

Chapter VI

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.

MRW collections started in the early 1980’s primarily as HHW-only events, also known as “round-ups.” These events usually happened once or twice a year.

In the late 1980’s, permanent collection facilities, now known as fixed facilities, began to replace the collection events in order 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.

It should be noted the data in this chapter are 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 been issued a solid waste permit by the appropriate local authority.

- Total MRW collected in 2007 was just over 32.2 million pounds.
- The average amount of HHW disposed of per participant was 74.8 pounds, and per capita was 2.62 pounds.
- Over 3.5 percent of Washington residents used a fixed facility or collection event to remove hazardous waste from their household, about 9.1 percent of all households.
- The counties that publicly collected the most CESQG waste per capita were Yakima, Whatcom, Lewis, Cowlitz, and Chelan.
- The counties that collected the most used oil per capita were Mason, Stevens, Wahkiakum, Skamania, San Juan, and Yakima.
- The ten categories of collected waste that increased the most from 2006 were Flammable Gas Poison, Oil w/PCB’s, Oil (Contaminated), Oil Filters (off-site), Batteries (nicad/NIMH/lithium), Bases, Flammable Liquid Poison (Aerosols), Organic Peroxides, CRT’s, and Latex Paint.
- Approximately 82 percent of all HHW was recycled, reused, or used for energy recovery.

Chapter V Solid Waste Generation, Disposal and Recycling in Washington State includes additional data statewide.

Funding

Washington State's 1988 Model Toxics Control Act provides a large part of the funding for public MRW programs through the Coordinated Prevention Grant program. Many jurisdictions use funds to plan and carry out local MRW programs.

By 1991 all local governments in the State of Washington had submitted MRW plans. Every local MRW plan includes sections on CESQG technical and disposal assistance, MRW public education, MRW enforcement, and HHW collection.

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.

2004 – Some reporting errors have been identified since the 2004 report numbers were published. The 2004 HHW numbers and consequently the overall MRW number for 2004 have changed dramatically. One facility over reported the total amount of latex paint collected by 3 million pounds. Another facility reported the total amount of HHW that came to its facility from all sources (versus the facilities county of residence) in 2004. This same facility, due to the aforementioned reporting confusion and a contract change saw its HHW number go from 4,068,503 pounds collected in 2004 to 4,395 pounds collected in 2005. The actual number for 2004 is impossible to know for what was collected in the county it resides. These two reporting anomalies account for upwards of 7 million pounds over reported in 2004 in the HHW and overall MRW categories.¹

2005 - Columbia County did not report their used oil collections so the number from the previous year was carried over.

Lincoln County experienced limited quantities and stored their MRW. They only submitted HHW quantities, participation numbers, and costs from the past three years. This data was averaged over the time period to establish the numbers for 2005. In addition, Klickitat County's participation numbers seem high but the county could not confirm this for us.

One facility in King County reported all CESQG waste received at its facility from all Washington State counties it services for CESQG collections. These numbers were backed out of the King County total based on other annual reports submitted to Ecology.

2006 – Lincoln County did not report in 2006 (see 2005 above). Except for used oil collection sites, Clallam County did not have anything further to report because they chose not to conduct

¹ See Table 6.2 for a year by year breakdown of HHW, CESQG, and overall MRW pounds collected back to 1999. By accounting for the reporting confusion mentioned above, the numbers are more in line with overall collection trends and explain the large jump seen from 2003 to 2004.

the collection events in 2006 that they normally do. Clallam County was anticipating a fixed facility to come on-line in 2006, but the facility did not open until early 2007. If using 2005 collection totals for Clallam and Lincoln Counties, approximately 110,000 pounds of MRW did not get collected or reported in 2006.

The total in Table 6.3 in the 2006 annual report should have been 26,279,699 pounds, which would have accounted for 81.4 percent of all MRW collected in 2006, not 65.3 percent as reported in the document.

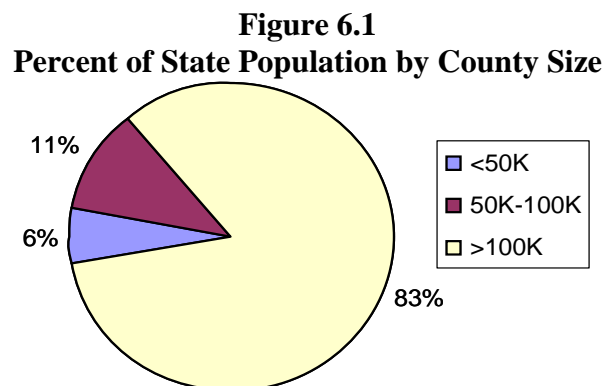
The CESQG totals for Pierce County in 2005 and 2006 were originally thought to be based on Pierce County only collections, but were found to be the statewide collection totals for Emerald Services. This year's report shows the Pierce County only total, as well as, Emerald's collection total statewide.

