Imperial County, California

Asthma Report 2008

Based on data collected from 2003-2005

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Table of Contents

Table of Contents ................................................................................................................................................................................................................. 2
Table of Figures ................................................................................................................................................................................................................... 4
Acknowledgements .............................................................................................................................................................................................................. 5
Executive Summary ............................................................................................................................................................................................................. 6
   Individuals and Families Affected by Asthma .......................................................................................................................................................... 6
   Environmental Triggers of Asthma ............................................................................................................................................................................ 7
Face of Asthma in Imperial County ...............................................................................................................................................................................10
Environmental Racism & Inequality .............................................................................................................................................................................13
Imperial County Demographics ......................................................................................................................................................................................15
   Socioeconomic Characteristics .............................................................................................................................................................................. 15
   Housing Stock ................................................................................................................................................................................................................ 15
   Transportation ............................................................................................................................................................................................................... 16
   Rates of Medical Insurance .................................................................................................................................................................................... 16
Asthma Indicators Prevalence ........................................................................................................................................................................................17
   Asthma Diagnosis.......................................................................................................................................................................................................... 17
   Race / Ethnic Disparities............................................................................................................................................................................................. 17
Asthma Indicators: Mortality and Healthcare Usage................................................................................................................................................19
   Asthma Mortality .......................................................................................................................................................................................................... 19
   Race / Ethnic Mortality Disparities ......................................................................................................................................................................... 19
   Hospitalization Rates .................................................................................................................................................................................................. 20
   Race/Ethnic Disparities.................................................................................................................................................................................................. 20
   Geographic Disparities .................................................................................................................................................................................................. 21
   Age Disparities .............................................................................................................................................................................................................. 22
   Emergency Department & Urgent Care Visits ...................................................................................................................................................... 23
   911 Asthma-Related Calls .................................................................................................................................................................................................. 24
## Table of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1: Farmworkers in Imperial County</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Figure 2: Farmworkers are Exposed to Health Hazards</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Figure 3: Children in Imperial County</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Figure 4: Demographics by Race (2006 ACS)</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Figure 5: Mulberry Elementary School in the</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Figure 6: New River in Calexico</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Figure 7: Plant in Imperial County</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Figure 8: Agriculture in Imperial County</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Figure 9: Percent of Uninsured People with Asthma in Southern California Counties</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Figure 10: Percent of Population Ever Diagnosed with Asthma in Southern California</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Figure 11: Asthma Prevalence by Race/Ethnicity in Imperial County</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Figure 12: Deaths in Imperial County due to Asthma</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Figure 13: Hospitalization Rates per 100,000 Imperial County Residents due to Asthma by Ethnicity</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Figure 14: Hospitalization Rate per 100,000 Imperial County Residence due to Asthma, 2002-2004</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Figure 15: Hospitalization Rate per 100,000 Imperial County Residents due to Asthma by Age Group</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Figure 16: County Residents with Asthma who sought Treatment for Symptoms during past year at an Emergency Room or Urgent Care</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Figure 17: Imperial County EMS (2006)</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Figure 18: PM10 Annual number of Days Exceeding Standards in Imperial County,</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>Figure 19: PM2.5 Emissions</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Figure 20: Recent &amp; Historic Toxic Air Emissions from</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Figure 21: Average Charge per Hospitalization by Payer Type, 2000-2004</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>
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Executive Summary

This report summarizes available data and research, outlines the problem of asthma and health disparities in Imperial County, describes some of the work being conducted to address the problem, and highlights some policy recommendations and advocacy strategies.

Asthma affects thousands of children and adults in Imperial County. This inflammatory lung disease is one of the most common chronic childhood diseases affecting millions of children nationwide. Common symptoms include recurrent wheezing and coughing, difficulty breathing, and tightness of the chest. Asthma attacks can range in severity from inconvenient to life threatening.

Individuals in Imperial County are exposed to a variety of environmental health conditions including air quality, pesticide exposure, heat and climate change, and water quality and availability, issues which contribute to the asthma crisis in this county. Additionally, Imperial County’s socio-economic challenges such as poverty, unemployment, lack of health insurance, low educational attainment, old and substandard housing, environmental pollution, and limited healthcare services contribute to health disparities and asthma prevalence.

Individuals and Families Affected by Asthma
Asthma costs millions of dollars and impacts thousands of individuals and families in Imperial County across racial, ethnic, income, and other differences; however, the burden still falls on predominantly low-income families of color:

- Approximately 21,000 have been diagnosed with asthma in Imperial County.²
- 17% of children ages 0-14 and 11% of adults have been diagnosed with asthma at some point in their lives.³
- 9% of people without health insurance suffer from asthma.⁴

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⁴
A disproportionate number of young people are hospitalized due to asthma each year.\(^5\)

Asthma among the elderly is on the rise.\(^6\)

In 2003, approximately 2,000 county residents went to an emergency room or urgent care facility because of asthma.

Imperial County consistently has had the highest asthma hospitalization rate in California.\(^7\)

The highest measurable hospitalization rate per100,000 residents was in Brawley (178) followed by El Centro (156), Holtville (124), Imperial (121), and Calexico (115). Other areas of Imperial County had too few cases to be included in the analysis.\(^8\)

The average cost of hospitalizations was highest among Medicare recipients, followed by Private Insurance, “Other” insurance, and finally Medicare.

