

Ongoing Health Assessment Portland, South Portland Air Quality

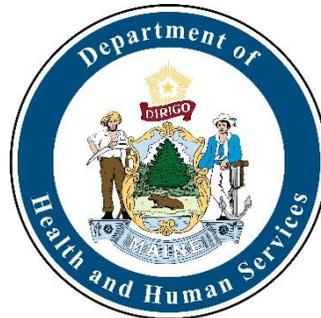
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Environmental and Occupational Health Program

Maine Center for Disease Control and Prevention

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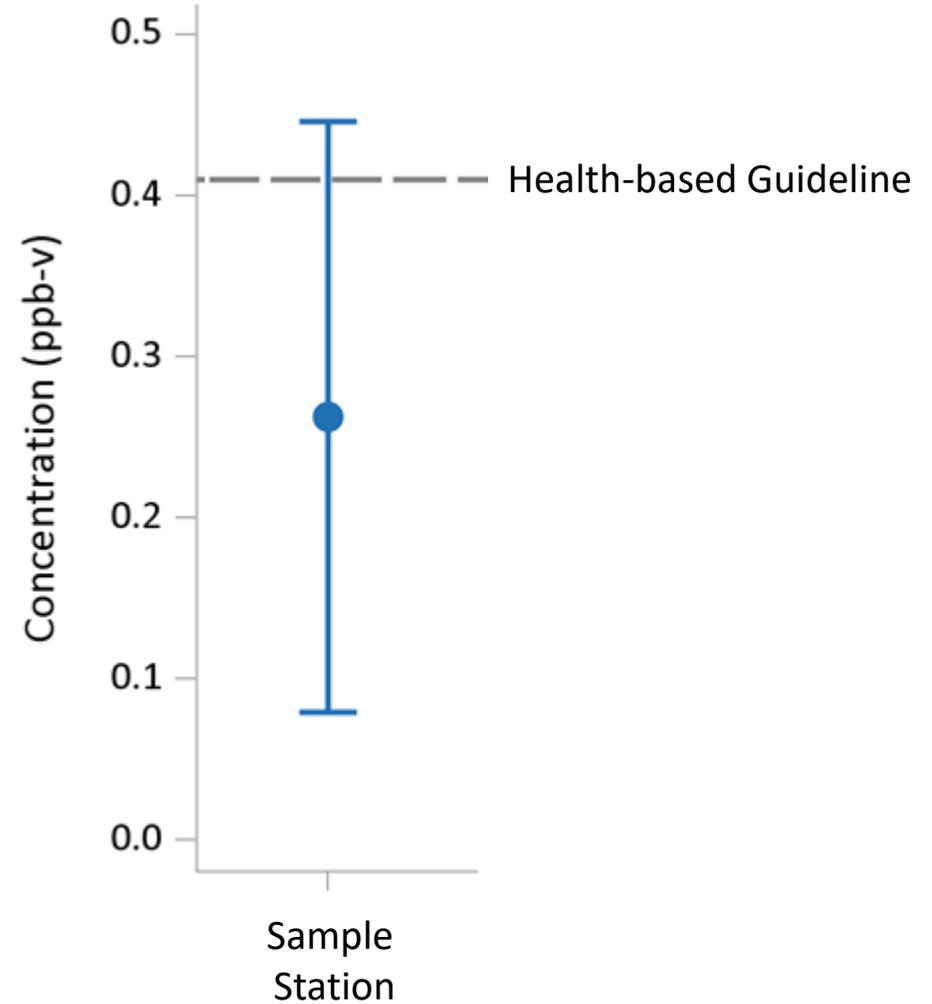
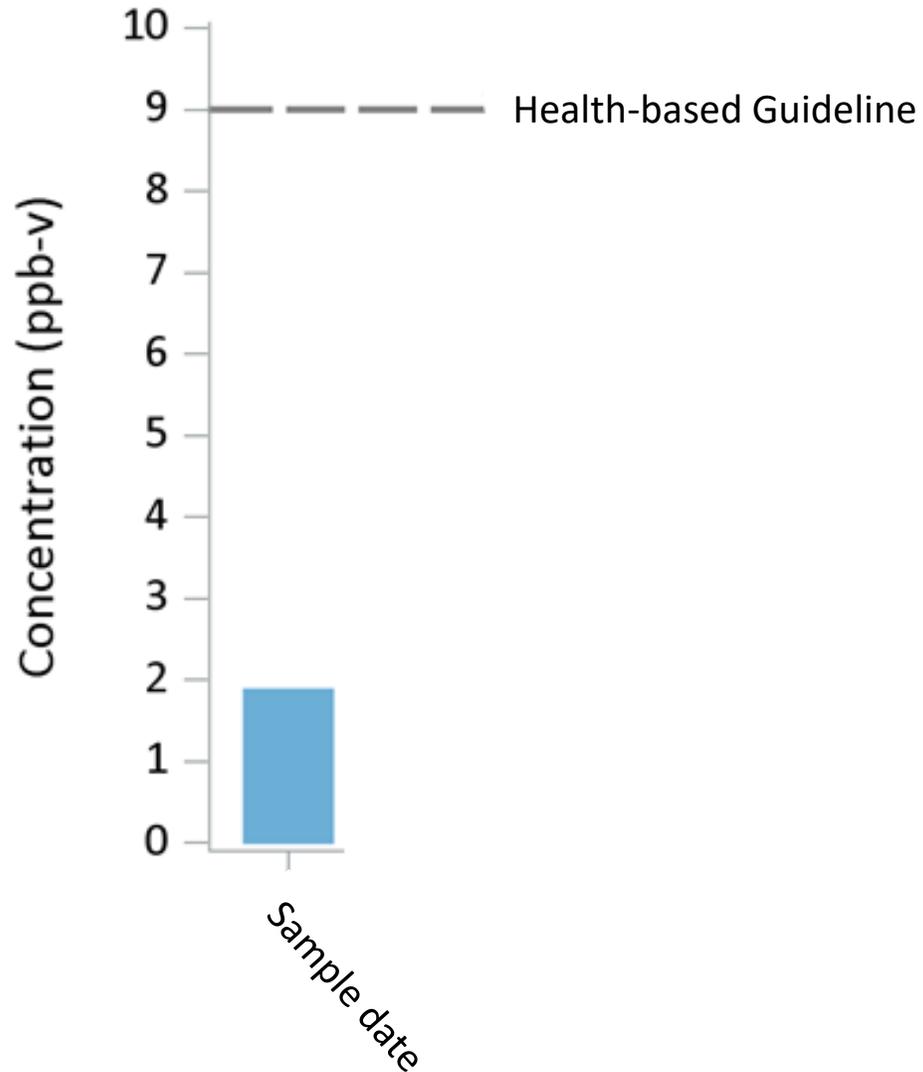
Road Map

