

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 2008 was just more than over 31.1 million pounds.
- The average amount of HHW disposed of per participant was 63.7 pounds, and per capita was 2.15 pounds.
- More than 3.3 percent of Washington residents used a fixed facility or collection event to remove hazardous waste from their households, about 8.7 percent of all households.
- Counties that publicly collected the most CESQG waste per capita were Yakima, San Juan, Cowlitz, Island and Kitsap.
- Counties that collected the most used oil per capita were Garfield, Stevens, Skamania, Lincoln and Pacific.
- The ten categories of collected waste that increased the most from 2007 were Non-Regulated Liquids, Oil Filters (crushed), Batteries (small lead-acid), Flammable Liquid Poison (aerosols), Flammable Gas Poison (aerosols), Latex Paint (contaminated), CFCs, CRTs, Oil Filters and Electronics.
- Approximately 86 percent of all MRW 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

At the time of publication of this document, Ecology provides funding to local governments to develop and implement local hazardous waste management plans through the CPG Program.

RCW 70.105.235 authorizes financial assistance for implementation of MRW programs. Due to Washington State's budget deficit in the 2007-09 Biennium and the projected budget deficit in the 2009-11 Biennium, the Legislature moved capital programs previously funded from the Local Toxics Control Account to the State Building Construction Account (SBCA). SBCA is supported through the sale of bonds and is now the new funding source for the CPG Program.

Development of local MRW plans is also eligible for financial assistance. All local governments in the state of Washington submitted MRW plans. Every local MRW 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. Nonetheless, 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.

2008 Data

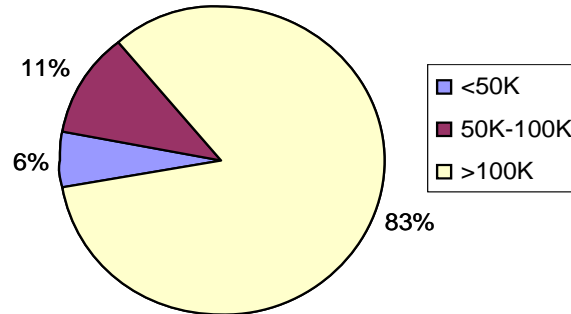
Ecology requires local programs to submit MRW report forms annually. Annual reports are required to be submitted by April 1 for the previous calendar year collections. Information received from local programs through MRW annual reports provides Ecology with data on MRW infrastructure, collection trends, costs and waste types received at collection events and fixed facilities. 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.

This year's report focuses on 2008 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 2008, Columbia County did not report any HHW collections, only used oil collections. Also, Franklin County failed to provide any annual reports for 2008 for their public collection. Private collectors provided the numbers for that county.

Figure 5.1 indicates a distinction between counties with a population 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 2008, 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 unit in Wahkiakum County. 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. Cowlitz County opened a new MRW facility at the Waste Control Transfer Station in 2008. The previous MRW facility was located at the Cowlitz County Landfill and closed in 2009 because the landfill will reach capacity soon.



New MRW Facility in Cowlitz County

Also, new facilities may be coming to Chelan, Pierce and Clark Counties in the future.

Collection services for CESQGs have leveled off statewide. For 2008, 18 fixed facilities serviced CESQGs and 4 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.