While asthma mortality rates have been declining, 10 people died of asthma in Imperial County from 2000-2004, compared to 16 between 1990 and 1997.\(^9\)

Currently, there is no system that tracks the incidence of asthma-related 911 calls.

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**Environmental Triggers of Asthma**

Imperial County residents are exposed to a variety of outdoor air environmental triggers of asthma and other respiratory illnesses:

- Although in the last 10 years, the toxic emissions have dropped from a staggering 35 tons per day, to a high 24 tons per day, particulate matter (PM\(_{10}\) and PM\(_{2.5}\)) and Ozone continue to be two areas of major concern.\(^{10}\)
- Indoor air quality assessments in Calexico schools found asthma environmental triggers in classrooms. A majority of the classrooms had elevated levels of

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\(^5\) California Office of Statewide Health Planning & Development (OSHPD) Discharge Data

\(^6\) California Office of Statewide Health Planning & Development (OSHPD) Discharge Data

\(^7\) California Department of Health Services Environmental Health Investigations Branch: California County Asthma Hospitalization Chart Book September 2003: Retrieved July 12, 2006, [http://www.californiabreathing.org](http://www.californiabreathing.org/)

\(^8\) California Office of Statewide Health Planning & Development (OSHPD) Discharge Data

\(^9\) California Office of Statewide Health Planning & Development (OSHPD) Discharge Data

\(^10\) Air Resource Board, California Environmental Protection Agency: The California Almanac of Emissions and Air Quality 2006 Edition, [http://www.arb.ca.gov/homepage.htm](http://www.arb.ca.gov/homepage.htm) and [http://www.arb.ca.gov/el/el.htm](http://www.arb.ca.gov/el/el.htm)
carbon dioxide above 1,000 ppm. In some portable classrooms, the CO2 levels were above 1,000 ppm with the systems operating.11

- Although a large portion (60%) of housing in Imperial County was built prior to 1979, few interventions and programs are available to address indoor air quality health hazards associated with asthma inside homes.
- Imperial County lacks interventions and programs to work specifically with farmworker families with asthma to address pesticide exposure, substandard housing, etc.

Families in Imperial County face many socio-economic challenges:

- Median household income in 2004 was $33,674 compared to $49,894 for the state of California.12
- Annual unemployment rate of 15.8% compared to 5.4% in California in 2005.13
- Approximately 28% of children age 17 and under live in poverty, in comparison with 20% statewide.14
- Of the County’s residents age 25 years and over, 41% did not complete high school or equivalency, nearly twice the California rate of 23%.15

While scientists continue to explore what causes asthma, it is clear that some environmental factors like air quality play a role in the onset of asthma in otherwise healthy people. Although there is no known cure for asthma, it can be managed by following a medical plan and reducing exposure to environmental triggers.16

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12 U.S. Census Bureau Small Area Income and Poverty Estimates, Retrieved July 26, 2006 from
16 Special thanks to The California Endowment’s Community Action to Fight Asthma (CAFA) project for allowing us to use asthma materials, logos, etc., to Public Media Center for their designs and to Regional Asthma Management and Prevention (RAMP) Initiative for coordinating asthma resources. http://www.calasthma.org/
The costs and impacts associated with asthma affect the entire community; therefore, prevention and management need to be addressed through policy and community interventions to reduce the burden of asthma in communities across California.
Asthma, an inflammatory lung disease, is one of the most common chronic childhood diseases affecting 6.3 million children nationwide and 1 in 6 children in California. Common symptoms include recurrent wheezing and coughing, difficulty breathing, and tightness of the chest. Asthma attacks can range in severity from inconvenient to life threatening.

Although asthma affects all ages, races, and ethnic groups in the United States, low-income, and some ethnic populations experience a disproportionate burden evidenced in higher rates of fatalities, hospital admissions, and emergency room visits due to asthma. Asthma rates are the highest among African-Americans, Latinos (Puerto Ricans), and populations in urban inner cities and rural communities across the U.S.

- In the United States, 14.2% of children ages 5-17 have been diagnosed with asthma at some point in their lives from 2003-2005.
- In California, nearly 1.3 million children ages 5-17 have been diagnosed with asthma at some point in their lives.
- In Imperial County, 17% of children ages 0-14 and 14.1% of the population have been diagnosed with asthma at some point in their lives.

17 USEPA, 2006. Asthma and Indoor Environments. (http://epa.gov/asthma/about.html)
20 California Health Interview Survey (CHIS). Lifetime Asthma Prevalence. 2007; Available at (http://www.chis.ucla.edu/)
The face of asthma in Imperial County is low-income, ethnically diverse, rural, multi-lingual, and binational. The ninth largest county in California by landmass, Imperial County had a population of 142,361 in 2000 of whom 72% were Latino, compared to 32% in California. The County’s population additionally includes 20% White, 4% Black, 3% Mixed, 2% Asian and 1% Native American.22 A substantial number (33%) of residents are foreign-born.23

Situating just north of the U.S.-Mexico border, with San Diego County to the west, Riverside County to the north, and Arizona to the east, Imperial County is especially illustrative of the binational region that has developed over time along the U.S.-Mexico border since 1848 when the U.S.-Mexico border was created. It is here where two sovereign nation states come into direct contact through the sharing of a common geographic space, the exchange of economic goods, and cross border flow of people.

The county’s economy is primarily based on agriculture, with other industries in the area including tourism and manufacturing. In the early 1900s the region was a barren desert.