- Provide background information
- How we evaluate 24-hour sample results
- How we evaluate air levels averaged over time
- Describe future evaluation of data on asthma-related emergency department visits

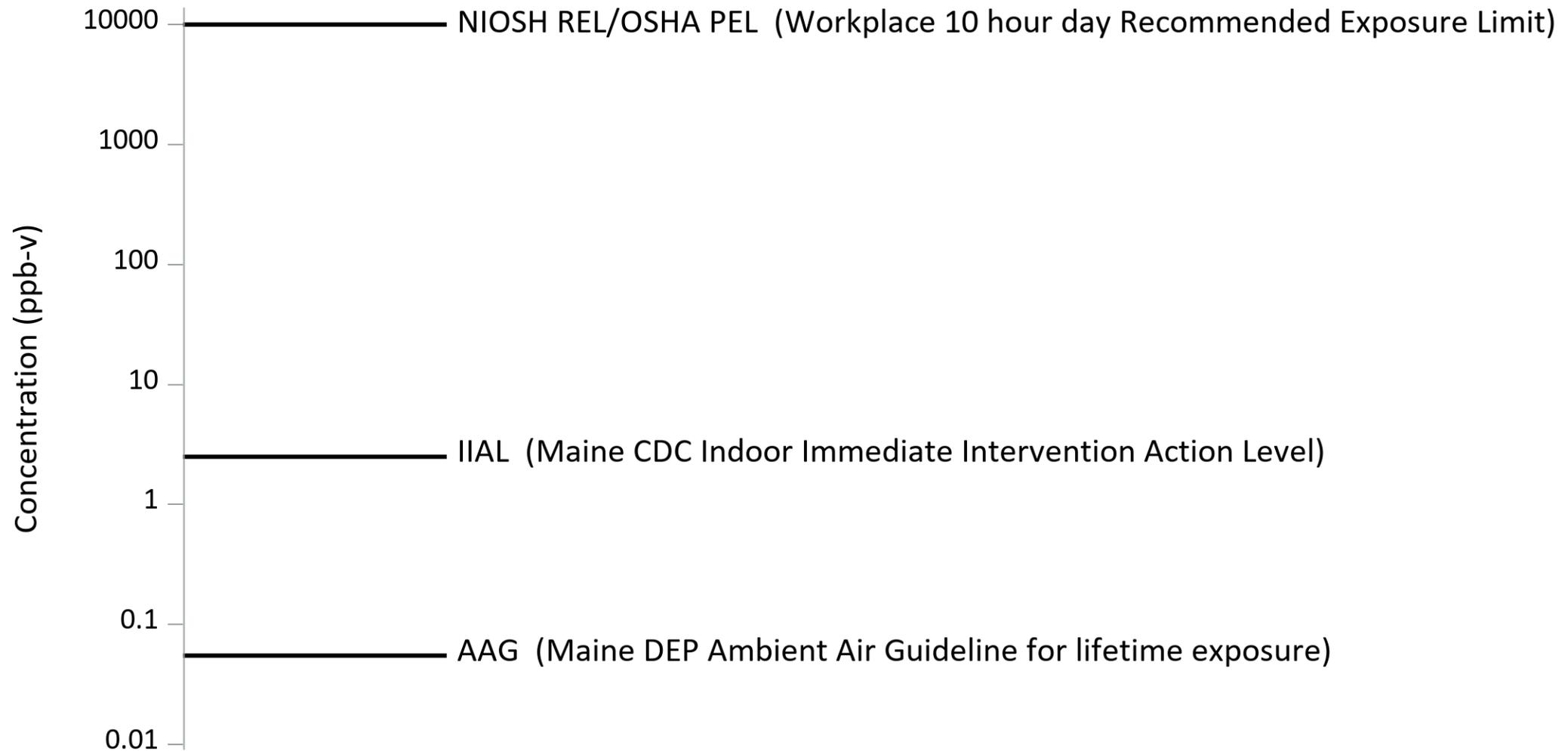


Some Background

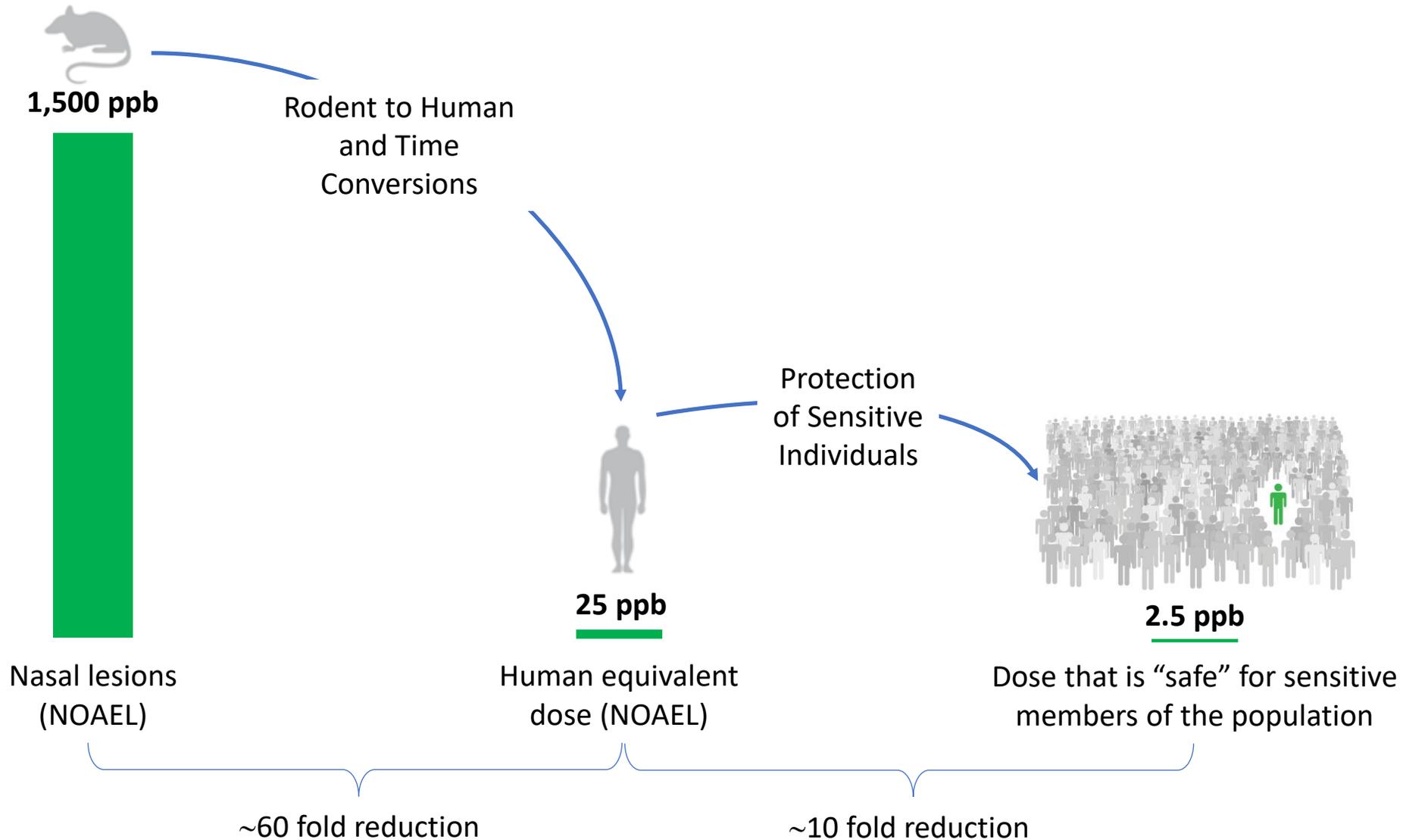
Inspection of Air Quality Results and Comparison to Health-based Guidelines



