

Washington State Department of Agriculture Waste Pesticide Identification & Disposal Activity Report: 1988–2007



Purpose of this Report

The purpose of this report is to provide a historic review of the accomplishments of the Washington State Department of Agriculture (WSDA) waste pesticide identification and disposal activities. The period of review is from the 1988 inception of WSDA waste pesticide collection and disposal activities through December 31, 2007. This report will include:

- *A brief description of WSDA waste pesticide identification and disposal activities*
- *A short history of waste pesticide collection and disposal in Washington state*
- *Unusable pesticide collection and disposal programs in other states*
- *Unusable pesticide collection and disposal activities in Washington state*
- *Impacts of federal pesticide registration changes*
- *Examples of the WSDA response to changes in pesticide registration*
- *WSDA waste pesticide identification and disposal role in state environmental protection*

Description of Activities

WSDA waste pesticide identification and disposal activities provide non-regulatory, cost-free assistance to dispose of unusable pesticides. WSDA provides this service primarily to farmers, ranchers and similar institutions wanting to dispose of unusable agricultural and commercial pesticides. These activities are enacted under the authority of Chapter 15.58 RCW and WAC 16-228-1370.

Under WAC 16-228-1010 (39), a “waste pesticide” is defined as “any pesticide formulation which cannot be used according to label directions in Washington state because of cancellation or suspension of its federal or state registration, or deterioration of the product or its label, and any pesticide formulation whose active ingredients are not clearly identifiable because of label deterioration or because the pesticide is not stored in its original container.”

WSDA waste pesticide identification and disposal activities have two primary goals:

1. To collect and properly dispose of cancelled, suspended or otherwise unusable pesticides in storage, especially on farms and other similar locations.
2. To minimize future accumulations of unusable pesticides through education and outreach.

WSDA waste pesticide identification and disposal activities are conducted in cooperation with local agencies and area businesses. Since beginning its activities in 1988, WSDA has removed over 2 million pounds of unusable pesticides from more than 6,000 collection events held in Washington state.

The unusable pesticides safely removed from the environment included not only pesticides collected at scheduled events but also pesticides damaged by floods, fires, and other natural disasters.

History of Waste Pesticide Collection and Disposal activities in Washington State

From the 1940's to 60's, scientists and engineers developed an extensive body of studies concerning the hazardous properties of industrial waste and the links between land disposal of industrial waste and groundwater contamination. The hazardous properties of pesticides, as a distinct class of waste, were also widely acknowledged.

In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA) enacting the primary federal law for governing the disposal of solid and hazardous waste. RCRA gave EPA the authority to control hazardous waste from “cradle to grave,” including generation, transportation, treatment, storage, and disposal.

Although Washington state had adopted its first hazardous waste regulations in 1977, it was not until 1982 that the Washington State Dangerous Waste Rules were established — fully implementing the state’s federally-delegated RCRA authority. By implementing these regulations, Washington state made it illegal to dispose of hazardous waste (including most unused and/or unwanted pesticides) in sanitary landfills.



Under both federal and state hazardous waste laws, pesticides that are no longer usable are generally classed as “hazardous wastes” and must be managed and destroyed following specific requirements for record keeping, transportation, and disposal.

Concerned that farmers had no appropriate, economically feasible means for legally disposing of pesticides with uses restricted or cancelled after purchase, Washington state allocated \$49,500 in 1986 to fund a Department of Ecology survey. The survey, “Agricultural Hazardous Waste Study — 1987,” evaluated possibilities for recycling, treatment and disposal of unusable pesticides as well

as identifying potential funding sources for a disposal program.

The survey assessed the type and amount of unusable pesticides and pesticide containers held by farmers, ranchers and other pesticide applicators. The survey also explored options for disposal of these pesticides. Survey results identified nearly 42 tons of unusable pesticides needing disposal, primarily 2,4-D, DDT, endrin and parathion. A review of the survey data suggested the 42-ton estimate was low. This was verified by future disposal activities.