Early developers saw that Colorado River could be diverted to supply irrigation water. By 1915, three hundred thousand acres were under cultivation producing vegetables, agronomic crops and livestock to feed the nation. According to the Imperial County Agricultural Commissioner, in 1999 Imperial Valley had 572,286 harvested acres worth $1,045,092,000. Leading crops in the area in 1999 are vegetables (122,063 acres -value $458 million, agronomic crops (368,517 acres -value $257 million), livestock (Value $220 million) fruit & nuts (5,812 acres -value $34.7 million), seed & nursery (75,894 -value $72 million, and apiary products ($3 million).

Despite the region’s agricultural bounty, Imperial County ranks among the poorest counties in California. Approximately 18% of individuals and 16% of

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23 US Census Bureau, 2006 American Community Survey
families live below the national poverty level. The median household income was $33,674 in 2004 compared to California’s $49,894.

The majority (77%) of the county’s population resides in the incorporated cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial and Westmorland. El Centro, with 37,835 residents, serves as the largest municipality, followed by Calexico, with 27,109 residents (95% of whom are Latino). The remaining 23% population resides in unincorporated areas. The population has been growing quickly in recent years, with the county ranking as California’s fifth fastest growing county from 1990-2000.

Rapid growth and the continuous flow of people and products have transformed Imperial County into a distinctive region with unique social, political, and economic relationships and interactions. As can be expected, these characteristics have a tremendous impact on the region’s physical and social development. Among the impacts are environmental challenges and health disparities that require strategically targeted interventions that are culturally appropriate, well integrated, and binational in scope. As both nations and the states of California and Baja California seek strategies to address special needs of the border region, binational collaboration and cooperation becomes more critical. Although challenging, a binational approach is necessary to address environmental and human needs of the region.

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Triggers of Asthma

Lack of appropriate health care, use of medications, and exposure to environmental hazards aggravate asthma.

Most common indoor environmental asthma triggers are:

- **Secondhand Smoke**
- **Dust Mites**
- **Molds**
- **Cockroaches and Pests**
- **Pets**
- **Nitrogen Dioxide**

Most common outdoor environmental asthma triggers are:

- **Outdoor Air Pollution**
  - Power Plants
  - Areas sources such as oil refineries, petrochemical industry facilities
  - Mobile sources such as cars, buses, trucks
  - Pesticides

U.S. Environmental Protection Agency
http://www.epa.gov/asthma/index.html

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24 US Census Bureau, 2006 American Community Survey
Environmental Racism & Inequality

Race, ethnicity, and socio-economic class are determinants of health. The concept, environmental racism, coined to explain the intentional or unintentional discrimination based on race in the enforcement of environmental rules and regulations, the intentional or unintentional targeting of minority communities for the placement of polluting industries, or the exclusion of minority groups from public and private boards, commissions, and regulatory bodies has been downplayed in environmental health discussion. However, more than 100 studies now link racism to worse health. Many people of color experience a wide range of serious health issues including asthma. Furthermore it is now well established that among U.S. residents of similar socio-economic status, there is greater asthma morbidity and mortality among Latino Americans and African Americans than among Caucasian Americans. Latinos and African Americans suffer substantially higher fatality rates, hospital admissions, and emergency room visits due to asthma. Nationwide, African American children are 5 times more likely to die from asthma than white children.

The hospitalization rate for asthma in California is more than 3 times higher for African American children than for white children and Latino children are hospitalized for asthma at a rate that is 10 percent greater than for white children. Latino children currently account for the largest minority group of children in the nation and have higher rates of asthma than non-Latino children. Additionally, Latino children are at least three times more likely to live in counties where air pollutant concentrations exceed cancer risk

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30 Community Action to Fight Asthma (http://www.calasthma.org)
levels. Although rates of asthma prevalence are higher in African-American populations, the functional morbidity due to asthma (e.g. missed days of school) is higher in Latino children attending primary care clinics.

Data on asthma-related clinical characteristics is being collected by the Genetics of Asthma in Latino Americans (GALA) Study, studying ethnic specific genetic risk factors for asthma and asthma severity among Latino and African American asthmatics. According to the study, there are striking differences in reported rates of asthma morbidity and mortality among specific Latino American ethnic groups. Specifically, Puerto Rican asthmatics have a higher risk of emergency visits and previous hospitalization of asthma than Mexicans. In addition, Puerto Rican asthmatics have lower responsiveness to asthma medications than their Mexican counterparts. This is in stark contrast to the near geographic uniformity of asthma morbidity and mortality rates among African Americans and Caucasians in the U.S.

In Imperial County, it is evident that socioeconomic and racial disparities coalesce to over-burden low-income people of color currently living in unhealthy communities and to exacerbate asthma in these communities. Despite environmental regulations to protect public health, environmental health issues abound in Imperial County including air quality, pesticide exposure, heat and climate change, and water quality and availability, issues which contribute to the asthma crisis in this part of the country.

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Imperial County Demographics

Imperial County reflects ethnic, cultural, and linguistic diversity and shares a binational border with Mexico.

