Washington State Ban on Coal Tar Sealants

Holly Davies, PhD
Joshua Grice
Timeline

• Dec 2010- Peter Van Metre and Barbara Mahler. Contribution of PAHs from coal-tar pavement sealcoat and other sources to 40 U.S. lakes. Sci. Tot. Env. 409 334-344.

• Jan 2011- HB1721 based on the USGS paper.

• Ecology publically supported it.

• Apr 2011 passed legislature then signed.
2010 USGS modeling study- fig 4

Figure is surprising based on what we know about
• The use of coal tar sealants and
• The sources of PAHs
What we know about use of coal tar sealants in Washington

• Van Metre *et al.* 2009 seemed to limit major impacts to east of the Rockies.

• WSDOT stopped using them.

• Some people are rumored to be using them, but these people were not willing to speak publicly.
What we know about releases of PAHs in Washington

- Creosote treated RR ties
- Residential wood burning
- Vehicle emissions
- Creosote treated marine pilings
- Creosote treated utility poles
- Wild fires
- Motor oil leaks
- Lawn, garden, and recreation equipment
- Residential trash burning
- Business equipment
- Silvicultural
- Locomotives
- Improper disposal of used motor oil
- Industrial point sources
- Vehicle tire wear
- Coal tar sealants
- Large spills
- Asphalt roofs
- Residential yard waste burning
- Residential fuel, non-wood
- Cigarette smoke

Estimated annual releases of PAHs in metric tons

- Air
- Water
- Land
Ecology support for ban

• Even though we don’t think coal tar sealants are the largest source of PAHs in Washington State

• PAHs are bad
  – Persistent, bioaccumulative and toxic (PBTs)
  – Human carcinogens
  – Wildlife carcinogens
  – PAHs also affect survival, growth and reproduction
  – Local examples

• There are safer alternatives
How much PAH in each source?

<table>
<thead>
<tr>
<th>Source</th>
<th>Concentration (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh asphalt</td>
<td>1.5</td>
</tr>
<tr>
<td>Weathered asphalt</td>
<td>3</td>
</tr>
<tr>
<td>Fresh motor oil</td>
<td>4</td>
</tr>
<tr>
<td>Brake particles</td>
<td>16</td>
</tr>
<tr>
<td>Road dust</td>
<td>24</td>
</tr>
<tr>
<td>Tire wear particles</td>
<td>86</td>
</tr>
<tr>
<td>Diesel engine</td>
<td>102</td>
</tr>
<tr>
<td>Gasoline engine</td>
<td>370</td>
</tr>
<tr>
<td>Used motor oil</td>
<td>440</td>
</tr>
</tbody>
</table>

**Pavement Sealcoat**

- **Asphalt Based**
  - ~ 50

**Coal-tar-based**

- ~ 100,000

All concentrations in mg/kg (averages of 1-6 studies)
Human Health

PAH in house dust [mg/kg]

Mahler, Van Metre, Wilson and Musgrove 2010. EST 44: 894-900

(1) "Coal tar" means a viscous substance obtained by the destructive distillation of coal and containing levels of polycyclic aromatic hydrocarbons in excess of ten thousand milligrams per kilogram. "Coal tar" includes, but is not limited to, refined coal tar, high temperature coal tar, coal tar pitch, or any substance identified by chemical abstract number 65996-93-2.

(2) "Coal tar pavement product" means a material that contains coal tar that is intended for use as a pavement sealant.
Chapter 70.295 RCW
Storm water pollution — coal tar

• After Jan. 1, 2012 sales ban
  “no person may sell at wholesale or retail a coal tar pavement product that is labeled as containing coal tar”

• After July 1, 2013 use ban
  “a person may not apply a coal tar pavement product on a driveway or parking area”
• A city or county may adopt an ordinance providing for enforcement of the requirements of subsection (1) or (2) of this section. A city or county adopting an ordinance has jurisdiction concurrent with the department to enforce this section.

• Requests for exceptions
  — FAA, DOT