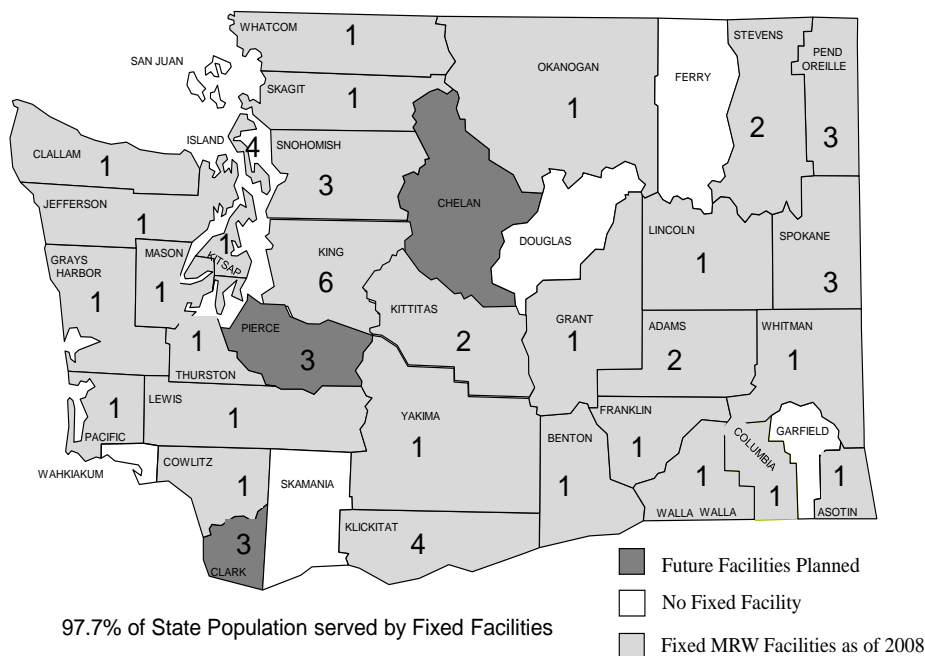
**Table 5.1
Individual County Population by Size (2008)**

<50K		50K-100K		>100K	
Adams	17,800	Chelan	72,100	Benton	165,500
Asotin	21,400	Clallam	69,200	Clark	424,200
Columbia	4,100	Cowlitz	99,000	King	1,884,200
Douglas	37,000	Franklin	70,200	Kitsap	246,800
Ferry	7,700	Grant	84,600	Pierce	805,400
Garfield	2,300	Grays Harbor	70,900	Skagit	117,500
Jefferson	28,800	Island	79,300	Snohomish	696,600
Kittitas	39,400	Lewis	74,700	Spokane	459,000
Klickitat	20,100	Mason	56,300	Thurston	245,300
Lincoln	10,400	Walla Walla	58,600	Whatcom	191,000
Okanogan	40,100	50K-100K Total	734,900	Yakima	235,900
Pacific	21,800			>100K Total	5,471,400
Pend Oreille	12,800				
San Juan	16,100				
Skamania	10,700				
Stevens	43,700				
Wahkiakum	4,100				
Whitman	43,000				
<50K Total	381,300				

State Total: 6,587,600

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

Map 5.A
56 MRW Facilities as of 2008



MRW Collected

As shown in Table 5.2, Washington collected nearly 14.2 million pounds of HHW, 8.6 million pounds of used oil (UO) from collection sites and 8.3 million pounds of CESQG waste, for a total of 31.1 million pounds of MRW during 2008. The most significant trends seen since 2004 are the increase of CESQG waste collected, and decrease in HHW and used oil collected.

The increases seen in CESQG collection totals are attributed to statewide collections by Phillip Services (Kent Facility) in King County and the Emerald Services facility in Pierce County. The most significant increase has come from antifreeze collections by Emerald Services.

Table 5.2
Total Pounds per Waste Category
Years 1999 – 2008

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

Collection by Waste Category and Type

There a couple of factors that affected collection totals for 2008. First, King County discontinued collection of latex paint in 2008. Therefore, the 2.2 million pounds of latex paint collected by King County in 2007 were not collected in 2008. This is a trend that seems to be continuing into 2009. Latex paint is not hazardous and very expensive for programs to manage. Two additional large counties have already either stopped or will soon stop collecting latex paint.

Second, in previous reports the mercury containing devices (CFLs, tubes, thermostats, thermometers, etc.) were converted to pounds of mercury collected. Due to the problems encountered by trying to convert products containing varying amounts of mercury, this year's report simply report the total weight of all mercury containing devices collected. This change has added close to 420,000 pounds to the total of MRW collected.

