Chapter 5: Moderate Risk Waste Management

The term "moderate risk waste" (MRW) was created by revisions to Washington State's 1986 Hazardous Waste Management Act (RCW 70.105). MRW is a combination of household hazardous waste (HHW) and conditionally exempt small quantity generator (CESQG) waste. HHW is waste created in the home, while CESQG is small quantities of business or non-household waste. Both HHW and CESQG waste are exempt from state hazardous waste regulations.

- Total MRW collected in 2010 was about 29.5 million pounds.
- The average amount of HHW disposed of per participant was 72.1 pounds, and per capita was 2.21 pounds.
- More than 3.3 percent of Washington residents used a fixed facility or collection event to remove hazardous waste from their households, about 7.9 percent of all households.
- Counties that publicly collected the most CESQG waste per capita were Yakima, Lewis, Whatcom San Juan, and Kitsap.
- Counties that collected the most used oil per capita were Garfield, Skamania, Stevens, Lincoln, Wahkiakum and Cowlitz.
- Approximately 84 percent of all MRW collected was recycled, reused or used for energy recovery.

MRW collections started in the early 1980s primarily as HHW-only events, also known as "roundups" or collection events. These events usually happened once or twice a year.

In the late 1980s, permanent collection facilities now known as fixed facilities began to replace collection events to fulfill the need for year-round collection. In addition, collection facilities have further developed with mobile units and satellite facilities. These efforts resulted in a larger number of customers served, decreased costs and increased reuse and recycling of MRW.

Please note the data in this chapter is only a portion of the MRW waste stream. The MRW data presented here is reported through local governments, with a few private companies also reporting because they have a solid waste permit issued by the appropriate local authority. Chapter 4 includes additional statewide data.

Funding

RCW 70.105.235 authorizes Ecology to provide financial assistance through grants to locals for preparing, updating and implementing local Hazardous Waste Plans, which detail local MRW programs. Ecology uses the Coordinated Prevention Grants program (CPG) to provide pass-through funding to local governments for these purposes. CPG is historically funded by the Local Toxics Control Account (LTCA).[1] However, the 2009-11 funding comes from the State Building and Construction Account (SBCA). LTCA funds were transferred to the General Fund to help balance the state budget. SBCA is funded through bonds that are sold by the state treasurer.

All local governments in the state of Washington have completed Hazardous Waste (HW) Plans. See Chapter 2 for the status of plans in each county. Every local HW plan must address:

- ✓ HHW collection.
- ✓ Household and public education.
- ✓ Small business technical assistance.
- ✓ Small business collection assistance.
- ✓ Enforcement.
- ✓ Used oil collection and education.

Accuracy of Data Collection

Ecology created and circulates a standard reporting form to all MRW programs. However, the reported data can vary depending on a program's collection process, and how data is reported and interpreted. All programs must provide individual MRW reports.

2010 Data

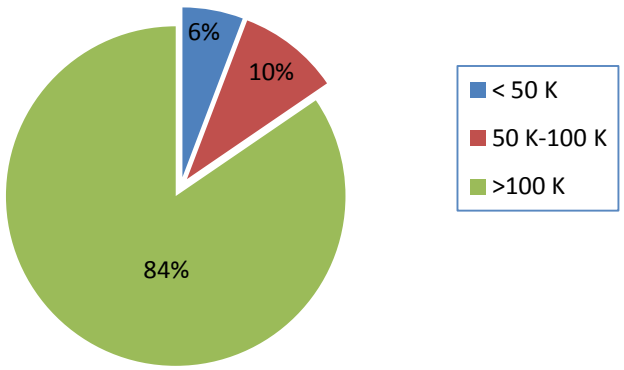
Chapter 173-350 WAC, Solid Waste Handling Standards, requires local programs to submit MRW report forms annually. Annual reports are required to be submitted by April 1 for the previous calendar year collections. Information received from local programs through MRW annual reports provides Ecology with data on MRW infrastructure, collection trends, costs, waste types received at collection events and fixed facilities, and disposition of wastes collected. Ecology translates this data into the information contained in this chapter and designs it to be specifically useful to those who operate or work in MRW programs in Washington State.

[1] Authorized by RCW 82.21.030 (Chapter 82.21 RCW, Hazardous substance tax -- Model toxics control act).

This year's report focuses on 2010 data with some comparisons to data published in previous years' reports. In an effort to provide useful information for individual programs, it was decided to present data in categories by county size.

In 2010, Adams and Columbia Counties did not report any HHW or used oil collections. Additionally, Franklin and Mason Counties did not provide used oil reports for 2010. Private collectors provided the numbers shown in this report for Adams and Columbia Counties. Due to budget constraints some counties have decided to reduce hours of operations at their fixed facilities or have discontinued or reduced collection events. Figure 5.1 shows the percentage of the state population that reside in counties of less than 50,000, 50,000 to 100,000, and more than 100,000.

Figure 5.1
Percent of State Population by County Size



Permanent fixed facilities now service most of the state. In 2010, Benton, Chelan, Douglas, Ferry, Garfield, San Juan, Skamania and Wahkiakum counties did not have fixed facilities. Garfield residents use the facility in Asotin County and Cowlitz County conducts a mobile event in Wahkiakum County. Benton, Chelan, Douglas, Ferry, San Juan and Skamania counties conduct collection events.