In December of the same year, the Western Agriculture Chemical Association granted \$10,000 to fund a pilot project to collect and dispose of unusable pesticides. In cooperation with local agencies, WSDA invited 49 Yakima County farmers to bring in their unusable pesticides for collection and disposal.

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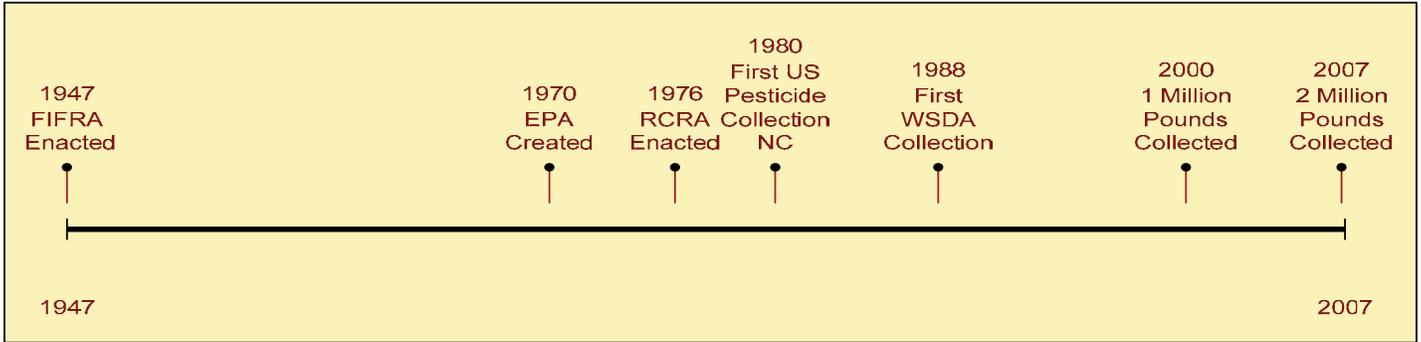


Figure 1: Timeline for Unusable Pesticide Regulation & Disposal

The farmers were exempted from the state’s waste generator requirements and paid a nominal fee to participate in the collection. The pilot project collected over 5,500 pounds of unusable pesticides from 34 farmers and established the foundations for WSDA waste pesticide identification and disposal activities.

With a \$234,000 appropriation in 1988, Washington state established the WSDA waste pesticide identification and disposal activities (Chapter 15.58.045 RCW).

This appropriation made available an affordable and environmentally acceptable mechanism for any farmer, rancher or similar institution to dispose of unusable agricultural and commercial pesticides. A key component of the new pesticide disposal activity was that the WSDA took legal possession of the unusable pesticides and became the “hazardous waste generator.”

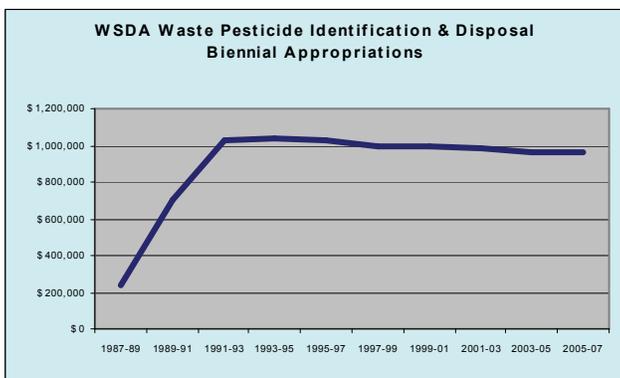


Figure 1: Biennial Appropriations

The passage of the 1988 Model Toxics Control Act allows WSDA to receive a biennial appropriation averaging \$1 million to continue the identification, collection and disposal of unusable pesticides and to help manage future pesticide accumulations. The funds are allocated from the State Toxics Control Account. This account is the primary fund source for managing wastes and dealing with chemical contamination in the environment.

Unusable Pesticide Collection and Disposal in Other States

The North Carolina Pesticide Disposal Assistance Program was created in 1980 as a stewardship program to provide a much needed consumer service and was the first of its kind in the United States. According to a 2001 EPA publication, there are 33 states with permanently funded or continuous pesticide disposal programs and 13 other states working to establish permanent programs.

