

CLIMATE DISASTERS AT SCHOOL: Who's In Charge?

APHA Session 3137

Schools as Shelters:

Impacts of severe weather events on schools and their communities

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www.HealthySchools.org



Presenter Disclosures

Claire L. Barnett, MBA

- (1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose.

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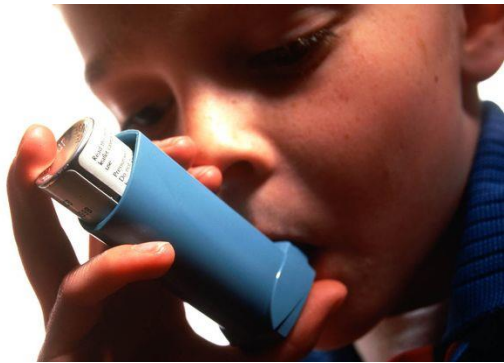


About Children / About Schools

Children are **not** just little adults.

Schools are **not** just little offices.

All states require children to attend school.



There are **more schools than zip codes** in the U.S:
130,000 schools enroll 55M children.



Existing Risks in Schools

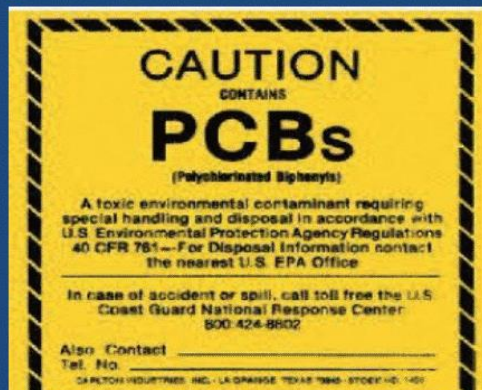
Physical location compromised: wet, contaminated, hazards

Indoor risks to health, thinking and learning: legacy toxics such as asbestos, PCBs, lead; plus indoor/outdoor air quality; moisture/molds; pesticides/pests; radon; asthma/allergy triggers; **mercury**, chemical fumes, **chemical management** and disposal; vehicle idling; inadequate facility maintenance and repair; noise; poor lighting; poor sanitation; overcrowding; high heat and humidity

Old buildings, poor maintenance: av age ~ 50 years



Common Indoor Hazards in Schools



Chemical Risks in Schools

New York State Example



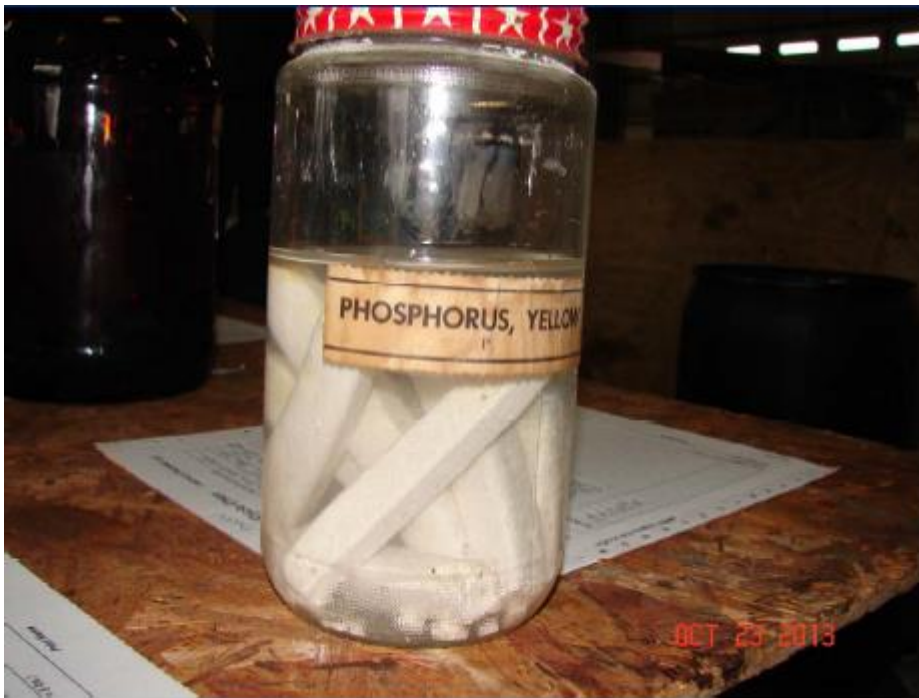
Chemical Risks in Schools

New York State Example



Chemical Risks in Schools

New York State Example



Climate Change → Risks to Children

Vulnerable Segments of the Population

Communities of color, low income, children at extra risk

Profile of Children in Public Schools Today

Nearly half are children of color; nearly half are in poverty; more health and learning issues; fewer school buildings; fewer federal and state dollars; fewer staff

