility Assessment, Air summary, Facility scores, Asthma Control Test
- Education:** Asthma Curriculum, Environmental Curriculum, Webinar/Podcasts to staff, Staff Development /AFC, Website, Asthma Blow Outs
- Environment:** Education and Removing Triggers from home / school environments, Indoor Environment Quality Best Practices, Tools for Schools, Six Technical Solutions, Tips for Healthy Classroom Air Quality

Stakeholders: students, parents, staff, community

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### Environment

Exposure of patients who have Asthma/Allergy to irritants or allergens is which they are sensitive has been shown to increase symptoms and precipitate exacerbations. NEISD EPA-2

- Organize:** Six Key Drivers, Tools for Schools program, Department of Environmental Health, Six Technical Solutions, Asthma Triggers
- PLAN:** Create Asthma Friendly Campus, Facilities trades cross-training, Custodial training, Administrators awareness, Staff development
- ASSESS:** Inhaler usage, IAQ symptoms, Walk thru, Facility Assessments, Attendance, Work Order system
- ACT:** 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
- Communicate:** Administrators (campus & facilities), Teachers, Website / Webinars/ Podcasts

Environment factors: Humidity, Mold, Dust, VOCs, PM, Cleaning & Maintenance, Materials Selection, Source Control

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### Assessment Driver - 2006 to present

#### Student Health

- Inhaler usage (separate scheduled from PRN, excel spreadsheet)
- software application (asthma and IAQ symptoms)
- Targeted Asthma and IAQ symptoms (by classroom)

#### Building Health

- Reactive assessment only (work order)
- Health check data driven walk through
- Agreed upon district standards Software Application

Indoor Air Quality (IAQ)

### NEISD Health Check data

Category	0	1	2	3	4	5	6	7	8	9	10
ASHRAE 62.1	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 90.1	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 189.1	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.2	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.4	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.6	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.8	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.10	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.12	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.14	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.16	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.18	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.20	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.22	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.24	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.26	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.28	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.30	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.32	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.34	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.36	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.38	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.40	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.42	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.44	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.46	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.48	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.50	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.52	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.54	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.56	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.58	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.60	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.62	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.64	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.66	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.68	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.70	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.72	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.74	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.76	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.78	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.80	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.82	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.84	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.86	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.88	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.90	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.92	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.94	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.96	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 155.98	0	0	0	0	0	0	0	0	0	0	0
ASHRAE 156.00	0	0	0	0	0	0	0	0	0	0	0

## Environmental Assessment

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

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

**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

Five possible areas – average score for each classroom and overall campus score

### CAMPUS ENVIRONMENTAL ASSESSMENT

Westwood, Diane Rhodes  
Heldy, Elgi Chait  
Indoor Air Quality  
NICHOLAS KELLAR

Campus: WEST AVENUE E.S.  
Inspected by: NICHOLAS KELLAR

#### Room Assessment(s):

Room No.	Inspected Date	Teaching Env	Custodial	Facility	Chemical Storage	Air Summary	Average
2	2/23/2012	100	100	100	-NA-	-NA-	100
2	3/25/2012	100	100	100	-NA-	-NA-	94
3	2/23/2012	95	94	100	-NA-	-NA-	96
3	3/25/2012	100	75	100	-NA-	-NA-	92
4	2/23/2012	95	100	100	-NA-	-NA-	98
2	2/23/2012	91	95	100	-NA-	-NA-	95
9	1/19/2012	55	79	100	-NA-	-NA-	78
10	2/24/2012	95	80	100	-NA-	-NA-	94
16	1/25/2012	80	83	100	-NA-	-NA-	90

### Administrative email

**North East Independent School District**  
Department of Environmental Health  
15333 BROADWAY – SAN ANTONIO, TEXAS 78217  
Phone (214) 617-8623, Fax (214) 617-8556