In past reports, Ferry County was shown to have a fixed facility, but the facility is more properly categorized as a limited MRW Facility. Benton County had a permanent fixed facility until about mid-2010 when the facility was destroyed by a fire.

Collection services for CESQGs have leveled off statewide. In 2010, 18 fixed facilities serviced CESQGs, and 5 different counties provided collection events for CESQGs.

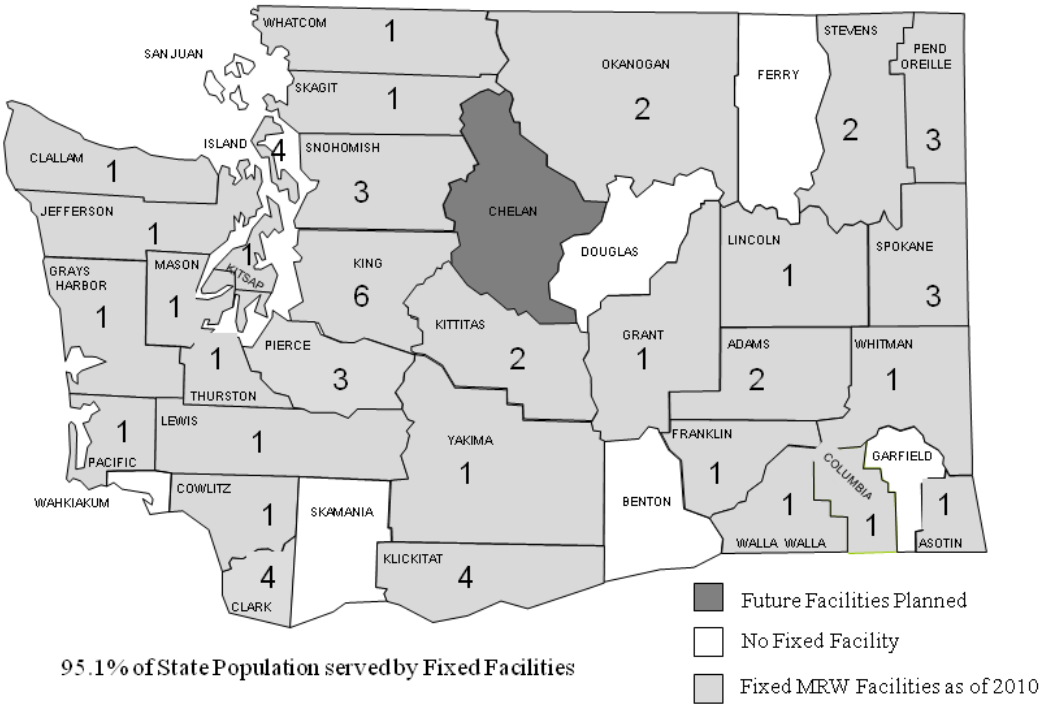
Table 5.1 shows the size of individual counties. In Washington State there are 42 programs that manage MRW. These programs include all 39 counties.

Table 5.1
Individual County Population by Size (2010)

< 50 K		50 K - 100 K		> 100 K	
Garfield	2,300	Mason	57,100	Cowlitz	100,000
Columbia	4,150	Walla Walla	59,600	Skagit	119,300
Wahkiakum	4,150	Clallam	70,100	Benton	172,900
Ferry	7,850	Grays Harbor	71,600	Whatcom	195,500
Lincoln	10,500	Chelan	73,300	Yakima	239,100
Skamania	10,900	Franklin	75,500	Kitsap	248,300
Pend Oreille	13,100	Lewis	75,600	Thurston	252,400
San Juan	16,500	Island	81,100	Clark	435,600
Adams	18,300	Grant	87,700	Spokane	470,300
Klickitat	20,500	**50 K - 100 K Total**	**651,600**	Snohomish	711,100
Asotin	21,700			Pierce	814,600
Pacific	22,100			King	1,933,400
Jefferson	29,300			**> 100K Total**	**5,692,500**
Douglas	38,500				
Kittitas	40,500				
Okanogan	40,900				
Whitman	43,600				
Stevens	44,300				
< 50K Total	**389,150**			**State Total**	**6,733,250**

Map 5.A shows which counties have permanent fixed facilities, the number of fixed facilities in each county and which counties are likely to develop a permanent fixed facility in the future.

Map 5.A
57 MRW Facilities as of 2010



MRW Collected

As shown in Table 5.2, Washington programs collected approximately14.9 million pounds of HHW, 9.4 million pounds of used oil (UO) and 5.2 million pounds of CESQG waste, for a total of 29.5 million pounds of MRW during 2010.

HHW increased slightly in 2010. Used oil collections have shown a slight upward trend over the last two years. CESQG waste collected decreased again in 2010. This decrease can mostly be attributed to Emerald Services Inc. collection of antifreeze over the last two years, which decreased by approximately 2.9 million pounds in 2009 due to economic conditions.

