

Ecology

Washington State Department of Ecology's summary of pesticide-related Spill Program complaints, Toxic Cleanup Program and Aquatic Pesticide Permits, and monitoring activities during 2007.

Background

Multiple programs within the Department of Ecology are involved in pesticide-related activities. Ecology works with National Marine Fisheries Service and other federal and state agencies to reduce the impacts of pesticide applications to salmonids under the Federal Endangered Species Act. The agency participates in an interagency Urban Pesticide committee, the Washington State Healthy Schools Initiative, and other projects. Ecology is responsible for oversight of contaminated areas requiring cleanup or monitoring, including areas contaminated with pesticides. Ecology's pollution prevention and sustainability efforts emphasize prevention of the overuse and misuse of pesticides.

This report presents data for four programs: Spill Prevention, Preparedness, and Response Program; Toxics Cleanup Program; Water Quality Program; and the Environmental Assessment Program. These programs track data on pesticide spills, on the cleanup of pesticide contamination, and on the use of pesticides to protect water quality, and monitor the impacts of pesticides to water quality.

Spill Prevention, Preparedness, and Response (Spills) Program: Pesticide-Related Incidents

The Spills Program responds to pesticide-related complaints and is responsible for ensuring that damage from a spill is contained as much as possible and cleaned up as quickly as possible. Ecology uses the data from pesticide-related spills and complaints to identify where additional education is necessary to reduce the impacts of pesticides on human health and the environment. Summaries of the Spills Program pesticide-related complaints for 2007 are provided in Appendix C.

Table EC1 lists the types of pesticide-related complaints received from 2003 to 2007. Complaints can involve more than one category of concern.

Table EC1. Ecology Pesticide-Related Complaints, 2001 – 2007

| Type of complaint* | 2003 | 2004 | 2005 | 2006 | 2007 |
|--|-----------|-----------|-----------|-----------|-----------|
| Pesticides threatening ground or surface water | 13 | 10 | 23 | 10 | 8 |
| Pesticide disposal or waste concern | 12 | 6 | 2 | 9 | 6 |
| Spills and fires | 5 | 10 | 12 | 5 | 9 |
| Unsafe pesticide storage or handling | 10 | 3 | 5 | 10 | 3 |
| Totals | 40 | 29 | 42 | 34 | 26 |

*Complaints may involve more than one category.

There were 14 pesticide-related complaints involving threats to air, water, and/or soil in 2007. Spills Program response to complaints may include follow-up by phone, referral back to involved parties for voluntary cleanup, referral to another agency, or issuance of a notice or requirement for cleanup. Investigations are initiated for complaints requiring field work, research, coordination with other agencies, or technical assistance.

Ecology responded within 24 hours in all of the 14 complaints in 2007. Ecology investigated all of the 14 complaints

Of the 14 pesticide-related complaints received by Ecology during 2007:

- Three occurred in the agricultural environment.
- Six involved commercial or industrial activities.
- Seven were reported by private citizens.
- Two stemmed from residential activities.
- One involved a combination of chemicals containing a pesticide.
- Thirteen resulted in potential exposure to humans.
- Seven required some form of cleanup or removal of materials.
- None were referred to the Toxics Cleanup Program.

After Ecology Spills staff responds to and stabilizes the initial emergency, the case is closed if it is determined that there are no long-term impacts. If there are long-term impacts, the case is referred to another program within the agency. When indicated, Ecology refers complaints to other state or local agencies. In 2007, the Spill Program referred ten complaints involving pesticides to Tribes, Department of Transportation, the Environmental Protection Agency, city and county public works departments and WSDA. Ecology immediately notified DOH of one incident where humans were potentially exposed to pesticides.

Toxics Cleanup Program: Contaminated Sites Containing Pesticides

Ecology is responsible for oversight of contaminated areas requiring cleanup or monitoring. These sites may have been contaminated from leaking underground petroleum tanks, historic or current pesticide use, spills, or industrial processes. When a contaminated site is added to Ecology's cleanup list, it remains on the list until it is either cleaned up or requires no further action. A site may be on the list for more than one year. Maps of pesticide-contaminated sites may be found in Appendix E.