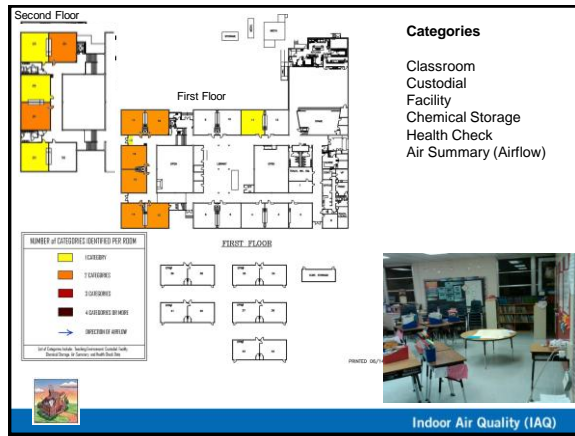
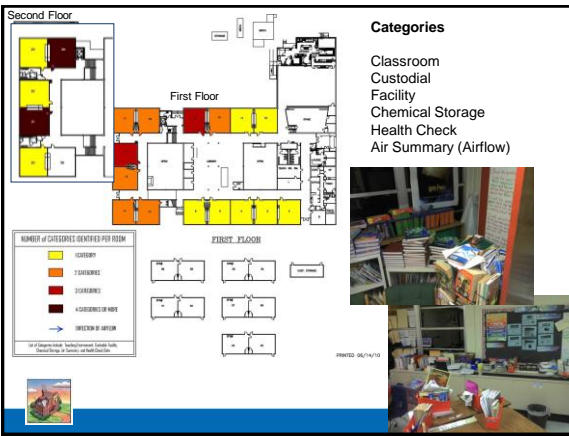
DATE: March 9, 2012  
TO: Belinda Gonzalez, Principal, West AVE Elementary  
FROM: Diane Rhodes, Director, Department of Environmental Health  
Lawrence Fowler, Coordinator, Department of Environmental Health  
SUBJECT: Campus Environmental Assessment

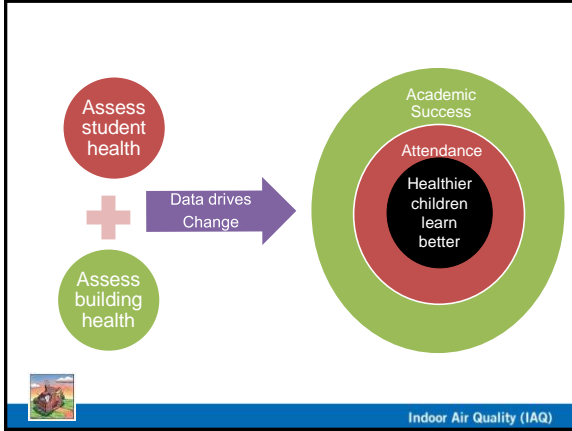
Recently environmental assessments were performed at your campus. Please find below the results:

Campus: WEST AVE E.S.  
Avg Campus Score: 93.7%

Avg Teaching Environment score: 96.2%  
Avg Custodial score: 89.6%  
Avg Facility score: 100%  
Avg Chemical Storage score: -NA-  
Avg Air Summary score: 88%

If you cannot access your report or have any questions in regards to your assessment. Please call the Environmental Health Department at (214) 617-8673.





### Applying the Framework: Action Planning Guide

Rate how your own program shows up for the Assess Driver.

1. No Action.
2. Planning.
3. Forming.
4. Well-Developed.

Indoor Air Quality (IAQ)

### KEY DRIVER: Plan Your Short and Long-term Activities

**PLAN**

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

Plan

Organize, Communicate, Assess, Plan, Act, Evaluate

Indoor Air Quality (IAQ)

# PLANNING

to improve student performance

Frank DiNella, Director of Operations,  
Keller ISD

April 21, 2012

118

## THE CHALLENGE

- Operationalize Excellence with focus on the 5 board strategic initiatives
  1. Educational Excellence
  2. Excellence in Student, Parent and Community Relations
  3. Excellence in Operational Processes and Systems
  4. Employee Excellence and Organizational Improvement
  5. Excellence in Financial Stewardship

119

## THE ANSWER

- A comprehensive program to improve our Indoor Environmental Quality
  - Voluntary
  - Common-sense
  - Low-cost

Indoor Air Quality Tools for Schools Action Kit

120

## Follow a Structured Process

- *IAQ Tools for Schools Framework for Effective School IEQ Management*
- Defines strategies to establish and sustain a successful IEQ management plan.
- Provides a flexible and adaptable structure.