Climate Change Impacts on Children

Displacement/separation; injuries; asthma/allergies; infectious diseases; missed school days; pests and pesticides; high heat days (lower test scores); IAQ/IEQ



Changing Climate v. School Facilities

Current problems of school buildings:

- No A/C, inadequate electrical systems
- Pests/weeds
- Poor facilities vulnerable to weather
- Do not meet current codes
- Not built as shelters
- Fewer nonmandated staff: facility workers & building trades, nurses, aides



Short-sighted Facility Retrofits = More Risks to Children

Sealed Buildings

**Reduced
Ventilation**

**More Air
Conditioning**



**Building
Renovations**

“Green” Buildings

More Pesticides



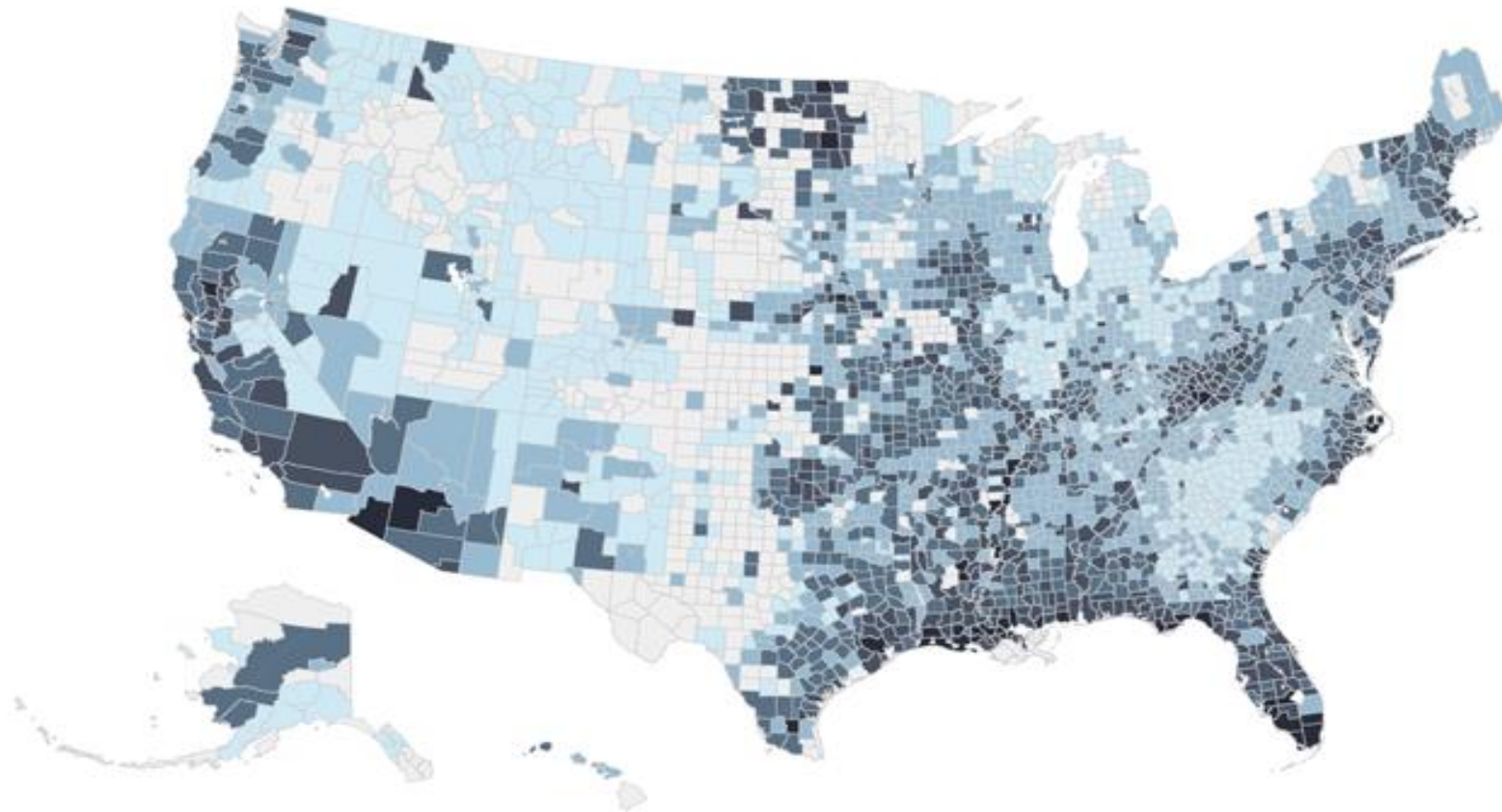
Severe Weather v. School Facilities



Figure 1

School Flood Risk Is Distributed Widely Across the U.S.