Ecology added 21 pesticide-contaminated sites to the cleanup list in 2007. Twelve of those sites were soil contamination at the Department of Energy's Hanford site in Benton County. Of the other nine sites added in 2007, two sites were added in Yakima County and one each in Benton (unrelated to Hanford), Douglas, King, Klickitat, Pierce, Skagit, and Thurston Counties.

Ecology designated the 12 Department of Energy Hanford sites as active and undergoing clean-up. Of the other nine pesticide-contaminated sites identified in

2007, Ecology designated three sites as active and undergoing cleanup, five as awaiting cleanup, and one as a non-active (remediated) site that was cleaned up or required no further action.

There was a total of 234 pesticide-contaminated sites in 2007. Of those, 64 sites remained active in the cleanup process (awaiting clean-up) at year's end. The status for all sites for 2007 is summarized in EC2.

Table EC2. Status of Pesticide-Contaminated Sites Statewide, 2007

| Pesticide-contaminated sites | 2007 |
|--|------------|
| Sites undergoing cleanup at year's end | 89 |
| Sites with no further action needed | 81 |
| Sites awaiting further investigation | 64 |
| Total pesticide-contaminated sites for the year | 234 |

Water Quality Program: Aquatic Pesticide Permits

Ecology is delegated by the EPA to implement all federal water pollution control laws and regulations through the state's laws. These include the issuance of permits for the use of aquatic pesticides to protect water quality. The permitting process ensures that chemicals are sparingly and properly applied, thereby reducing the potential for exposure to natural resources and people. The data below is Ecology's only pesticide use data in or near aquatic ecosystems.

Aquatic Plant and Algae Management NPDES Permit

Table EC3 contains the pesticide use reporting information for pesticides applied in lakes and ponds under Ecology's Aquatic Plant permit in 2007.

Table EC3. Aquatic Plant and Algae Management Permit, 2007

| Product | Pounds of active ingredient used |
|--|----------------------------------|
| 2, 4-D | 190 |
| Diquat | 3,046 |
| Endothall | 1,498 |
| Fluridone | 446 |
| Glyphosate | 350 |
| Sodium carbonate peroxyhydrate | 331 |
| Triclopyr | 3 |
| Total pounds of active ingredient applied | 5,863 |

Oyster Grower's NPDES Permit

The Oyster Grower's NPDES Permit is an individual permit issued directly to the Willapa Bay/Grays Harbor Oyster Growers Association. It allows the use of carbaryl, an insecticide in the carbamate family, to control burrowing shrimp in oyster beds. The data for 2005 through 2007 is shown in Table EC4.

In 2007 the Washington State Department of Agriculture issued an experimental use permit for use of Imidacloprid. Imidacloprid is a neonicotinoid, which is a class of neuro-active insecticides modeled after nicotine. Imidacloprid was

applied experimentally to less than one acre and did not exceed 0.5 pounds of active ingredient.

Table EC4. Oyster Growers Permit, Carbaryl Usage, 2005 - 2007

| Year | Acres treated | Pounds of active ingredient used |
|------|---------------|----------------------------------|
| 2005 | 576 | 3,629 |
| 2006 | 593 | 4,741 |
| 2007 | 555 | 4,438 |

Noxious Weed NPDES Permit

The Noxious Weed NPDES Permit is issued to government agencies, homeowners, lake-advocacy groups, and marinas to treat fresh and saltwater environments for noxious, non-native plant species. The treated areas are located throughout Washington State. The product totals are listed in Table EC5.

Table EC5. Noxious Weed NPDES Permit, 2007

| Product | Pounds of active ingredient used |
|--|----------------------------------|
| 2, 4-D | 106 |
| Diquat | 47 |
| Endothall | 56 |
| Fluridone | 1 |
| Glyphosate | 35,301 |
| Imazapyr | 3,634 |
| Triclopyr | 698 |
| Total pounds of active ingredient applied | 39,843 |

Fish Management NPDES Permit

The Fish Management NPDES Permit is issued to the Department of Fish and Wildlife for fish management in Washington lakes. In 2007, eight lakes were treated in three counties under this permit (Table EC6).