Year 2007 Data

Ecology requires local programs to submit MRW report forms annually. For the past few years, Ecology has requested annual reports be submitted by April for the previous calendar year collections. The information received from local programs through the 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 MRW programs within Washington State.

This year's report focuses on 2007 data with some comparisons to the data published in previous years' reports. In an effort to provide useful information for individual programs, it was determined that data would be presented in categories by county size.

Figure 6.1 indicates a distinction between counties with a population of less than 50 thousand, of 50 to 100 thousand, and of more than 100 thousand.



Many HHW collection systems are approaching stability. Permanent fixed facilities now service most of the state. In 2007, Chelan, Douglas, Garfield, San Juan, Skamania, and Wahkiakum counties did not have fixed facilities. San Juan County had a fixed facility, but had to close in June of 2005. San Juan County does plan to reopen at an undetermined later date. Garfield residents use the facility in Asotin County and Cowlitz County conducts a mobile unit in Wahkiakum County. Chelan, Douglas, and Skamania counties conduct collection events but may convert to fixed facilities in the future. The City of Port Angeles opened a new facility early in 2007 to serve Clallam County residents.



City of Port Angeles New Facility

Also, Stevens County is planning one new facility and Pierce County may be seeing two new facilities in the future. Mason County is looking to expand its current facility. Cowlitz County added a new facility in 2008 and will be closing its existing facility in 2009.

Collection services for CESQGs have leveled off statewide. For 2007, 16 fixed facilities serviced CESQG's and four different counties provided collection events for CESQGs.

Table 6.1 shows the size of individual counties. In Washington State there are 42 programs that manage MRW. These programs include all 39 counties.

**Table 6.1
Individual County Population by Size (2007)**

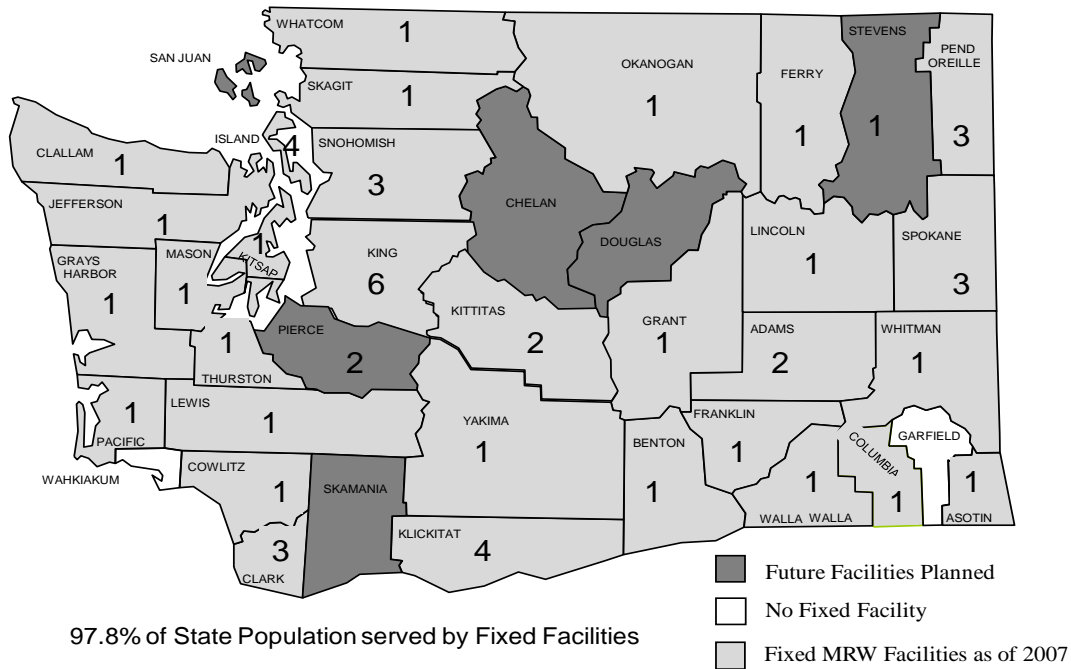
<50K		50K-100K		>100K	
Adams	17,600	Chelan	71,200	Benton	162,900
Asotin	21,300	Clallam	68,500	Clark	415,000
Columbia	4,100	Cowlitz	97,800	King *	1,275,100
Douglas	36,300	Franklin	67,400	Kitsap	244,800
Ferry	7,550	Grant	82,500	Pierce	790,500
Garfield	2,350	Grays Harbor	70,800	Skagit	115,300
Jefferson	28,600	Island	78,400	Snohomish	686,300
Kittitas	38,300	Lewis	74,100	Spokane	451,200
Klickitat	19,900	Mason	54,600	Thurston	238,000
Lincoln	10,300	Walla Walla	58,300	Whatcom	188,300
Okanogan	39,800	50K-100K total	723,600	Yakima	234,200
Pacific	21,600			Seattle *	586,200
Pend Oreille	12,600			>100K total	5,387,800
San Juan	15,900				
Skamania	10,700				
Stevens	43,000				
Wahkiakum	4,000				
Whitman	42,700				
<50K total	376,600				

