



TO: Oregon Board of Forestry and State Forester Hirsch
FROM: Beyond Toxics
DATE: September 22, 2021
RE: Aerial Herbicide Application in State Forests on Drinking Water

Dear Chair Kelly, State Forester Hirsch, and members of the Board:

Please consider these comments as a follow-up to the September 8th presentation by Beyond Toxics, a statewide environmental justice organization with offices in Lane and Jackson Counties. While we're compiling comprehensive findings to submit to the Board in the near future, we wanted to share with you our main takeaways from a preliminary set of data we have obtained regarding the application of pesticides in state forests. Data was taken from the Forest Activity Electronic Reporting and Notification System (FERNS).

We urge the Board of Forestry to consider this preliminary data and ultimately call for a thorough, immediate evaluation of the full range of impacts of aerial herbicide application in state forests on drinking water quality, greenhouse gas emissions, essential fish habitat, and community health and wellbeing.

I. Herbicide Applications on Oregon State Forests

The data in this section details herbicide applications on state forest lands spanning from January 1st, 2020, to August 30th, 2021. In Figure 1, it is clear that most sprays during this period occurred in the Western Lane District, followed by Astoria and Forest Grove.

Figure 2 illustrates that, of the 326 herbicide applications on state forest lands between January 2020 and August 2021, 215 were ground sprays and 111 were aerial sprays. In the past 20 months, 34% of all sprays on state forests were aerial herbicide sprays. However, previous analysis Beyond Toxics completed using FERNS data showed that aerial spraying could comprise as much as 70% of all herbicide sprays in a state forest district over a broader time period.

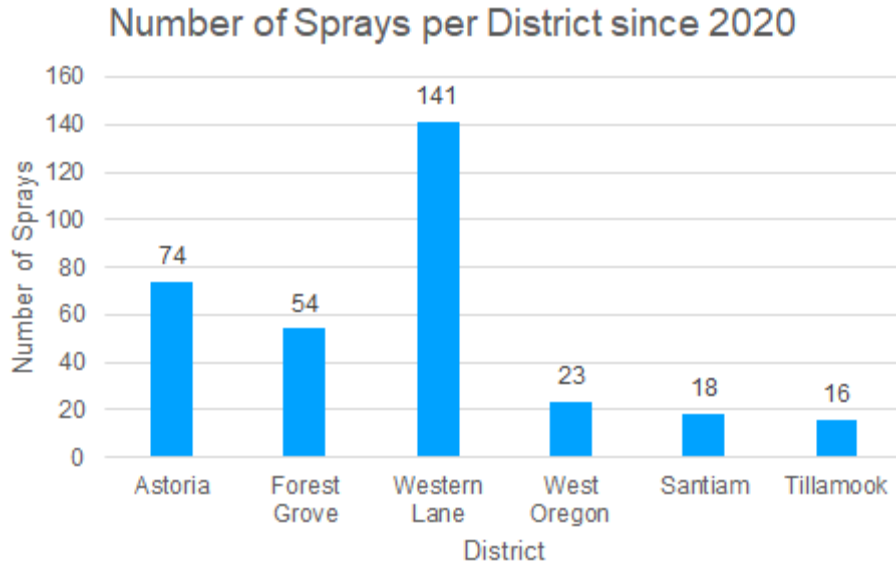


Figure 1. Number of sprays per state forest district since January 1, 2020.

Application Type since 2020

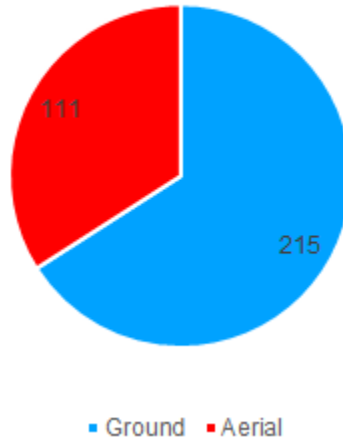


Figure 2. Herbicide spray application types on state forests since January 1, 2021.