Overall composite flood risk scores



100 counties with highest flood risk include >6,000 schools enrolling 4M children

Risk score

Lowest

Highest

Note: Counties with no shading in this figure were either not included within the Federal Emergency Management Agency Flood National Hazard Layer data set or within National Center for Education Statistics database.

Source: ICF

© 2017 The Pew Charitable Trusts



Flooding

**ILLINOIS
Granite City**

**Including air quality
testing, school
delayed 25 days,
9/2019**



Heat & Flooding Outside

MISSOURI

High Heat Warnings Aug. 11, 2019

Flash Flooding

Aug. 26, 2019

Eureka High School closed.

Eureka HS also flooded in Dec. 2015



Heat & Flooding - Inside

MISSOURI

**High Heat Warnings
Aug 11, 2019**

**Flash Flooding
Aug 26, 2019**

**Rockwood District's
Eureka High School
closed.**



Flooding

TEXAS

**Houston
flooding
Sept. 2019**



Flooding

OKLAHOMA

May 2019 storm floods halls, enters eight classrooms, two bathrooms, library, kitchen, gym and offices. School not in flood zone.

Most carpeting affected.



FLORIDA

Cat 5

Hurricane

Dec. 2018

**Tampa Bay
school used
as shelter.**

**Reopens for
students in
spring 2019**



US VIRGIN ISLANDS

April 2019,
18 months
after major
hurricanes,
students in
temporary
classrooms.

Educators
report
trauma/MH
issues.



HEAT WAVE

Aug. 27, 2018



Forecast Record High Temperatures
TODAY

*Heat index reaches 100 in Philadelphia, PA.
Afternoon classes cancelled. School closures
MA, NJ, CT, OH reported.*

