2017 Water Monitoring Findings
Presentation Overview

• Background and Context
  – Local Pesticide Stewardship Partnerships
  – State Approach to Pesticides in Water

• Walla Walla Pesticide Monitoring Findings
  – 2017 surface water detections and historical trends for selected pesticides
Water Monitoring Context: Pesticide Stewardship Partnerships

Using monitoring data to focus collaborative actions and local expertise to produce measurable water quality improvements

Everyone’s Goal:
General decrease in pesticide levels in streams over time
Monitor for current use pesticides
In surface waters from drift & runoff

Identify streams
with elevated pesticide concentrations or high # of detections

Collaborate
to implement voluntary management practices

Follow-up
monitoring to determine improvements over time
Walla Walla Project Began in 2005

- Walla Walla Basin Watershed Council
  - Water sampling, weather stations, outreach
- OSU Extension & Blue Mountain Hort Society
  - Technical assistance, training and implementation
- Oregon Department of Environmental Quality
  - Laboratory analysis & data evaluation
- Oregon Department of Agriculture
  - Technical support
- Salmon-Safe
- Pea/Wheat Growers
Monitoring period:

- Late March through late June
- Two fall sampling events

Approximately **130** pesticides or breakdown products analyzed by DEQ Lab
Walla Walla Watershed Pesticide Monitoring: 2017 Data Findings

West Branch Crockett
*Note: Upper Watershed sites added in 2015, and new laboratory analytes added (e.g., glyphosate and degrade)
Upper watershed sites fully added in 2015, and new analytes added (e.g., glyphosate and degrade).
Maximum Number of Pesticide Ingredients in a Single Walla Walla Basin Mixture Spring/Summer

Year:
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017

Number of Pesticide Ingredients:
- 7 (2012)
- 4 (2013)
- 2 (2014)
- 9 (2015)
2017 Walla Walla Water Monitoring: Insecticide Detections

Mid West Prong
Walla Walla Spring/Summer 2017
chlorpyrifos (Lorsban)

minimum benchmark: 0.041

(3.9 cfs at time of sampling)
Walla Walla Distributaries Early Spring
Average and Maximum Concentration of Detections
chlorpyrifos 2005 - 2017

Concentration (ug/L)

Detection Frequency

Average

Detection Frequency

WQ Benchmark = 0.041

Walla Walla Spring/Summer 2017
carbaryl (Sevin)

minimum benchmark: 0.5
Walla Walla Distributaries Spring/Summer
Average and Maximum Concentration of Detections
carbaryl 2005 - 2017

Concentration (μg/L)

Detection Frequency

Average
Detection Frequency
WQ Benchmark = 0.5

No Malathion Detections in 2017
2017 Walla Walla Water Monitoring: Herbicide Detections

Pine Creek at Schubert Road
Very few detections of Diuron in 2017
Walla Walla Distributaries Spring/Summer
Average and Maximum Concentration of Detections
diuron 2005 - 2017

- Average
- Detection Frequency
- WQ Benchmark = 2.4
Walla Walla Spring/Summer 2017
desethylatrazine
(simazine/atrazine degradate)

minimum benchmark: 1000

Result (ug/L)

- Pine Creek at Schubert Road - Lower
Walla Walla Spring/Summer 2017
metribuzin (Sencor/Lexone)

minimum benchmark: 8.7

![Graph showing metribuzin levels in the Walla Walla River with the minimum benchmark indicated.](image-url)
Walla Walla Spring/Summer 2017
pendimethalin (Prowl)

minimum benchmark: 5.2

Result (ug/L)

Apr 01  Apr 15  May 01  May 15  Jun 01  Jun 15  Jul 01  Jul 15

Little Walla Walla River Mid West Prong
Flow Rates During Sampling
When Analytes Were Detected

| Maximum (Pine Creek) | 37.70 cfs | 3/22/2017 |
| Minimum (WB Crockett) | .60 cfs | 3/30/2017 |
| Average | 4.62 cfs |
| Median | 3.30 cfs |
PSP Sampling Sites 2018

- West Little Walla Walla River
- South Stateline Road
- West Prong
- West Branch Crockett
- Pine Creek
- Schubert Road Bridge
- Dry Creek
- Seven Hills Road
- Little Walla Walla River
- At The Frog
- Walla Walla River
- Grove School Bridge
Pesticide Stewardship

✓ Increased Awareness

✓ Local, Voluntary and Collaborative
Evaluation of Monitoring Data by Inter-Agency Team