**Socioeconomic Characteristics**

- The county reported high unemployment rates, frequently ranging from 15% to 30% over the past 15 years. In 2005, Imperial County’s annual unemployment rate of 15.8% compared to 5.4% in California.\(^{34}\)
- The County’s median household income in 2004 was $33,674 compared to $49,894 for the state of California.\(^{35}\)
- An estimated 20% of the overall population lives below the national poverty level, in comparison with 14% statewide. Approximately 28% of children age 17 and under live in poverty, in comparison with 20% statewide.\(^{36}\)
  - Imperial County has the state’s lowest educational attainment. Of the County’s residents age 25 years and over, 41% did not complete high school or equivalency, nearly twice the California rate of 23%.\(^{37}\)

**Housing Stock**

- In 2000, 90% of Imperial County’s housing stock was occupied with an average of 3 persons per household.\(^{38}\)
- Approximately 58% of the housing stock was owner occupied.
- The residential density (housing units per residential acre) was 4.6.
- 60% of the County’s housing stock was built prior to 1979.
- 20.8% of housing units were in multi-unit structures in 2000.\(^{39}\)

\(^{39}\) U.S. Census Bureau: State and County QuickFacts, [http://quickfacts.census.gov/qfd/states/06/06025.html](http://quickfacts.census.gov/qfd/states/06/06025.html)
Transportation
Recent research findings show that traffic-related exposures increase the risk of frequent asthma symptoms, and that individuals in poverty tend to be strongly affected by heavy traffic.  

- 36% of the County’s households have 2 vehicles and 19% of households have 3 or more.
- In 2000, the average commute time in the County was 15-19 minutes, close to the national average of approximately 20-24 minutes.
- 73% of County workers drove to work alone in 2000.
- Imperial County is impacted by traffic at the Calexico-Mexicali border crossing.

Rates of Medical Insurance
Health insurance is an important predictor of access to medical care and to asthma management. The California Health Interview Survey (CHIS) estimates that 19% of residents in Southern California lack health insurance. Approximately 21% of Hispanics and 5% of Non-Latino White residents lack insurance.

In Imperial County, approximately 9% of people without health insurance suffer from asthma. While this figure is comparable to nearby counties and the statewide average, it also represents a significant number of people at risk for uncontrolled asthma and increased public medical costs.

![Figure 9: Percent of Uninsured People with Asthma in Southern California Counties](image_url)

Source: California Health Interview combined 2001 and 2003 data
Asthma Diagnosis

According to the 2003 California Health Interview Survey (CHIS) an estimated 21,000 Imperial County residents have been diagnosed with asthma by a healthcare provider during their lifetime. Furthermore, children were disproportionately affected by asthma. The study estimated that 17% children and 11% of adults in Imperial County have a lifetime diagnosis of asthma. An analysis of the 2001 and 2003 CHIS studies shows that while estimates of asthma diagnosis for adults remained stable across years (~11%), rates for children increased dramatically from 15% to 19%.

Race / Ethnic Disparities

Asthma prevalence varies by ethnicity in Imperial County and nationwide. The reasons for this are not entirely clear, but studies suggest differences in asthma prevalence by ethnicity vary due to urban environment, exposure to risk factors like secondhand tobacco smoke, air pollution, and possibly genetic factors.

Figure 10: Percent of Population Ever Diagnosed with Asthma in Southern California

Source: 2001 and 2003 California Health Interview Surveys


http://www.californiabreathing.org/ and http://www.californiabreathing.org/asthma_data/county_asthma_profiles/
In Imperial County, African-American, Multi-ethnic/Other and White residents are the most likely to have been diagnosed with asthma, while Native Americans and Latinos have a lower prevalence rate.44

**Figure 11: Asthma Prevalence by Race/Ethnicity in Imperial County**

![Asthma Prevalence by Race/Ethnicity in Imperial County](http://www.californiabreathing.org/asthma_data/county_asthma_profiles/)

Source: 2001 and 2003 California Health Interview

* Note that this statistic is unstable

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Asthma Indicators: Mortality and Healthcare Usage

Asthma Mortality
Because asthma is a chronic, manageable disease, mortality figures are often low relative to other indicators. Imperial County is no exception. According to the California County Asthma Mortality Chart Book, 16 asthma-induced deaths occurred in Imperial County from 1990 to 1997. More recent mortality data show that Imperial County had 10 deaths due to Asthma from 2000 to 2004.45

Race / Ethnic Mortality Disparities
While overall asthma mortality rates have been declining, mortality by ethnicity shows that 6 White and 4 Hispanic people died of Asthma in Imperial County from 2000 to 2004.46

Figure 12: Deaths in Imperial County due to Asthma

45 California Office of Statewide Health Planning & Development (OSHPD) Discharge Data
46 California Office of Statewide Health Planning & Development (OSHPD) Discharge Data
Hospitalization Rates
Imperial County has experienced fluctuations in the asthma hospitalization rates from 2000 to 2004. The age adjusted hospitalization rate was at its lowest in 2001, at 177 cases and peaked in 2003 at 210 cases per 100,000 residents. It is important to note that Imperial County consistently had the highest asthma hospitalization rate among all California counties.47

Race/Ethnic Disparities
An analysis of the hospitalization rate by ethnicity shows that burden of asthma rests heavily on both White and Hispanic Imperial County residents.48 Although the asthma hospitalization rates fluctuated from year to year, the rate per 100,000 residents was consistently high for both White and Hispanic Imperial county residents. For White residents, the hospitalization rate ranged from 163 to 227 cases per 100,000 residents. Hispanics had an average hospitalization rate ranged from 192 to 218 cases per 100,000 Imperial county residents.

