

Summary of Board and Department roles and responsibilities: Additional Details

Regulatory & Policy Environment

The Department is one of four state agencies responsible for varying aspects of the safe use and distribution of chemicals under state and federal law (Table 1).

Table 1: Summary of agency regulatory roles for authorizing use of chemicals according to state and federal laws.

<p>Agriculture (ODA) Federal Insecticide, Fungicide & Rodenticide Act (FIFRA)</p> <ul style="list-style-type: none"> • Distribution, sale and use of pesticides in Oregon • Sets standards for chemicals use in agricultural operations • Enforcement of chemical applications according to product labels
<p>Environmental Quality (DEQ) Clean Water Act (CWA)</p> <ul style="list-style-type: none"> • Regulates discharges of pollutants into waters of the state and maintaining quality standards for surface waters
<p>Human Services (DHS) Safe Drinking Water Act (SDWA)</p> <ul style="list-style-type: none"> • Protect the quality of drinking water in Oregon (groundwater & surface water)
<p>Forestry (ODF) Forest Practices Act (FPA)</p> <ul style="list-style-type: none"> • Sets standards for natural resource protection when chemicals are used in forest environments. Forest operations that comply with the FPA are considered to comply with state water quality standards (OAR 340-041-0061(11)). FPA rules meet or exceed EPA chemical label requirements.

The forest practice Chemical and Other Petroleum Product Rules (OAR 629-620-0000 through 0800) provide policy direction related to forest pesticide use. The statements are shown as follows, in selections from OAR 629-620-000:

- Operators are encouraged to voluntarily use integrated pest and vegetation management processes. The use of pesticides is one of a variety of integrated pest management strategies that forest landowners may implement to minimize the impact of forest pests in an environmentally and economically sound manner to meet site specific objectives. When properly used, pesticides and other chemicals can be effective tools in the growing and harvesting of forest tree species.
- The purpose of the forest practice chemical and other petroleum product rules is to establish requirements that will ensure:

- Chemicals and other petroleum products used on forestland do not occur in the soil, air, or waters of the state in quantities that would be injurious to water quality or to the overall maintenance of terrestrial wildlife or aquatic life; and
- The vegetative components of riparian management areas and sensitive resource sites receive protection on herbicide operations consistent with the purposes of the reforestation rules, the requirements of the sensitive resource site rules, and the vegetation retention goals of the water protection rules.
- Operations involving the use of chemicals and other petroleum products on forestland are also subject to the pesticide control laws administered by the Department of Agriculture, hazardous waste laws administered by the Department of Environmental Quality, hazard communication rules administered by the Occupational Safety and Health Division, the water use laws administered by the Water Resources Department. Maximum contaminant levels in drinking water for certain pesticides are established by the Health Division.

Different statutes require the Department to use to integrated pest management (IPM) practices when carrying out the agency's duties related to pest control (ORS 634.660: Pesticide Control, 527.321: Forest Practices). Each have slightly different definitions of IPM, but both definitions are consistent in defining IPM as a coordinated process for identifying environmentally and economically efficient methods for controlling a "pest" (damaging plants, animals, or diseases) according to agency or landowner objectives (ORS 634.650(1), 527.310(5)).

12 Board of Forestry Principles to Guide FPA Chemical Rule Review

The following set of 12 principles was created by the Board in October 1995, by which the review and revision of the FPA chemical rules was conducted (paraphrased):

- Principle 1:** The Department will encourage forest landowners to voluntarily use integrated pest and vegetation management processes. The use of pesticides is one of a variety of IPM tools that forest landowners may use to control forest pests in an environmentally and economically sound manner to meet site specific objectives.
- Principle 2:** The Board does not intend to assert authority to permit or prohibit the right to use pesticides. The Environmental Protection Agency (EPA) and ODA have primary authority to develop regulations to protect human health and safety regarding pesticides. ODA and the Department will cooperate in any rule revision processes, strive for consistent regulation of pesticides across all land uses, see that there is coordination with other agencies, and protect forest resources according to the FPA.
- Principle 3:** FPA rules must be consistent with and not duplicate authorities of other state and federal regulations and agencies.
- Principle 4:** ODA and EPA are the sole entities responsible for enforcing state and federal label requirements.
- Principle 5:** Any changes to the forestry chemical best management practices (BMPs) will be based on relevant complaint investigation, monitoring, and scientific data.