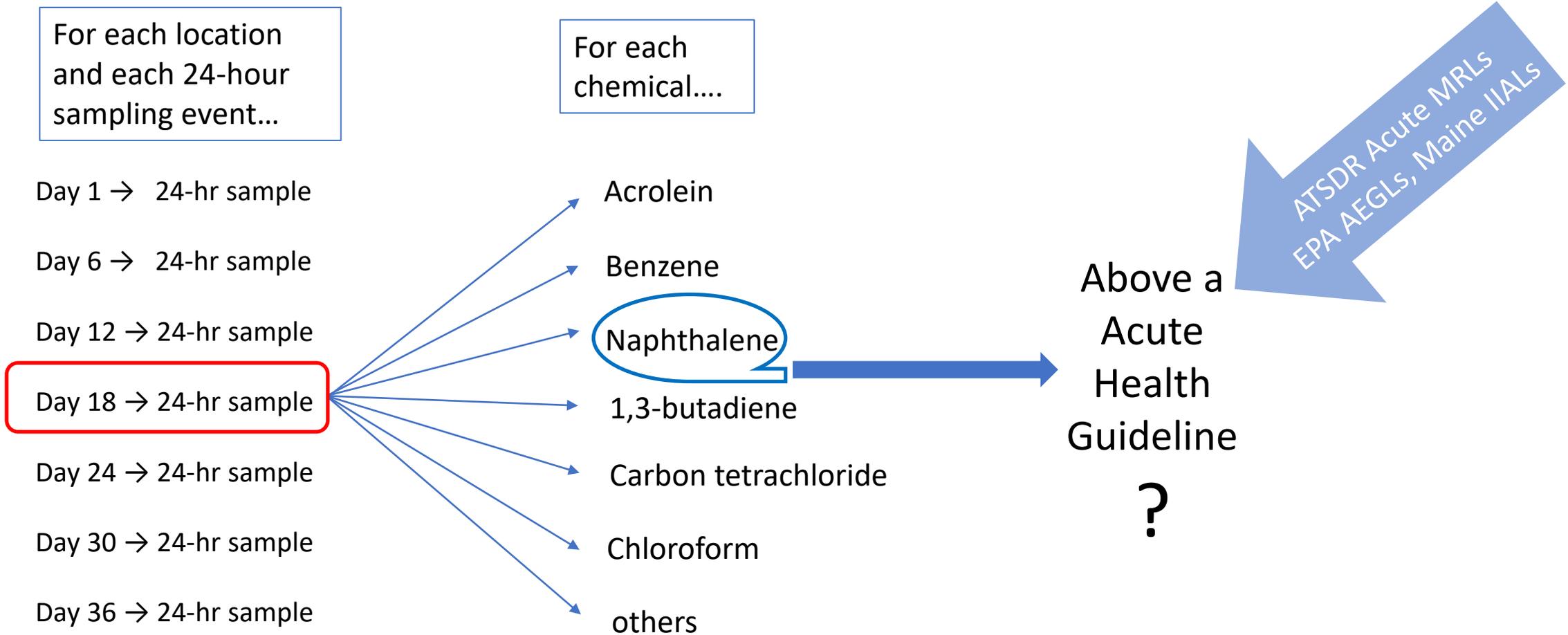
Example: Health-based Exposure Guidelines for Naphthalene



