Im ac ⊠ f Add e⊠⊠⊠g Ai P ll i ⊠i⊠Ag ic l al C mm ⊠i ie⊠

Pi⊠ i⊠i⊠g he P blem
Particulate matter, ozone, pesticides, and ammonia, a common product of animal farming, can worsen asthma. Air pollution is elevated in rural agricultural communities; linked to poor respiratory health in children.

Ide⊠ if i⊠g S l i ⊠⊠
Portable HEPA cleaners can reduce indoor triggers of asthma.

Im ⊠i⊠g Heal h
Combining HEPA cleaners with in-home asthma education programs can reduce asthma symptoms and improve asthma control in children.

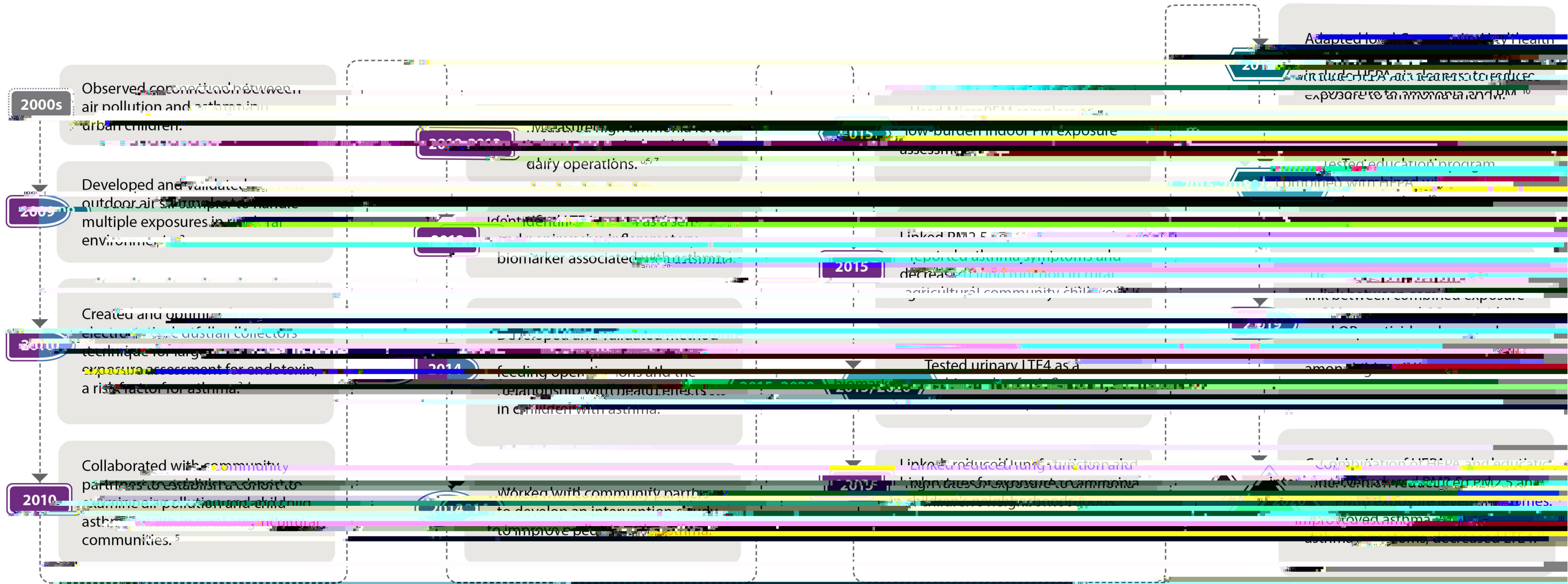### Sha i⊠g Re⊠ l ⊠
Disseminated ndings through community events, health fairs, infographics, radio reports, a radionovela, and meetings with agency leaders.

B ildi⊠g C mm ⊠i Ca aci
Built capacity in partner organizations to conduct health assessments, collect samples, and work with air quality monitoring equipment.

Fundamental Questions

Application and Synthesis

Implementation and Adjustment

Policy and Practice

Impact

2000s

Observed correlation between air pollution and asthma in urban children.

2009

Developed and validated an outdoor air sampler to handle multiple exposures in rural environments.

Created and optimized electrostatic dust fall collectors technique for large exposure assessment for endotoxin, a risk factor for asthma.

2010

Collaborated with community partners to establish a cohort to examine air pollution and childhood asthma in rural agricultural communities.

Measured high ammonia levels in dairy operations.

Identified LTE4 as a biomarker associated with asthma.

Developed and validated method feeding operations and the relationship with health effects in children with asthma.

Worked with community partners to develop an intervention study to improve pediatric asthma.

2015

Linked PM2.5 reported asthma symptoms and decreased lung function in rural agricultural community children.