- Principle 6:** The purpose of the FPA chemical rules is to ensure that chemicals used on forestland do not occur in the soil, air, or waters of the state in quantities that would be injurious to wildlife, aquatic life, or to water quality and to ensure riparian vegetation and resources sites receive adequate protection. The Board shall primarily rely on FIFRA and Oregon's pesticide control laws for the protection of public health and safety.
- Principle 7:** Protection of private property, such as agricultural crops, laws, gardens, or dwellings, from damage from chemicals used on forestlands is an important civil matter between forest landowners and their neighbors. ODA filings and tort laws are available remedies for such suspected damage. Forest practice rules specifically written to protect private property would not be consistent with the purpose of the FPA.
- Principle 8:** Forest practice chemical rules will not be product-specific.
- Principle 9:** Chemical BMPs will recognize differences in the properties of chemicals used on forestlands and the risks of soil, air, or water contamination associated with different methods of application.
- Principle 10:** The FPA chemical rules will provide forest landowners with flexibility in how best to prevent soil, air, and water contamination on a site-specific basis, but ensure prompt and effective enforcement action is taken when violations occur.
- Principle 11:** The chemical rules will have a cooperative monitoring component that involves landowners, applicators, water utilities.
- Principle 12:** The public advisory committee will explore ways that use incentive approaches, rather than regulatory approaches, in achieving desired resource protection.

Proactive Participation

Department personnel are currently participating in a number of cooperative efforts related to assessing and monitoring pesticides as an issue at a statewide or watershed level. These efforts touch on the key Department policy and regulatory issue of establishing the risk for and what quantities of chemicals are injurious to water quality (see Tables 2 and 3).

Toxics rulemaking: On October 23, 2008 the Oregon Environmental Quality Commission (EQC) directed DEQ to pursue rule revisions that will set new water quality standards for toxic pollutants in Oregon. Department personnel are acting in an advisory role to the rulemaking committee. The new standards will be based on a new fish consumption rate of 175 grams per person per day, up from the current rate of 17.5 grams per person per day. Specifically, the EQC directed DEQ to:

- Revise Oregon's toxics criteria for human health based on a fish consumption rate of 175 grams per person per day;
- Propose rule language that will allow DEQ to implement the standards in National Pollutant Discharge Elimination System (NPDES) permits and other Clean Water Act programs in an environmentally meaningful and cost-effective manner;

- Propose rule language or develop other implementation strategies to reduce the adverse impacts of toxic substances in Oregon's waters that are the result of non-point source (not via a pipe) discharges or other sources not subject to section 402 of the Clean Water Act;
- Develop a proposed rule and implementation methods that carefully consider the costs and benefits of the fish consumption rate and the data and scientific analysis already compiled or that is developed as part of the rulemaking proceeding.

Pesticide Management Plan for Water Quality Protection (Water Quality Management Plan – WQMP): This plan sets forth a process for preventing and responding to pesticide detections in Oregon's ground and surface water resources by managing the legal use of pesticides, as dictated by their labels. Cooperators include ODA, DEQ, DHS, and ODF. The scope of the plan includes pesticide related issues to human and aquatic health. Behind the Plan is the Water Quality Plan Management Team (WQPMT) consisting of the cooperating agencies. The WQPMT does not have any regulatory authority unto itself, but instead provides a venue for interagency coordination in the areas of monitoring, analysis and interpretation of data, and effective response measures. Participation on the WQPMT has provided a regular means of communication and information sharing with toxicologists from DEQ and DHS. The WQPMT has begun implementing the plan in the Clackamas River basin based in monitoring data from DEQ and the U.S. Geologic Survey (USGS).