Protect Yourself

From the HEAT when outside

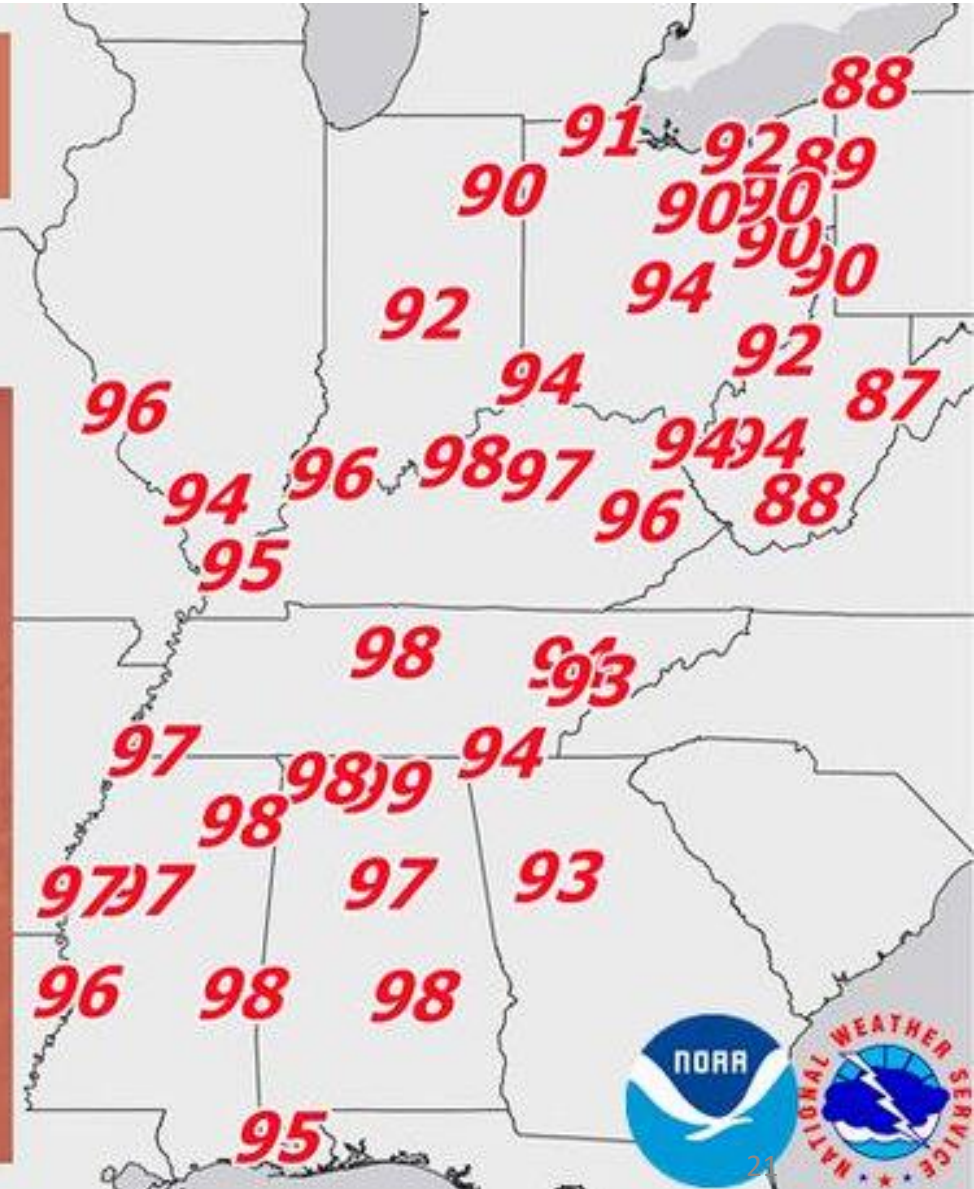
Drink plenty of water

Apply sunscreen regularly

Dress in lightweight and light-colored clothing



weather.gov/heat



INDIANA

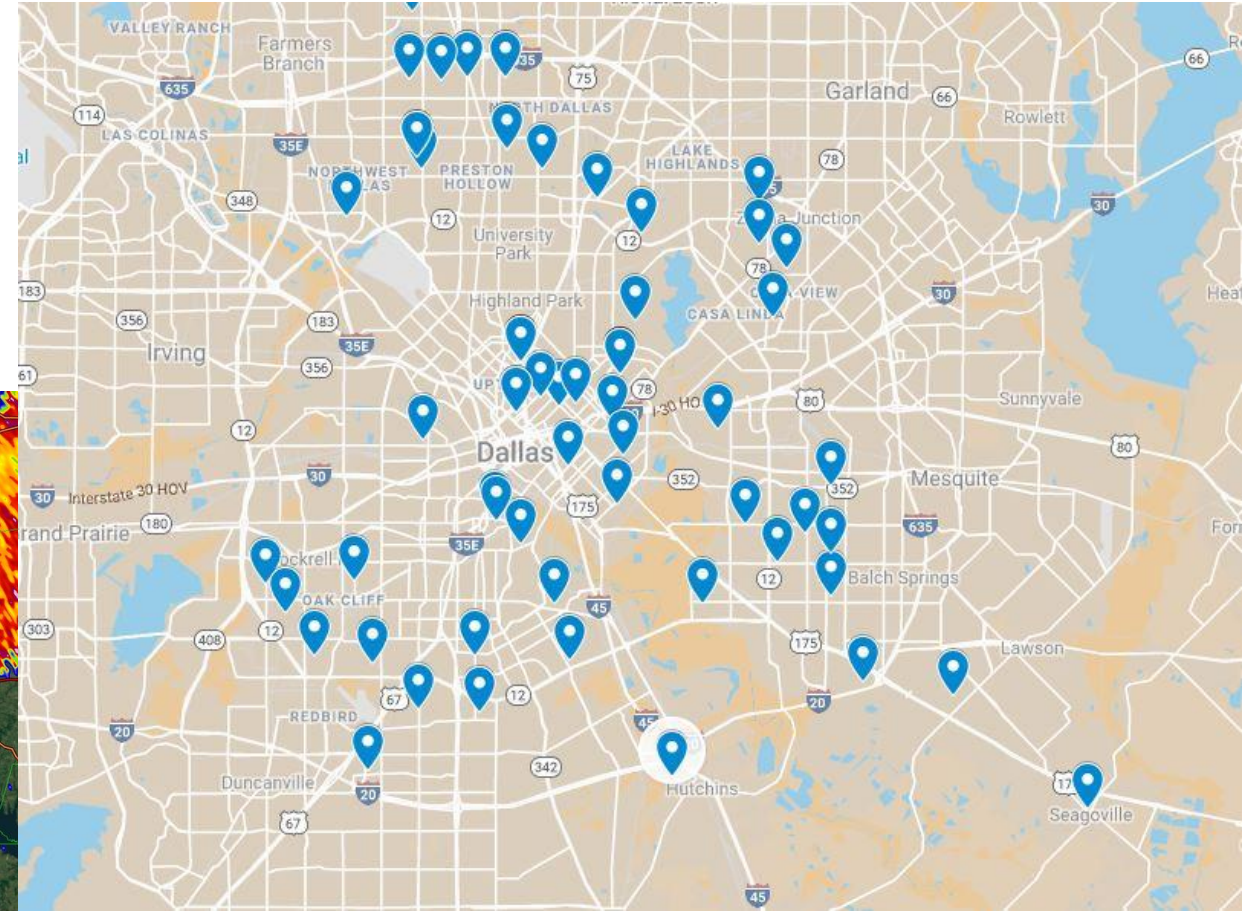
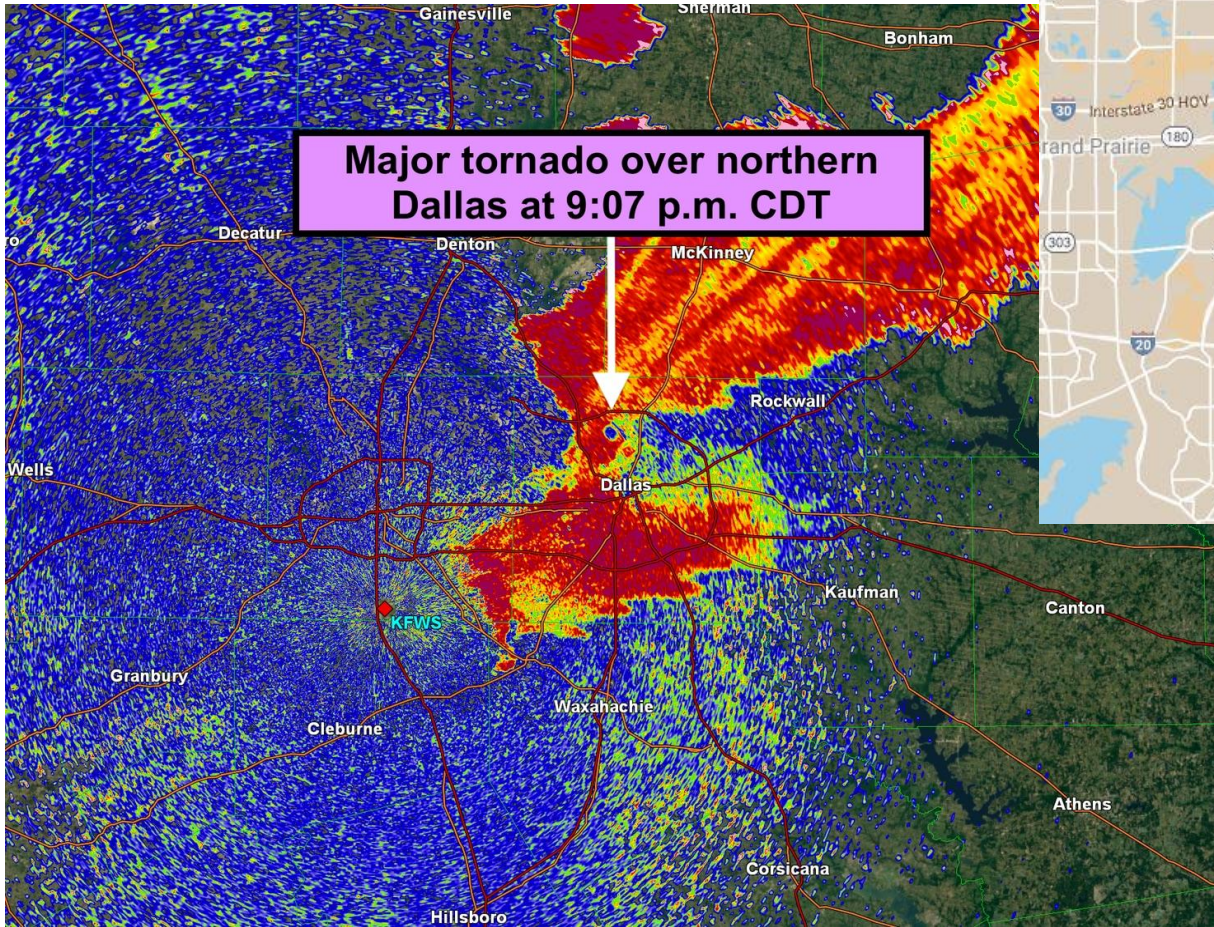
June 19, 2019

*Tornado
damages
dozens of
classrooms at
Beech Grove
HS.*



TEXAS

Super cell thunderstorm over Dallas lifts debris 4 miles into the air, Oct. 20, 2019



TEXAS – super cell damage, St Mark’s school, Sunday, Oct. 20, 2019



“The smell was atrocious. Our eyes were burning and throats were on fire before the students even arrived.” *LAUSD teacher, Oct. 2019*

REOCCUPYING SCHOOLS



CLIMATE DISASTERS AND SCHOOLS: Who's In Charge?

Schools of Ground Zero; Hurricane Katrina; Deepwater Horizon spill; Super Storm Sandy; Ebola outbreak in the US; Hurricanes Harvey/Irma/Maria ...