Of the 326 tank mixes sprayed in state forests, 227 or 69.6% contained three or more active ingredients, as shown in Figure 3. Typically, multiple adjuvants are also added to the tank mixes to alter the characteristics or increase the effectiveness and potency of the herbicide formulation.

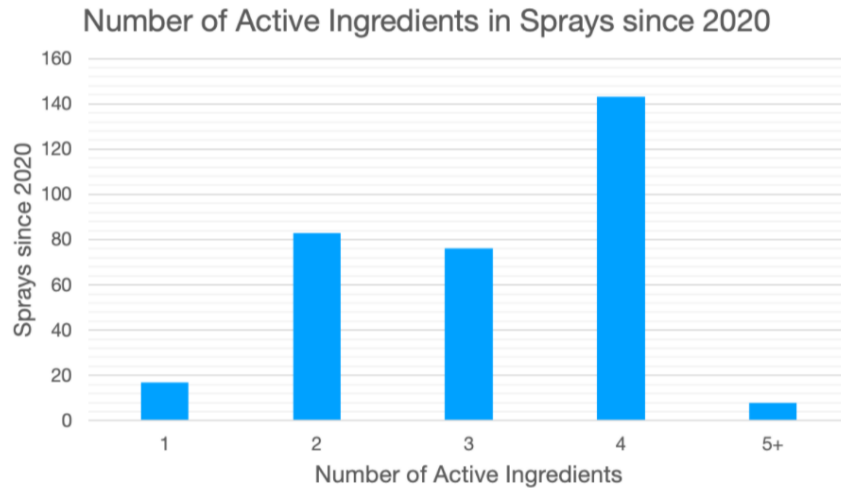


Figure 3. Number of active ingredients in herbicide mixes applied to state forests since January 1, 2020.

In Figure 4, we see that in 175 of the 326 total tank mixes, four or five adjuvants were added, which represents 54% of the total used multiple adjuvants. This creates chemical mixtures of active ingredients and adjuvants that have not been researched for their synergistic or additive effects in the environment or in drinking water. In any single tank mix, there could be seven to eight hazardous chemicals present, possibly increasing the overall toxicity¹ being introduced into the environment and making its way into streams that support fish, amphibians and other aquatic species and provide drinking water to thousands of Oregonians.

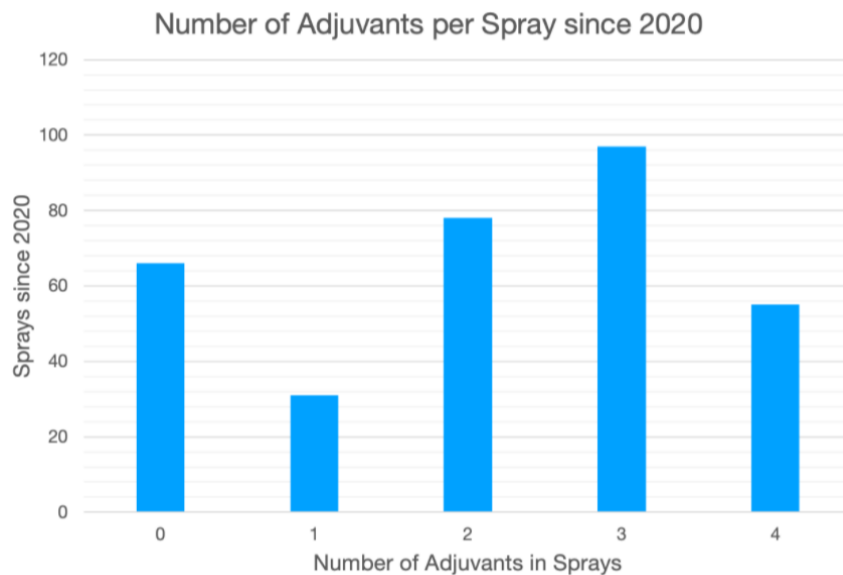


Figure 4. Number of adjuvants in herbicide mixes applied to state forests since January 1, 2021.