*** King excludes Seattle**

State Total 6,488,000

Map 6.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 6.A
Fifty-five MRW Facilities as of 2007



MRW Collected

As shown in Table 6.2, Washington collected approximately 14.9 million pounds of HHW, 9.7 million pounds of used oil (UO) from collection sites (includes antifreeze and oil filters), and 7.6 million pounds of CESQG waste, for a total of 32.2 million pounds of MRW during 2007. The two most significant trends seen since 2004 is the increase of CESQG waste collected and the decrease in 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. The drop seen in Used Oil collections needs to continually be 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.

Table 6.2
Total Pounds per Waste Category
Years 1999 – 2007

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

* An estimated 7 million pounds of HHW was over reported in 2004. These numbers reflect a change from the numbers shown in the 2004 report.

Collection by Waste Category and Type

As shown in Table 6.3, the most dominant waste types of MRW collected in 2007 were non-contaminated 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 83.5 percent of the estimated 32.2 million pounds of MRW collected in 2007.

Table 6.3
Six Most Dominant MRW Waste Types Collected in 2007

Waste Type	Total Lbs.
Non-Contaminated Used Oil	9,776,267
Antifreeze	5,541,292
Latex Paint	4,509,498
Oil-based Paint	3,095,564
Flammable Liquids	2,076,206
Lead-Acid Batteries	1,988,385
TOTAL	26,987,212

Table 6.4 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 for 2007.

Table 6.4
Total Pounds of MRW Collected by Waste Category in 2007

WASTE TYPE	HHW	CESQG	TOTAL
Acids	124,548.60	24,284.00	148,832.60
Acids (aerosol cans)	200.00	1,115.00	1,315.00
Aerosols (consumer commodities)	180,053.00	12,073.00	192,126.00
Antifreeze	352,247.00	4,917,220.00	5,269,467.00
Antifreeze Off-site*	0.00	271,825.00	271,825.00
Bases	219,090.00	22,620.00	241,710.00
Bases, Aerosols	683.00	363.00	1,046.00
Batteries (lead acid)	1,946,535.00	41,850.00	1,988,385.00
Batteries (small lead acid)	5,725.00	2,337.00	8,062.00
Batteries (dry cell)	229,339.00	15,420.00	244,759.00
Batteries (nicad/NIMH/lithium)	30,030.00	4,262.00	34,292.00
CFC's	1,410.00	0.00	1,410.00
Chlorinated Solvents	3,722.00	3,000.00	6,722.00
CRT's	693,834.00	63,391.00	757,225.00
Electronics	688,729.00	9,007.00	697,736.00
Flammable Solids	48,078.00	24,230.00	72,308.00
Flammable Liquids	1,173,283.00	902,923.00	2,076,206.00
Flammable Liquids, Aerosols	15.00	0.00	15.00
Flammable Liquids Poison	155,394.00	3,357.00	158,751.00
Flammable Liquid Poison, Aerosols	11,509.00	2,157.00	13,666.00
Flammable Gas (butane/propane)	122,282.00	1,297.00	123,579.00
Flammable Gas Poison	3,930	1,012.00	4,942.00
Flammable Gas Poison, Aerosols	16,255.00	216.00	16,471.00
Latex Paint	4,413,546.00	95,952.00	4,509,498.00
Latex Paint, Contaminated	480,498.00	52,219.00	532,717.00