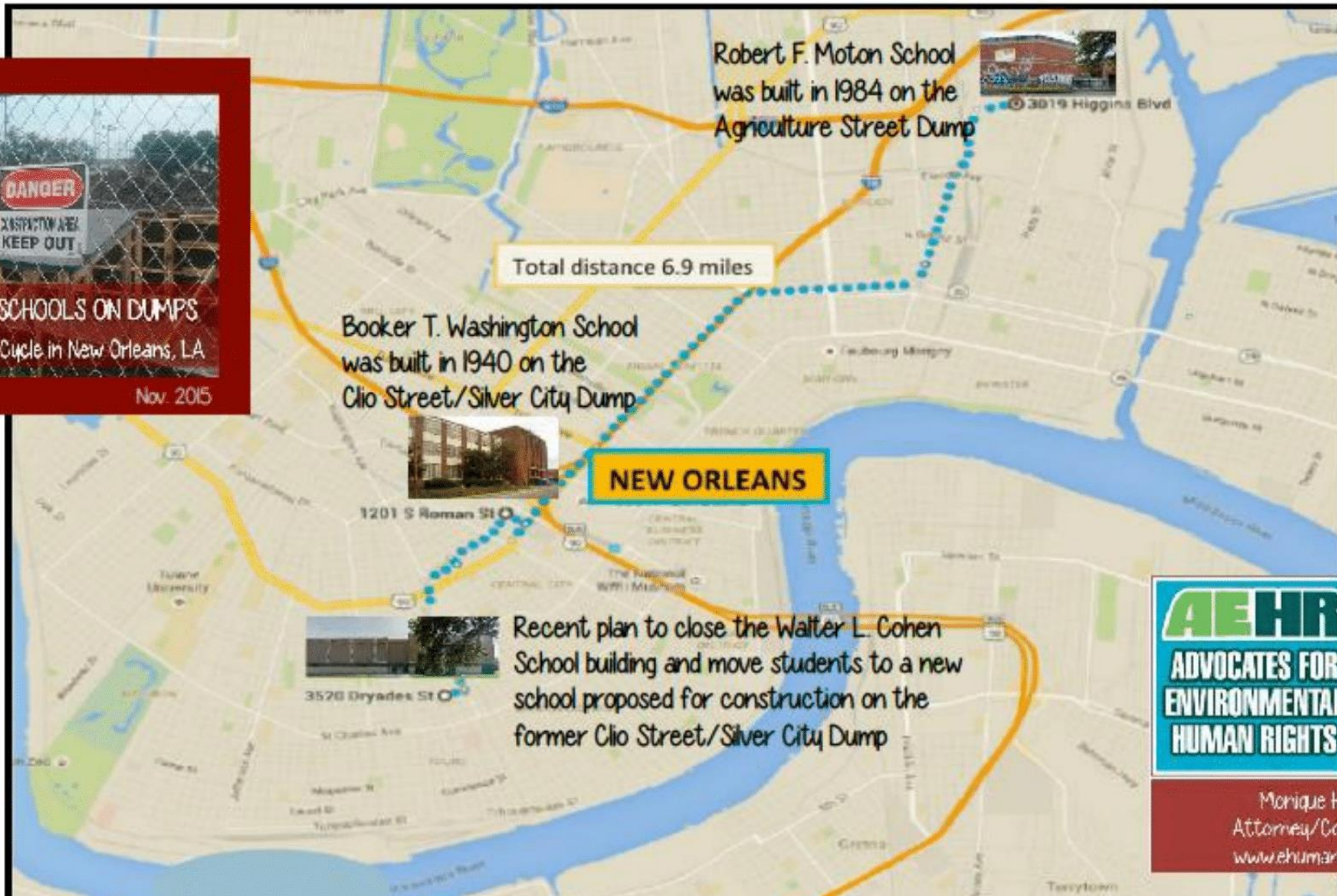
- **No** public agencies with child-specific environmental public health advisories aimed at schools/childcares
- **No** regulatory agency formally “clears” a damaged school for safe reoccupancy by children
- **ISSUES:** public health v. LEAs (entry, closure, oversight)