As shown in Table 5.3, the most dominant waste types of MRW collected in 2008 were noncontaminated used oil, antifreeze, latex and oil-based paint, flammable liquids and lead-acid batteries. These totals include used oil and antifreeze collected at all collection sites. These six specific waste types accounted for 78.5 percent of the estimated 31.1 million pounds of MRW collected in 2008.

Table 5.3
Six Most Dominant MRW Waste Types Collected in 2008

Waste Type	Total Lbs.
Non-Contaminated Used Oil	8,606,794
Antifreeze	6,156,045
Latex Paint	3,246,022
Oil-based Paint	3,037,253
Flammable Liquids	1,796,834
Lead-Acid Batteries	1,574,670
Total	24,417,618

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 2008

Waste Type	HHW	CESQG	Total
Acids	111,596	27,829	139,425
Acids (Aerosol Cans)	0	23	23
Aerosols (Consumer Commodities)	173,249	21,918	195,167
Antifreeze	661,431	5,494,614	6,156,045
Bases	152,739	24,634	177,373
Bases, Aerosols	993	31	1,024
Batteries (Lead Acid)	1,559,965	14,705	1,574,670
Batteries (Small Lead Acid)	13,906	9,095	23,001
Batteries (Dry Cell)	175,351	13,190	188,541
Batteries (Nicad/NIMH/Lithium)	23,108	6,798	29,906
CFCs	2,009	0	2,009
Chlorinated Solvents	2,961	2,371	5,332
CRT's	1,022,263	64,006	1,086,269
Electronics	905,937	4,500	910,437
Flammable Solids	11,131	25,658	36,789
Flammable Liquids	1,036,195	760,639	1,796,834
Flammable Liquids Poison	164,442	13,005	177,447
Flammable Liquid Poison, Aerosols	25,604	0	25,604

Waste Type	HHW	CESQG	Total
Flammable Gas (Butane/Propane)	66,393	1,614	68,007
Flammable Gas Poison	4,838	109	4,947
Flammable Gas Poison, Aerosols	27,380	1,678	29,058
Latex Paint	3,106,604	139,418	3,246,022
Latex Paint, Contaminated	824,347	28,112	852,459
Mercury Compounds (Dental Amalgam)	28	7,982	8,010
Mercury Devices (Monometers, Barometers, etc.)	98	10	108
Mercury (Fluorescent Lamps & CFLs)	281,891	127,035	408,926
Mercury (Pure Elemental)	483	170	653
Mercury (Switches & Relays)	2	7	9
Mercury (Thermostats/Thermometers)	3,705	298	4,003
Nitrate Fertilizer	2,036	0	2,036
Non-Regulated Liquids	57,322	537,546	594,868
Oil-Based Paint	2,665,479	371,774	3,037,253
Oil-Based Paint, Contaminated	4,526	6,400	10,926
Oil Contaminated	46,520	28,680	75,200
Oil Filters	233,432	3,596	237,028
Oil Filters Crushed	30,457	0	30,457
Oil Non-Contaminated	8,549,312	57,482	8,606,794
Oil with Chlorides	922	0	922
Oil with PCBs	15,714	6,630	22,344
Other Dangerous Waste	53,681	740,032	793,713
Organic Peroxides	1,147	296	1,443
Oxidizers	33,963	3,742	37,705
Pesticide/Poison Liquid	271,009	9,064	280,073
Pesticide/Poison Solid	193,512	14,316	207,828
Photo/Silver Fixer	1,266	13,768	15,034
Reactives	3,076	1,778	4,854
MRW TOTAL	22,522,113*	8,584,553*	31,106,666

* 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 in that most of it is HHW rather than CESQG. Therefore, it is now included with the HHW total in Table 6.4 instead of the CESQG total as in the past.

Note: In 2008 MRW facilities recycled 8,421,667 pounds of materials such as propane tanks, cardboard, 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.