Maine Derivation of an Acute Toxicity Value for Naphthalene

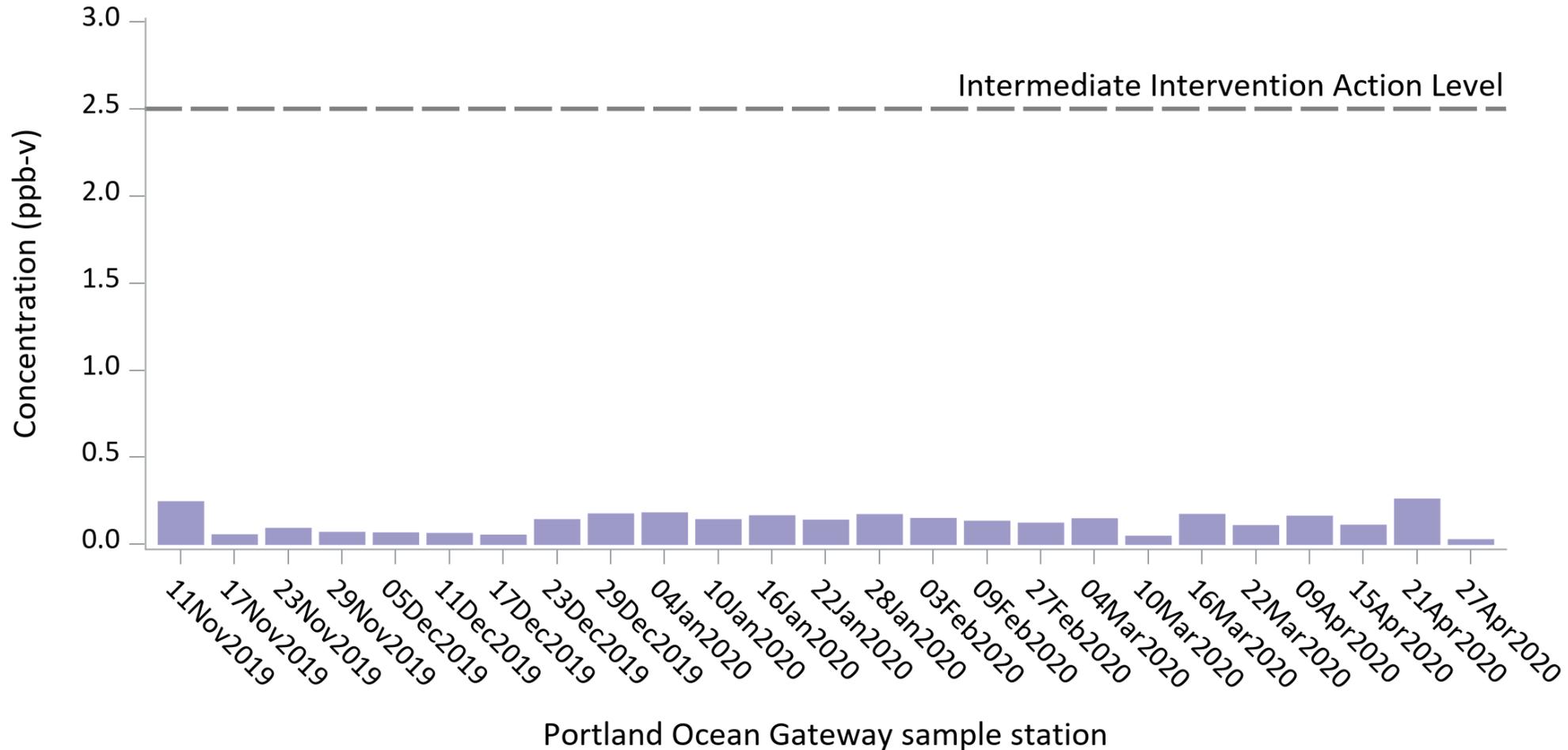


How we assess short-term exposure to chemicals in outside air:

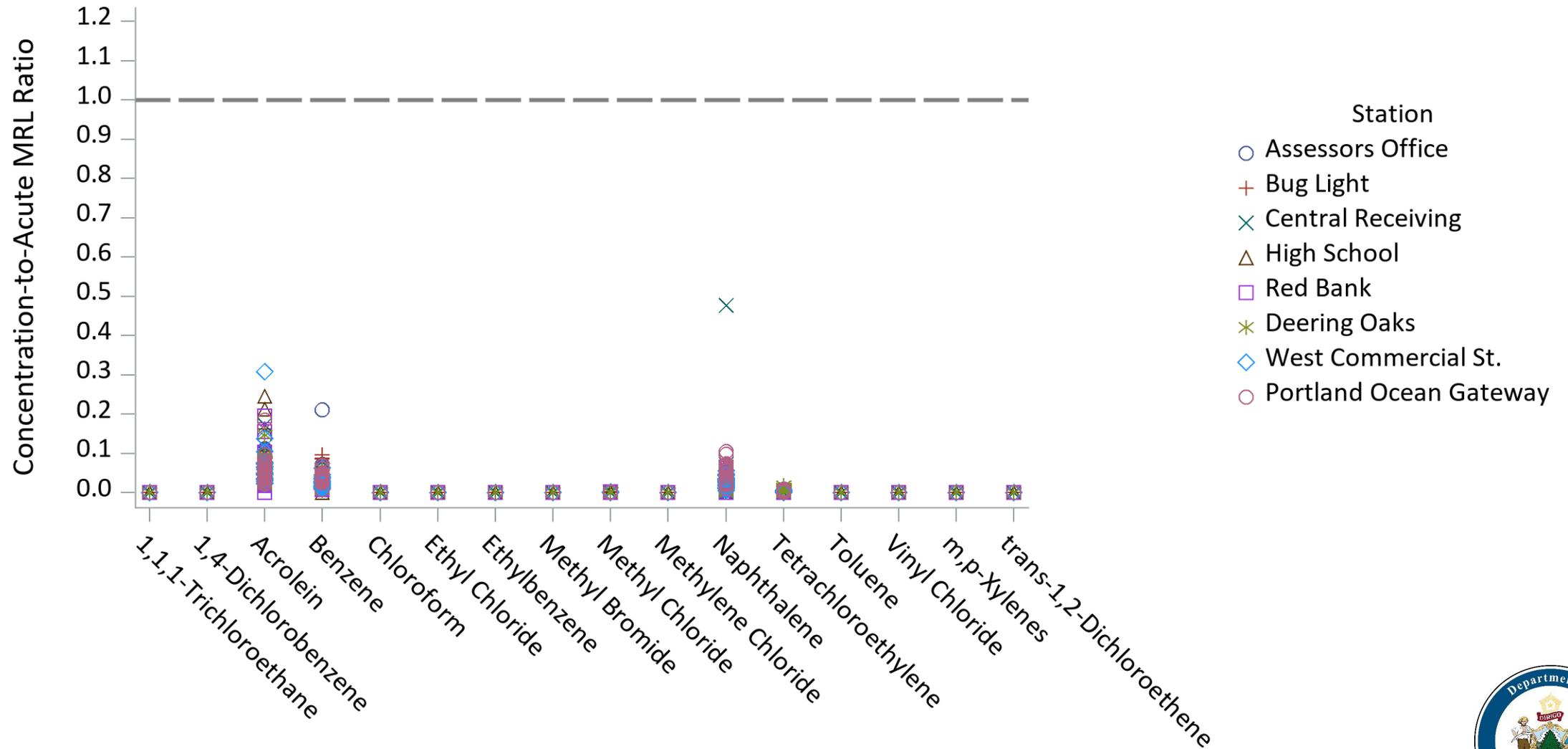


EXAMPLE – Naphthalene

Comparison of 24-hour sampling results for Naphthalene to an acute health guideline



24-hour Sample Comparisons with Acute Guideline Values



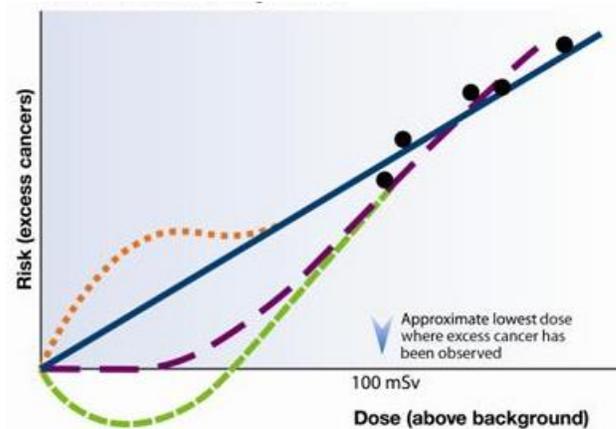
California Derivation of an Chronic Toxicity Value for Naphthalene

10,000 to 60,000 ppb



Increase in nasal tumors

Assumes Linear Dose-Response



0.06 ppb

Incremental Lifetime Cancer Risk of 1-in-100,000 (Ambient Air Guideline)



How we assess long-term exposure to chemicals in outside air:

For each location and for each 24-hour sampling event and each specific chemical result...