LOUISIANA

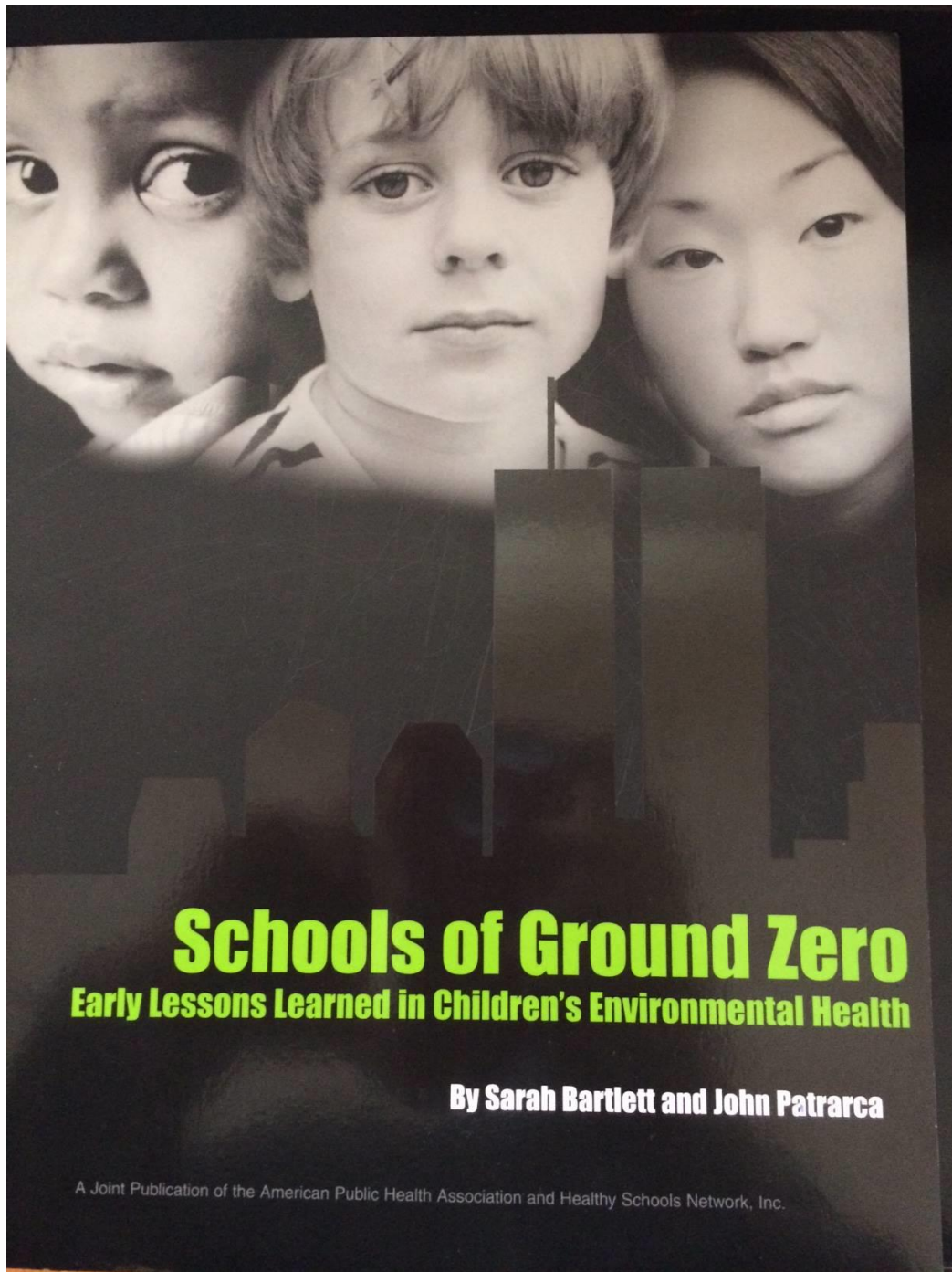


Nov. 2015



Monique Harden
Attorney/Co-Director
www.ehumanrights.org







CALIFORNIA

Oct. 2019: LAUSD school reopens, contaminated with **wildfire** smoke.

Pictured: school protest; classroom soot on wipe.