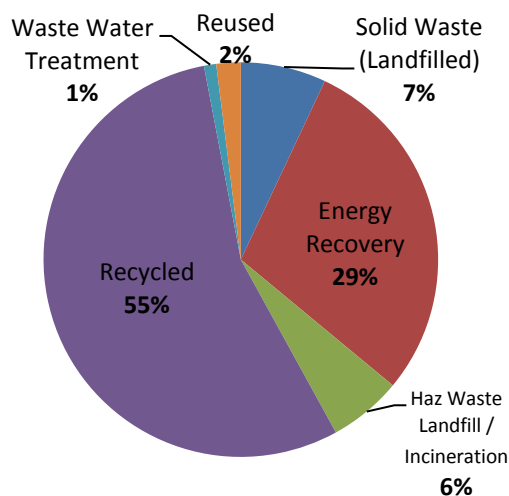
The annual report form was changed for the 2007 reporting year to get better accuracy for mercury collections and reduce the amount reported in the “Other Dangerous Waste” category. The newly added waste categories include:

- Aerosols (consumer commodities)
- CFCs
- Mercury devices (monometers, barometers, etc.)
- Mercury compounds (dental amalgam)
- Nitrate fertilizer
- Nonregulated liquids
- Photo/silver fixer
- Materials recycled (propane tanks, cardboard, cans, etc.)

Disposition of MRW Waste

The disposition of MRW 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. Six percent of all MRW is disposed at a hazardous waste landfill or incinerator. See Figure 5.2 for 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 has only been shown in past reports for Pierce and King counties. 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	6,367	225	3.5%	\$53.07	25.06	5,639	35,992
Asotin	9,850	585	5.9%	\$103.37	72.67	42,513	64,374
Benton	65,892	4,854	7.4%	\$50.55	40.00	179,425	322,468
Chelan	34,236	759	2.2%	\$81.04	155.79	118,247	241,406
Clallam	34,995	523	1.5%	\$148.25	124.10	64,905	277,539
Clark	166,196	16,336	9.8%	\$35.01	134.55	2,198,077	3,733,569
Columbia	2,170	0	0%	\$0	0	No HHW Collections in 2008	15,492*
Cowlitz	42,826	1,841	4.3%	\$61.99	121.41	223,523	556,740
Douglas	15,191	321	2.1%	\$98.47	150.78	48,401	118,387
Ferry	4,121	30	.7%	\$25.74	15.53	466	1,793
Franklin	22,902	299	1.3%	\$14.48	4.79	1,433	256,581
Garfield	1,318	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	21,000
Grant	33,968	594	1.7%	\$90.77	103.53	61,499	129,102
Grays Harbor	35,472	1,606	4.5%	\$98.94	66.56	106,894	395,144
Island	38,446	1,646	4.3%	\$120.68	129.02	212,377	357,218
Jefferson	16,506	1,193	7.2%	\$67.41	39.18	46,745	128,356
King	821,935	71,274	8.7%	\$42.22	53.38	3,804,577	8,239,473
Kitsap	104,467	6,608	6.3%	\$111.59	92.85	613,585	1,297,193
Kittitas	19,687	515	2.6%	\$170.07	286.10	147,339	242,660
Klickitat	9,985	8,700	87.1%	\$5.15	10.43	90,758	132,125
Lewis	33,865	1,516	4.5%	\$117.77	237.49	360,046	611,974
Lincoln	5,827	374	6.4%	\$24.64	20.03	7,494	46,227
Mason	30,306	4,391	14.5%	\$13.26	31.03	136,292	220,873
Okanogan	20,797	312	1.5%	\$217.68	171.39	53,473	85,568
Pacific	15,101	197	1.3%	\$593.90	69.49	13,690	87,754
Pend Oreille	7,516	2,489	33.1%	\$37.91	26.82	66,771	95,693
Pierce	323,884	9,516	2.9%	\$66.20	49.35	469,648	2,070,128
San Juan	11,514	296	2.6%	\$142.92	160.55	47,522	107,625