WASTE TYPE	HHW	CESQG	TOTAL
Mercury Compounds (dental amalgam)	10.60	400.34	410.94
Mercury Devices (monometers, barometers, etc)	6.64	651.00	657.64
Mercury (fluorescent lamps & CFL's)	2.83	1.89	4.72
Mercury (pure-elemental)	1,095.70	105.3	1,201.00
Mercury (switches & relays)	.90	.50	1.4
Mercury (thermostats/thermometers)	57.82	70.01	127.83
Nitrate Fertilizer	2,854.00	0.00	2,854.00
Non-Regulated Liquids	34,107.00	56,292.00	90,399.00
Oil-Based Paint	2,800,247.50	295,317.00	3,095,564.50
Oil-Based Paint, Contaminated	376,739.00	58,895.00	435,634.00
Oil Contaminated	118,983.00	129,219.00	248,202.00
Oil Filters	30,751.00	3,122.00	33,873.00
Oil Filters Off-site*	0.00	146,523.00	146,523.00
Oil Filters Crushed	8,206.00	0.00	8,206.00
Oil Non-Contaminated	2,111,969.00	71,445.00	2,183,414.00
Oil Non-Contaminated Off-site *	0.00	7,381,935.00	7,381,935.00
Oil with Chlorides	5,699.00	1,622.00	7,321.00
Oil with PCBs	12,240.00	5,867.00	18,107.00
Other Dangerous Waste	83,330.52	562,234.00	645,564.52
Organic Peroxides	2,766.00	769.00	3,535.00
Oxidizers	50,860.00	3,642.40	54,502.40
Pesticide / Poison Liquid	291,128.20	6,305.00	297,433.20
Pesticide / Poison Solid	231,619.00	10,765.00	242,384.00
Photo/Silver Fixer	709.00	11,290.00	11,999.00
Reactives	2,405.00	1,760.00	4,165.00
MRW TOTAL	17,066,723.31	15,219,931.04	32,286,654.35

* Used oil, oil filter, and antifreeze collection sites other than a collection facility or event. These wastes were collected at various county locations and generator status is impossible to know for certain. In order to stay consistent with past reports, these numbers are included with the CESQG numbers.

Note: In 2007 446,128.00 pounds of materials such as propane tanks, cardboard, cans, etc. were recycled by MRW facilities. This number is not included in any of the data in the above table or elsewhere in this Chapter. It is being noted here because it is a waste stream that MRW facilities must deal with. The majority of MRW facilities manage these recyclables appropriately.

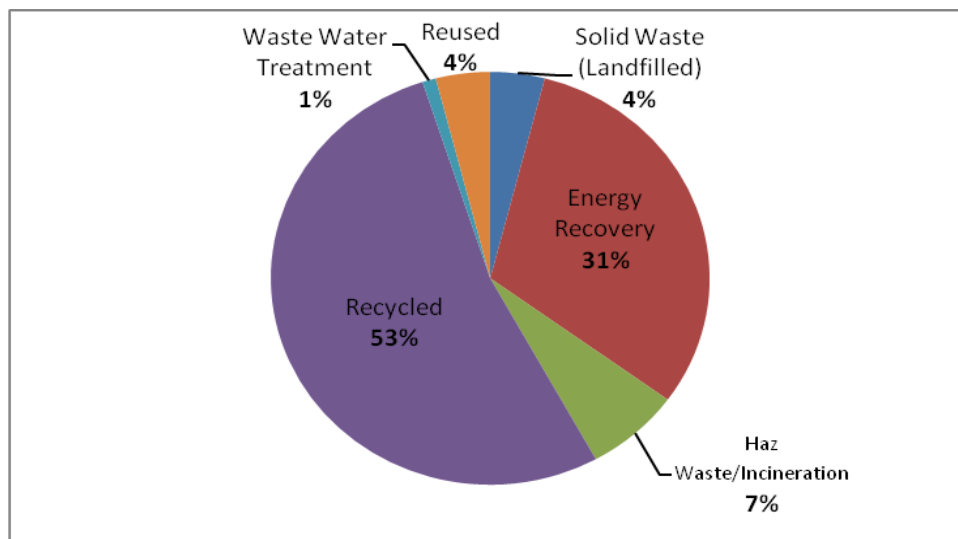
The form was changed to get better accuracy for mercury collections and to reduce the amount reported in the “Other Dangerous Waste” category. The newly added waste categories include: Aerosols (consumer commodities), CFC’s, Mercury Devices (monometers, barometers, etc.), Mercury Compounds (dental amalgam), Nitrate Fertilizer, Non-Regulated Liquids, Photo/Silver Fixer, and Materials Recycled (propane tanks, cardboard, cans, etc.). The newly added categories were not included as any of the ten categories of wastes collected that increased the most from the previous year listed in the box on the first page of this chapter.