South Yamhill Pesticide Stewardship Partnership: Since 1999, DEQ has been using a voluntary, collaborative approach called Pesticide Stewardship Partnerships (PSPs) to identify problems and improve water quality associated with pesticide use at the local level. The PSP approach uses local expertise in combination with water quality sampling and toxicology expertise of ODEQ to encourage and support voluntary changes that cause measurable environmental improvements. DEQ has obtained funds to implement a PSP in the South Yamhill basin with sampling covering the major land uses (forestry, agricultural, and urban). Monitoring at three locations to representative of forestry is planned. As feasible, the PSP will also sample runoff events, a key pesticides monitoring information need for the Department. Sampling of pesticides at a landscape scale and during runoff events are key questions identified in the 2002 Private Forests Monitoring Strategy (see Table 3). The Department has made initial contacts with landowners seeking their voluntary participation in the PSP by providing access to forestlands for water quality grab sampling. Follow-up contacts are planned now that funds have been obtained.

Oregon Senate Bill 737 (2007) Priority Persistent Pollutants: The 2007 Oregon Legislature passed Senate Bill 737, which require DEQ to consult with all interested parties by June 2009 to develop a list of priority persistent bioaccumulative toxics ("Priority Persistent Pollutant List") that have a documented effect on human health, wildlife and aquatic life. With the assistance of a technical work group, DEQ has developed a draft list of priority persistent pollutants. The Department is reviewing the draft list and plans to provide comments to DEQ. The only pesticide that is on the draft list and that is registered for forest use in Oregon is chlorothalonil, but is not known to be used outside of Christmas tree operations. The herbicide oxfluorfen is also on the list; this herbicide is not currently registered for forest use in Oregon, but the manufacturer may attempt to register it for forest use.

By June 2010, DEQ must again report to the Legislature. This report will include the list of priority persistent pollutants, reporting on end-of-pipe (point), nonpoint and legacy sources of priority persistent pollutants “from existing data,” and identify source reduction and control methods that can reduce discharges. SB 737 also requires Oregon’s 52 large municipal wastewater treatment plants to develop plans by 2011 for reducing priority persistent pollutants through pollution prevention and toxics reduction. Depending on the final list of priority persistent pollutants, prevention programs might affect forest pesticide use.

More information on SB 737 is available at <http://www.deq.state.or.us/wq/SB737/>.

Ongoing Commitments

Department personnel are involved in several ongoing efforts focused on the issue of chemicals. These provide regular interaction with a variety of stakeholders and experts in government, toxicology, the timber industry, the legislature, lobbyists both for and against the use of pesticides, concerned citizens, and complainants in alleged illegal use of or trespass of pesticides.

Pesticides and Schools Work Group; 2009 Legislation

In 2008, Senator Avakian convened a work group to be led by Senator Bonamici to examine the issue of pesticide use near schools. The work group was composed of a broad range of agencies, stakeholders, and interested parties. Over a series of meetings, the work group narrowed its focus to two concerns: The use of pesticide on school property by school officials and potential drift from pesticide applications on other lands near schools.

The resolution of the first item is the introduction of SB 637 into the 2009 legislature. The bill would require school districts to develop and implement integrated pest management plans for pest control on school properties and would also require licensing for any personnel doing the applications. The resolution of the second item was less firm, but seemed to be a call for monitoring and research so determine if there were problems.

Pesticide Analytical Response Center (PARC)

PARC is mandated to perform the following activities with regard to pesticide-related incidents in Oregon that have suspected health or environmental effects:

- Collect incident information
- Mobilize expertise for investigations
- Identify trends and patterns of problems
- Make policy or other recommendations for action
- Report results of investigations
- Prepare activity reports for each legislative session

PARC does not have regulatory authority; its primary function is to coordinate investigations and to collect and analyze information about reported incidents. PARC’s member agencies conduct most of the investigations and take any necessary enforcement action(s).

PARC member agencies include the Oregon Department of Agriculture, the Oregon Department of Forestry, the Oregon Department of Fish & Wildlife, the Department of Environmental

Quality, the Department of Human Services, the Occupational Safety & Health Administration, the State Fire Marshall and the Oregon Poison Center. Representatives of each member agency make up the PARC Board, which meets every other month.