County	Housing Units	HHW Participants	% Participant / Housing Units	HHW Cost / Participant	HHW lbs / Participant	HHW Total lbs	HHW, SQG, & Used Oil Total lbs
Skagit	49,454	3,784	7.7%	\$33.05	44.19	167,241	409,427
Skamania	5,409	238	4.4%	\$87.98	91.63	21,808	66,086
Snohomish	277,565	18,289	6.6%	\$56.81	124.07	2,269,102	4,545,781
Spokane	196,219	35,900	18.3%	\$15.98	24.38	875,298	2,177,593
Stevens	19,876	412	2.1%	\$65.54	186.14	76,691	294,914
Thurston	104,237	14,574	14.0%	\$44.97	48.76	710,652	1,485,545
Wahkiakum	2,081	36	Inc w/ Cowlitz	Inc w/ Cowlitz	Inc w/ Cowlitz	Inc w/ Cowlitz	Inc w/ Cowlitz
Walla Walla	23,256	1,893	8.1%	\$91.45	77.56	146,836	195,992
Whatcom	88,211	6,957	7.9%	\$50.54	38.72	269,404	731,912
Whitman	18,909	1,060	5.6%	\$32.38	30.08	31,885	54,754
Yakima	85,192	2,265	2.7%	\$111.75	208.07	471,286	1,252,434
STATEWIDE	2,805,749	222,408	7.9%	\$45.04	63.7	14,163,842	31,106,666

* Columbia County total represents used oil and privately collected CESQG wastes.

Household Hazardous Waste (HHW)

Participants per Housing Unit

Counties that exhibit ten percent or higher of participants per housing unit perform 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 County 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. Statewide and according to annual reports submitted to Ecology, HHW (does not include CESQG costs) programs spent just over \$10 million in 2008.

HHW Pounds per Participant

The average pounds collected statewide per participant for HHW was 63.7. Table 5.6 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for 2006-08. Statewide, HHW pounds per participant collected was 2.15 pounds.

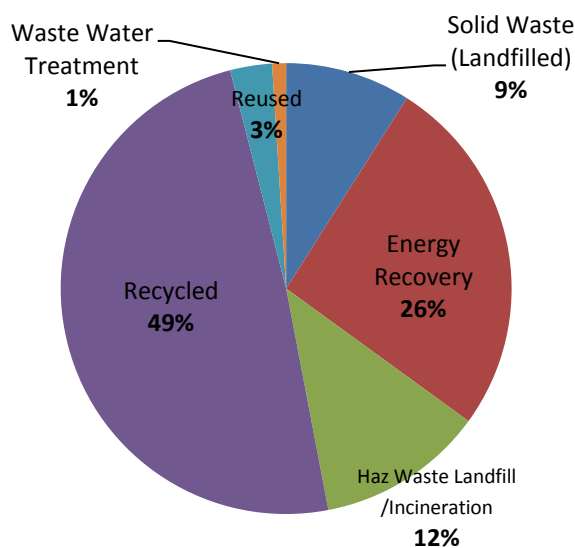
**Table 5.6
High Collections of HHW (No Used Oil Sites)
Pounds per Capita by County in 2006-08**

HHW 2006			HHW 2007			HHW 2008		
County	Size	Lbs	County	Size	Lbs	County	Size	Lbs
Klickitat	<50K	5.35	Pend Oreille	<50K	6.85	Pend Oreille	<50K	5.22
Pend Oreille	<50K	5.18	Klickitat	<50K	6.26	Clark	>100K	5.18
Clark	>100K	4.89	Skagit	>100K	4.42	Lewis	50-100K	4.82
Island	50-100K	4.87	Skamania	<50K	4.21	Klickitat	<50K	4.52
Kittitas	<50K	4.36	Clark	>100K	4.16	Kittitas	<50K	3.74

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 waste from the public. King County began a pilot program to collect CESQG wastes in 2008. Counties that sponsor CESQG waste collections are:

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

Yakima County was responsible for close to 24 percent of the total statewide volume of publicly collected CESQG waste. This is largely due to Yakima County's policy of not charging businesses to dispose or recycle their waste. This does not take into account the numbers of CESQG waste collected privately in the county.