Compute the average air level

Day 1 → 24-hr sample → Naphthalene

Day 6 → 24-hr sample → Naphthalene

Day 12 → 24-hr sample → Naphthalene

Day 18 → 24-hr sample → Naphthalene

Day 24 → 24-hr sample → Naphthalene

Day 30 → 24-hr sample → Naphthalene

Day 36 → 24-hr sample → Naphthalene

Average Naphthalene Concentration in air

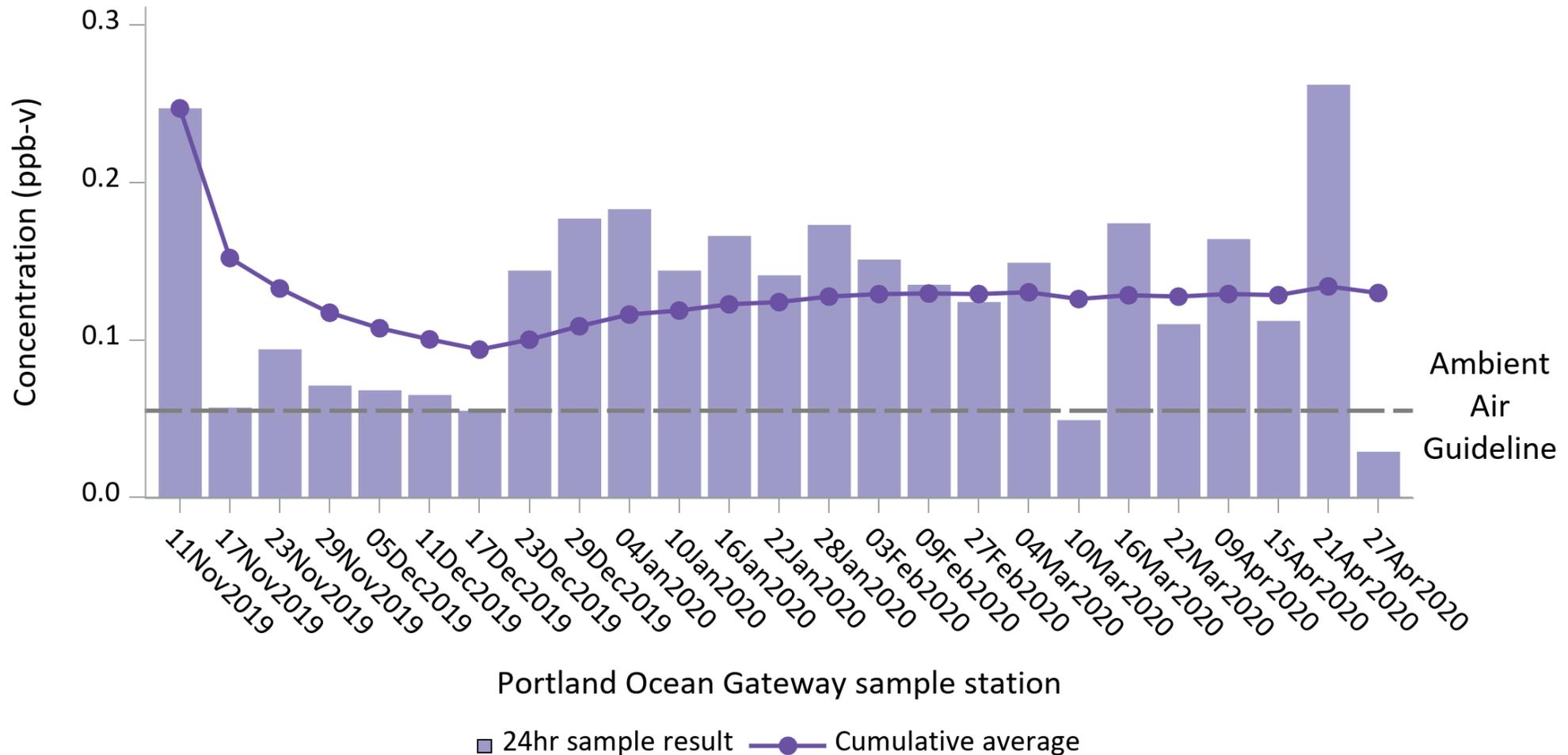
Above a Chronic Health Guideline ?