¹ See “Ubiquitous Herbicide Glyphosate/Roundup Threatens Nearly All Endangered Species, Says EPA.” Beyond Pesticides, December 4, 2020. <https://beyondpesticides.org/dailynewsblog/2020/12/ubiquitous-herbicide-glyphosate-roundup-threatens-nearly-all-endangered-species-says-epa/>

II. Common Active Ingredients in Tank Mixes and Associated Impacts

Many of the chemicals used by ODF in their sprays can lead to harmful symptoms when people are exposed to them, including rashes, asthma attacks, vomiting, and nosebleeds. There have been several instances where hazardous chemical mixtures, poorly timed spraying and high winds have led to sickened communities in Oregon. Figure 5 shows specific examples of active ingredients used in herbicide sprays on Oregon state forests.

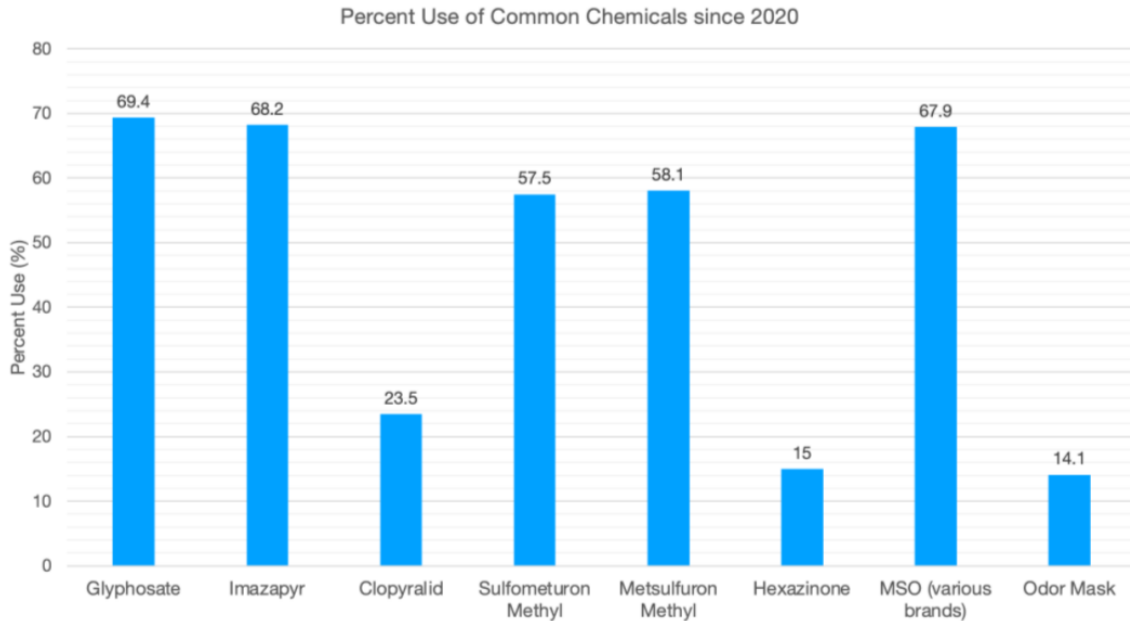


Figure 5. Common active ingredients present in herbicide mixes applied to state forest lands since January 1, 2021.

These pesticides are known to have negative environmental and health effects:

Glyphosate was used in 69.4% of the tank mixes applied to state forests since January 1st, 2020. A draft biological evaluation² from the U.S. Environmental Protection Agency states that glyphosate herbicides are associated with growth and reproductive effects in terrestrial and aquatic animals as well as adverse effects on plant growth.³ The EPA found that glyphosate was likely to adversely affect 93% of threatened and endangered species.⁴ Glyphosate has been found

² U.S. EPA. Glyphosate Draft Biological Evaluation, November 2020.

<https://www.epa.gov/endangered-species/draft-national-level-listed-species-biological-evaluation-glyphosate#executive-summary>

³ Erickson, Britt. 2020. "Glyphosate likely harms nearly all endangered species." Chemical and Engineering News, November 30, 2020.