47 California Office of Statewide Health Planning & Development (OSHPD) Discharge Data
Geographic Disparities
The hospitalization rate ranged from negligible to high across Imperial County. However, for many areas of the county, age adjusted hospitalization rates were high. The highest measurable hospitalization rate per 100,000 residents was in Brawley (178) followed by El Centro (156), Holtville (124), Imperial (121), and Calexico (115). Other areas of Imperial County had too few cases to be included in the analysis.49

Figure 14: Hospitalization Rate per 100,000 Imperial County Residence due to Asthma, 2002-2004

49 California Office of Statewide Health Planning & Development (OSHPD) Discharge Data
Age Disparities
A disproportionate number of young people are hospitalized due to asthma each year. It can be seen that children suffer from the highest rate of asthma symptoms. Recent figures show that asthma amongst the elderly is on the rise.

Figure 15: Hospitalization Rate per 100,000 Imperial County Residents due to Asthma by Age Group

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50 California Office of Statewide Health Planning & Development (OSHPD) Discharge Data
Emergency Department & Urgent Care Visits

In 2003, approximately 2,000 County residents went to an emergency room or urgent care facility because of asthma. Furthermore, approximately 17% of County residents with a diagnosis of asthma require emergency room or urgent care treatment each year.51

Figure 16: County Residents with Asthma who sought Treatment for Symptoms during past year at an Emergency Room or Urgent Care

911 Asthma-Related Calls
At this time, there is no system that tracks the incidence of asthma related 911 phone calls.52 However, there is a system in place that records the number of 911 calls based on broadly defined symptoms. For example, in 2006, Imperial County EMS received over two-hundred 911 phone calls for residents suffering “shortness of breath”. Furthermore, the EMS received over one-hundred seventy 911 calls for residents suffering from “respiratory distress”. The list of symptoms related to asthma also includes “difficulty breathing”, “allergic reaction” and “airway obstructions”.

Figure 17: Imperial County EMS (2006)

52 Imperial County Public Health Department: WebPCR System reporting for Respiratory cases (1/1/06 to 12/31/06).
Poor outdoor and indoor air quality can pose a serious health threat and is known to significantly increase the risk of asthma attacks. According to the Healthy People 2000 report, each year in the United States:

- The health costs of human exposure to outdoor air pollutants range from $40 to $50 billion.
- An estimated 50,000 to 120,000 premature deaths are associated with exposure to air pollutants.
- People with asthma experience more than 100 million days of restricted activity, costs for asthma exceed $4 billion, and about 4,000 people die of asthma.

Imperial County has made important strides towards cleaner air and reached a major milestone in 2002, when it attained the federal one-hour clean air standard for ozone. Nonetheless, there are several areas where the County has not met more stringent air quality standards for the State of California. Particulate matter (PM10 and PM2.5) and Ozone continue to be two areas of major concern.

What is Particulate Matter?

Particulate matter is found in both indoor and outdoor air. It includes very small particles and aerosols from combustion sources such as motor vehicles, industrial processes, tobacco smoke, cooking, and wood burning activities. Particulate pollutants also include biological components such as pollen, mold spores, dust mites, cockroach allergens, soil particles and fine fibers such as asbestos.
**Particulate Matter**

Particulate Matter (PM10) is composed of small particles that stay suspended in the air and are small enough to be inhaled into the lungs. The state’s 24-hour standard for this air pollutant is 50 micrograms per cubic meter. Imperial County surpassed the State 24-hour standard for particulate matter (PM10) level for 210 days in 2004. However, the county does appear to be making progress as the overall number of days exceeding the State 24-hour standard for PM10 has declined from 313 in 2000 to 210 in 2004.

**Figure 18: PM10 Annual number of Days Exceeding Standards in Imperial County, 2000-2004**

- **PM10 - Calculated Days Above State 24-Hour Standard**
- **PM10 - Calculated Days Above National 24-Hour Standard**
**PM 2.5**

PM 2.5 is smaller fine particles that can be inhaled deeper into the lungs causing irritation. It contributes to asthma and other lung conditions, heart disease and studies have shown it can even contribute to premature mortality. The State Particulate Matter 2.5 standard (annual average) is 12 ug/m³. The Air Pollution Control District indicates that Imperial County has maintained excess of PM₂.₅ from 1990 through 2005.³³

**Figure 19: PM2.5 Emissions**

![PM2.5 Emissions Graph](image)

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³³ Air Resource Board, California Environmental Protection Agency: The California Almanac of Emissions and Air Quality 2006 Edition, [http://www.arb.ca.gov/homepage.htm](http://www.arb.ca.gov/homepage.htm) and [http://www.arb.ca.gov/ei/ei.htm](http://www.arb.ca.gov/ei/ei.htm)
**Toxic Air Pollution**

Toxic air pollutants are poisonous substances in the air that come from natural or man-made sources such as motor vehicles, industrial processes (factories), and consumer products.

There are thousands of chemicals in the air that can pose serious threats to health. Because there are so many different kinds of toxic air pollutants, the risks from these emissions can be difficult to assess. However, some of these substances are likely to contribute to the risk of developing asthma. Many have also been shown to cause increased symptoms for those who already have asthma. For example, polycyclic aromatic hydrocarbons, produced by diesel exhaust, have been shown to provoke inflammatory responses in the lungs. Since 1995, the Air Pollution Control District of Imperial County has operated toxic sampling monitors. In the last 10 years, the toxic emissions have dropped from a staggering 35 tons per day, to a high 24 tons per day.