Maine AAGs
ATSDR Chronic MRLs



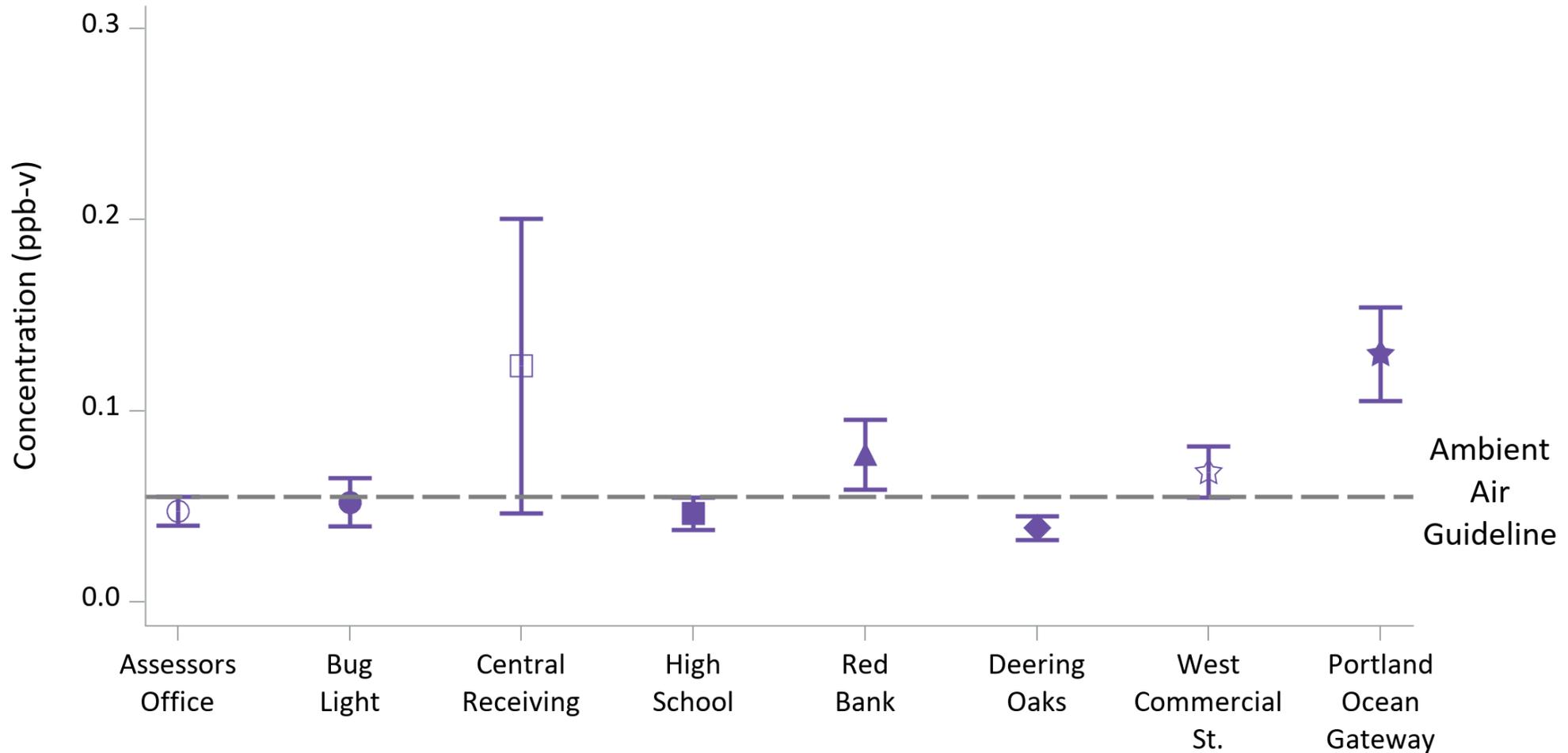
EXAMPLE – Naphthalene

Averaging of 24-hour sampling results for Naphthalene and comparison to a chronic health guideline

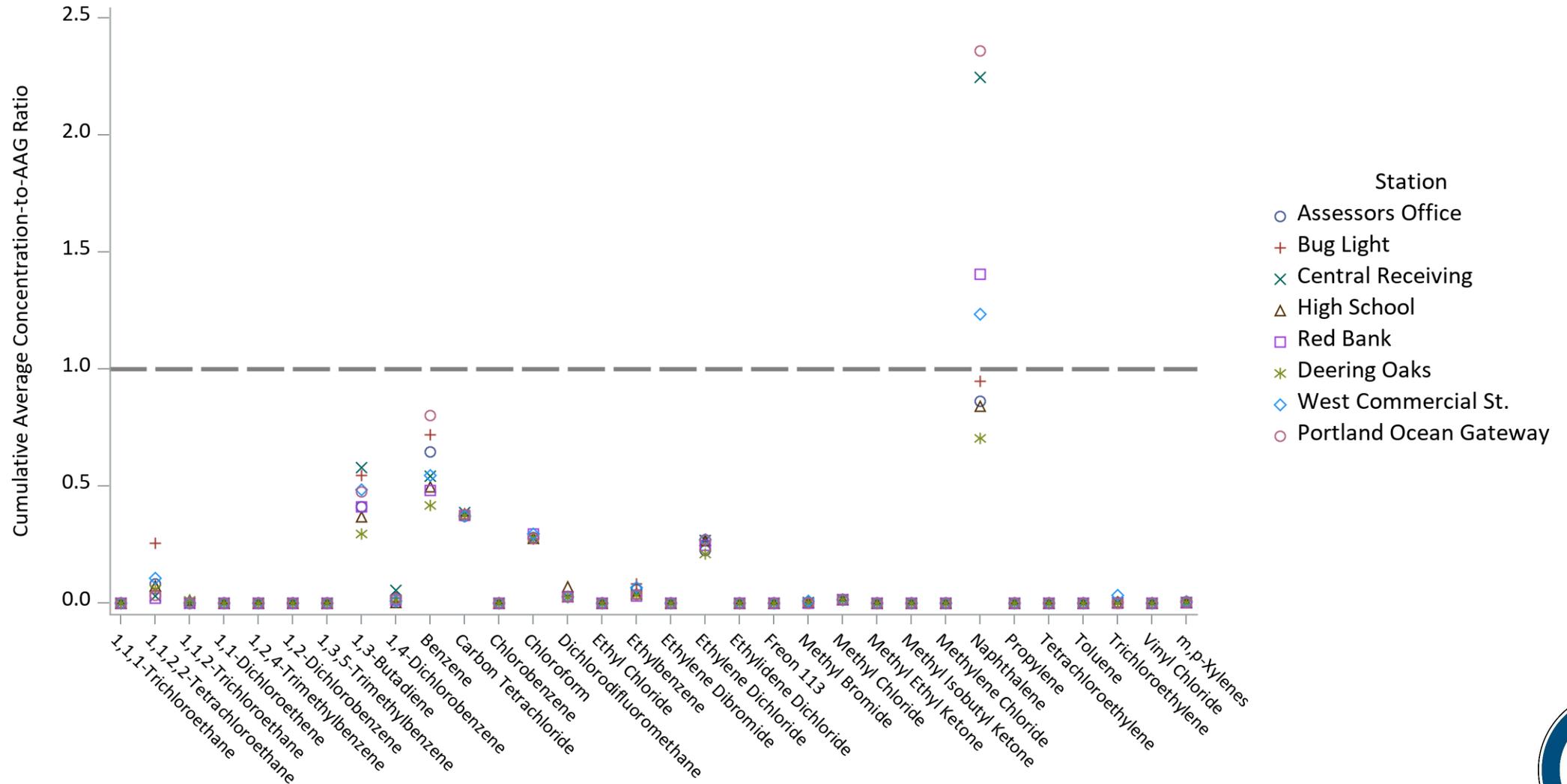


EXAMPLE – Naphthalene

Comparison of average 24-hour sample results with 95% confidence interval on the mean for Naphthalene across sampling locations