PARC's investigation coordination includes collecting reports produced by each member agency and consultation as necessary with a toxicologist from Oregon State University (OSU). Other governmental bodies may also participate in the reporting or investigation of an incident. PARC maintains regular contact with the Oregon State University Extension Service, United States Environmental Protection Agency (EPA), the Center for Research on Occupational and Environmental Toxicology (CROET), and other public and private organizations to facilitate the investigation of specific incidents, identify potential problems, and assist in developing solutions. <http://www.oregon.gov/ODA/PEST/parc.shtml>

Department Monitoring Roles and Responsibilities and Maintenance of Technical Expertise in Relation to Other Research, Monitoring, and Regulatory Efforts

The Department is required by rule to assess monitoring needs for and to prioritize efforts to monitor the chemical rules in cooperation with state agencies, landowners, and other interested parties (OAR 629-620-0700). A total of 89 key questions were identified in the 2002 Monitoring Strategic Plan, from which an overall list of priority monitoring projects was identified (Table 2). The pesticides (chemicals) issue that appears on this overall list is moderate in priority and focuses on landscape-level monitoring of FPA effectiveness. Further, a total of five key questions related to pesticides were identified in the Monitoring Strategy and range from top to low in priority. These questions and ongoing, completed, or related efforts to inform the questions are provided in Table 3.

Table 2: 2002 Private Forests Monitoring Strategies overall priorities.

Overall Priority	FPA Rule Division Mandated Monitoring	Topic	Ongoing (O) or Completed (C) Department or Related (R) Work
Top	Y	Riparian Function, Structure, and Stream Temperature on Type F Streams	(C) 1994-1995 Cooperative Stream Temperature Monitoring (Tech Rpt 2) (C) 1997 Stream Temperature and Hardwood Conversion Study (Tech Rpt 3) (C) 2001 Riparian Function and Structure Study (Tech Rpt 12) (C) 2001 Shade Study (Tech Rpt 13) (O) Riparian Function and Stream Temperature (RipStream) project
Top	N	Wet Weather Hauling	(C) 2003 Wet Season Road Use (Tech Rpt 17)
Top	N	Oregon Plan for Salmon and Watersheds implementation, effectiveness, and trends	--

Overall Priority	FPA Rule Division Mandated Monitoring	Topic	Ongoing (O) or Completed (C) Department or Related (R) Work
Top	Y	Headwater streams	(R) Alesa, Hinkle, and Trask Watershed Studies
Top	N	Wildlife compliance and effectiveness	(C) 2009 Leave Tree & Downed Wood Compliance Report (finalizing report) (C) 2005 Bald Eagle Monitoring Report (Tech Rpt 19)
High	N	Wetlands compliance and effectiveness	(C) 2002 Compliance Monitoring – Inference from visual observations of no herbicide damage to Type N vegetation – No large wetlands sampled (Tech Rpt 14)
High	N	Other Roads Issues: Improvement in road conditions over time at the landscape scale sampling under current forest practices sampling design.	(O) Forestry Program for Oregon Indicators of Sustainable Forest Management – D.c. Forest road risks to soil and water resources (developing sampling design, seeking resources to implement)
Moderate	Y	Landslides: Debris flow run out and new rules for landslides and public safety	(C) 1996 Storm Landslide Study
Moderate	Y	Pesticides: Effectiveness using landscape scale sampling under current forest practices sampling design.	(R) South Yamhill Pesticide Stewardship Partnership
Low	N	Reforestation (implementation)	--

Table 3: Pesticides questions and priorities from the 2002 Private Forests Monitoring Strategy.

#	Pesticides Questions	Priority (within topic)	Ongoing (O) or Completed (C) Department or Related (R) Work
75	What level of contamination is injurious (including acute toxicity, chronic toxicity, and sub-lethal behavioral effects) to aquatic biota? (research)	Top	*(R) Statewide Water Quality Management Plan
76.	Is water quality, including the integrity of aquatic communities and public health, being effectively protected when herbicides or insecticides are applied near streams? <i>Current monitoring data indicate BMPs are protective from herbicide drift contamination on Type F streams.</i> (effectiveness, research, OPSW activity)	Low (Completion of 2000 aerial study)	*(R) 2009 DEQ Rulemaking (Fish Consumption) *(C) 2000 Aerial Pesticide Application Study (ODF Tech Rpt 7) *(C) 1992 Aerial Herbicide Application Study *(C) 1993 Carbaryl case study *(C) Historic monitoring – No summaries or reports available
77	Is water quality, including the integrity of aquatic	Moderate	*(R) 2009 DEQ Rulemaking