## PLAN

## STANDARD COMMUNICATIONS

In alignment with our vision to be an intentionally exceptional district in which to learn, work and live, KISD commits to providing a healthy and safe environment for students, faculty, staff and visitors. KISD will 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 our facilities and operations on the environment;
- Participating in local, regional, and national initiatives to improve the quality of the environment;
- Researching, developing, and integrating best practices to build capacity and expertise that ensures environmental sustainability.
- The superintendent, or his designee, shall effectuate this policy through a comprehensive environmental stewardship plan which includes measurable goals, periodic evaluations, and analysis of performance against the plan.

## THE RESULT

- MANAGING IEQ BECAME THE STRATEGY TO SUPPORT EDUCATIONAL EXCELLENCE
- M&O BECAME AN INTEGRAL PART OF THE EDUCATIONAL SYSTEM IN KISD

## Applying the Framework: Action Planning Guide

**Rate how your own program shows up for the Plan Driver.**

1. No Action.
2. Planning.
3. Forming.
4. Well-Developed.

## KEY DRIVER: Act to Address Structural, Institutional and Behavioral Issues

**ACT**

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

# Applying the Framework

## Act

Tiffany Delcour, Director of Environmental Quality, Louisiana Recovery School District

Excellence.Equity.Community.  
RecoverySchoolDistrict



Indoor Air Quality (IAQ)

# Educate/Train

- IAQ 101
  - Reach as many groups as possible...
    - Custodians, Maintenance Crew, Teachers, Administrators, Parents...
- Action Planning
  - Do not leave without identifying the next steps.

IAQ Teacher Classroom Survey

B. Drinks, Bats and Tables in the Classroom			
Do you have any drinks in the classroom?	Yes	No	NA
Do you have any bats in the classroom?			
Do you have any tables in the classroom?			
Do you have any chairs in the classroom?			
C. Workers in the Classroom			
Do you have any workers in the classroom?	Yes	No	NA
Do you have any custodians in the classroom?			
Do you have any maintenance crew in the classroom?			
Do you have any teachers in the classroom?			
Do you have any administrators in the classroom?			
Do you have any parents in the classroom?			



Indoor Air Quality (IAQ)

# Do

- Follow through on next steps...
- Perform walkthrough
- Keep team well informed of the work that is happening.
- Be responsive!

RSD IAQ Walkthrough Checklist

School: \_\_\_\_\_  
Date: \_\_\_\_\_ Inspector: \_\_\_\_\_  
Record Outdoor levels CO<sub>2</sub> \_\_\_\_\_ Temp: \_\_\_\_\_ RH: \_\_\_\_\_

- Exterior: Ground Level
  - 1a. Are there obstructions blocking air outside?
  - 1b. Are there vents and/or breezings near windows or outside?
  - 1c. Are dumpsters placed away from doors, windows, and air intakes?
  - 1d. Are there potential sources of air contaminants near the building? (utility tracks, industrial plants, exhaust from nearby buildings)
  - 1e. Is there the potential for vehicle idling near air intakes?
  - 1f. Is there proper drainage of the school grounds?
    - o Are you pooling, excessive mud?
    - 1g. If there are ground operations do they spray away from building?
    - 1h. Are there any possible entry points for pests in the entrance?
      - o openings: large gaps under doors, holes in air intake paths, etc.
    - 1i. Are walk-off mats present at entrances?
    - 1j. Is the guttering system effectively draining storm water away from the building?