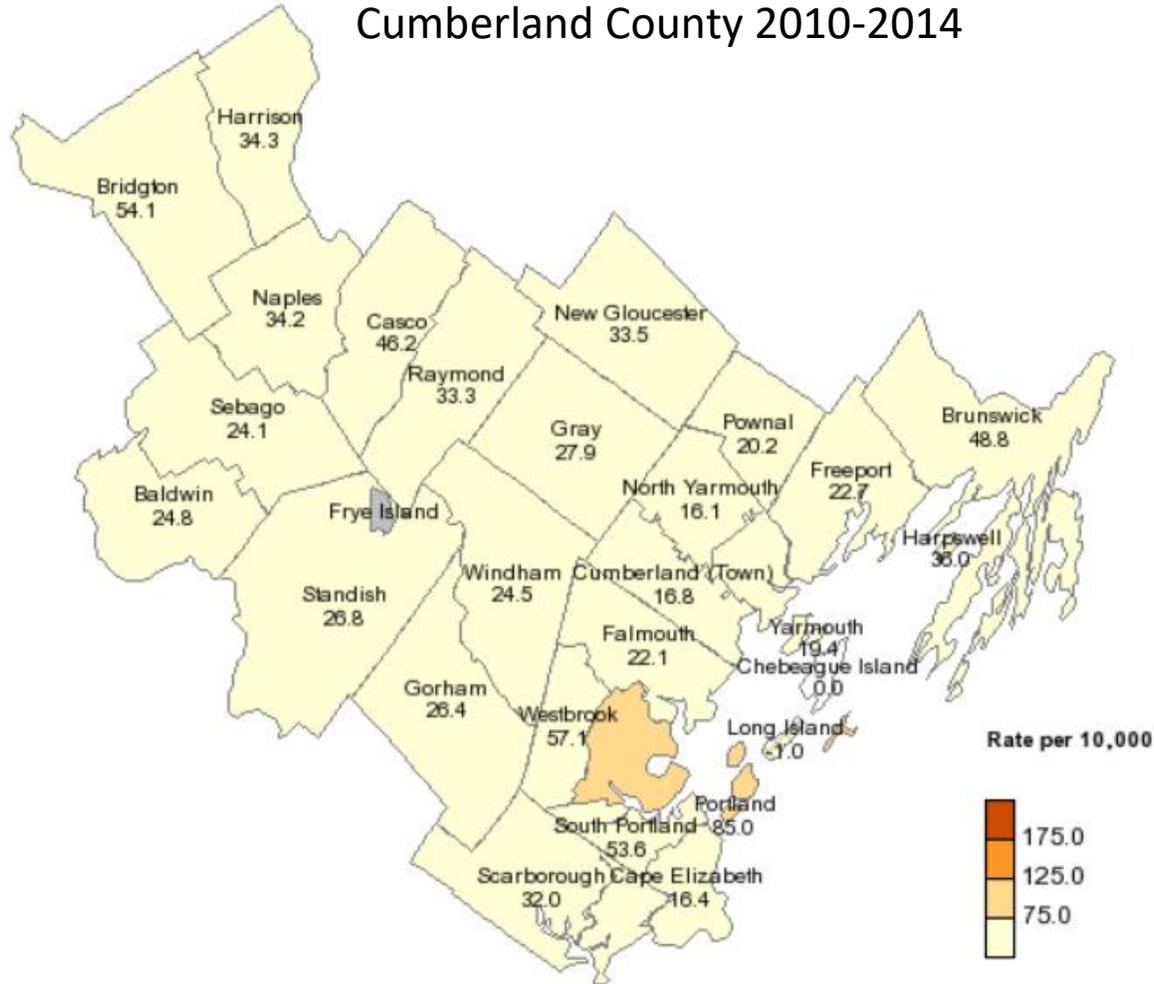


Average 24-hour Sample Results Comparisons with Chronic Guideline Values

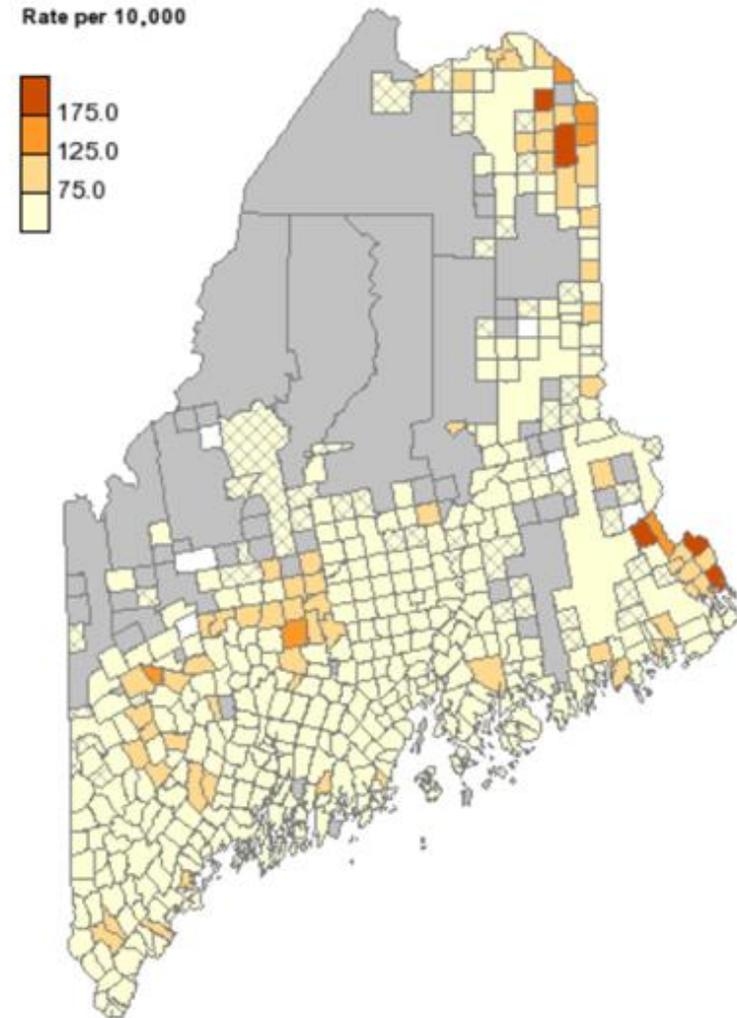


Evaluate Health Outcomes - Asthma

Rates of Emergency Department Visits by Town
Cumberland County 2010-2014



Rates of Emergency Department Visits by Town
Statewide 2010-2014



Potential Cluster Analysis

Example – Childhood Lead Poisoning

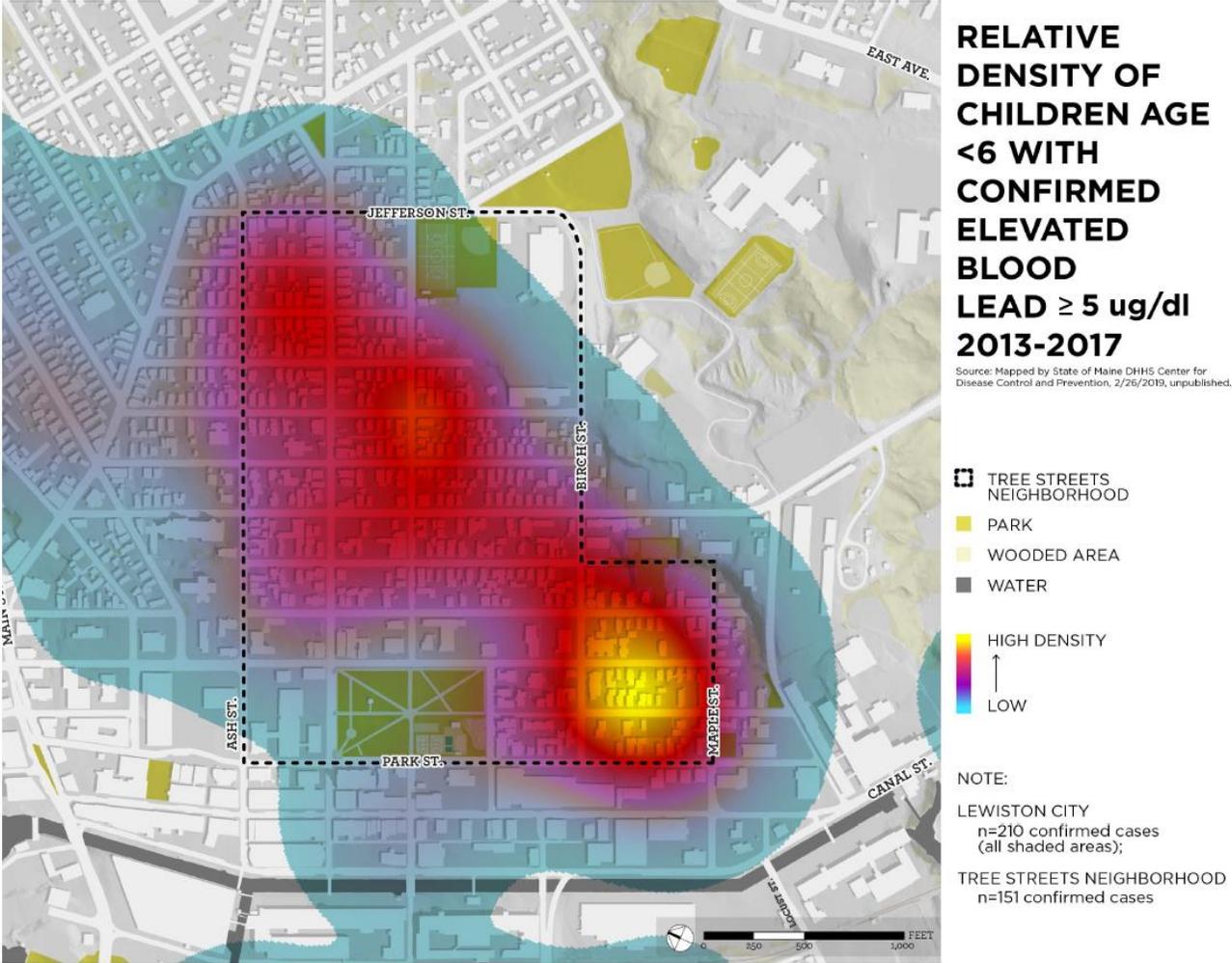


Figure 21. Map of the relative density of confirmed childhood lead poisoning cases in the Tree Streets Neighborhood



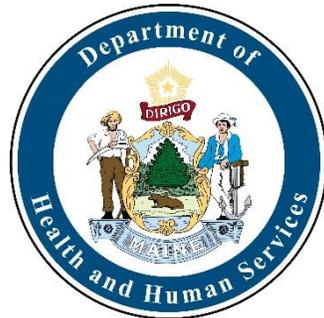