The top five counties that publicly collected the most CESQG waste per capita in 2008 were:

- Yakima
- San Juan
- Cowlitz
- Island
- Kitsap

Table 5.7 shows the total amount of CESQG waste collected publicly and privately by each county. When we take into account both public and private collection numbers, the top five counties for CESQG collections per capita in 2008 were:

- Franklin
- Clark
- Spokane
- Whatcom
- Grays Harbor

Table 5.7
2008 Washington State Public and Private CESQG Collections
in Pounds by County

County	Publicly Collected CESQG Waste	Public CESQG Waste Collected/Capita	Privately Collected CESQG Waste	Total CESQG Waste Collected	Total CESQG Waste Collected/Capita
Adams	0	0	1,974	1,974	.11
Asotin	462	.02	2,814	3,276	.15
Benton	17,573	.11	7,736	25,309	.15
Chelan	9,971	.14	16,272	26,243	.36
Clallam	0	0	53,919	53,919	.78
Clark	0	0	1,468,387	1,468,387	3.46
Columbia	0	0	396	396	.10
Cowlitz	44,981	.45	10,810	55,791	.56
Douglas	2,405	.07	2,490	4,895	.13
Ferry	0	0	1,327	1,327	.17
Franklin	0	0	255,148	255,148	3.63
Garfield	0	0	182	182	.08
Grant	352	.004	12,675	13,027	.15
Grays Harbor	25,108	.35	73,885	98,993	1.40
Island	35,105	.44	20,684	55,789	.70
Jefferson	6,221	.22	20,516	26,737	.93
King	60,684	.03	2,469,467	2,530,151	1.34
Kitsap	104,263	.42	218,451	322,714	1.31
Kittitas	3,230	.08	3,661	6,891	.17
Klickitat	0	0	182	182	.01
Lewis	29,635	.40	50,076	79,711	1.07
Lincoln	0	0	2,895	2,895	.28
Mason	0	0	37,856	37,856	.67
Okanogan	1,318	.03	6,860	8,178	.20
Pacific	587	.03	32	619	.03
Pend Oreille	0	0	1,012	1,012	.08
Pierce*	2,686	.003	866,670	869,356	1.08
San Juan	8,325	.52	0	8,325	.52
Skagit	9,935	.08	23,881	33,816	.29
Skamania	0	0	1,136	1,136	.11
Snohomish	162,394	.23	629,401	791,795	1.14
Spokane	0	0	697,826	697,826	1.52
Stevens	0	0	6,583	6,583	.15
Thurston	64,372	.026	233,429	297,801	1.21
Wahkiakum	0	0	0	0	0
Walla Walla	0	0	1,196	1,196	.02
Whatcom	77,843	.40	212,170	290,013	1.52
Whitman	0	0	8,328	8,328	.19
Yakima	203,683	.86	44,570	248,253	1.05
Statewide Totals	871,133	.13	7,464,897	8,336,030	1.27

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

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 2008 were:

- Antifreeze
- Flammable Liquids
- Non-Regulated Liquids
- Oil-Base Paint
- Latex Paint

Table 5.8
Washington State Public and Private CESQG Collections for 2008 by Waste Type