Several states dedicate fees collected for certain activities to unusable pesticide collection and disposal programs.

For example, the 2001 EPA report states Texas uses fees from hazardous waste and industrial solid waste generators and waste management units; Montana uses dealer and certified applicator fees; and Iowa uses a Groundwater Protection Fund generated from tonnage fees at landfills and permit fees charged to retailers of hazardous materials.

Some state legislatures consistently budget funds for unusable pesticide collection and disposal programs while other states budget funds intermittently. The North Carolina General Assembly annually funds the Pesticide Disposal Assistance Program of the Department of Agriculture and Consumer Services.

California, Colorado, Connecticut, Massachusetts, Michigan, Montana, and Oregon charge fees to all unusable pesticide disposal participants to wholly or partially cover the cost of collection and disposal.

EPA funds have comprised only a small percentage of the total funding for the states’ unusable pesticide collection and disposal programs.

Unusable Pesticide Collection and Disposal Activities in Washington State

Unusable pesticides are collected from two types of events: regional and special collection sites. Most

pesticides are collected at regional events held around the state.

Customers transport the unusable pesticides to a regional collection site. WSDA takes possession of the pesticides and a hazardous waste contractor packages the collected pesticides into hazardous waste shipping containers.

Over 408,000 pounds of unusable pesticides were collected at Yakima County events between 1988 and 2007. This amount is nearly 20 percent (by formulated product weight) of the total pesticides collected by WSDA.

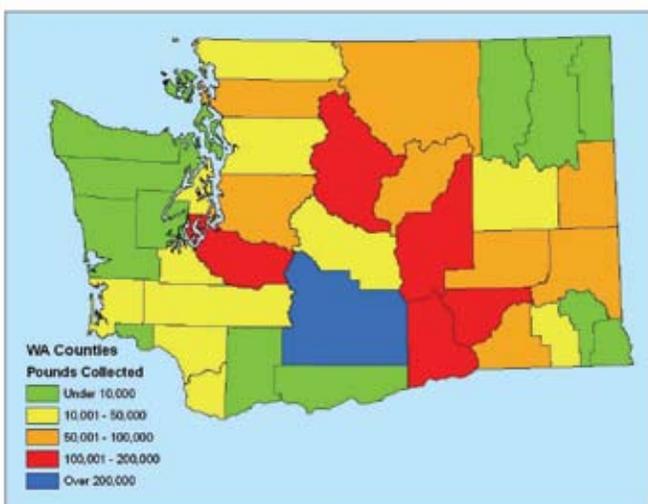


Figure 2: Pesticide Collection Totals (in lbs. of formulated product)

Many of the pesticides brought to a regional collection site are regulated hazardous materials and, as such, WSDA prepares and sends a specific bill-of-lading to each customer based on the unusable pesticide inventory the customer submitted before the collection event. The bill-of-lading must be in the customer's vehicle while on a public road and available to emergency personnel in the event of a spill or accident. WSDA can also provide packaging materials to customers to ensure unusable pesticides are handled and transported safely.

The balance of the unusable pesticides is collected at special site events. These events are typically held at the customer's pesticide storage locations. Special site events may occur for several reasons: customers are not able to transport their unusable pesticides to a regional event; customers have numerous containers of unknown chemicals; or to prevent transport of hazardous containers by private citizens, such as pressurized fumigant cylinders, or containers in poor condition.

After the contractor packages the unusable pesticides, they are transported to a permitted hazardous waste disposal facility. These pesticides are disposed of by

thermal destruction since most pesticides are prohibited from disposal at hazardous waste landfills.

Pesticides containing metallic ingredients (such as arsenic, lead and mercury) cannot be thermally destroyed. These pesticides are encapsulated and disposed of at a hazardous waste landfill.