<https://cen.acs.org/environment/pesticides/Glyphosate-likely-harms-nearly-endangered/98/web/2020/11>

⁴ "Ubiquitous Herbicide Glyphosate/Roundup Threatens Nearly All Endangered Species, Says EPA." Beyond Pesticides, December 4, 2020.

to persist in plants within a forest environment for more than twelve months, which may have implications for the edible and/or medicinal use of native plants.⁵ This is a concern for Native American and members of other cultures who depend on native plants for food and medicinal uses or for people who forage forest products.⁶

Hexazinone, which was present in 15% of the tank mixes applied to state forests over the past 20 months, is a particularly hazardous “restricted use pesticide” that can cause eye damage and harm aquatic species. Hexazinone is persistent in ground water and **can persist in soils** and aquatic systems for some time, concerning both ground- and surface water quality.⁷ As a result of its relative persistence and high mobility, it has a high potential to move off-site and contaminate water or kill desirable plants.⁸ Washington State banned the use of pesticides containing hexazinone in forestry practices on all forestlands in the state due to its toxicity in groundwater ([WAC 16-228-1231\(3\)](#)).

Clopyralid is a highly persistent chemical in the environment, meaning it doesn’t break down easily. This chemical was used in 23.5% of tank mixes. As an example of its extreme persistence, clopyralid has been found in compost facilities, getting there through clopyralid-laced manure, then damaging home gardens at concentrations of only 3 parts per billion. This took place in Portland just last year.⁹

Finally, and alarmingly, **odor masks** were added to 14.1% of the tank mixes applied since January 1, 2020. Masking agents are used to inhibit Oregonians from sensing the chemical concoctions being applied in their forests in an attempt to superimpose a pleasant fragrance upon an unpleasant odor. This would be concerning for people picnicking, hiking and camping in our state forests, who may not realize they are inhaling dangerous toxins.

<https://beyondpesticides.org/dailynewsblog/2020/12/ubiquitous-herbicide-glyphosate-roundup-threatens-n-early-all-endangered-species-says-epa/>

⁵ Botten, N., Wood, L.J., and Werner J.R. 2021. “Glyphosate remains in forest plant tissues for a decade or more.” *Forest Ecology and Management* 493, August 1, 2021,

<https://doi.org/10.1016/j.foreco.2021.119259>

⁶ Wood, Lisa. 2019. “The presence of glyphosate in forest plants with different life strategies one year after application.” *Canadian Journal of Forest Research* 49:6, January 8, 2019.

<https://doi.org/10.1139/cjfr-2018-0331>

⁷ U.S. EPA, Hexazinone: Reregistration Eligibility Decision (RED) Fact Sheet.

https://archive.epa.gov/pesticides/reregistration/web/pdf/0266fact.pdf&sa=D&source=editors&ust=1632337300152000&usg=AOvVaw0LOK1FIDZgzUuhyt7u0_uY

⁸ Tu et al. “Weed Control Methods Handbook: Hexazinone.” *The Nature Conservancy*, April 2001.

https://www.invasive.org/gist/products/handbook/15.Hexazinone.pdf&sa=D&source=editors&ust=1632337300154000&usg=AOvVaw1K0Z6VtK0I5FE4mTmggFY_

⁹ Danovich, Tove. 2020. “Contaminated compost: How an industrial herbicide is ruining backyard gardens.” *The Counter*, July 7, 2020.

<https://thecounter.org/contaminated-compost-herbicide-industrial-agriculture-backyard-gardens-clopyralid/>

III. Proximity of Aerial Herbicide Applications to Drinking Water Intakes

Based on some of the health risks that come with intaking pesticides, what is especially concerning is the proximity of aerial herbicide applications to drinking water intakes. The map below shows the locations of aerial sprays that occurred from 2015 to 2018 (shown in red). Tillamook State Forest lands (shown in brown) overlap with areas designated as drinking watersheds by the Oregon Department of Environmental Quality and Oregon Health Authority (shown in pink). As you can see, several aerial sprays occurred where state forest lands overlapped with these drinking water source areas, which provide drinking water for thousands of Oregonians. This is very concerning in the context of public health.