Table 5.2
Total Pounds per Waste Category
Years 1999 – 2010

Collection Year	HHW lbs (no UO)	Used Oil lbs	CESQG lbs	Total MRW lbs
1999	9.9M	9.3M	637K	20.4M
2000	10.5M`	8.3M	1.1M	19.8M
2001	15.6M	11.3M	1.0M	27.9M
2002	13.5M	9.2M	1.4M	24.1M
2003	16.0M	11.7M	1.3M	29.0M
2004	15.3M	12.4M	2.4M	30.1M
2005	14.7M	11.3M	6.3M	32.3M
2006	15.2M	10.0M	7.1M	32.3M
2007	14.9M	9.7M	7.6M	32.2M
2008	14,163,842	8,606,794	8,336,030	31,106,666
2009	14,704,355	8,925,818	5,637,850	29,268,023
2010	14,858,912	9,435,676	5,198,109	29,492,697

Collection by Waste Category and Type

As shown in Table 5.3, the most dominant waste types of MRW collected in 2010 were non-contaminated used oil, antifreeze, latex paint, oil-based paint, oil filters, and lead-acid batteries. These totals include used oil and antifreeze collected at all collection sites. The six specific waste types accounted for approximately 74 percent of the estimated 29.5 million pounds of MRW collected in 2010.

Table 5.3
Six Most Dominant MRW Waste Types Collected in 2010

Waste Type	Total Lbs.
Non-Contaminated Used Oil	9,218,066
Antifreeze	4,594,528
Latex Paint	2,548,713
Oil-based Paint	2,215,629
Oil Filters	1.988,269
Lead-Acid Batteries	1,297,635
Total	**21,862,840**

Table 5.4 provides summary information on total pounds of MRW collected from HHW and CESQG (publicly and privately collected) categories by waste types. Some waste type categories were changed and a few new ones added to the annual report form beginning in 2007.

Table 5.4
Total Pounds of MRW Collected by Waste Category in 2010

Waste Type	HHW	CESQG	Total
Acids	140,900	34,504	175,404
Acids (Aerosol Cans)	375	0	375
Aerosols (Consumer Commodities)	162,014	27,550	189,564
Antifreeze	2,226,538	2,367,990	4,594,528
Bases	185,093	30,692	215,785
Bases, Aerosols	472	23	495
Batteries (Lead Acid)	1,285,531	12,104	1,297,635
Batteries (Small Lead Acid)	20,817	25,933	46,750
Batteries (Dry Cell)	285,938	28,203	314,141
Batteries (Nicad/NIMH/Lithium)	47,755	18,645	66,400
CFCs	3,662	0	3,662
Chlorinated Solvents	5,828	7,755	13,583
Compressed Gas Cylinders	1,595	168	1,763
CRT's	430,011	13,084	443,095
Cyanide Solutions	16	8	24
Dioxins	1,024	0	1,024
Electronics	511,560	54,351	565,911
Fire Extinguishers	5,608	607	6,215
Flammable Solids	3,614	25,807	29,421
Flammable Liquids	623,152	294,081	917,233
Flammable Liquids, Aerosols	0	27	27
Flammable Liquids Poison	148,143	7,455	155,598
Flammable Liquid Poison, Aerosols	5,878	1,974	7,852
Flammable Gas (Butane/Propane)	105,409	696	106,105
Flammable Gas Poison	1,574	20	1,594
Flammable Gas Poison, Aerosols	66,031	1,394	67,425
Latex Paint	2,427,885	120,828	2,548,713
Latex Paint, Contaminated	244,987	22,347	267,334
Mercury Compounds (Dental Amalgam)	36	9,495	9,531

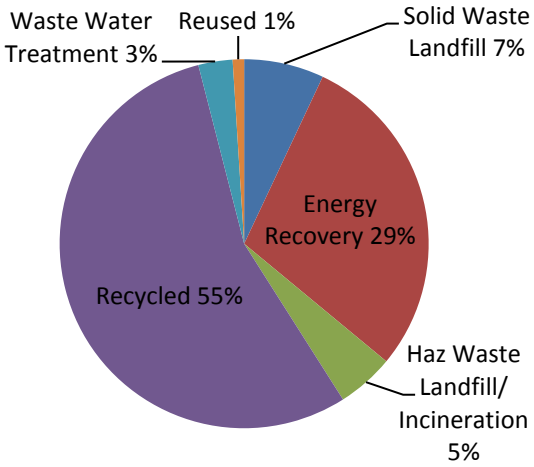
Waste Type	HHW	CESQG	Total
Mercury Containing Batteries (Button, etc)	0	1	1
Mercury Devices (Monometers, Barometers, etc.)	895	220	1,115
Mercury (Fluorescent Lamps & CFLs)	278,552	152,121	430,673
Mercury (Pure Elemental)	609	563	1,172
Mercury (Switches & Relays)	178	7	185
Mercury (Thermostats/Thermometers)	938	1,296	2,234
Nitrate Fertilizer	4,599	362	4,961
Non-PCB Containing Light Ballasts	2,734	8,550	11,284
Non-Regulated Liquids	42,348	841,918	884,266
Non-Regulated Solids	136,405	59,297	195,702
Oil-Based Paint	1,965,189	250,440	2,215,629
Oil-Based Paint, Contaminated	451	48,502	48,953
Oil Contaminated (oily H2O, oil w/PCB's, etc.)	27,816	189,794	217,610
Oil Filters	1,982,084	6,185	1,988,269
Oil Filters Crushed	19,822	0	19,822
Oil Non-Contaminated	9,030,492	187,574	9,218,066
Oil Stained Rags, Absorbent Pads, etc.	2,909	9,902	12,811
Organic Peroxides	2,831	72	2,903
Other Dangerous Waste	79,497	433,583	513,080
Oxidizers	35,714	4,397	40,111
Paint Related Materials	791,156	199,635	990,791
PCB Containing Light Ballasts	21,042	11,829	32,871
Pesticide/Poison Liquid	290,067	21,982	312,049
Pesticide/Poison Solid	189,700	21,229	210,929
Photo/Silver Fixer	319	9,599	9,918
Reactives	4,202	155	4,357
Tar and/or Adhesives	10,788	10,523	21,311
Used Cooking Oil	54,437	0	54,437
MRW TOTAL	**23,917,220**	**5,575,477**	**29,492,697**