Impacts of Federal Pesticide Registration Changes

EPA regulates pesticides under two major federal statutes:

- Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), EPA registers pesticides for use in the United States and prescribes labeling and other regulatory requirements to prevent unreasonable adverse effects on human health or the environment.
- Under the Federal Food, Drug, and Cosmetic Act (FFDCA), EPA establishes tolerances (maximum legally permissible levels) for pesticide residues in food.

FIFRA and FFDCA were amended by the Food Quality Protection Act of 1996 (FQPA) fundamentally changing the way EPA regulates pesticides. The major changes in pesticide regulation include stricter safety standards and a complete reassessment of all existing pesticide tolerances.

EPA evaluates, and if necessary, cancels the registration of extremely persistent and highly toxic pesticides resulting in the product's removal from trade and prohibition against its use. WSDA then establishes timely, environmentally sound management and disposal practices for pesticides with restricted uses or cancelled registrations.

Examples of WSDA Response to Changes in Pesticide Registration

Clopyralid

Effective March 1, 2002, herbicides containing clopyralid may not be used on lawns and turf in Washington state. Additional restrictions limited the purchase of clopyralid products to only licensed pesticide applicators for use on wheat and other cereal grains as well as on grass grown for hay. The purpose of the ban is to keep clopyralid, a long-lasting herbicide, from potentially contaminating compost.

In 1999, WSDA investigators found clopyralid in the products from several composting facilities. When clopyralid-tainted compost is used to enrich soils, it can harm certain flowers and vegetables.

As evidenced by the Figure 3, applicators took advantage of the availability of WSDA waste pesticide identification and disposal activities to dispose of unusable stocks of pesticide products containing clopyralid in a timely and environmentally safe manner.

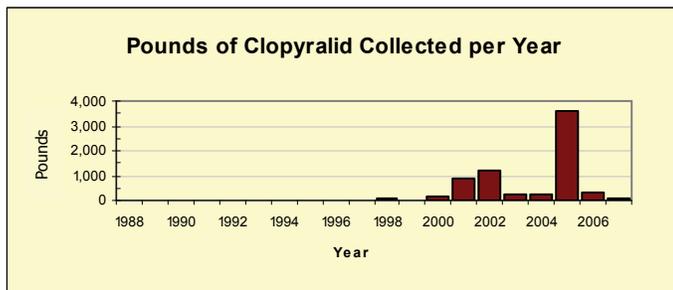


Figure 3: Clopyralid Collections (in lbs. of formulated product) per Year

Diazinon

The 1996 Food Quality Protection Act (FQPA) dramatically affected the re-registration of diazinon. Using the FQPA safety standards, EPA determined that diazinon poses health risks to humans, birds and other wildlife, drinking water resources, and the environment.

In late 2000 as part of an agreement with EPA, the manufacturers of diazinon agreed to a four-year phase out of all indoor uses, all lawn and garden uses, and all other non-agricultural outdoor uses of diazinon. By the end of December 2004, diazinon was no longer sold for use in homes, on lawns and gardens, and in pet products.



Figure 4: Diazinon Collections (in lbs. of formulated product) per Year

EPA and the registrants further agreed to remove about one-third of the agricultural crop uses of diazinon. These actions ended approximately 75 percent of the uses of diazinon.

In the late 1990's, applicators began a responsible stewardship of existing diazinon stocks by taking the appropriate disposal options. Farmers and ranchers disposed of several tons of diazinon in dust formulations they no longer used. These disposal decisions were made prior to the 2004 phase out for non-agricultural use and carried through the deadline and the new requirements for agriculture use of the chemical. (See Figure 4.)

Legacy Pesticides

Legacy pesticides comprised a large part of the early WSDA pesticide collection activity. Legacy pesticides are pesticides that are no longer registered for use in the United States, such as DDT, dinoseb and endrin. Approximately 20 percent of the WSDA collection activity from 1988 through 1990 was DDT. (See Figure 5.)

In 2004, WSDA again collected DDT in the amount of 3,022 pounds. In 2006, WSDA collected an additional 2,617 pounds of DDT as well as 1,735 pounds of dinoseb and 1,086 pounds of endrin.