*Figure 20: Recent & Historic Toxic Air Emissions from Stationary Sources in Imperial County*
**Indoor Air Quality**

There are many sources of indoor air pollution in the home, school and workplace including combustion sources such as gas, kerosene and wood, tobacco products, building materials, wet or damp carpet (mold spores), household cleaning and maintenance supplies, central heating and cooling systems, and pesticides. While there is little data available to measure the overall impact of indoor air quality, controlling and/or eliminating environmental triggers (both indoor and outdoor) can significantly reduce asthma attacks. Over a decade ago researchers provided evidence that race and socioeconomic status are independent risk factors for cockroach allergen sensitization. Common indoor environmental triggers include second hand smoke, mold, pet dander, dust mites, cockroaches, and pollen.

Currently, no programs or interventions in Imperial County exist to address asthma and indoor air quality in homes.

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**Economic and Social Costs of Asthma**

In addition to the human costs of morbidity and mortality, asthma also places a significant burden on the community in terms of financial costs and reduced productivity. While they can be difficult to track, estimates of these costs are important to obtain because of their ability to show the impact of asthma in terms of dollars and cents. Unfortunately, over the past decade the prevalence of asthma among children living in impoverished areas has continued to rise despite better understanding of the disease. Research has shown that early childhood exposure to indoor allergens is a significant risk factor for the development of asthma.

**Direct & Indirect Medical Expenditures**

The total charges for asthma hospitalizations in Imperial County in 2005 were nearly 4.3 million dollars. Despite the declining asthma hospitalizations rates and length of stay in 2002, this represented a slight increase in costs over 2001. From 2000 to 2004, nearly 15,000 individuals were hospitalized due to asthma symptoms.

<table>
<thead>
<tr>
<th>Medical Expenditures</th>
<th>2000 to 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Hospitalizations</td>
<td>1,492</td>
</tr>
<tr>
<td>Mean Charge per Hospitalization</td>
<td>$10,292.17</td>
</tr>
<tr>
<td>Average Length of Stay (Days)</td>
<td>3.33</td>
</tr>
</tbody>
</table>
Payments for Health Care
Payment for hospital visits varied across the county from 2000 to 2004. The average cost of hospitalization was highest among Medicare recipients, followed by Private Insurance, “Other” insurance, and finally Medi-Cal.

Figure 21: Average Charge per Hospitalization by Payer Type, 2000-2004
**Indoor Air Quality Tools for Schools in Calexico**

Since data collection methods vary considerably between and within school districts, it is difficult to accurately assess the impact of asthma on school absenteeism in Imperial County. However, national figures indicate:

- Asthma accounts for 14 million lost days of school annually in the United States.
- Asthma is the third most common cause of hospitalization among children under age 15.
- The estimated cost of treating asthma among children 18 years and younger is $3.2 billion per year.

EPA developed the *Indoor Air Quality (IAQ) Tools for Schools (TfS)* Program to reduce exposures to indoor environmental contaminants in schools through the voluntary adoption of sound indoor air quality management practices.

The *IAQ Tools for Schools* Program is a comprehensive resource to help schools maintain a healthy environment in school buildings by identifying, correcting, and preventing IAQ problems. Poor indoor air quality can impact the comfort and health of students and staff, which, in turn, can affect concentration, attendance, and student performance. In addition, if schools fail to respond promptly to poor IAQ, students and staff are at an increased risk of short-term health problems, such as fatigue and nausea, as well as long-term problems like asthma. For more information about the EPA’s IAQ Tools for Schools resources, visit: [http://www.epa.gov/iaq/schools/index.html](http://www.epa.gov/iaq/schools/index.html).

The Imperial Valley Asthma Coalition (IVAC) was formed as part of the Community Action to Fight Asthma grant in 2002. The coalition took the following steps to introduce Indoor Air Quality Tools for Schools in Calexico:

- Formed schools committee to review IAQ Tools for Schools, modify questionnaires, and devised methodology to pilot program in Calexico.
- Met with school district superintendent to introduce and review the Tools for Schools Program/Process.
- Met with school principals to proceed with Tools for Schools at individual schools.
- Met school faculty/staff to discuss the assessments process. During this meeting coalition representatives reviewed the implementation of Tools for Schools with the faculty/staff to assure that school personnel clearly understand the assessment procedure and their role in the implementation of Tools for Schools.
• Recruited coalition members to be part of the assessment team committee. This committee scheduled assessment dates at school sites as needed. Comite Civico del Valle, Inc. assisted with assessment process.

• Formed an assessment committee at each school site to meet with principal and IVAC staff. IVAC personnel and coalition members conducted interviews of school personnel.

• Debriefed with assessment committee upon completion of interviews of assigned school personnel. IVAC staff reviewed the assessments with each committee member to assure questionnaires were completed properly.

• Reviewed assessments, entered data into database, and analyzed results. In consultation with statisticians and epidemiologists, Paula Kriner and Alfonso Rodriguez, coalition completed report with the findings from each individual school site, statisticians then provided IVAC Staff with a copy which was then used to present results/recommendations to each individual school site.

• Presented assessment results and recommendations to school personnel.