* These totals do not match the HHW and CESQG totals in Table 5.2 because these contain used oil, which was separated out in Table 5.2. Also, in past reports most of the used oil was included with the CESQG totals. It is impossible to know if used oil collected at facilities such as Jiffy Lube is HHW or CESQG. However, it seems more reasonable that most of it is HHW rather than CESQG. Therefore, since 2008 it is now included with the HHW total in Table 5.4 instead of the CESQG total as in the past. Note: In 2010 MRW facilities recycled 1,444,781 pounds of materials such as propane tanks, cardboard, paint cans, etc. This number is not included in any of the data in the above table or elsewhere in this Chapter. It is noted here because it is a waste stream that MRW facilities must deal with. The majority of MRW facilities manage these recyclables appropriately.

Disposition of MRW Waste

The disposition of MRW collected is generally well managed. Most MRW is recycled or used for energy recovery. Very little of the MRW collected is safe for solid waste disposal. Five percent of all MRW is disposed at a hazardous waste landfill or incinerator. Figure 5.2 shows final disposition of MRW between recycled, reused, energy recovery, hazardous waste landfill or incineration, solid waste landfill and disposal through a wastewater treatment plant.

Figure 5.2
MRW Final Disposition



MRW Data

Table 5.5 shows various data by county. This data includes privately collected CESGQ wastes by Emerald Services and Phillip Services Corporation. The included private collection data was first presented this way in 2008, with previous reports including this data for Pierce and King counties only. This information can be used to evaluate efficiencies within each county by comparing percentage of participants per housing units and costs, and HHW pounds per participant.

Housing units are the number of households in each county. This data is used instead of per capita because participants typically represent a household.

Table 5.5
Various HHW Data by County

County	Housing Units	HHW Participants	% Participant / Housing Units	HHW Cost / Participant	HHW lbs / Participant	HHW Total lbs	HHW, SQG, & Used Oil Total lbs
Adams*	6,484	0	0.0%	$0	0.00	0	8,383
Asotin	9,969	1,504	15.1%	$31.15	53.21	80,033	112,602
Benton	67,335	4,990	7.4%	$60.83	33.59	167,630	209,369
Chelan	34,910	709	2.0%	$99.23	120.62	85,521	195,912
Clallam	35,569	640	1.8%	$160.58	124.97	79,982	228,612
Clark	168,969	11,346	6.7%	$52.35	197.66	2,242,642	4,315,131
Columbia*	2,190	0	0.0%	$0	0.00	0	816
Cowlitz	43,360	1,796	4.1%	$52.70	370.45	665,323	983,786
Douglas^	15,691	0	0.0%	$0	0.00	0	55,464
Ferry	4,191	13	0.3%	$150.62	51.31	667	3,701
Franklin	24,015	314	1.3%	$25.96	37.09	11,645	394,602
Garfield	1,337	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	18,098
Grant	35,161	207	0.6%	$154.04	135.57	28,062	80,546
Grays Harbor	35,887	1,807	5.0%	$103.99	57.60	104,078	346,508
Island	39,014	2,650	6.8%	$70.42	96.92	256,834	779,169
Jefferson	16,756	1,388	8.3%	$75.80	61.06	84,756	151,925
King	845,265	64,649	7.6%	$40.53	46.58	3,011,303	5,847,534
Kitsap	105,592	8,277	7.8%	$92.94	119.55	989,540	1,528,160
Kittitas	20,223	558	2.7%	$143.24	211.57	118,055	231,309
Klickitat	10,240	8,700	85.0%	$4.29	10.02	87,199	113,199
Lewis	34,492	1,200	3.5%	$104.90	235.53	282,640	517,814
Lincoln	5,862	287	4.9%	$25.76	170.70	48,990	102,563
Mason	30,787	314	1.0%	$51.43	96.97	30,450	32,297
Okanogan	21,323	411	1.9%	$130.80	70.44	28,952	57,488
Pacific	15,424	225	1.4%	$59.11	72.00	16,200	45,679
Pend Oreille	7,673	7,300	95.1%	$6.17	11.14	81,323	105,944
Pierce	328,890	9,563	2.9%	$62.07	45.78	437,760	1,941,826
San Juan	11,783	242	2.0%	$127.23	117.12	28,344	82,246
Skagit	50,323	4,120	8.2%	$28.01	58.74	242,000	452,419
Skamania	5,493	264	4.8%	$83.05	94.58	24,970	81,677
Snohomish	283,495	10,270	3.6%	$65.40	191.83	1,970,059	3,590,147
Spokane	200,362	33,500	16.7%	$9.56	26.12	875,180	2,049,042
Stevens	20,230	0	0.0%	$0	0.00	113,720	294,426
Thurston	106,790	14,554	13.6%	$27.51	133.20	1,938,535	2,374,379
Wahkiakum	2,120	Inc. w/ Cowlitz	Inc. w/ Cowlitz	Inc. w/ Cowlitz	Inc. w/ Cowlitz	Inc. w/ Cowlitz	20,193

