Herbicide Use on Oregon Highway Shoulders—

Time to Stop?

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**Introduction.** A mixture of herbicides is normally applied by truck as a liquid spray and sometimes as granules in a band several feet wide along the pavement edges on highways maintained by the Oregon Department of Transportation (ODOT). This is done every spring, and sometimes again in fall, in an attempt to keep the treated area free of vegetation. People traveling the highways cannot avoid breathing herbicide vapors, which last for many days after an application. Signs are not posted to warn travelers of the presence of herbicide.

Along the coast and in other rural areas it is often impossible to travel between towns without traveling on state highways, as no alternate routes exist. People in cars, hikers and bikers, children waiting for school buses and anyone using the highways can be exposed to potent applications of weed killers, including a known carcinogen, without their informed consent. Children are especially vulnerable.

Some people with disabilities are intolerant of herbicide vapors and are advised by their physicians to avoid all travel for up to three weeks after an application. Because the herbicides are applied at different times in different locales, the springtime spray season can last from mid-March to early June, preventing for up to three months this segment of the population from accessing needed services that require travel on state highways, including trips for medical and dental care.

Some of the herbicides used are toxic to aquatic algae, fish and other organisms. Applying them along the coastal highways and along ditches and wetlands allows for the possibility of environmental degradation and water contamination.

The focus of this report is on treating road shoulders only, not on spot spraying for noxious weed control or removal of blackberries or scotch broom. Although some of the same concerns would apply to spot sprays, shoulder spraying uses far more herbicide and exposes everyone who travels on state highways—that is, nearly everyone in Oregon.

Some states and counties maintain roadsides without herbicides. A recent review commissioned by the Washington State Department of Transportation (WSDOT) suggests that the rationale for shoulder spray—the need for a vegetation-free zone along the pavement edge—may not be valid except in special localized cases.

Recommendations are included here for ODOT to adopt a policy of herbicide use as a last resort and to phase out shoulder spray along state highways in Oregon, except in specific localized areas where a need can be shown and alternatives do not exist. Where justification for herbicides is based on limited budget, full cost accounting is recommended to expose the actual full cost of herbicide use to Oregon taxpayers by factoring in the cost to the State of health problems, resulting economic impacts, and environmental degradation.

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http://www.wsdot.wa.gov/Research/Reports/600/621.1.htm
Which herbicides are used and in what amounts?

Highways maintained by ODOT were treated with 66 different herbicide products and 11 different spray adjuvants in 2006. A total of 18,098 gallons of liquid herbicide concentrates and 28,939 pounds of herbicide granules was used. This comes to 2.24 gallons of herbicide concentrate and 3.6 pounds of granules for each mile of state-maintained highway in Oregon.

The five herbicide products used in greatest amounts in 2006 are listed below.

**Casoron 4G**
(dichlobenil 4%, a possible carcinogen, moderate acute aquatic toxicity, potential ground water contaminant) 21,822 pounds

**Roundup Pro Concentrate**
glyphosate 50.2%, inert ingredients 49.8% 6,792 gallons

**Diuron 4L**
diuron 40.7%, inert ingredients 59.3%, a “known/likely” carcinogen, ground water contaminant, moderately toxic to fish, highly toxic to aquatic invertebrates, kills aquatic algae 3,188 gallons

**Ranger Pro**
glyphosate 41%, inert ingredients 59% 1,309 gallons

**Garlon 3A**
amine form of triclopyr 44.4%; inerts 55.6%, known inerts: ethanol, triethylamine, EDTA 1,049 gallons

In addition to active ingredients, each product may contain one or more "inert" ingredients. Many "inert" ingredients in current use have known adverse human and environmental effects. Testing of herbicide products is normally limited to active ingredients. For example, when researchers compared the complete product Round-Up to the active ingredient glyphosate, they found Round-Up always to be more toxic than its active ingredient. They concluded that endocrine and toxic effects of Round-Up can be observed in mammals.

What are the visible effects of herbicide spraying?

The photos on the following pages were taken along Highway 101 in the vicinity of Waldpsrt in Lincoln County, OR, a few weeks after the shoulders were treated with herbicide in 2004 and 2005.

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*Source: ODOT data. Totals include both shoulder and spot sprays.*
*http://www.ehponline.org/members/2005/7728/7728.html*
Applying Herbicide to Highway Shoulders—Is it necessary?

Above, the telltale stripe of dead vegetation from herbicide.