• Followed-up with principals within 8-12 weeks to review and document any changes made at each school. Principals and other school staff are asked to complete a post-survey, which concludes our assessment process. At that time, IVAC provided a Tools for Schools Kit to the school and encouraged the school staff to build their own assessment team with the assistance of IVAC Staff. IVAC Staff supported the schools and provided technical assistance.

The project conducted indoor air quality assessments and provided information about ways to reduce asthma triggers to school staff and parents at schools throughout Imperial County. Volunteers conducted assessments at all nine schools in the Calexico Unified School District. Study findings include:

**Teacher Assessment:** Overall, most teachers reported taking steps to ensure that they were knowledgeable about the special care needs of students with asthma or allergies in their classes.

**Nurse Assessment:** Sixteen nurses from 15 schools completed the assessment. Nearly all of the nurses (14, 87.5%) reported that students had completed health records, which include information about allergies and asthma.

**Ventilation Assessment:** In areas tested at the schools, a majority of the classrooms had elevated levels of carbon dioxide above 1,000 ppm. In some portable classrooms, the CO₂ levels were above 1,000 ppm with the systems operating.
**Alianza For A Healthier Community (Alianza)**
Alianza is a coalition of concerned residents from Heber, California, a predominantly Latino community. Since June 2007, Alianza has organized to address the proximity of heavy industries near residential zones and schools. Alianza's vision is to increase community awareness of local issues, civic participation and environmental justice. Through these efforts Alianza hopes to increase transparency in public meetings and eliminate the risk of toxics sources which negatively impact the health of local residents and their children. For more information about Comite Civico del Valle, Inc. contact 760.351.8761 and/or email comitecivico@sbcglobal.net.

**Comite Civico del Valle, Inc.**
Founded on the principle of community empowerment, Comite Civico del Valle, Inc. (CCV) is a non-profit organization dedicated to serving the needs of Imperial County’s residents and underserved populations. CCV is an integral part of the local grassroots service provider network aiming at increasing awareness and action surrounding outdoor air quality and health in the valley. For more information about Comite Civico del Valle, Inc. contact 760.351.8761 and/or email comitecivico@sbcglobal.net.

**Clean Air Initiative**
In response to the unhealthy air quality observed in the Imperial Valley and Mexicali border region, concerned individuals and organizations joined forces in 2003 to form the Clean Air Initiative (CAI). The coalition constitutes a binational partnership to address regional air quality issues and their effects on health. Among the Coalition’s accomplishments include completing two community surveys that assess community knowledge of outdoor air quality and education and awareness training for residents as well as policy makers in the region. For more information about the Clean Air Initiative visit www.ivcair.org.

**Imperial Valley Child Asthma Program**
The Imperial Valley Child Asthma Program (IVCAP) is a program funded by the Imperial County Children and Families First Commission and operated by the El Centro Regional Medical Center in partnership with Pioneers Memorial Hospital. The IVCAP combines the strengths of working with medical providers, families and the community to provide effective asthma management. The program is preventive-based and cultural competent. The main goal of the program is to improve asthma health outcomes, prevent hospital stay, and reduce Emergency visits through the enhancement of parental asthma management skills. To send referrals or for more information please contact Aide Fulton, RN, BSN Program Coordinator @ 760-482-0978 or e-mail afulton@ecrmc.org.
**Asthma Initiative**
The Asthma Initiative is an initiative of the Imperial County Public Health Department addressing asthma in Imperial County. For more information about Imperial County Public Health Department’s asthma programs, contact Amy Binggeli, Public Health Program Planning and Evaluation Specialist, Imperial County Public Health Department at 760.482.4716 and/or visit the website: http://www.icphd.org.

**BASTA: Border Asthma & Allergies Study**
The California Department of Health Services conducted an important school-based asthma survey with 13 and 14 year-old children in Imperial County in 2006. The purpose of the study was to learn about asthma, the environment and breathing problems in children. The specific goals of the research project were the following:

- Determine the number of 13 and 14 year-olds in Imperial County with asthma, asthma symptoms, and allergies.
- Examine family, environmental, and socio-economic influences on asthma.
- Compare and contrast asthma prevalence and risk factors on both sides of the U.S.-Mexico border.

For more information about this research project, contact Michael Lipsett, investigator at the Environmental Health Investigations Branch (EHIB) of the California Department of Health Services.
Conclusions and Recommendations

The National Latino Research Center recommends the following areas be addressed as a way to reduce the alarming rates of asthma in Imperial County.

**Organizational and Systems Change**
As the complex picture of asthma presented here indicates, there are organizational and system wide changes that need to occur in order to address health disparities and asthma in Imperial County. Limited resources and isolated efforts; lack of organizational infrastructure, lack of a best practices in asthma interventions, and sustainability all challenge progress and impact agencies and community organizations working in the Imperial County. In Imperial County addressing these issues are especially critical to the development of effective programs. Technical assistance, strategic planning, and organizational capacity are especially needed for organizations working on asthma and health disparities.

**Binational Solutions**
Addressing asthma in border regions will require a binational agenda and investment by all regional agencies. The development of best practices and protocols in binational collaboration are needed as a way to ensure equitable and effective health interventions targeting asthma. Finally, well developed efforts to integrate a border and binational agenda into the infrastructure of agencies working in the border region are critical to effecting lasting change in asthma rates.