Tested urinary LTE4 as a

Linked reduced lung function and high rates of exposure to ammonia in children recently

Adapted local community health

Used Micro-PEM samplers for low-burden indoor PM exposure assessment.

Tested education program combined with HEPA

link between combined exposure

improved asthma
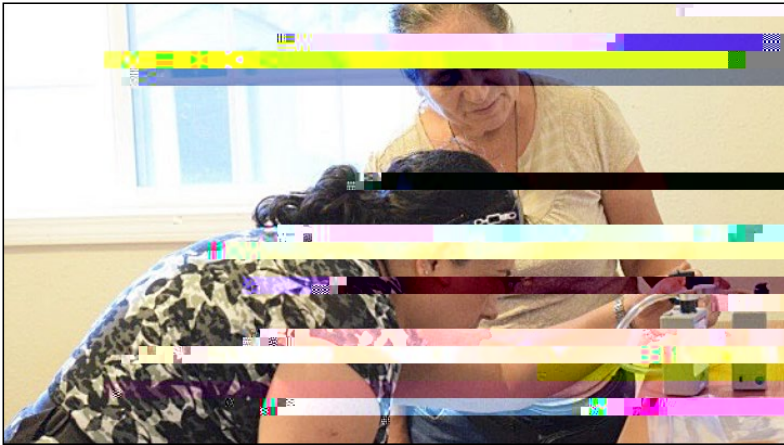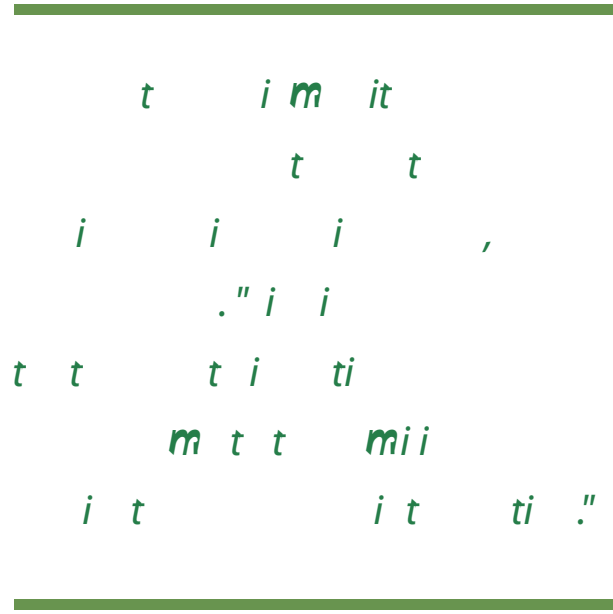asthma symptoms, decreased LTE4

Challenges and Lessons Learned

Challenge: Researchers had to address families' logistical concerns about participating in the study.

Lesson Learned: Researchers purposefully found a sensor that met the needs of family members. The MicroPEM technology was developed by other NIEHS researchers and is small, quiet, and unobtrusive.[11]

Challenge: The families who would most benefit from this intervention — immigrant Latino children with asthma living in rural agricultural Washington — can be reluctant to participate in medical research.

Lesson Learned: The research team built and sustained a long-standing partnership with the Northwest Communities' Education Center, Radio KDNA, the Yakima Valley Farmworkers Clinic, and Heritage University. The families were more willing to participate in the study because of the trust and goodwill established over time.
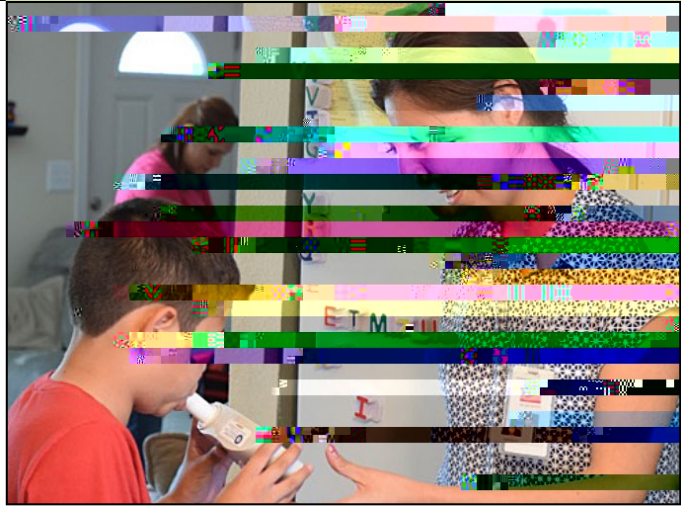

Engaging With Communities

The research team trained and fostered job skills within local partner organizations, building their capacity to conduct community-based research and enabling them to tackle other challenges within their community.