Right, an unsprayed shoulder appears healthy and supports low grass and wildflowers.
Is it effective?

The next four photos show that herbicides do not kill all weeds along the highway.
Is the environment protected?

The next photos show that road shoulders are sprayed near the ocean, bay, and wetlands.
Are native plants or wildlife affected?

Sometimes native plants like salal that prevent erosion are killed by the spray.

This shoulder was sprayed despite an active osprey’s nest with chicks present. The nest is on the horizon in a dead tree just left of center. Herbicide-killed grass is in the foreground.
What effects do herbicides have on human health?

Research on this topic fills volumes, but to put it briefly, herbicides are more harmful than originally thought and are now linked to several cancers, Parkinson's disease, attention deficit disorder, nerve and liver damage, reproductive effects, asthma attacks, sleep disorders and tinnitus.

Herbicide chemicals are of particular concern for people with compromised immune systems, the elderly, cancer survivors, pregnant women, babies and children, people with chemical sensitivities, and those with asthma.

In 2004, The Ontario College of Family Physicians conducted a comprehensive review of herbicides and other pesticides and their effects on human health. They recommended avoidance of these products whenever possible. iv Many Canadian cities, including Toronto, Montreal and Vancouver, have banned cosmetic use lawn and garden pesticides even on private property.

What effects do herbicides have on the environment?

Again, volumes have been written. The biggest concerns may be contamination of surface and ground waters and adverse effects on aquatic life, including salmon and other anadromous species, whose behaviors and defenses are altered in ways that diminish their survival.

Traces of herbicide have found in runoff from road shoulders after rainfall and, "there appears to be a long-term residual of these compounds for many months after their application to the road shoulder," according to a study by the US Geological Survey in Western Oregon."v

One herbicide, diuron, is so reliably toxic to marine algae that it is used in marine paints and anti-foulants. Its application near rivers and especially the ocean is problematic, since algae are the base of the aquatic food web.

In addition to runoff and spray drift on the day of application, herbicides along the highways continue to volatize for days or weeks after application.

Why are some herbicides still on the market if they are harmful?

Herbicides are not "approved" by EPA, however they must be registered because they are poisons. EPA registration chiefly guarantees that the product will kill what it claims to kill.

With our present system it takes EPA years or decades to regulate harmful chemicals, because to prevent the marketing of an herbicide the agency must first prove the chemical poses a health


hazard. Manufacturers can take EPA to court to contest EPA’s decisions. If a chemical is already on the market it may take thirty or forty years to accumulate enough data to ban it. While use of it continues, people, pets and wildlife are exposed and some are made ill or die.

**Why is Washington State reconsidering the practice of shoulder spraying?**

Partly as a result of citizen activism, a 2005 study\footnote{Technical report WA-RD 621.1. K. Hill and R. Homer. Assessment of Alternatives in Roadside Herbicide Management. Washington State Transportation Center, University of Washington, Seattle, December 2005. http://www.wsdot.wa.gov/Research/Reports/600/621.1.htm} to explore both the need for and alternatives to annual applications of roadside herbicides was commissioned by WSDOT and performed by University of Washington researchers. It included both a literature review and a set of interviews with people having specific knowledge or views of these issues, including state transportation workers.

The study found no reason to keep the area immediately adjacent to the pavement free of vegetation unless some particular, observable condition triggers the need for such maintenance. The study listed examples of states and counties that do not use herbicides for highway, and reviewed alternative vegetation management practices used or attempted in other areas.

So far Washington State's reduction of shoulder spraying resulted in herbicides use dropping 42% statewide in 2006 as compared to 2005.\footnote{Washington State Department of Transportation, Memo from WSDOT maintenance engineer to regional maintenance engineers, 9 February 2007.}

**How can roadsides be managed without herbicides?**

The article "Managing Roadside Vegetation without Herbicides" discusses specific techniques that have been used for many years by road maintenance personnel in Jefferson County, Washington, to successfully manage roadsides. (The article is included as Appendix A).

Six counties in western Washington---Snohomish, Island, Jefferson, Clallam, Thurston, and San Juan---do not use herbicides in maintaining their roads. Nor do the cities of Olympia, Snohomish, and Bainbridge Island. No problems have been reported with safety or damage to highway shoulders. If any vegetation removal is deemed necessary, shoulders are mowed.