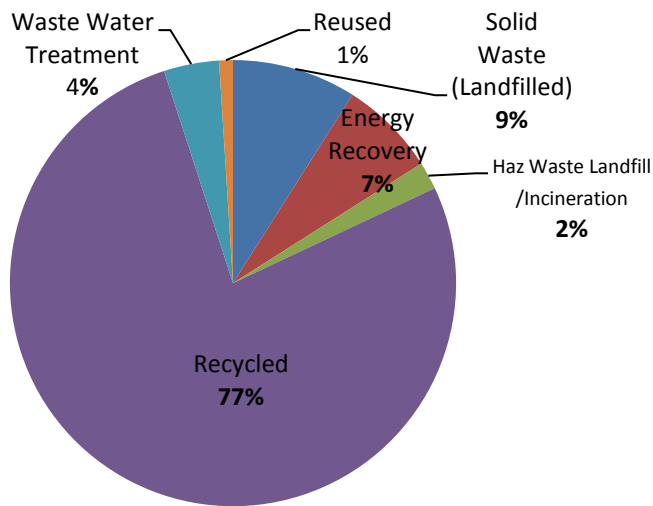
Waste Type	Public Collections	Private Collections	Totals
Antifreeze	14,127	5,480,487	5,494,614
Flammable Liquids	99,985	660,654	760,639
Other DW	35,168	516,009	551,177
Non-Regulated Liquids	23,578	513,968	537,546
Paint - Oil Base	277,388	94,386	371,774
Paint - Latex	127,330	12,088	139,418
Mercury Collections	117,278	18,224	135,502
CRT's	24,325	39,681	64,006
Paint - Latex Contaminated	25,143	2,969	28,112
Acids	15,133	12,696	27,829
Flammable Solids	4,018	21,640	25,658
Used Oil - Non-Contaminated	456	24,636	25,092
Bases	14,835	9,799	24,634
Aerosols - Consumer Commodities	11,631	10,297	21,928
Batteries - Auto Lead Acid	11,268	3,437	14,705
Pesticides - Poison/Solids	6,986	7,330	14,316
Photo/Silver Fixer	12,663	1,105	13,768
Batteries - Alkaline/Carbon	8,439	4,751	13,190
Flammable Liquid Poison	10,901	2,104	13,005
Batteries - Small Lead Acid	1,261	7,834	9,095
Pesticides - Poison/Liquid	5,688	3,376	9,064
Batteries-Nicad/Lithium	4,777	2,021	6,798
Oil w/ PCB's	5,870	760	6,630
Paint - Oil Base -Contaminated	400	6,000	6,400
Electronics	0	4,500	4,500
Oxidizers	2,285	1,457	3,742
Oil Filters	3,596	0	3,596
Chlorinated Solvents	1,516	855	2,371
Reactives	1,269	509	1,778
Flammable Gas Poison - Aerosols	661	1,017	1,678
Flammable Butane/Propane	1,546	68	1,614
Flammable Liquid Poison - Aerosols	892	50	942
Used Oil - Contaminated	450	0	450
Organic Peroxides	112	184	296
Flammable Gas Poison	109	0	109
Bases - Aerosols	31	0	31
Acids - Aerosols	18	5	23
Totals	871,133	7,464,897	8,336,030

* Note: Approximately 66 percent of all CESQG wastes collected comes from collection of antifreeze.

CESQG Disposition

Eight-four percent of all CESQG waste was either recycled or used for energy recovery. See Figure 5.4 for the complete disposition of CESQG wastes. The biggest difference between final disposition of HHW and CESQG wastes lies in the amount of waste recycled. Seventy-seven percent of CESQG waste was recycled, while 49 percent of HHW was disposed of via the same method. Also significant is the 7 percent of CESQG waste used for energy recovery while 26 percent of HHW waste was disposed in the same manner.

**Figure 5.4
CESQG Final Disposition**



Collection/Mobile Events

Table 5.9 represents the number of mobile and collection events held statewide in 2006-08. The number of events conducted has increased every year. However, the total pounds collected in 2008 dropped from 2007 by a little more than 1 million pounds. This drop is partly attributed to King County no longer accepting latex paint.

In 2007, King County collected more than 800,000 pounds of latex paint that was not collected in 2008. The amount of waste collected through these types of events was approximately 2.6 million pounds, which is a little more than 8 percent of all MRW collected in 2008, down from 11 percent in 2007. Waste Mobile in King County conducted 32 mobile events that collected a little more than 645,000 pounds of MRW.