County	Housing Units	HHW Participants	% Participant / Housing Units	HHW Cost / Participant	HHW lbs / Participant	HHW Total lbs	HHW, SQG, & Used Oil Total lbs
Walla Walla	23,568	2,094	8.9%	$78.50	32.57	68,200	132,176
Whatcom	89,364	7,418	8.3%	$45.27	32.66	242,294	655,196
Whitman	19,227	930	4.8%	$52.88	33.90	31,525	56,518
Yakima	86,183	3,701	4.3%	$83.28	103.89	384,500	1,295,841
STATEWIDE	2,865,547	205,941	7.2%	$41.34	72.15	14,858,912	29,492,697

* These counties did not report in 2010 and total pounds shown represents the amount private companies collected from CESQG's in those jurisdictions.
^ These counties scaled back operation in 2010 and pounds reported represent those collected at limited MRW sites.

Household Hazardous Waste (HHW)

Participants per Housing Unit

Counties that exhibit ten percent or higher of participants per housing unit provide excellent public education to encourage use of facilities or events, have very convenient locations for their collection facilities, or both. The participation number and rate for Klickitat and Pend Oreille counties seem high and were not verified before this report was completed.

Cost per Participant

This statistic is hard to compare, because of the many variables in program costs. Some programs record every cost, whether direct or indirect; others record only the disposal and basic operation costs.

Larger counties have the advantage of efficiency in scale, both in quantities received and in disposition options. Also, there are differences in service levels of the basic program, accounting differences, and errors. However, this data does provide an idea of what is possible and an incentive to contact those counties that seem to operate efficiently. According to annual reports submitted to Ecology, HHW programs spent just more than $8.5 million in 2010 statewide (does not include CESQG costs). In 2009, HHW programs spent approximately $10.1 million. In 2010, HHW programs reduced their costs by more than $1.5 million while still increasing the amount of waste they collected.

HHW Pounds per Participant and per Capita

The average pounds collected statewide per participant for HHW was 72.15. Table 5.6 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for 2008-2010. Statewide, HHW pounds per capita collected was 2.21 pounds.

Table 5.6
High Collections of HHW (No Used Oil Sites)
Pounds per Capita by County in 2008-10

HHW 2008		
County	**Size**	**Lbs**
Pend Oreille	<50K	5.22
Clark	>100K	5.18
Lewis	50-100K	4.82
Klickitat	<50K	4.52
Kittitas	<50K	3.74

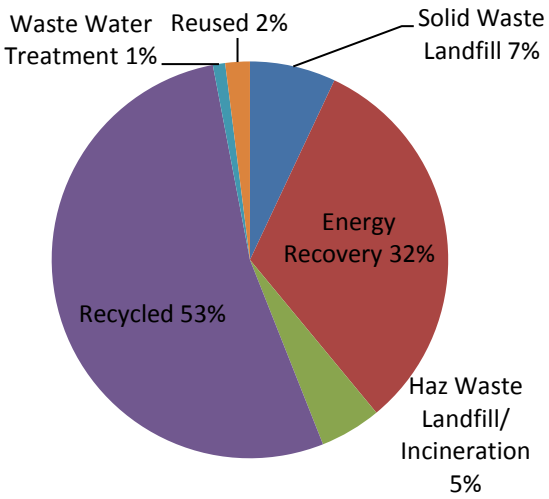
HHW 2009		
County	**Size**	**Lbs**
Pend Oreille	<50K	6.28
San Juan	<50K	5.80
Thurston	>100K	5.41
Snohomish	>100K	4.61
Klickitat	<50K	4.27

HHW 2010		
County	**Size**	**Lbs**
Thurston	>100K	7.68
Cowlitz	>100K	6.65
Clark	>100K	5.15
Lincoln	<50K	4.67
Klickitat	<50K	4.25

HHW Disposition

Figure 5.3 shows the final disposition of all HHW collected throughout Washington State.

Figure 5.3
HHW Final Disposition



Conditionally Exempt Small Quantity Generator (CESQG)

Twenty-one local MRW programs collect CESQG wastes. King County began a pilot program to collect CESQG wastes in 2008 and that pilot continued in 2009. The city of Tacoma offers CESQG's collection assistance for fluorescent lights only. Counties that sponsored CESQG waste collections are:

Asotin	Island	Okanogan	Thurston
Benton	Jefferson	Pacific	Whatcom
Chelan	King	Pierce	Yakima
Cowlitz	Kitsap	San Juan	
Grant	Kittitas	Skagit	
Grays Harbor	Lewis	Snohomish	

The top five counties that publicly collected the most CESQG waste per capita in 2010 were:

- Yakima
- Lewis
- Whatcom
- San Juan
- Kitsap

Table 5.7 shows the total amount of CESQG waste collected publicly and privately in each county. When we take into account both public and private collection numbers, the top five counties for CESQG collections per capita in 2010 were:

- Franklin
- Island
- Clark
- Lincoln
- Wahkiakum

Table 5.7
2010 Washington State Public and Private CESQG Collections in Pounds by County