	communities and public health, being effectively protected when forest management chemicals are applied near small Type N streams? What are the downstream effects on water quality, aquatic biota, and human health if contamination does occur on small Type N streams?		(Fish Consumption) *(R) Alsea Watershed study *(C)2002 Compliance Monitoring – Inference from visual observations of no herbicide damage to Type N vegetation (Tech Rpt 14)
78.	What concentrations of chemicals are found in streams when runoff events occur after the initial forest application near streams? Do these concentrations threaten water quality, aquatic biota, or public health, either locally or downstream? (effectiveness, research)	Moderate	(R) Alsea Watershed study (R) South Yamhill PSP
79	Is water quality protected from surfactants, carriers, and “inert” ingredients when chemical applications take place near streams? (research)	Moderate	--

Efforts to assess the effects of pesticides are also occurring at a national level. In response to a 2001 lawsuit, the U.S. EPA was required to consult with National Marine Fisheries Service (NMFS) on registrations for pesticides likely to adversely affect salmon species listed under the federal Endangered Species Act. The court ordered EPA to review potential effects of 54 pesticides on listed salmon species. EPA determinations and consultations with NMFS have reduced the number of pesticides remaining on the review list. To date, the only forestry pesticides remaining on the list are:

- Triclopyr ester, herbicide (Garlon 4, Pathfinder II, Tahoe 4E, and probably some others). This is the forestry pesticide that will be of issue for forest landowners most of the time. The scheduled date for NMFS to make a determination on this pesticide is November 30, 2010.
- Carbaryl, an insecticide that has been used periodically for insect control in eastern Oregon. The scheduled date for NMFS to make a determination on this pesticide is March 31, 2009. EPA rules developed in 1997 requiring 300 foot aerial application buffers for non-biological insecticides was largely in response to Department water quality monitoring data on carbaryl in the early 1990’s.
- Chlorothalonil, a little-used fungicide. The scheduled date for NMFS to make a determination on this pesticide is November 30, 2010.

On July 31, 2008, NMFS delivered a draft biological opinion stating that the use of three insecticides, chlorpyrifos, diazinon, and malathion, jeopardize western salmon stocks that are threatened or endangered. These pesticides can be particularly problematic when occurring simultaneously in water due to the potential for additive and synergistic effects. These three pesticides, however, are used rarely if at all in field forestry applications. Concerns about synergistic effects or single-chemical effects on olfactory systems and behavior of salmonids have also been raised for the forestry-registered herbicides glyphosate and atrazine^{1,2}.

¹ Tierney et. al. 2006. Changes in Juvenile Coho Salmon Electro-olfactogram during and after short-term exposure to current-use pesticides. Environmental Toxicology and Chemistry, Vol. 25, No. 10, pp. 2809-2817.

² Tierney et. al. 2007. Relating olfactory neurotoxicity to altered olfactory-mediated behaviors in rainbow trout exposed to three currently-used pesticides. Aquatic Toxicology, Vol. 81 Issue 1, p55-64, 10p.

What causes “injurious” levels of pesticides is also a resource protection effectiveness issue as captured in Questions 76 - 79. Question 76 (aerial pesticide rule effectiveness) is considered low priority due to the completion of the 2000 aerial pesticides study. A recent study³ of the effectiveness of FPA chemical rules (buffers) in minimizing the risk of aerial pesticide contamination to streams supports the findings of the 2000 ODF report (average drift reduction >90%).

