Portland Air Toxics Community Assessment Monitoring Project
2005

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Presentation Outline

• Purpose
• Study Area
• Standard Methods
  • Results
• Method development
  • QC issues
• Conclusions
Project Objectives

- Oregon’s Air Toxics Program
  - Inform stakeholder group
  - Identify sources
- Respond to neighborhood concerns
Air Quality Program

Portland, Oregon
Air Quality Program

Portland, Oregon
Air Quality Program

Portland, Oregon
Air Quality Program

“Standard” Methods

- VOC
- PM 10 Metals
- Carbonyls
- PAH
- Hex Cr
- Black Carbon
## Results - VOC

<table>
<thead>
<tr>
<th>Location</th>
<th>o-Xylene</th>
<th>m, p-Xylene</th>
<th>Toluene</th>
<th>Methylene Chloride</th>
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</thead>
<tbody>
<tr>
<td>Highland</td>
<td>0.11</td>
<td>0.28</td>
<td>0.08</td>
<td>0.69</td>
</tr>
<tr>
<td>Lafayette</td>
<td>0.33</td>
<td>0.51</td>
<td>0.33</td>
<td>1.12</td>
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<td>Post Office</td>
<td>0.25</td>
<td>0.69</td>
<td>0.16</td>
<td>1.93</td>
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<tr>
<td>Roselawn</td>
<td>0.19</td>
<td>0.55</td>
<td>0.13</td>
<td>1.13</td>
</tr>
<tr>
<td>Kelly</td>
<td>0.12</td>
<td>0.33</td>
<td>0.11</td>
<td>0.89</td>
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<tr>
<td>Kauffman</td>
<td>0.14</td>
<td>0.39</td>
<td>0.13</td>
<td>0.91</td>
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</table>
# Air Quality Program

## Results – Metals

<table>
<thead>
<tr>
<th>Location</th>
<th>As</th>
<th>Pb</th>
<th>Mn</th>
<th>Ni</th>
<th>Cr (VI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highland</td>
<td>1.06</td>
<td>3.18</td>
<td>3.82</td>
<td>&lt;1.0</td>
<td>&lt;0.042</td>
</tr>
<tr>
<td>Lafayette</td>
<td>1.32</td>
<td>5.72</td>
<td>6.37</td>
<td>1.75</td>
<td>&lt;0.042</td>
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<tr>
<td>Post Office</td>
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<td>6.60</td>
<td>41.88</td>
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<td>Roselawn</td>
<td>1.74</td>
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<td>15.86</td>
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</tr>
<tr>
<td>Kelly</td>
<td>1.22</td>
<td>5.79</td>
<td>19.18</td>
<td>1.78</td>
<td>&lt;0.042</td>
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<tr>
<td>Kauffman</td>
<td>1.03</td>
<td>3.82</td>
<td>8.00</td>
<td>1.09</td>
<td>&lt;0.042</td>
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</tbody>
</table>
## Results - Carbonyls

<table>
<thead>
<tr>
<th>Location</th>
<th>Acetaldehyde</th>
<th>Formaldehyde</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highland</td>
<td>1.25</td>
<td>1.58</td>
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<tr>
<td>Lafayette</td>
<td>1.64</td>
<td>2.14</td>
</tr>
<tr>
<td>Post Office</td>
<td>1.66</td>
<td>2.4</td>
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<tr>
<td>Roselawn</td>
<td>1.53</td>
<td>2.17</td>
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<tr>
<td>Kelly</td>
<td>1.48</td>
<td>2.16</td>
</tr>
<tr>
<td>Kauffman</td>
<td>1.43</td>
<td>1.97</td>
</tr>
</tbody>
</table>
Results – Black Carbon

Annual Average BC and UV

Roselawn: 1.12 ug/m³
Lafayette: 0.94 ug/m³
Post Office: 0.95 ug/m³

Air Quality Program
Method Development – Hourly VOC
Air Quality Program

Results – Hourly VOC
Air Quality Program

Results – Hourly VOC

April 2006 Air Toxic Data for Benzene, Toluene, and Styrene

Logarithms of concentrations in parts-per-billion vs. sample number

Note brief 6-hour styrene "episode" near the end of the month
most styrene levels are below the detection limit ~50 ppt
Air Quality Program

“Standard” Method
QC Issues

- Chromium (VI) loss
- Benzene contamination
Summary

- Differences in neighborhoods
  - Not just motor vehicle related
  - Localized sources
- Still to do
  - Look at woodstoves / diesel
  - Look at trends
  - Use the hourly VOC to find sources
  - Monitor to model comparisons