Comments: \_\_\_\_\_



Indoor Air Quality (IAQ)

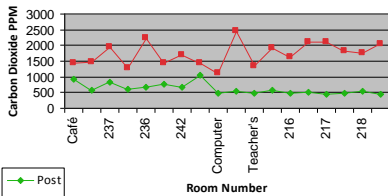
# Follow Up

- Make changes!
  - (Over) Communicate those changes
- What was the result of change...
  - New policy/procedure?
  - Change in products?
  - Improved IAQ Indicators?
- Show the importance of your work.



Indoor Air Quality (IAQ)

Carbon Dioxide Pre and Post Intervention



Show proof of success!

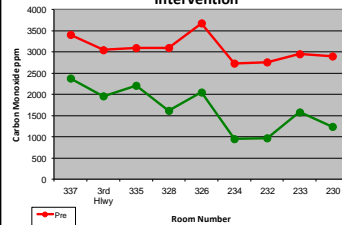
- Edward Harney Elementary School
- Overdue Filter Change
  - PM's not followed



Indoor Air Quality (IAQ)



Carbon Dioxide Levels Pre and Post Intervention



- Initial Assessment found high levels of CO<sub>2</sub>
- Large Fan Units Disabled
- Capital Investment \$3,500



Indoor Air Quality (IAQ)

## Repeat

(Secret- this is the hardest part)

- Put more responsibility at the school level.
- Evolve...
  - Customize
  - Build on success
  - Make Policy!

**Indoor Air Quality Classroom Rules**  
*All unapproved products are subject to Removal!*

Never Allowed in the Classroom	Approved for use in the Classroom
Antiseptic Sprays, Lysol, Air Fresheners, Etc.	Sanitizing Wipes
Glade Plug-ins, Scented candles or other air freshening products	Low toxicity All Purpose cleaners (or with generation, green waxes, simple green)
Bleach or bleach based cleaning products @ 40%	Alcohol Based Hand Sanitizers
Perfume: Raid, Combat, Hot Shot, Ultra Kill...	Cloth products washed in HOT water every two weeks (stuffed animals, small rags, sheets, pillow cases)
Food not contained in thick plastic containers	Food stored in thick plastic containers
Clutter	
Blocked air vents	

Indoor Air Quality (IAQ)

## RSD Evolution

- Decentralized School District
- Contract Management
  - HVAC
  - Custodial-Green Cleaning
- Self Sustaining...
  - Policy Counts!



Indoor Air Quality (IAQ)

## Applying the Framework: Action Planning Guide

Rate how your own program shows up for the Act Driver.

- No Action.
- Planning.
- Forming.
- Well-Developed.



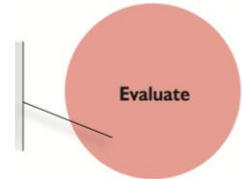
Indoor Air Quality (IAQ)

### KEY DRIVER:

Evaluate Your Results for Continuous Improvement

#### EVALUATE

- Solicit Feedback
- Capture Return on Investment



Indoor Air Quality (IAQ)

## Applying the Framework

### Evaluate

Panel Discussion about the Evaluate Driver

## Applying the Framework: Action Planning Guide

Rate how your own program shows up for the Evaluate Driver.

- No Action.
- Planning.
- Forming.
- Well-Developed.



Indoor Air Quality (IAQ)

## Applying the Framework

Each speaker will answer the question  
 “How have you utilized the Framework to  
 address specific technical solutions in your  
 school district?”



Indoor Air Quality (IAQ)

## Applying the Framework: Action Planning Guide

At your tables, share your ratings and collect strategies from  
 one another.