1. **Compare Detections to Lowest EPA Aquatic Life Benchmarks**
   - Non-regulatory benchmarks that help ID & prioritize pesticides & locations
   - Benchmarks for fish, invertebrates and non-target aquatic plants

<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorpyrifos</td>
<td>0.041 ug/L</td>
</tr>
<tr>
<td>Sulfometuron methyl</td>
<td>0.45 ug/L</td>
</tr>
<tr>
<td>(Oust)</td>
<td></td>
</tr>
<tr>
<td>Diuron</td>
<td>2.4 ug/L</td>
</tr>
<tr>
<td>(Karmex)</td>
<td></td>
</tr>
<tr>
<td>Imazapyr</td>
<td>24 ug/L</td>
</tr>
<tr>
<td>(Arsenal)</td>
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</tbody>
</table>

2. **Consider frequency of detections:**
   - Uncertainty about chronic effects of ever-present low levels in streams

3. **Other “weight-of-evidence” factors:**
   - E.g., pesticides that often occur in mixtures with other pesticides
Recap of 2017 Walla Walla Pesticide Surface Water Monitoring Findings

• The total number of pesticide ingredients detected in watershed reduced from 18 to 7 from 2015 to 2017
  – Only 5 pesticide ingredients were detected in the Lower Watershed (tree fruit area) in 2017

• Total number of pesticide detections lowest since monitoring began

• Chlorpyrifos (Lorsban) concentrations continue to exceed water quality standards in early spring

• Other pesticides detected were all at very low levels (<10%) relative to benchmarks, except one carbaryl sample
DEQ Groundwater Monitoring in Walla Walla Watershed

- Legislature funded Statewide GW Monitoring Program for assessment purposes only
- Walla Walla was the second watershed on the monitoring schedule
- Data can help augment PSP surface water data and further inform outreach efforts
- 60 wells sampled in Winter and Fall of 2015
  - Fall sampling included 40 new wells and 20 from Winter sampling
## 2016 OREGON DEQ GROUNDWATER MONITORING: MILTON-FREEWATER AREA DETECTIONS

<table>
<thead>
<tr>
<th>Current Use Pesticides</th>
<th>Winter (N = 60)</th>
<th>Fall (N = 60)</th>
<th>Total (N= 120)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrazine</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Carbaryl</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>DCPA Acid metabolites (Dacthal)</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Deisopropylatrazine</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Desethylatrazine</td>
<td>18</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>Endosulfan II</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Metribuzin</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Metsulfuron-methyl</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Norflurazon</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Simazine</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legacy Pesticides</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDT metabolites</td>
</tr>
<tr>
<td>Chlordane metabolites</td>
</tr>
<tr>
<td>Endrin metabolites</td>
</tr>
<tr>
<td>Heptachlor epoxide</td>
</tr>
</tbody>
</table>

| Total Number of Detections | 45 | 35 | 80 |

* The Fall sampling included 20 wells sampled in the Winter and 40 new wells
Oregon Pesticide Waste Collection Events: 
Making Link Between Pesticide Use, Water Quality and Pesticide Disposal

28 free ag / commercial pesticide collection events conducted in Oregon since 2014:

– Over **338,000 pounds of unusable pesticides** removed from watersheds
– **550** growers, forest land owners and commercial & institutional applicators participated
– Includes state-sponsored events and local events (with state support)
– **Tens of thousands of pounds** of empty plastic containers also collected for recycling
Examples of Funded Grant Projects:

- Developing management tool and training to improve sprayer efficiency and calibration
- Demonstrate use and effectiveness of Integrated Pest Management tools
- Develop and refine modeling tool to predict pesticide loadings to water
- Urban pesticide water quality education and outreach
- **NEW award to OSU for research on Spotted Wing Drosophila control alternatives**
Fisheries Services recently released re-done biological opinions on chlorpyrifos, malathion, diazinon

- Recommend label changes for larger no-spray buffers
- One option is to implement multiple actions, including “pesticide stewardship plans” (e.g., Salmon-Safe)
External Factors Impacting The PSP Program

• Changing benchmarks from the US EPA

  Atrazine benchmark raised from .001 ug/L in 2016 to 1 ug/L in January 2017

  Imidacloprid lowered from 1.05 ug/L in January 2017 to .01 ug/L in December 2017

Approximately 25 other changes to benchmarks in 2017. Most do not impact Oregon or Oregon pesticide users.

Changing benchmark create a dynamic playing field for PSP partners and users of pesticides. Also impacts what is and what is not a designated Pesticide of Concern.