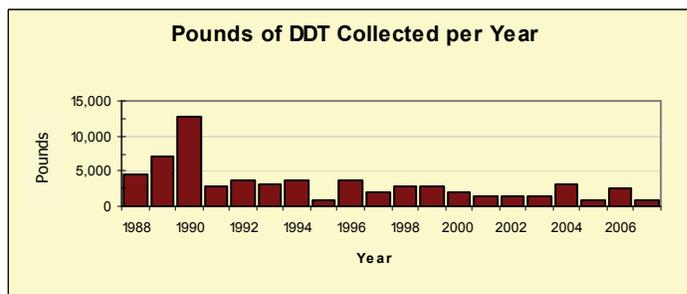


Figure 5: DDT Collections (in lbs. of formulated product) per Year

Worker Protection Standards

The revised Worker Protection Standard (WPS) regulation was issued in August 1992 by EPA and became fully effective on January 1, 1995. The WPS was established to reduce the occupational risk of pesticide poisonings and related injuries among agricultural workers and pesticide handlers on farms, forests, nurseries and greenhouses.

All pesticide products falling within the scope of WPS were required to have WPS replacement labeling in place by October 23, 1995. To assist pesticide dealers, growers and applicators in managing existing pesticide stocks without replacement labeling, WSDA expanded its collection activities to include these pesticides.

Analysis of WSDA Collection Activity Data

WSDA has collected a variety of pesticides and materials contaminated by pesticides. Pesticides are classified by type — herbicide, insecticide, fungicide, rodenticide, fumigant, wood preservative or other. Figure 6 shows the pesticide types by percent pounds of formulated product collected by WSDA.

WSDA has also routinely accepted material not defined as a "waste pesticide" under WAC 16-228-1010. This material is typically pesticides that are 1) no longer wanted, 2) disposal represents a financial burden, or 3) alternatives for use are problematic.

WSDA has also accepted wood preservatives, including pentachlorophenol, as well as fertilizers and pesticide-

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contaminated materials including potentially contaminated empty pesticide containers.

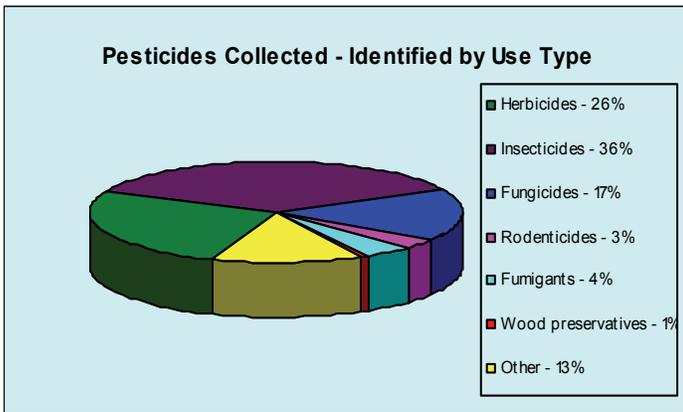


Figure 6: Pesticides Collected by Use Type

The top 50 pesticides (ranked by pounds of formulated product collected) represent approximately 50 percent of the total materials collected by WSDA.

Table 1 (See opposite.) lists the top 50 materials collected by WSDA from 1988 through December 31, 2007, ranked in order of pounds of formulated product collected. The category "Dangerous Waste, n.o.s. (not otherwise specified)" is unclassified liquid and solid waste materials collected by WSDA.

The liquid waste materials are comprised mainly of unlabeled containers believed to contain unusable pesticides.

The solid waste materials are primarily materials contaminated by pesticides. These materials may be cardboard boxes, used ground tarps and personnel protection equipment generated during WSDA collection events. However, they may also include dry-formulated pesticides that cannot be identified.