Indoor Air Quality (IAQ)

## National Network – Connections to Spur Action

*Strengthening the National Network through Regional Pacing Events*



## Exhibitor Expo

Ian Hadden, Energy/Sustainability Services Manager,  
 Fanning Howey

FANNING HOWEY



Indoor Air Quality (IAQ)

## Exhibitor Expo

- U.S. EPA Region 6
  - School Environments
  - Children’s Environmental Health
  - Lead Based Paint
  - Pollution Prevention
- Republic Services
- Council of Educational Facilities Planners International
- Region 6 Pediatric Environmental Health Specialty Unit
- Texas Department of State Health Services
- Texas Energy Managers Association
- North Texas Green School Committee
- Asthma and Allergy Foundation of America



Indoor Air Quality (IAQ)

## Exhibitor Expo

### Scavenger Hunt Instructions

- Record requests and offers from exhibitors in your Action Planning Guide handout. Ask exhibitors to initial by the Technical Solution you discussed and stop by the EPA table to drop off your raffle ticket.



Indoor Air Quality (IAQ)



## Reception, Dinner and Networking

5:00 – 7:00

*And then prizes!*



Indoor Air Quality (IAQ)

## Highlights

- Leadership Voices and Call to Action
- Framework for Effective IEQ Management
- Taste of the Technical Solutions
- Hunt for Resources



Indoor Air Quality (IAQ)

## Reception/Dinner

Dr. James R. Veitenheimer,  
Superintendent,  
Keller ISD



Anne Crowther, Program Manager,  
Children's Medical Center - Dallas



Indoor Air Quality (IAQ)

## Healthy Schools

Keller ISD's Focus on Indoor Environmental Quality

## Keller ISD at a Glance

- Serves 9 communities
- 33,000 students
- 3,500 Employees
- 2,100 Teachers
- 33,000 Students
- 39 Campuses and 4 Additional Facilities
- Fast Growth District
  - 18 New Campuses in Previous 10 Years

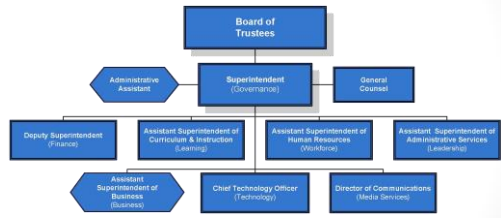
## Keller ISD at a Glance

- 5-Star FAST Rating for Financial Efficiency
  - Two years in a row
- 2010 Texas Safe Schools Award
- TASBO Awards of Merit for Purchase and Operations
- College Readiness Recognitions by ACT
- Two State Teachers of the Year (2007, 2008)
- 10 National Merit Finalists (2011-2012)

## District Organization

- District Administration divided into 8 “Functions”
  - Business (Maintenance and Operations, Transportation, Child Nutrition, Construction & Planning)
  - Finance (Payroll, Purchasing)
  - Governance (Superintendent, General Counsel)
  - Leadership (Campus/Program Administration)
  - Learning (Curriculum & Instruction)
  - Media Services (Communications)
  - Technology
  - Workforce (Human Resources)

## District Organization



## Continuous Improvement

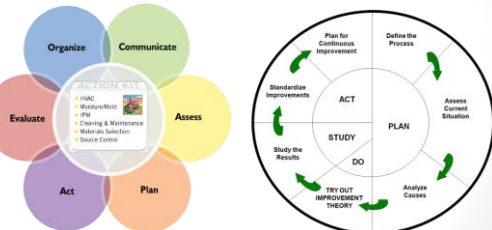
- Baldrige Education Criteria for Performance Excellence
  - Adopted 2008
- Began with senior leadership
- Maintenance and Operations brought in-house around same time period
- Renewed M&O focus on Strategic Priorities

## Continuous Improvement

- Operations reevaluated role in “Educational Excellence”
  - “How can what we do affect student performance in the classroom?”
- Monitoring IAQ became important strategy to “Educational Excellence”
  - Healthier environment = better student/staff attendance
  - Better attendance = greater performance

## Campus Environment Quality

- Employed EPA Tools for Schools IAQ Management Program



## Campus Environment Quality

Keller ISD  
229007

BUILDINGS, GROUNDS, AND EQUIPMENT MANAGEMENT CL  
(LOCAL)

COMMITMENT  
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.