County	Publicly Collected CESGQ Waste	Public CESQG Waste Collected/Capita	Privately Collected CESGQ Waste	Total CESQG Waste Collected	Total CESQG Waste Collected/Capita
Adams	0	0	8,383	8,383	0.45
Asotin	2,527	0.12	904	3,431	0.16
Benton	7,356	0.04	17,675	25,031	0.14
Chelan	11,533	0.16	16,017	27,550	0.37
Clallam	0	0	5,556	5,556	0.08
Clark	0	0	1,290,453	1,290,453	2.96
Columbia	0	0	816	816	0.2
Cowlitz	17,486	0.17	10,312	27,798	0.28
Douglas	0	0	7,150	7,150	0.18
Ferry	0	0	37	37	0
Franklin	0	0	382,957	382,957	5.07
Garfield	0	0	98	98	0.04
Grant	480	0.01	11,563	12,043	0.14
Grays Harbor	13,450	0.19	14,032	27,482	0.38
Island	19,218	0.24	349,123	368,341	4.54
Jefferson	6,465	0.22	3,155	9,620	0.33
King	82,650	0.04	777,052	859,702	.44
Kitsap	105,171	0.42	31,304	136,475	0.55
Kittitas	4,542	0.11	4,187	8,729	0.21
Klickitat	0	0	117	117	0
Lewis	65,194	0.86	7,522	72,716	0.96
Lincoln	0	0	13,939	13,939	1.33
Mason	0	0	1,847	1,847	0.03
Okanogan	3,598	0.09	4,686	8,284	0.2
Pacific	632	0.03	98	730	0.03
Pend Oreille	0	0	475	475	0.04
Pierce*	3,668	0	714,733	718,401	0.88
San Juan	9,559	0.58	0	9,559	0.58
Skagit	15,831	0.13	34,588	50,419	0.42
Skamania	0	0	12,107	12,107	1.11
Snohomish	103,368	0.15	164,925	268,293	0.38
Spokane	0	0	611,315	611,315	1.3
Stevens	0	0	3,570	3,570	0.08
Thurston	33,456	0.13	39,100	72,556	0.29
Wahkiakum	0	0	5,504	5,504	1.33
Walla Walla	0	0	12,017	12,017	0.2
Whatcom	117,488	0.60	129,954	247,442	1.26
Whitman	0	0	7,381	7,381	0.17
Yakima	231,008	0.97	26,145	257,153	1.07
Statewide Totals	**854,680**	**0.13**	**4,720,797**	**5,575,477**	**.83**

* City of Tacoma's CESQG program collects fluorescent lighting only.

Table 5.8 shows the total amount of CESQG waste collected publicly and privately by waste type. Excluding the "Other DW" category, the top five CESQG waste types collected in 2010 were:

- Antifreeze
- Non-Regulated Liquids
- Flammable Liquids
- Oil-Base Paint
- Mercury Collections (includes all mercury waste types)

Table 5.8
Washington State Public and Private CESQG Collections for 2010 by Waste Type

Waste Type	Public Collections	Private Collections	Totals
Antifreeze	17,504	2,350,486	2,367,990
Non-Regulated Liquids	9,297	832,621	841,918
Other DW	3,633	429,950	433,583
Flammable Liquids	112,475	181,606	294,081
Paint - Oil Base	213,141	37,299	250,440
Paint Related Materials	29,896	169,739	199,635
Used Oil-Cont. (oily water, etc)	19,678	170,116	189,794
Used Oil - Non-Contaminated	40,723	146,851	187,574
Mercury Collections	121,107	42,575	163,682
Paint – Latex	110,318	10,510	120,828
Non-Regulated Solids	1,099	58,288	59,297
Electronics	0	54,351	54,351
Paint - Oil Base –Contaminated	0	48,502	48,502
Acids	20,056	14,448	34,504
Bases	21,937	8,755	30,692
Batteries - Alkaline/Carbon	11,684	16,519	28,203
Aerosols - Consumer Commodities	8,896	18,564	27,550
Batteries - Small Lead Acid	13,467	12,466	25,933
Flammable Solids	5,351	20,456	25,807
Paint - Latex Contaminated	8,522	13,825	22,347
Pesticides - Poison/Liquid	11,890	10,092	21,982
Pesticides - Poison/Solids	11,280	9,949	21,229
Batteries-Nicad/Lithium	4,422	14,223	18,645
CRT's	0	13,084	13,084
Batteries - Auto Lead Acid	9,132	2,972	12,104
PCB Containing Light Ballasts	9,800	2,029	11,829
Tar/Adhesives	333	10,190	10,523
Oil Stained Rags, Absorbent Pads, etc.	783	9,119	9,902
Photo/Silver Fixer	8,035	1,564	9,599
Non-PCB Containing Light Ballasts	5,643	2,907	8,550
Chlorinated Solvents	5,626	2,129	7,755
Flammable Liquid Poison	6,534	921	7,455
Oil Filters	4,491	1,694	6,185
Oxidizers	3,264	1,133	4,397
Flammable Liquid Poison – Aerosols	1,959	55	2,014
Flammable Gas Poison - Aerosols	1,394	0	1,394
Flammable Butane/Propane	438	258	696
Fire Extinguishers	358	249	607
Nitrate Fertilizer	350	12	362
Compressed Gas Cylinders	0	168	168
Reactives	101	54	155
Organic Peroxides	54	18	72
Flammable Gas Poison	0	28	28
Bases – Aerosol	1	22	23
Cyanide Solutions	8	0	8
Totals	**854,680**	**4,720,797**	**5,575,477**