WSDA Role in State Environmental Protection

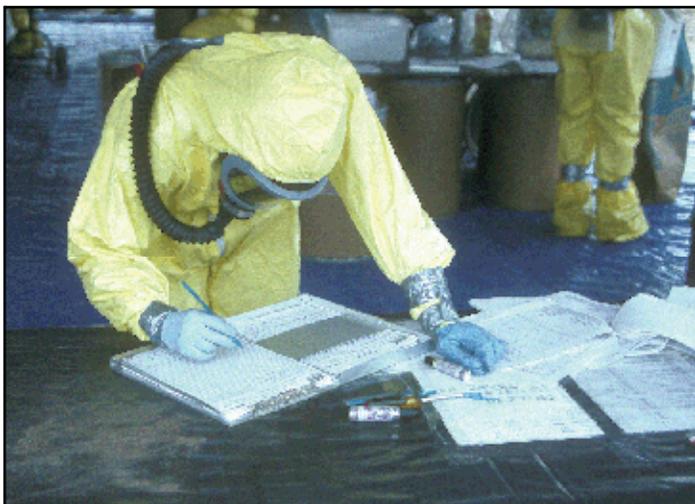
WSDA waste pesticide identification and disposal activities complement the efforts of the other state agencies and local governments receiving State Toxics Control Account funding. The State Toxics Control Account provides funds to state agencies to clean up contaminated sites; improve management of hazardous wastes; and prevent future contamination from hazardous substances.

WSDA works cooperatively with state and local organizations and pesticide applicators and distributors to protect human health and the environment by ensuring the safe management and proper disposal of unusable pesticides. Timely and appropriate disposal of unusable pesticides prevents potential hazards due to the improper handling or removal of these chemicals.

Table 1: Top 50 Pesticides Ranked by Historical Pounds Collected

Rank	Chemical Name	Pounds Collected 1988 – 2007	Primary Pesticide Use Type
1	Adjuvants	91,382	Other
2	2,4-D	80,014	Herbicide
3	Dinoseb	72,132	Herbicide
4	Dangerous waste, n.o.s (solid)	68,210	Other
5	DDT	63,375	Insecticide
6	Sulfur	62,732	Fungicide
7	Dangerous waste, n.o.s (liquid)	54,112	Other
8	Malathion	52,838	Insecticide
9	Petroleum oil	47,472	Insecticide
10	Ethyl parathion	39,298	Insecticide
11	Captan	34,767	Fungicide
12	Pentachlorophenol (PCP)	34,308	Wood preservative
13	Endrin	33,748	Insecticide
14	Calcium polysulfide	31,342	Insecticide
15	Diazinon	24,964	Insecticide
16	Chlopyrifos	22,449	Insecticide
17	Methyl parathion	20,876	Insecticide
18	Carbaryl	20,621	Insecticide
19	Zinc sulfate	19,496	Other
20	Zineb	18,750	Fungicide
21	Phosphoric acid	17,748	Other
22	Endosulfan	17,590	Insecticide
23	Lindane	17,034	Insecticide
24	Pyrethrins	17,019	Insecticide
25	Sodium chlorate	17,014	Herbicide
26	Dodine	16,583	Fungicide
27	Piperonyl butoxide	16,428	Other
28	Disulfoton	16,153	Insecticide
29	Aldicarb	15,496	Insecticide
30	Dicamba	15,295	Herbicide
31	Chlordane	14,879	Insecticide
32	Dalapon	14,544	Herbicide
33	Carbon disulfide	14,450	Fumigant
34	Ziram	13,982	Fungicide
35	Methoxychlor	13,810	Insecticide
36	Mancozeb	13,281	Fungicide
37	Dangerous waste (liquid, flammable)	13,121	Other
38	Ethion	13,108	Insecticide
39	Rotenone	13,066	Insecticide
40	Dichlobenil	13,056	Herbicide
41	Simazine	12,968	Herbicide
42	Maneb	12,618	Fungicide
43	Dimethoate	12,572	Insecticide
44	Trifluralin	12,003	Herbicide
45	Carbon tetrachloride	11,816	Fumigant
46	MCPA	11,557	Herbicide
47	MCPP	11,533	Herbicide
48	Ammonium nitrate	11,345	Other
49	EPTC	11,247	Herbicide
50	Lead arsenate	11,111	Insecticide

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