ENVIRONMENTAL STEWARDSHIP  
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.

RESPONSIBILITIES  
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.

## Campus Environment Quality

- Indoor Air Quality
- Green Initiatives
- Cleaning Products and Procedures
- Building Construction Materials
- Focus on LEED Concepts
- Waste Management
- Energy Consumption
  
- Timberview Middle School (2010) epitomizes all of these efforts

## Campus Environment Quality



## Sobering Statistics

- 50% of all illness is caused or aggravated by poor IAQ
- About 20% of all schools have problems linked to IAQ
- U.S. children miss more than 14 million days each year because of asthma due to poor IAQ
- Average productivity loss due to poor IAQ is between 3 and 7 percent
- 80% of parents believe that poor IAQ can have a direct negative effect on a student's academic performance

## National Studies

- IAQ is consistently ranked as a top five environmental risk to public health
  - Impacts student/teacher attendance and performance
  - Can strain relationships among school administration, parents and staff
  - Can create negative publicity/liability

## Attendance vs. Performance

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

## National Studies

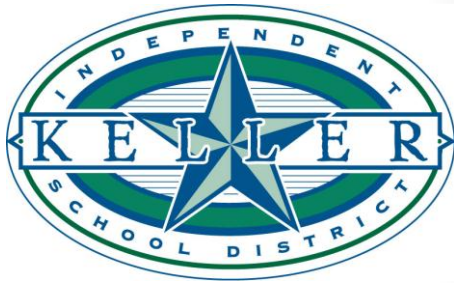
- Improved Health translates into an enhanced educational environment for students
  - 70% reported that students perform better and have fewer absences in green schools
  - Related studies show improved standardized test scores and other educational markers

## Results

- Increase in Test Scores
  - Over three years, 10.1% Increase in State Assessment scores
- Increase in Scholarships Offered
  - Over three years, 65.4% Increase
- Reduce Cost of Operating Facilities
  - Over three years, .008% Decrease in operating cost per square foot

## National Recognition

- 2009 National Great Start Award
- 2009 National Leadership Award
- 2010 National Excellence Award
- 2011 National Model of Sustained Excellence Award
- LEED Silver Level Certification by the U.S. Green Building Council



### Asthma Management Program

Dallas, Texas

### Statistical Information

- Asthma is the most common chronic disease of childhood affecting an estimated 6.5 million children
- Asthma is the third-ranking cause of hospitalization among children under 15 and accounts for 1/3 of all pediatric emergency room visits
- Incidence of asthma is increasing most rapidly in the under five age group
- One in thirteen children have asthma
- Asthma is the leading cause of school absence

EPA, Indoor Environment Division, May 2007

Dallas, Texas  
Privileged and Confidential



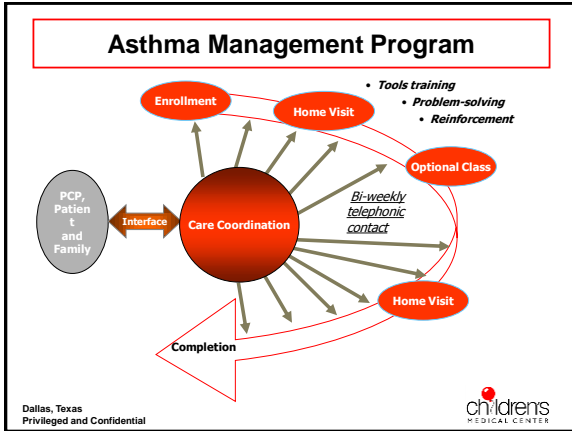
### Impact On Our Community

- In Dallas County an estimated 56,000 children have asthma
- In the state of Texas 1 in 10 children have asthma
- Asthma is one of the top three admitting diagnoses to Children's Medical Center Dallas
- The estimated annual cost for treating asthma in children younger than 18 is between \$2.0 and \$3.2 billion.