Table 5.9
2006-08 Collection/Mobile Event Collection Amounts

Type of Event	Number of Events			Pounds Collected		
	2006	2007	2008	2006	2007	2008
Mobile	67	63	90	2,956,141.06	2,963,460.05	1,909,138.00
Collection	20	51	45	437,384.80	686,737.72	694,049.00
Totals:	87	114	135	3,393,525.86	3,650,197.77	2,603,187.00

Used Oil Sites

In 2008, facilities and collection sites reported collecting a total of 8,606,794 pounds of used oil (1 percent contaminated, 99 percent non-contaminated). Used oil collection peaked statewide (12.4 million pounds) in 2004 and has steadily declined since. The drop seen in used oil collections needs 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 changing oil every 5,000 miles compared to 3,000 miles and less do-it-yourself oil changers may be impacting this category. See Table 5.10 for the six counties with the highest collections in pounds per capita by county size for 2006-08.

Table 5.10
Used Oil High Collection Counties - Pounds per Capita by County Size Collected at Facilities and Used Oil Collection Sites 2006-08

Used Oil Sites - 2006			Used Oil Sites - 2007			Used Oil Sites - 2008		
County	Size	Lbs	County	Size	Lbs	County	Size	Lbs
Mason	50-100K	10.9	Mason	50-100K	8.1	Garfield	<50K	9.13
Stevens	<50K	5.5	Stevens	<50K	5.1	Stevens	<50K	4.84
San Juan	<50K	3.8	Wahkiakum	<50K	4.1	Skamania	<50K	4.03
Yakima	>100K	3.6	Skamania	<50K	4.0	Lincoln	<50K	3.45
Asotin	<50K	3.3	San Juan	<50K	3.8	Pacific	<50K	3.37
Cowlitz	50-100K	3.3	Yakima	>100K	3.6	San Juan	<50K	3.22

Statewide Level of Service

The Washington State Office of Financial Management reported that as of 2008 Washington State had an estimated 2,805,749 housing units¹. MRW Annual Reports revealed there were 222,408 participants. The actual number of households served is larger because most used oil

¹This information was downloaded from Web site <http://www.ofm.wa.gov/>

sites do not 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 244,648 participants served in 2008. This number represents 8.7 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	2005	9.0
2002	6.8	2006	8.6
2003	8.9	2007	9.1
2004	8.9	2008	8.7

Trends in Collection

The majority of counties in Washington State have at least one fixed facility. The number of collection events held in 2008 increased from 114 in 2007 to 135 in 2008. As the population grows, collection events can be a useful strategy to reach residents inconveniently located from fixed facilities.

Overall, MRW collections leveled off between 2005 and 2007. 2008 has seen a significant reduction in collection numbers, most likely due to King County's policy of no longer collecting latex paint. This trend will most likely continue into the future as more facilities choose to discontinue collecting nonhazardous latex paint in these tough economic times.

Also, as product stewardship programs become more prevalent in the future, collection numbers will most likely go down accordingly. The Electronics Recycling Program started in 2009, which will most likely lower MRW collection totals in 2009 for electronics and CRTs. For more information about the E-Cycle Washington Program, see Chapter 2. MRW programs collected close to two million pounds of electronics and CRTs in 2008.

As of October 2009 the electronics recycling program collected more than 33 million pounds of electronics. This shows that by providing convenient options for electronics recycling, the product stewardship model can facilitate increased collections of waste products while further enhancing protection of human health and the environment.

Programs for paint and fluorescent lighting are also in the works, which may further reduce collection totals for MRW programs. This is a positive shift in MRW management as manufacturers are now accepting responsibility for end-of-life management costs of their products versus placing those costs on 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

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

Product stewardship efforts have resulted in the statewide electronics recycling program. Other work is currently underway for paint and compact fluorescent lights. 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.”* The Take-it-Back Network is a voluntary program for businesses. Due to this arrangement it can be difficult to get data on the total amount of materials brought back to businesses.

Emerging Waste Streams

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. 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.



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 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.

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

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 as 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).