**What human rights and ethical principles are involved?**

When travelers on Oregon highways at certain times of the year are exposed to herbicide vapors without their knowledge, the principle of informed consent is violated. Most people would agree in principle that 'citizens have the right to know the toxic substances to which they are being exposed by their government. Yet the practice of applying herbicides to highway shoulders
without posting warning signs or otherwise informing travelers is depriving people of information they need to make choices that affect their own and their families’ health.

Article 5 of *The 1994 Draft Declaration of Human Rights and the Environment* states, "All persons have the right to freedom from pollution, environmental degradation and activities that adversely affect the environment, threaten life, health, livelihood, well-being or sustainable development within, across or outside national boundaries." The Oregon residents who experience severe symptoms from highway herbicides and who are unable to access basic services during the spray season are most definitely not free from pollution that affects their health, livelihood or well-being.

In 2006 Gov. Kulongoski proclaimed the month of May as Toxic Injury Awareness and Education Month, recognizing that people throughout the world have developed intolerance to low-level exposure to chemicals as a result of chemical injuries. ODOT was provided copies of the proclamation, yet they continued as usual with herbicide applications that harm people with chemical injuries while failing to provide timely and reliable advance warning of herbicide applications to people who requested it.

What about ODOT’s herbicide information line?

The toll free recorded herbicide information line was instituted in 2005. The recorded information is very useful to those wishing to avoid treated highways, but it still does not address the need for giving advance notification to people with disabilities who suffer severe health effects if they encountered freshly sprayed herbicide. One could call the herbicide hotline before leaving home in the morning believing no herbicides had been applied, only to encounter a spray truck or freshly sprayed herbicide a short time later. Also, the existence of the herbicide information line is not widely known or promoted.

What are some other reasons to reconsider highway herbicide use?

The precautionary principle asserts that when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.

Liability issues are also a serious consideration. ODOT has been sued over herbicide use along highways, and future class action suits become more likely as more and more health and environmental effects are linked to herbicides by scientific research. Water contamination is another liability concern, as is chemical trespass and destruction of valuable non-target crop plants and fruit trees by herbicide drift.

Have Oregon residents objected to herbicide use?
Though to our knowledge no surveys have been conducted, many residents of Oregon have expressed a preference that herbicides not be used on State highways. Included in paragraphs a-c below are activities in Lincoln County of which the authors have personal knowledge (no attempt was made to assess dissatisfaction in other counties in Oregon).

a. Appendix B contains a sample of letters of concern to ODOT. A brief history of the local herbicide warning network is included as Appendix C, and a sample of letters to the editor published in the Newport News Times regarding herbicide use along highways appears as Appending D.

b. Community volunteers and a youth group in Yachats helped educate residents about ODOT’s no-spray permits in an attempt to reduce the use of herbicides. Other volunteers distributed no-spray permit applications door-to-door along 35 miles of State highways in Lincoln County. A local nonprofit group ran display ads in three local newspapers to inform people living along the highways of the no-spray permit option.

c. Over four hundred signatures were gathered on a petition to implement a policy of using herbicides only as a last resort on roads in Lincoln County, after Lane County adopted such a policy. (Copies of the signed petitions are available for inspection upon request.)

d. An attorney for the Oregon Advocacy Center, an agency which provides legal advocacy for people with disabilities, wrote to ODOT on behalf of some Oregon residents with disabilities, some of whom were severely sickened by herbicides or had been advised by their physicians to avoid any exposure to herbicide residues, or had their normal life activities significantly disrupted by highway herbiciding. The letters from the Oregon Advocacy Center and ODOT’s responses are in Appendix E.

**What are some recommendations for curtailing herbicide use?**

a. Phase out shoulder spray along state highways in Oregon, except in specific localized areas where a need can be demonstrated and non-chemical alternatives do not exist. Begin with a one-year moratorium on highway shoulder herbiciding to allow ODOT time to review procedures and identify specific road shoulders that may need vegetation management.

b. Adopt a State policy of herbicide use as a last resort, and carefully monitor its implementation.

c. End all use of high-hazard herbicides along highways. A 3-tiered system such as that adopted by the City of Seattle can help decide which chemicals to restrict. For more information on the 3-tiered system, see [http://seattle.gov/environment/pesticides.htm](http://seattle.gov/environment/pesticides.htm).

d. Use full-cost accounting to compare various methods of weed control. Allow the long-term savings to the State from reduced shoulder spray help to fund non-chemical methods in localized areas where vegetation along the road shoulders may need to be managed.

(Note: For copies of the appendices, email info@concernedcitizensforcleanair.org)