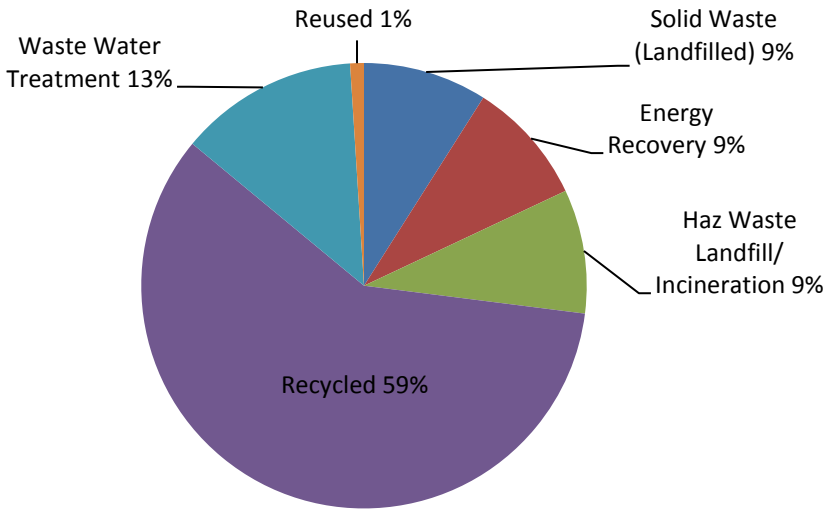
* Note: Approximately 42 percent of all CESQG wastes collected comes from the collection of antifreeze.

CESQG Disposition

Sixty-eight percent of all CESQG waste collected was either recycled or used for energy recovery. See Figure 5.4 for the complete disposition of CESQG wastes. There are several differences between final disposition of HHW and CESQG wastes worth noting:

- 32 percent of HHW was sent for energy recovery versus 9 percent of CESQG wastes.
- 1 percent of HHW was sent through a waste water treatment plant versus 13 percent of CESQG wastes.
- In general, less HHW waste gets landfilled (12%) compared to CESQG waste (18%).

Figure 5.4
CESQG Final Disposition



Collection/Mobile Events

Table 5.9 represents the number of mobile and collection events held statewide from 2008-10. The number of events decreased from for the first time since we began tracking this number (141 events in 2009 to the 125 events in 2010). However, the total pounds collected decreased by only approximately 36 thousand pounds.

The amount of waste collected through these types of events was approximately 2 million pounds in 2010, which is approximately 7 percent of all MRW collected in 2010, down from 8 percent in 2008 and 11 percent in 2007. The Waste Mobile in King County conducted 45 mobile events that collected a little more than 885,000 pounds of MRW in 2010.

Table 5.9
2008-10 Collection/Mobile Event Collection Amounts

Type of Event	Number of Events			Pounds Collected		
	2008	2009	2010	2008	2009	2010
Mobile	90	99	79	1,909,138	1,574,873	1,606,286
Collection	45	42	46	694,049	507,311	439,572
Totals:	**135**	**141**	**125**	2,603,187	2,082,184	2,045,858

Used Oil Sites

In 2010, facilities and collection sites reported collecting a total of 9,435,676 pounds of used oil. Used oil collection peaked statewide (12.4 million pounds) in 2004 and has steadily declined up until the last two years. Even with the slight increase in used oil collections in 2009 and 2010 (approximately 800,000 pounds), used oil collections need to be continually monitored. There are more cars on the road than ever, so one would expect this category to keep increasing. The recent trend to change oil every 5,000 miles compared to 3,000 miles and less do-it-yourself oil changers may be impacting this category. Table 5.10 show the six counties with the highest collections in pounds per capita by county size for 2008-10.

Table 5.10
Used Oil High Collection Counties - Pounds per Capita by County Size
Collected at Facilities and Used Oil Collection Sites 2008-10

Used Oil Sites - 2008		
County	**Size**	**Lbs**
Garfield	<50K	9.1
Stevens	<50K	4.8
Skamania	<50K	4.0
Lincoln	<50K	3.5
Pacific	<50K	3.4
San Juan	<50K	3.2

Used Oil Sites - 2009		
County	**Size**	**Lbs**
Garfield	<50K	8.0
Stevens	<50K	4.3
Skamania	<50K	3.8
Pend Oreille	<50K	3.8
Wahkiakum	<50K	2.9
Cowlitz	50-100K	2.9

Used Oil Sites – 2010		
County	**Size**	**Lbs**
Garfield	<50K	7.8
Skamania	<50K	4.1
Stevens	<50K	4.0
Lincoln	<50K	3.8
Wahkiakum	<50K	3.5
Cowlitz	>100K	2.9

Statewide Level of Service

The Washington State Office of Financial Management reported that as of 2010, Washington State had an estimated 2,865,547 housing units[2]. MRW Annual Reports revealed there were 205,941 participants who used the services of either an MRW collection event or MRW fixed facility. The actual number of households served is larger, because most used oil sites do not

[2]This information was downloaded from Web site http://ww.ofm.wa.gov/

record or report numbers of participants. The actual number of households served is also larger, because some participants counted at events or by facilities bring HHW from multiple households.

One way to estimate the approximate number of households served is to add ten percent to the participant values. This method gives an estimate of 226,535 participants served in 2010. This number represents 7.9 percent of all households in Washington State. Table 5.11 shows the percent of participants served statewide since 2001.

Table 5.11
Percent of Participants Served Statewide

Year	Percent Participants Served	Year	Percent Participants Served
2001	6.1	2006	8.6
2002	6.8	2007	9.1
2003	8.9	2008	8.7
2004	8.9	2009	8.3
2005	9.0	2010	7.9

Trends in Collection

The majority of counties in Washington State have at least one fixed facility. While the number of collection events held in 2010 declined, collection events can be a useful strategy to reach residents inconveniently located from fixed facilities.