**Implementation of Strategic Plan for Asthma in California, 2008-2012**
This Plan builds upon considerable work over the last five years to implement the 2002 Strategic Plan for Asthma in California. This revised Plan includes specific goals and objectives in the areas of building infrastructure to address asthma: surveillance and research, health care, and indoor and outdoor environments. The Plan is designed to help state agencies, health organizations, and members of the community develop work plans for addressing asthma. While using this Plan, five important cross-cutting priorities should be taken into consideration: reducing asthma disparities, fostering asthma awareness and education, focusing on asthma throughout the lifespan, changing systems and policies within organizations, and creating the most health protective asthma policies.54

**Research and Data**
The NLRC recommends future research to better assess the impact of asthma in Imperial County. In order to efficiently and effectively target asthma treatment and prevention in the county, better surveillance of asthma symptoms and health care usage is needed. Specifically, data from schools and emergency departments is needed to better target the areas that are most in need of asthma treatment and prevention services. Improved, that is, more systematic data collection and asthma surveillance will allow services to be efficiently delivered.

**Reduce Disparities**
The burden of asthma in Imperial County falls most heavily on those least able to cope with it effectively: children, the poor, and minority groups. Asthma treatment and prevention efforts for these groups need to be sustained and expanded. Broad-based support for better treatment from government, the insurance industry, and healthcare organizations is necessary to prevent future increases in human suffering and healthcare costs due to asthma.

**Best Practices in Asthma**
Current efforts to control asthma are showing success. These programs should continue and intensified to minimize the effects of asthma on all people in Imperial County. Interventions should be increased to address all environmental hazards indoors and outdoors exacerbating asthma in Imperial County.

**Policy related to environmental triggers of asthma**
Asthma is a problem that needs to be addressed through policy change. Because the reduction of environmental triggers is an essential component of asthma control and prevention, individuals, communities, and policy makers must work together to find appropriate solutions.

Community Action to Fight Asthma has done groundbreaking and important work in identifying important policies aimed at reducing environmental triggers of asthma.\(^{55}\) Below are CAFA recommended policies needed in reducing the environmental triggers of asthma in three areas: schools, housing, and outdoor air.

**Schools**
Suggested policies to improve school environments, including indoor air quality, include:

\(^{55}\) For more information about these policy recommendations please visit the CAFA website at [www.calasthma.org](http://www.calasthma.org).
Implementing a comprehensive and effective Indoor Air Quality (IAQ) Management Plan (e.g., the Environmental Protection Agency’s Tools for Schools program) with policies and procedures for all child development and K-12 school sites.

Changing maintenance policies to prioritize low allergy landscaping for all new or renovating schools.

Increasing resources for school facility repair, including working with school districts to secure funding from the State’s Emergency Repair Program (ERP) to make repairs and improve IAQ in schools.

Creating sustainable funding for maintenance and custodial services to better support facilities management best practices such as: asthma-friendly cleaning; environmentally preferable purchasing; green construction and maintenance practices such as those offered by the Collaborative for High Performing Schools; and integrated pest management procedures to control pests.

Adopting Asthma and Wellness Policies, including IAQ protocols, a dedicated asthma nurse, and asthma education for staff, students, and parents/guardians.

**Outdoor Air Quality**

Every year, millions of pounds of dangerous chemicals, gases, and particles are released into the air by vehicles, power plants, factories, and other industrial sources that have serious effects on health and asthma. A recent report found that 9 of the 10 most ozone-polluted counties in the country are within California. Suggested policies to improve outdoor air quality related to asthma triggers include:

- Adopting land-use policies that protect public health including: smart growth principles that minimize sources of pollutants, particularly diesel emissions from rail yards, ports, distribution centers, and truck routes; standards that promote the use of new and emerging non-polluting technologies; and relocating industrial facilities away from residential neighborhoods.
- Supporting expedient attainment of the regional 8-hour ozone and PM 2.5 State and National Ambient Air Quality Standards.
- Adopting regional wood burning restrictions and ordinances.
- Developing and/or implementing state, air district, and port emission reduction plans in their entirety in order to dramatically reduce pollution from the freight transportation system.
- Ensuring all school districts adopt a policy prohibiting idling by any vehicle within 100 feet of a school facility.

**Homes**

The Department of Housing and Community Development report that one in every eight dwelling units in the state is substandard. Families alone cannot initiate large-scale changes to improve their children’s environments, so policy changes to systematically
improve housing conditions, especially among renters, are a key step toward reducing the problem of asthma. Policies to reduce asthma triggers in homes and improve health conditions include:

- Enacting and enforcing healthy, affordable housing laws and high levels of penalties for noncompliance, particularly in the case of criminal, repeat violators. These penalties, in turn, can help pay for the stepped-up code enforcement.
- Institutionalizing environmental health and asthma training for code enforcers, and adopting a proactive home inspection process such as annual inspections of multi-unit housing.
- Establishing Citizen Advisory Committees to promote public awareness and outreach projects that promote toxics reduction through safe housecleaning, integrated pest management, and safe house furnishings.
- Establishing statewide standards on assessment and remediation of mold complaints.
- Promoting healthy housing best practices and the use of State incentives for asthma-friendly affordable housing development and renovation.
References


Imperial County Agricultural Commissioner’s office (http://imperialcounty.net/ag/)


U.S. Census Bureau (http://www.census.gov/)

U.S. Environmental Protection Agency (http://www.epa.gov/iaq/schools/)