Today

• What is JHA?
• Where is the Duwamish Valley?
• Cumulative impacts
• Method
• Results and limitations
• How used?
JHA: working towards health equity

Research

- Health Impact Assessment
- Cumulative Health Impacts Analysis
- Environmental Justice analyses
- Community Based Participatory Research

Education

- Teaching
  - Curriculum development
- Facilitation

Mogford, Gould, & DeVoght, (2010), Health Promotion International
Duwamish Valley contamination –
soils, air, ground water, Duwamish River Superfund site
Assets too!
# Duwamish Valley Disparities

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Duwamish Valley</th>
<th>King County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy*</td>
<td>79.4</td>
<td>81.3</td>
</tr>
<tr>
<td>% below poverty**</td>
<td>17.6%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Foreign born**</td>
<td>31.9%</td>
<td>19%</td>
</tr>
<tr>
<td>No high school degree**</td>
<td>20.2%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Uninsured*</td>
<td>20%</td>
<td>13%</td>
</tr>
<tr>
<td>Lung cancer*</td>
<td>52.3 per 100,000</td>
<td>41.4 per 100,000</td>
</tr>
<tr>
<td>Homicide*</td>
<td>10.5 per 100,000</td>
<td>3.4 per 100,000</td>
</tr>
<tr>
<td>Asthma hospitalization*</td>
<td>240.4 per 100,000</td>
<td>143.4 per 100,000</td>
</tr>
<tr>
<td>Assault*</td>
<td>70.9 per 100,000</td>
<td>31 per 100,000</td>
</tr>
<tr>
<td>Low birth weight*</td>
<td>6.0%</td>
<td>4.9%</td>
</tr>
<tr>
<td>No leisure time physical activity*</td>
<td>24%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Public Health Seattle & King County.  
* p=.05; ** p=.10
Cumulative Effects - Imagine
“The environment is everything: where we live, work, play, go to school, as well as the physical and natural world. And so we can’t separate the physical environment from the cultural environment.”

(Robert Bullard, 1999)
What does the “community” want?
VISIONING the Duwamish Valley

Health as main outcome
EPA Environmental Justice Research Grant

1. Inform EPA’s Duwamish River Superfund Site Cleanup decisions
2. Develop risk reduction strategies for communities impacted by site
3. Improve health outcomes in the affected community
4. Inform action by regional public and private agencies
Methodology – CAL/EPA and OEHHA

CUMULATIVE IMPACTS: BUILDING A SCIENTIFIC FOUNDATION

DEFINITION:
Any exposures, public health or environmental effects from the combined emission and discharges in a geographic area, including environmental pollution from all sources, whether a single or multi-media, routinely, accidentally, or otherwise released.

December 2010

Linda S. Adams, Secretary
California Environmental Protection Agency

Joan E. Denton, Ph.D., Director
Office of Environmental Health Hazard Assessment

JustHealthAction
Seattle CHIA

Geographic unit of analysis – 10 ZIPS

Ranges of:
• Income
• Minority
• Pollution

• CBPR
Community Based Participatory Research
CBPR: Health Mapping

Where is our neighborhood healthy?

Where is our neighborhood unhealthy?
Research on 24 Indicators in 5 categories

<table>
<thead>
<tr>
<th>Component</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic factors</td>
<td>Community characteristics that result in increased vulnerability to pollutants</td>
</tr>
<tr>
<td>Sensitive populations</td>
<td>Populations with traits that may magnify the effects of pollutant exposures</td>
</tr>
<tr>
<td>Environmental exposures</td>
<td>Contact with pollution</td>
</tr>
<tr>
<td>Environmental effects</td>
<td>Adverse built environment conditions</td>
</tr>
<tr>
<td>Public health effects</td>
<td>Disease and other health conditions</td>
</tr>
</tbody>
</table>
Information sources

• The community!
• U.S. Census
• Public Health Seattle King County
• King County Department of Natural Resources
• Environmental Protection Agency TRI and C-FERST
• WA State Department of Ecology data base
### CHIA: Range of scores for each component