State of the Air: American Lung Association 2008 [online] <http://www.stateoftheair.org/>  
Wangli Y, Dong Y, Wheeler L. "Direct and Indirect Costs of Asthma in School-Age Children." Preventing Chronic Disease 2(1); [serial online]. January 2005.

Dallas, Texas  
Privileged and Confidential





- ### Environmental Triggers
- Child's Bedroom**
- Window coverings other than blinds
  - Ceiling fan are absent or dust free\*
  - Closet doors are closed\*
  - Toys are enclosed\*
  - Clothes are in drawers or enclosed\*
  - Bedroom is dust free\*
  - No live plants\*
  - Cheesecloth or filters over air vents
  - No pets
  - Pillow encasements in use\*
  - Mattress covers in use\*
- Other living areas**
- Dust free\*
  - No deodorizers\*
  - No water leaks\*
  - No tobacco smoke
  - No mold\*
  - No cockroaches\*
- \* Indicates statistical significance in the change from the 1<sup>st</sup> to the 2<sup>nd</sup> home visit
- Dallas, Texas  
Privileged and Confidential
- 

### Key Components

- Physician Involvement
- Child Specific and In-Home Education
- Teaching Self-Management Skills
- Reinforcing the Asthma Action Plan
- Environmental Assessment and Trigger Mitigation
- Community Involvement
- Care Coordination and Follow-up

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- ### Program Results
- 88 percent reduction in related inpatient admissions
  - 77 percent reduction in related ER visits
  - 29 percent increase in asthma quality-of-life scores
  - 71 percent reduction in missed school days**
  - 74 percent reduction in parental missed work days
  - 20 percent reduction of triggers in the home
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- 

### Taylor's Experience

- Taylor diagnosed with asthma at 18 months. Referred to the program at age 11. In the six months prior to program participation:
  - missed 5 school days
  - one ER visit
  - one IP hospitalization
- Key issues addressed in program:
  - environmental triggers in home
  - non-compliant with her medication
- During the 6 month program: symptoms and control improved, missed only one day of school, and had no ER or IP visits

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- ### Advocacy and Community Involvement
- North Texas Asthma Consortium
  - Asthma Coalition of Texas
  - American Lung Association
  - Association of Asthma Educators
  - American Academy of Allergy, Asthma and Immunology
  - Camp Broncho
  - Community Health Fairs
  - Head Start
  - School Nurse Education Programs
  - Baylor School of Nursing Education Programs
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**National Capabilities** 





We operate in 40 states and Puerto Rico

**Our Business Today** 



- \$8.2 billion in annual revenue
- \$19.5 billion total assets

**Our Business Today** 



- 376 hauling companies
- 223 transfer stations

**Our Business Today** 




- 78 recycling plants
- 193 operating landfills

**Our Business Today** 



- Our 31,000 employees deliver services to our customers nationwide

**Our Business Today** 



- 73 landfill gas and renewable energy projects
  - Environmental benefit equal to removing 3.9 million cars from the road
  - The nation's only landfill solar energy cover

**Environmental Sustainability** 

**By the Numbers**

- More than 1,000 alternative fuel trucks in our fleet including
  - Nearly 500 compressed natural gas (CNG) trucks
- More than 3 million tons recycled annually
- Renewable energy provided for more than 393,000 homes





# School Recycling



**Benefits of School Recycling with Republic Services** 

- Program Partnership – We design the recycling program around the priorities you set for your School District.
- Weights & Measures - We will provide the tonnage information for each school.
- Dedicated Account Manager to work with you from the the onset to help build and grow your recycling program.

**Benefits of School Recycling with Republic Services** 

- Provide training for your Staff, Janitorial Staff and Students. Set up and train Green Teams if needed.
- Implement a Recycling Kick-Off Campaign.

**Our Values** 

*Responsible*

*Relentless*  *Resourceful*

*Reliable* *Respectful*






**Republic Services**

**An Environmental Partner You Can Count On**



**Thank you!**

**See you tomorrow!**



Indoor Air Quality (IAQ)