Next Steps for Maine CDC

- Continue to monitor 24-hour sampling results in partnership with DEP
- Continue to track cumulative averages for each location in partnership with DEP
- Obtain and evaluate data on asthma ED visits for Portland / South Portland
- Periodically report back to Portland and South Portland communities



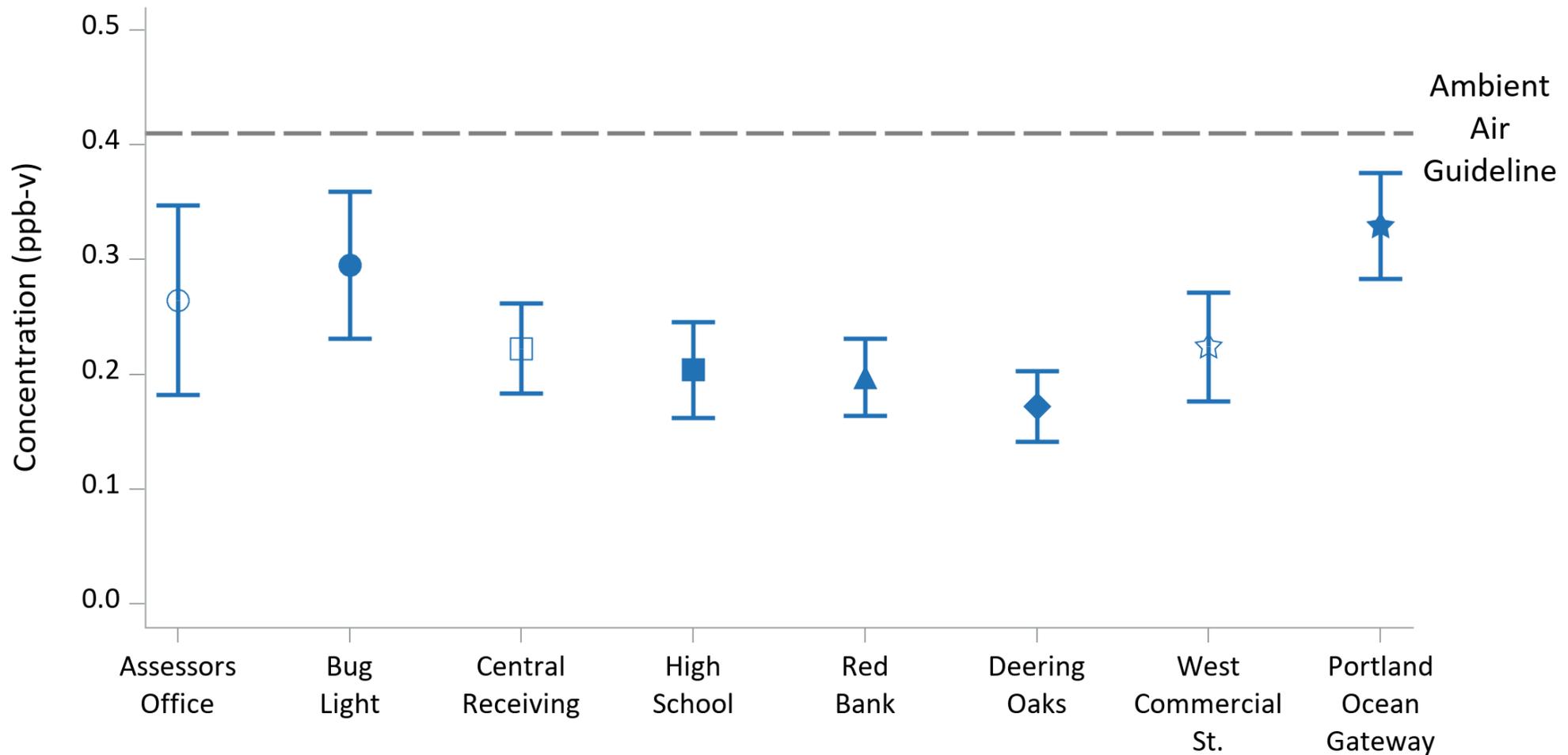
Questions?

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EXAMPLE – Benzene

Comparison of average 24-hour sample results with 95% confidence interval on the mean for Benzene across sampling locations



2018 HAPs Data – Acrolein Annual Averages