<table>
<thead>
<tr>
<th>Component</th>
<th>Range of Possible Scores</th>
<th>Map Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic factors</td>
<td>1-3</td>
<td>BROWN</td>
</tr>
<tr>
<td>Sensitive populations factors</td>
<td>1-3</td>
<td>GREEN</td>
</tr>
<tr>
<td>Environmental exposures factors</td>
<td>1-10</td>
<td>BLUE</td>
</tr>
<tr>
<td>Environmental effects factors</td>
<td>1-5</td>
<td>PURPLE</td>
</tr>
<tr>
<td>Public Health effects factors</td>
<td>1-5</td>
<td>PINK</td>
</tr>
<tr>
<td>Cumulative Impact Score</td>
<td>6-120</td>
<td>ORANGE</td>
</tr>
</tbody>
</table>

Source: Cal/ EPA Cumulative Impacts: Building a Scientific Foundation
Socioeconomic factor component (rank 1-3): Percent Below 200% Poverty Level by ZIP code
Sensitive populations component (rank 1-3): Percent Foreign Born by ZIP code
EPA C-FERST
Environmental exposures component (Rank 1-10):
Annual Average Benzene in human breathing zone (ug/m³), by ZIP code
EPA C-FERST
Environmental exposures component (Rank 1-10): Annual Average Diesel Particulate Matter in human breathing zone (ug/m³), by ZIP code
EPA TRI Data
Environmental effects component (Rank 1-5): Number of Toxic Release Inventory Sites, by ZIP code
Environment factors component (Rank 1-5): Percent Tree Canopy by ZIP code
Public health factors component (Rank 1-5): Childhood asthma hospitalization rate per 100,000 by ZIP code
Cumulative Health Impacts Formula:
Input 3 indicators from each component

\[
\text{Cumulative Impact} = \text{Socioeconomic factors} + \text{Sensitive populations factors} \times \text{Environmental exposures factors} + \text{Environmental effect factors} + \text{Public health factors}
\]

Source: Cal/ EPA Cumulative Impacts: Building a Scientific Foundation, 2010
Seattle Cumulative Impact Analysis Results
# Georgetown/South Park Park disparities

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Georgetown /South Park Census tracts 109 and 112</th>
<th>Laurelhurst Census tracts 4100 and 4200</th>
<th>Seattle</th>
<th>King County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy at birth (years)</td>
<td>73.3*</td>
<td>86.4*</td>
<td>81.5</td>
<td>81.5</td>
</tr>
<tr>
<td>Heart disease death rate per 100,000</td>
<td>202.9#</td>
<td>89.6*</td>
<td>138.4</td>
<td>137.8</td>
</tr>
</tbody>
</table>

Source: Public Health Seattle & King County  
*p=0.05 from both KC and Seattle average  
#p= 0.05 for KC average only
Community Prioritization Workshops
Community Action Grants

action!
Pollution control: Duwamish Valley Cisterns and Rain Gardens
Influencing Decision-Making

- Evidence base when giving neighborhood “toxic tours”
- Advocating for more resources to improve neighborhood conditions
- Citation when requesting funding for grants
- Informs community outreach efforts
- Helps identify mitigation measures for site cleanups and construction activities
- Information dissemination
- King County and Seattle Equity and Social Initiatives
- Seattle Mayor sets aside $250,000 Duwamish River Opportunity Fund to develop health interventions and mitigation for local residents
Education – CHIA lesson plans being developed and taught

How does ZIP code determine your health?

1. What makes an individual, school, neighborhood healthy and how do you measure it (indicators)?

2. What parts of Seattle have good/bad indicators? (color in the ZIPs by indicator)

3. How would you add it up? (use the formula)

4. Is this fair? (Equity vs equality and EJ)

5. Why is GT/SP different from 98108?

6. Action – what should we do?
QUESTIONS?

Where to get Duwamish Valley Cumulative Health Impacts Analysis (CHIA)?

• The full appendices, and poster can be found at: [www.justhealthaction.org/resources/jha-publications](http://www.justhealthaction.org/resources/jha-publications)

• Our CHIA and associated Environmental Justice curriculum should be available for free online by early 2015.
Thank You!

Contact:

Linn Gould
gouldjha@gmail.com
www.justhealthaction.org
(206) 324-0297
ACKNOWLEDGEMENTS

- Paulina Lopez – Community expert
- BJ Cummings – Co-author

Technical Advisory Group