Some runoff information is available from monitoring conducted by the Eugene Water and Electric Board (EWEB). EWEB has conducted landscape level monitoring of pesticide and other contaminants across land uses above the municipal water intake in the McKenzie River basin⁴. Eight sites described as representing forestry use were sampled during a 2005 storm. The only confirmed detection was a trace level of hexazinone in one stream (below laboratory detection limits, estimated 0.008 ppb). Three other detections of triclopyr (1 detection, 1 stream at 3.1 ppb) and 2,4-D (2 detections, 2 streams, <0.02 ppb) were inconsistent with Department notification records (either there were no chemicals notifications for the watershed in question or no record of the chemical detected on notifications). The use of notifications to identify what chemicals were applied in a given basin has limitations. Notifications will list all potential chemicals, but only application records will identify specifically what was applied. The use of notification records to estimate acreage of forestland treated is also prone to significant error, since landowners and operators may report entire sections to be treated in order to notify for road spraying activities.

Other recent landscape level monitoring has been conducted by the U.S. Geologic Survey⁵ (USGS) and DEQ⁶ in the Clackamas Basin. Both the USGS and DEQ results can only provide limited inference to forestry as sampling was conducted at points low enough in the basin that it is intermingled with other land uses (urban, agricultural, Christmas trees). Results of chemicals known to be registered for forestry use are provided, though it is unknown what chemicals were applied on forestland during the periods sampled.

Detections of the herbicides atrazine, glyphosate, and hexazinone were common throughout the basin in the USGS data at trace levels that did not exceed any utilized benchmarks (U.S. EPA aquatic life, DEQ aquatic life, National Academy of Science, Canadian aquatic life). Carbaryl (insecticide) and 2,4-D (herbicide) were also common and found at concentrations that exceeded Canadian benchmarks for aquatic life. Concern about potential impacts to fish and benthic invertebrates was expressed in the USGS report due to levels of the insecticides diazinone, endosulfan, and azinphos-methyl (not known to be registered for forestry use).

The DEQ monitoring only included one pesticide used in forestry (atrazine). Similar to the USGS results, atrazine was common but only at trace levels. The DEQ plans to expand upon the range of pesticides sampled in the future in this basin.

³ Ice, G, Thistle, H., and Karsky, R. 2008. Reductions in chemical drift by a vegetative buffer. American Water Resources Summer Specialty Conference. 6p.

⁴ Morgenstern, K. A. 2006. Nonpoint source pollution assessment and evaluation results. Eugene Water and Electric Board.

⁵ USGS. 2008. Pesticide Occurrence and Distribution in the Lower Clackamas River Basin, Oregon, 2000-2005. Scientific Investigations Report 2008-5027. 98 pp.

⁶2005-2007 Data available from DEQ upon request

Both the USGS work in the Clackamas and EWEB in the McKenzie basin are related to the National Water Quality Assessment (NAWQA) program administered by the USGS. The USGS monitors the presence of pesticides and other potentially toxic materials in water basins across the nation. The goal of the program is to assess trends on a regional and national scale. These monitoring efforts are focused, cooperative efforts meant to be follow-up to other NAWQA work.

Two upcoming interagency research and monitoring efforts have the potential to provide additional information on the key questions for pesticides identified in the monitoring strategy. The South Yamhill Pesticide Stewardship Partnership described earlier will help assess pesticide contamination levels for forestry in context of other land uses (agricultural and urban) and may provide insight on contamination associated with runoff. A pesticides study is planned in conjunction with the Alsea Watershed Study⁷. This will be particularly helpful in characterizing the potential for pesticides contamination due to contemporary forest practices.

The key issue today for continuing progress on monitoring both within and external to the Department is resources. The Department has developed a draft Monitoring Charter outlining a process to review and consider alternatives for structuring, prioritizing, staffing, funding, and implementing monitoring at an agency level. Monitoring staff and functions may be severely reduced or eliminated due to future budget constraints. Even if the monitoring unit is maintained, it is currently fully dedicated to data collection and analysis for the Riparian Function and Stream Temperature (RipStream) Project. On the side, monitoring personnel are supporting the South Yamhill Pesticide Stewardship Partnership by acting as the contact for private forest landowners and identifying ideal sites for pesticides sampling. Optimistically, with the completion of RipStream, the monitoring unit will be able to initiate a new monitoring effort on one of the top or high priority topics identified in the monitoring strategy that is of the most urgent need relative to FPA rule mandates and resource impact considerations.

⁷ Personal communication. Jeff Light, Forest Hydrologist, Plum Creek Timber Company