

Wood, Tamara M. "Herbicide Use in the Management of Roadside Vegetation, Western Oregon, 1999-2000: Effects on Water Quality of Nearby Streams." 2001. U.S. Geological Survey Water-Resources Investigations Report 01-4065, 27 p. (Reviewed by Elizabeth Parsons)

Studies of the chemical content of many small streams in Oregon have revealed high levels of herbicides. Several of these herbicides are ones that the Oregon Department of Transportation (ODOT) uses to control vegetation along roadsides. In order to test whether the ODOT's use of these herbicides was causing runoff into streams, the USGS conducted a study of a controlled application of the herbicides. The ODOT applied Krovar (diuron and bromocil), Oust, (sulfometuron-methyl), and Roundup (glyphosate) on the road shoulder near Bull Creek (which flows into the Mollala River, a tributary of the Willamette). They used artificial rainfall of 0.3 inches per hour one day, one week, and two weeks after application of the herbicides.

After the first simulated rainfall (one day later), runoff was greatest for the sulfometuron-methyl and less for the others. By the rainfall two weeks after application, concentrations of the chemicals were much lower. Wood reports in her results that "a heavy rainstorm occurring soon after herbicide application could generate concentrations in the runoff leaving the road shoulder of nearly one milligram per liter (parts per million) glyphosate and diuron, and concentrations on the order of a few hundred micrograms per liter of sulfometuron-methyl" (p. 2).

Measuring levels in Bull Creek, Wood concludes that glyphosate, diuron, and sulfometuron-methyl are only at detectable levels when there is heavy rainfall immediately after application of the herbicides (which the ODOT intentionally avoids). They conducted a second, similar study later in the year, when they could use natural rainfall, and found similar results. Although ODOT's use of the herbicides may account for part of the content in Bull Creek, it reaches detectable levels only when there is heavy rainfall immediately after application.

Critique

This is a thorough, scientific report on the effects of herbicide use on nearby streams. Although it is highly informative about its own methods and results, it fails to tie the study in to the larger issues of possible effects on wildlife and on chemical content of the Willamette. It also omits any information about possible effects on human health, but those familiar with diuron know that it has been linked to hormone disruption, neurological disorders, cancers, and low reproduction rates in wildlife. Therefore, although I wouldn't recommend this report to someone wishing to learn more about human health effects, it would be helpful to someone already familiar with the health effects of different chemicals.

It is from a highly reliable source (the U.S. Geological Survey in conjunction with the Oregon Department of Transportation) and conducted in a scientific and methodical manner. However, since the report is very long and technical, people interested in only the ultimate findings of the study (and not its methods) should probably read just the summary at the beginning. For those who want the technical

information, there are several charts included of the specific chemical levels reported in the experiment.

Available online at <http://oregon.usgs.gov/pubs_dir/WRIR01-4065/wri014065.pdf> or from USGS Information Services, Box 25286, Federal Center, Denver, CO 80225-0046.

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