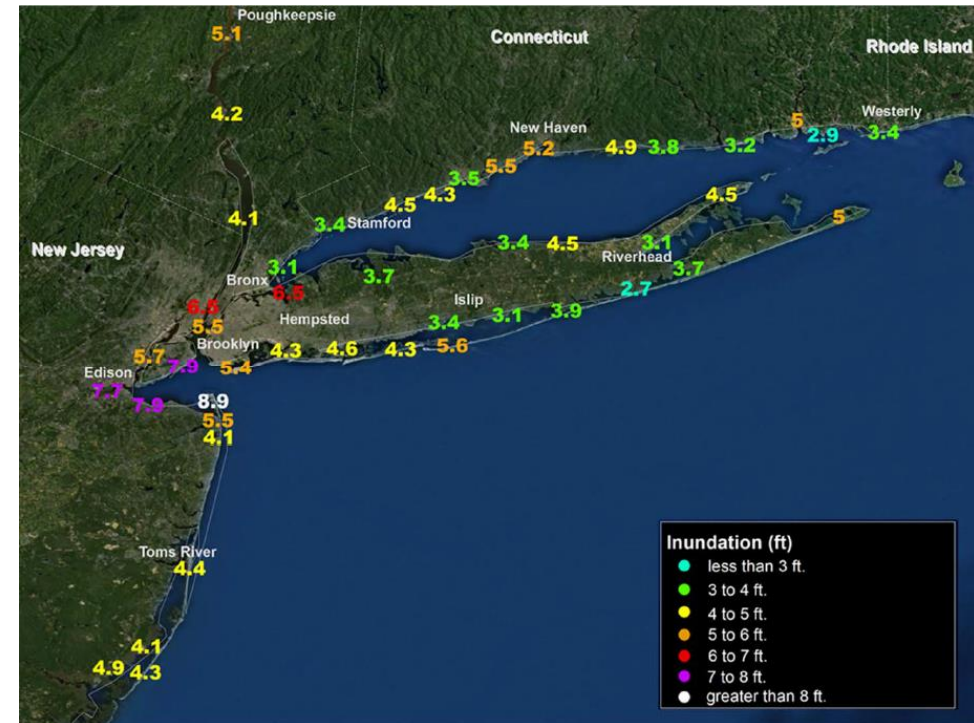


Who's In Charge (of Public Health)?

New York State

2001: *Schools of Ground Zero* documentary report: no federal, state, or city agency interventions for children. **Schools re-opened by NYC chancellor.**

2012: Super Storm Sandy 170+ public schools in or adjacent to storm surge. **State Education memo advises schools they can re-open** if they have power, water, communications.



Damaged School Facilities: Who's In Charge?

- **Schools as shelters:** Red Cross voluntary program, local option
- **FEMA:** with state/local teams, scans for structural damages; defers to state/local teams for local needs; no directive or guidance re EH hazard assessments
- **States: No EPH system for children at risk or with exposures**
 - Adopting IBC, but can delegate codes to counties/cities
 - 46 have a school facility office
 - 38 have school construction program
 - 28 *self-report tools* to assess school buildings



Who's In Charge: State/Local Teams?

University of Arizona College of Public Health
Seminar in Preparedness, EHS 489-589, October 2018

- **N = 23 students completed voluntary survey**
- **5/15 AZ found state school facility office; 1/6, CA office**
- **23 found all-hazard planning guides for their states**
- **Facility H&S checklists found for CA (2), AZ (1), NJ (1)**



Schools as Shelters Who's In Charge?

APHA adopted policy calls for [Establishing Environmental Public Health Systems](#) for children at risk or with suspected exposures at school. It also urges more research on childcare facilities to document conditions and impacts on children.

[All Hazards Preparedness Act of 2019](#) renews a national advisory committee on disasters and the advisory committee on children and disasters.



Preliminary Recommendations

- **Research and Advocacy**
 - Preventing risks to children's environmental health and addressing impacts to their compulsory workplaces must be incorporated into climate research and advocacy.
- **Improve Efforts by Agencies**
 - system of public health advisories must address vulnerability of children pre and post disaster and reach the education sector constituencies
 - children at risk or with exposures must have a system of EPH services
 - disaster damage assessments must include EH risks to children where they live, learn, and play
 - prevention of environmental exposures must include finding and eliminating toxics
 - schools designated shelters should have special financial support

Healthy Schools Network

[HealthySchools.org](https://www.healthyschools.org)

Who We Are. What You Can Do. I&R Fact Sheets. News

[Green Cleaning and Healthy Products](#)

Free Toolkits. Posters. Policies

[NationalHealthySchoolsDay](#)

Join Our Partners for the 18th Annual in April 2020

info@healthyschools.org



Major Sources

Media and Picture Credits

- **Red Cross *Ready Rating***, voluntary program for businesses, organizations and schools. <https://www.readyrating.org/How-It-Works/Frequently-Asked-Questions>
- ***Towards Healthy Schools: Reducing Risks to Children***, Healthy Schools Network (2016)
- ***Climate, the Indoor Environment and Health***, Institute of Medicine (2011)
- ***Schools of Ground Zero***, Bartlett and Petrarca, Healthy Schools Network and American Public Health Association (2002)
- ***Hurricanes Irma and Maria in Puerto Rico, Building Performance Observations, Recommendations, and Technical Guidance***, FEMA P-2020, October 2018
- ***Protecting the Health of Children: A National Snapshot of Environmental Health Services***, American Public Health Association (2019)
- **American Public Health Association**, policy 201713 *Establishing Environmental Public Health Services for Children at Risk or with Suspected Exposures in Schools* (2017)
- **Pictures, graphics, media links, all slides:** <https://tinyurl.com/y3rdxx37>