Table EC6. Fish Management NPDES Permit, 2007

| Water Body | Pounds of active ingredient used |
|--|----------------------------------|
| Chopak Lake | 786 |
| Corral Lake | 336 |
| Blythe Lake | 74 |
| Chukar Lake | 5 |
| Scaup Lake | 1 |
| Dixon Pond/Negro Creek | 28 |
| Sprague Lake | 5,191 |
| Cow Creek | 3 |
| Cow/Hallin/Finnell/Sheep lakes | 357 |
| Finnell Lake | 8 |
| Total pounds of active ingredient applied | 6,789 |

Irrigation District NPDES Permit

The Irrigation District NPDES Permit is issued for products to control weeds and algae in irrigation systems. The permit was issued to 16 of the 97 Washington irrigation districts during the 2007 application season. The 16 districts include 81% of the total irrigated land in Washington. The amounts of active ingredients applied in irrigation systems are listed in EC7.

Table EC7. Irrigation District NPDES Permit, 2007

| Product | Pounds of active ingredient used |
|--|----------------------------------|
| Acrolein | 197,550 |
| Copper products | 153,588 |
| Chelated Copper | 2,280 |
| Green Clean | 110 |
| Xylene | 67,811 |
| Total lbs. of active ingredient applied | 421,340 |

Mosquito General NPDES Permit

To prepare for the arrival of West Nile virus, the number of groups treating for mosquitoes in Washington State rapidly increased. Ecology allows mosquito control districts and government agencies to apply for coverage under a general permit through DOH. Table EC8 summarizes pesticide totals statewide from the 2007 application season.

Table EC8. Mosquito General NPDES Permit, 2007

| Product type | Pounds of active ingredient used |
|--|----------------------------------|
| Bacillus spaericus (H-5a5b) | 481 |
| Bacillus thuringiensis israelensis (Bti) | 35,963 |
| Methoprene (all formulations) | 1,379 |
| Monomolecular film | 40 |
| Paraffinic white mineral oil | 18,741 |
| Total lbs. of active ingredient applied | 56,605 |

Surface Water Monitoring

Surface Water Monitoring Program for Pesticides in Salmonid-Bearing Streams

The Departments of Ecology and Agriculture have a cooperative agreement for an ongoing study to investigate pesticide occurrence in salmonid-bearing streams. The complete report, Surface Water Monitoring Program for Pesticides in Salmonid-Bearing Streams, 2007 Monitoring Data Summary, is available online at: <http://www.ecy.wa.gov/pubs/0803020.pdf>.

Pesticide concentrations were measured in an urban drainage represented by Thornton Creek in the Cedar-Sammamish watershed, and in agricultural drainages represented by the Lower Yakima and Wenatchee-Entiat watersheds in eastern Washington, and the Lower Skagit-Samish watershed in the western Washington. 2007 was the first year in a three-year study cycle to investigate

pesticide occurrence in the Wenatchee-Entiat watershed and the second year for the Skagit-Samish watershed. It was the fifth in a six-year cycle to study pesticides in the Cedar-Sammamish and Lower Yakima watersheds.

Weekly sampling of 14 to 16 sites occurred February through September 2007 for 152 pesticides and degradates. A total of 58 current use pesticides, historical pesticides, and/or degradate compounds were detected in the urban and agricultural drainages. When pesticides were detected, the most commonly found general pesticide category for both the urban and agricultural basins was herbicides. A triennial report detailing results for all areas will be available in 2009.

Other Pesticide Related Water Quality Studies

- Copper is used as an herbicide in irrigation canals. In November 2007, Ecology began a sampling project to assess the impacts of copper on receiving water in the Wenatchee and mid-Columbia basins. Sediment and water column sampling will be conducted during the irrigation season. This project will continue into 2008 and a final report will be available in 2009. The Quality Assurance Project Plan can be found at: www.ecy.wa.gov/biblio/0703112.html.
- A data summary and comparison to human health criteria was completed in 2007 for chlorinated pesticides, PCBs, and dioxins in Yakima River Fish. This report can be found at: <http://www.ecy.wa.gov/biblio/0703036.html>.

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