Pesticide Stewardship Partnership & Urban Pesticide Use

Benton County Cooperative Weed Management Area Meeting
Feb 28, 2017
The Pesticide Stewardship Partnership Program is being implemented in nine watersheds across Oregon.

These watersheds represent diverse land uses including agricultural, industrial, urban, and forestry uses.

In several watersheds multiple land uses are being monitored to characterize pesticide use and evaluate current management actions that either prevent or contribute to pesticide residuals in ground and surface waters of the state.

In four of the watersheds urban pesticide use is being monitored. This includes:

- Clackamas
- Yamhill
- Amazon
- Middle Rogue
Currently Active PSP Watershed or Pilot Area Monitoring Sites
Surface water quality monitoring occurs at stream locations which are selected jointly by DEQ and PSP watershed partners and may vary from year to year based on previous years findings. Generally there are “long term” sites which do not change.

Sampling schedules are based on local knowledge as to when pesticide applications may begin and end. This generally results in sampling occurring beginning in March and running through July and beginning again in September and running through October/November.

Groundwater monitoring is beginning conducted thru DEQ’s GW assessment monitoring program. Thus far Middle Rouge, Walla Walla have been done with N. Willamette scheduled for 2017.
Herbicides

By far the most detected class of pesticides found in the PSP program are the herbicides accounting for approximately 65 -70% of all the detections occurring between 2010 and 2015. This compares favorably with a recently completed WSDA study in the Puget Sound on urban pesticide use.

In urban areas the number of herbicides detected is limited compared to those in rural or agricultural areas; however, the concentrations detected of those found in urban areas tend to be higher.

The most commonly detected herbicides in urban areas are:

- **2,4-D**
- **Glyphosate**
- **Triclopyr**
- **Diuron**
- **AMPA**
- **2,6-Dichlorobenzamide**

Variety of homeowner products
Round-Up
Variety of homeowner products
Karmax
Breakdown of Glyphosate
Breakdown of Dichlobenil
Urban Puget Sound – Pesticide Use Responses

Number of Positive Responses

- Herbicides
- Insecticides
- Moss Control
- Slug Control
- Fungicides
- Mole and Gopher

Kelly McLain, WSDA 2014
Urban Herbicide Use

A majority of the herbicides used in the urban (Western Oregon/Washington) environment are for the treatment of lawn weeds. This is followed by treatments for gardens (non-food), driveways, and roof tops. Below is a generalized use chart of pesticide application.

McLain 2014
Urban Puget Sound Most Treated Locations

- Lawns: 36
- Gardens: 14
- Foundations: 19
- Roofs: 11
- Driveways: 20

Kelly McLain, WSDA 2014
Examples of Herbicide Results from Urban Monitoring Locations
2,4-D and Triclopyr are active ingredients in several herbicides including Crossbow & Chaser.

Many “premixed” products for home use contain several active ingredients.
### Examples of Homeowner Products with Multiple A.I.’s

<table>
<thead>
<tr>
<th>MFR</th>
<th>Trade Name</th>
<th>Form</th>
<th>Chemical(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotts</td>
<td>Turf Builder Plus</td>
<td>Granular</td>
<td>2,4-D, MCPP</td>
</tr>
<tr>
<td>Lilly-Miller</td>
<td>Lawn Weed Killer</td>
<td>Liq. Conc.</td>
<td>2,4-D, MCPP, dicamba</td>
</tr>
<tr>
<td>Ortho</td>
<td>GroundClear Complete Veg. Killer</td>
<td>liquid</td>
<td>Glyphosate, Imazapyr</td>
</tr>
<tr>
<td>Ortho</td>
<td>Weed-B-Gone</td>
<td>Liquid</td>
<td>Triclopyr, MCPP, dicamba</td>
</tr>
<tr>
<td>Preen</td>
<td>Garden Weed Preventer</td>
<td>Granular</td>
<td>Trifluralin</td>
</tr>
<tr>
<td>Scotts</td>
<td>Turf Builder with Halts (30-3-4)</td>
<td>Granular</td>
<td>Pendimethalin</td>
</tr>
<tr>
<td>Spectracide</td>
<td>Triple Strike</td>
<td>Liquid</td>
<td>Diquat, Fluazifop, Dicamba</td>
</tr>
</tbody>
</table>
In several cases, WQ monitoring does not detect the original pesticide but rather the breakdown product or metabolite. In some cases that metabolite may be more toxic than the original pesticide or may be more mobile in the environment.
Amazon Watershed Station 25624

Glyphosate Results

- EPA ALB 1800000 ng/L
- EPA DWS 700000 ng/L

AMPA Results

- EPA ALM 249500000 ng/L
- EPA ALM 249500000 ng/L
Diuron is a broad spectrum herbicide used in agricultural, urban, and rural areas. It is the generally the most detected herbicide in the watersheds sampled. Indications are that its primary use in these settings is right of way maintenance. It has limited registered use in urban landscape environments.
Monitoring Station 34234 – South McMinnville
Yamhill Watershed Station 34234

2,4-D Results

EPA DWS
70 ug/L

Triclopyr Results

EPA ALM
26 ug/L
HBSL
300 ug/L
Yamhill Watershed Station 34234

**Glyphosate Results**

- EPA DWS
  - 700000 ng/L

**AMPA Results**

- EPA ALM
  - 249500000 ng/L
Yamhill Watershed Station 34234

Diuron Results

EPA ALBM
2400 ng/L

3/2/2017 19
Yamhill Watershed Station 34234

Because of the proximity of the sampling site to agricultural lands it is likely that there is some herbicides being detected that are not related to strictly urban use.

Atrazine Results

- EPA ALB 1 ng/L
- EPA DWS 3000 ng/L

Simazine Results

- EPA ALB 2240 ng/L
- EPA DWS 4000 ng/L
Yamhill Watershed Station 34234

Metolachlor Results

Metribuzin Results

EPA ALB
10000 ng/L

EPA ALB
8700 ng/L

3/2/2017
Water quality monitoring for urban use herbicides can be complicated in areas that transition from agricultural / forestry land use to urban

This is due to the fact that in several cases herbicides are registered for use in homeowner, agricultural, and forestry applications, for example:

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metolachlor</td>
<td>Agricultural, residential lawns (cert. app)</td>
</tr>
<tr>
<td>Metsulfuron Methyl</td>
<td>Agricultural, residential, forestry</td>
</tr>
<tr>
<td>Glyphosate</td>
<td>Agricultural, residential, forestry</td>
</tr>
<tr>
<td>Simazine</td>
<td>Agricultural, residential, forestry</td>
</tr>
<tr>
<td>Benefin</td>
<td>Agricultural, residential</td>
</tr>
<tr>
<td>Triclopy</td>
<td>Industrial, right-of-way, residential, forestry</td>
</tr>
</tbody>
</table>
Future Considerations for PSP’s

Six of the nine PSP areas will be looking more intensely at urban monitoring locations with monitoring sites located to reduce the possibility of other potential sources of contamination

Take Away’s

✓ Urban pesticide use is contributing to water quality impacts

✓ This contribution can impact aquatic life and possibility human health

✓ Need to look equally at all sources of herbicide contamination and develop management measures for various land uses

✓ Need for development of effective outreach and education targeted to urban home owners regarding safe and effective herbicide use