Overall, MRW collections leveled off between 2005 and 2007. 2009, like 2008, has seen a significant reduction in the amount of MRW collected. This is most likely due to some larger programs with policies of no longer collecting latex paint and the overall state of the economy. The slight increase seen in overall collections of MRW in 2010 is something to monitor, as it may either be a slight anomaly of the decreasing trend in collections, or it is the beginning of an upward trend.

Also, as product stewardship programs become more prevalent in the future, collection numbers may go down or up depending on how MRW programs are utilized by stewardship programs. The Electronics Recycling Program started collecting covered electronic products in 2009. As expected, MRW programs collected approximately 1.3 million pounds less in 2009 than 2008. MRW programs collected close to two million pounds of electronics and CRTs in 2008 compared to a little over 700,000 pounds in 2009 and a little over 1 million pounds in 2010. For more information about the E-Cycle Washington Program, see Chapter 2.

Product Stewardship

Some other methods of managing MRW are gaining wider acceptance in Washington State and across the country.

Product stewardship efforts have resulted in the statewide electronics recycling program. In 2010, the Washington State Legislature passed a product stewardship bill for mercury-containing lighting products. Paint and rechargeable batteries legislation is scheduled for introduction in the 2012 legislative session. Pharmaceuticals will also be on the legislative agenda again in 2012.

This is a positive shift in MRW management as some manufacturers are beginning to accept responsibility for the end-of-life management costs of their products versus externalizing those costs onto public agencies.

It remains to be seen what role MRW facilities will play in the future as product stewardship becomes more widespread. Will MRW facilities continue to collect products, but be reimbursed by industry for management of their products, or will MRW facilities choose to let industry find alternative locations and personnel to manage their programs?

Product stewardship principles have also guided establishment of the Take-it-Back Network in King County, Snohomish County, Pierce County, Yakima County and the city of Tacoma.

The Take-it-Back Network was set up by local governments and consists of "*a group of retailers, repair shops, nonprofit organizations, waste haulers and recyclers that offer convenient options for recycling certain products that should not be disposed in the trash.*" Because the Take-it-Back Network is a voluntary program for businesses, it can be difficult to get data on the total amount of materials brought back to them.

Waste Streams of Concern

Pharmaceuticals and personal care products continue to be an area of concern for local governments and the public.

Groups like the Northwest Product Stewardship Council are working with state and local governments, NGOs, retailers and manufacturers to develop strategies to manage these emerging wastes based on product stewardship principles.

Pharmaceuticals

Pharmaceutical wastes have drawn more and more attention from state and local governments. A USGS Reconnaissance Study from 1999 - 2000 tested 139 streams for the presence of 95 chemicals, including pharmaceuticals.

Steroids, nonprescription drugs and insect repellent were the chemical groups most frequently detected. Detergent metabolites, steroids and plasticizers generally were measured at the highest concentrations. Forty-six of the chemicals were pharmaceutically active.

In 2006, another study by Eastern Washington University and the USGS analyzed nine biosolids products from seven states. The concentration of pharmaceuticals in biosolids was higher than in water and treated wastewater.

In 2005, 53 million prescriptions were filled in Washington State. A 2006 King County Survey found that only 33 percent of people will use all of their medication. This leaves a substantial amount of pharmaceutical waste to manage. This becomes significant from a public health standpoint.

Two tadpoles after 57 days of development in the lab. The one on the right, which has yet to sprout limbs, was exposed to fluoxetine, also known as Prozac, at 50 parts per billion.

In 2004 the American Association of Poison Control Centers (62 participating members serving 294 million people) reported a total of 2.4 million exposures. Fifty-eight percent of those exposures were from pharmaceuticals.

In 2006, a new two-year pilot program started to collect pharmaceuticals at local pharmacies. Group Health sites participated initially, with Bartell Drugs participating later. Between October 2006 and September 2007, 2,972 pounds of medication were collected.

Since this time some local governments have partnered with law enforcement agencies to collect unwanted or leftover medicines. Over the last two years, these programs safely collected and disposed of about 75,000 pounds.

The environmental side effects of pharmaceuticals show that aquatic and terrestrial organisms may be affected through endocrine disruption and anti-microbial resistance.

Though product stewardship legislation has not passed over the last couple of years, it will be introduced again in 2011.

Personal Care Products

Personal care products are also becoming a concern for state and local governments. Personal care products include cosmetics, deodorants, nail polish, lotions, hair spray, styling gel, perfumes and colognes. According to industry estimates reported by the Toxic-Free Legacy Coalition:

- Consumers may use as much as 25 cosmetic products containing more than 200 different chemical compounds on any given day.

- Eighty-nine percent of the approximately 10,500 ingredients used in personal care products have not been screened for safety by the FDA or anyone else.

- One chemical of concern found in personal care products are phthalates. Phthalates are a reproductive toxin/endocrine disrupter. Some studies have shown impacts on male reproductive system development.

    - Moms with higher phthalate exposures were more likely to have boys with altered genital development including smaller penises and undescended testes (Swan et al., 2005; Marsee et al., 2006).

    - Baby boys exposed to higher levels of phthalates in breast milk had slightly, but significantly decreased testosterone levels (Main et al., 2005).