Assessing Imperial Valley Respiratory Health & the Environment (AIRE) Study

Fall 2022

USC AIRE Study
AIRE Study Overview

What is the lung health of children in Imperial Valley?

**Partner with schools**
- Partnerships
- With whom?

**Lung Function Testing**
- We assessed children's lung health
- Why?

How do environmental factors influence health?

**Health surveys**
- Who?
- Duration of study
- Health surveys

**Reporting results**
- Annual reports
- Community workshops
- Collaboration for action
- Infographics

Elementary school children
- 5 years
- Given in the fall & spring each year

Partnerships with schools
- Enroll 5 schools in the Northern/Central Imperial Valley
- Parents
- Teachers
- School officials
- Principals

To measure lung capacity
Study participants at a glance:

- A total of 744 students participated in the AIRE Study between 2017-2022
- Most students started the study when they were in 2nd or 3rd grade
- More girls than boys participated in the AIRE Study
<table>
<thead>
<tr>
<th>School</th>
<th>Participants in AIRE Study</th>
<th>Distance to nearest major roadway</th>
<th>Distance to agricultural field</th>
<th>Agricultural burns within 1 mile, 2016-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>School A</td>
<td>200 students</td>
<td>8.2 miles</td>
<td>2,200 ft</td>
<td>1</td>
</tr>
<tr>
<td>School B</td>
<td>47 students</td>
<td>15 miles</td>
<td>2000 ft</td>
<td>8</td>
</tr>
<tr>
<td>School C</td>
<td>273 students</td>
<td>0.43 miles</td>
<td>600 ft</td>
<td>0</td>
</tr>
<tr>
<td>School D</td>
<td>123 students</td>
<td>750 ft</td>
<td>600 ft</td>
<td>0</td>
</tr>
<tr>
<td>School E</td>
<td>101 students</td>
<td>1000 ft</td>
<td>300 ft</td>
<td>5</td>
</tr>
</tbody>
</table>
Physical Activity and Transportation

55% of children play a sport at least twice per week

Most frequent sports and physical activities

- Baseball, softball: 20%
- Soccer: 24%
- Basketball: 13%
- Dance: 10%

42% of children spend at least half of their weekdays after school OUTSIDE

Modes of transportation to school

- Car/Van: 74%
- Walk: 16%
- City Bus: 7%
- School Bus: 38%
14% of children are exposed to secondhand smoke at home.
Children's respiratory health

29% of children regularly woke up at night due to wheezing or problems breathing.

**Allergies**
- School A: 78%
- School B: 74%
- School C: 63%
- School D: 76%
- School E: 80%

**Recurrent cough or bronchitic symptoms**
- School A: 38%
- School B: 50%
- School C: 33%
- School D: 37%
- School E: 28%

**Wheeze**
- School A: 40%
- School B: 35%
- School C: 37%
- School D: 44%
- School E: 38%
Great news! 88% of children had normal lung capacity
Asthma is the leading, serious, chronic illness among children in the United States.

Lifetime prevalence of asthma among children

Lifetime prevalence of wheeze or asthma-like symptoms among children NOT diagnosed with asthma

* Source: California Health Interview Survey
Environmental Exposures and Asthma

Air quality and environmental exposures are risk factors in respiratory health. Conditions like asthma can be exacerbated due to poor air quality.

Asthma related emergency room visit rates for children ages 5-17 in Imperial County are the highest of any county in California.

<table>
<thead>
<tr>
<th>Location</th>
<th>visits per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial County</td>
<td>125</td>
</tr>
<tr>
<td>Riverside County</td>
<td>54.4</td>
</tr>
<tr>
<td>San Diego County</td>
<td>39.0</td>
</tr>
<tr>
<td>California</td>
<td>58.4</td>
</tr>
</tbody>
</table>

* Source: California Department of Public Health, California Asthma Dashboard, 2019.
Preliminary research findings

Higher levels of PM in Imperial County are associated with more wheeze symptoms among AIRE Study participants.

Associations between air pollutants and breathing problems are stronger among children with asthma.
27% of parents of AIRE Study participants reported that they were *often* stressed.

The main sources of parents' stress were:

- **parental** (concern for child's well-being or safety, difficult interactions with children, etc.)
- **familial** (family conflicts, living with or caring for relatives)
- **socioeconomic** (feeling lonely/isolated, in debt, single parent, not having enough money, etc.)

14% of parents of asthmatic children regularly felt "helpless" when their child experienced breathing problems.
All of us at the Children AIRE Study thank you for your support over the years and look forward to continued partnership to improve children's health in Imperial Valley.