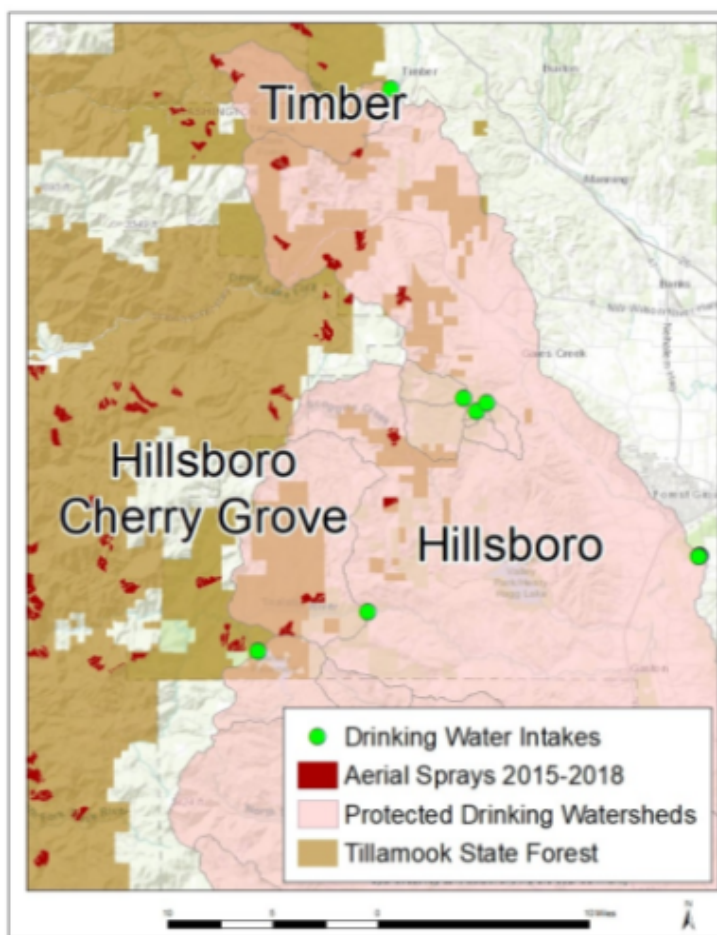


Figure 6. Aerial sprays that occurred from 2015-2018 compared to watersheds and drinking water intakes.

IV. Concerns and Recommended Next Steps

We and many other Oregonians are deeply concerned about the long-lasting impacts of aerial spray on our drinking water quality. Management plans being developed by the Department of Forestry do not adequately prioritize safe drinking water. They fail to adequately recognize the

role that forestry practices like aerial spray can play in threatening our water supplies and in exacerbating climate change. We should not forget that ODF's unsustainable logging policies and practices on the coast lost the state over \$1.2 million in federal grant funding in 2016.

Forest Management Plans do not underscore the urgency many Oregonians feel as we experience severe drought--plus greater levels of pollution--in waters of the state that are critical to health and sustenance for people and wildlife alike.

Solving our water and forest problems requires more urgency and greater corrective action than appears in the Department's efforts. We must protect our watersheds. Access to safe, reliable water is a basic human right that is necessary for viable communities and future generations. Further, if we protect our watersheds, we get more than safe water resources: we also get healthy forests, fish and wildlife habitat, carbon storage, a stronger economy and ecologically-appropriate forest practices.

Along with many other concerned Oregonians, we ask that the Board place a moratorium on aerial pesticide sprays in watersheds in state forests until such time that the Board can establish a panel of scientists, sustainable forestry management experts and community members to study the impacts of aerial spray to communities, water and the environment.

During a two-year moratorium ODF should conduct a study to map drinking water sources and critical groundwater areas and perform an independent analysis of water quality and pesticides.

Only when informed by a comprehensive analysis will ODF be able to chart a better path forward for our drinking water, our fish habitats, and community health and wellbeing. We will provide the Board with more comprehensive data and findings in support of this request as soon as possible. We are happy to answer any questions you may have at this time. Thank you for considering this urgent request.

Sincerely,

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