The Materials Recycled Category totals are not included in any waste totals in this document, but are mentioned at the end of Table 6.4. The biggest impact from these new categories on past categories comes from Aerosols (consumer commodities). For example the existing categories of Flammable Liquids, Aerosols went from 33,630 pounds in 2006 to 15 in 2007 and Flammable Gas Poison, Aerosols went from 99,290 pounds in 2006 to 16,471 in 2007. The “Other Dangerous Wastes” category did see a reduction as total pounds reported went from 1,044,986.86 in 2006 to 645,564.52 in 2007.

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 collected MRW is safe for solid waste disposal and seven percent of all MRW is disposed of at a hazardous waste landfill or incinerator. See Figure 6.2 for final disposition of MRW between recycled, reused, energy recovery, hazardous waste landfill or incineration, solid waste landfill, and disposal through a waste water treatment plant.

**Figure 6.2
MRW Final Disposition**



MRW Data

Table 6.5 shows various data by county. This data includes privately collected CESGQ wastes by Emerald Services and Phillip Services Corporation per county. This 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 6.5
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	6,296	325	5.2%	\$20.23	26.40	8,581.00	41,724.00
Asotin	9,744	907	9.3%	\$60.25	88.44	80,218.00	86,676.32
Benton	64,931	5,333	8.2%	\$28.74	29.30	156,241.11	471,485.14
Chelan	33,682	780	2.3%	\$93.43	144.31	112,565.24	251,876.24
Clallam	34,408	583	1.7%	\$147.51	67.56	39,385.00	261,880.00
Clark	163,266	16,065	9.8%	\$25.62	107.55	1,727,820.59	1,897,620.59
Columbia	2,155	9	.4%	\$79.33	193.67	1,743.00	2,685.00
Cowlitz	42,350	1,717	4.1%	\$57.70	106.09	182,150.00	558,180.00
Douglas	14,700	583	4.0%	\$64.94	85.75	49,990.01	106,642.01
Ferry	4,071	32	.8%	\$24.09	49.72	1,591.00	9,189.00
Franklin	22,256	323	1.5%	\$28.57	63.11	20,384.90	439,868.90
Garfield	1,311	Inc. with Asotin	Inc. with Asotin	Inc. with Asotin	Inc. with Asotin	Inc. with Asotin	Inc. with Asotin
Grant	32,987	622	1.9%	\$84.37	166.63	103,641.60	161,775.60
Grays Harbor	35,051	991	2.8%	\$151.40	128.99	127,826.02	374,148.06
Island	37,691	2,733	7.3%	\$74.05	89.16	243,679.69	506,251.48
Jefferson	16,219	1,140	7.0%	\$70.81	33.95	38,702.19	149,598.21
King	520,378	57,915	11.1%	\$43.72	64.18	4,432,754.18	8,506,018.27
Seattle	292,231	17,753	6.1%	\$84.64	97.62	1,732,990.87	1,732,990.87
Kitsap	102,539	6,991	6.8%	\$110.30	100.05	699,441.93	1,401,011.25
Kittitas	19,190	470	2.4%	\$388.52	297.11	139,642.30	262,443.30
Klickitat	9,827	8,480	86.1%	\$5.37	14.71	124,704.00	159,729.00
Lewis	33,224	1,259	3.8%	\$115.17	244.53	307,860.73	526,602.08
Lincoln	5,738	65*	1.1%	\$122.21	186.26	12,107.00	41,011.00
Mason	29,640	4,391	14.8%	\$30.47	17.10	75,086.01	572,701.01
Okanogan	20,571	268	1.3%	\$264.97	217.48	58,287.00	92,621.00
Pacific	14,913	240	1.6%	\$487.50	37.90	9,097.12	83,246.12
Pend Oreille	7,386	1,438	19.5%	\$81.20	60.02	86,306.00	88,333.00
Pierce	319,373	9,180	2.9%	\$63.54	92.14	895,878.55	1,719,682.55

COUNTY	HOUSING UNITS	HHW Participants	% Participant / Housing Units	HHW Cost / Participant	HHW lbs / Participant	HHW Total lbs	HHW, SQG, & Used Oil Total lbs
San Juan	11,323	300	2.6%	\$181.13	213.08	63,925.20	127,847.20
Skagit	48,486	3,656	7.5%	\$41.47	139.36	509,503.20	712,775.20
Skamania	5,326	268	5.0%	\$73.64	168.24	45,087.00	90,967.00
Snohomish	273,343	19,071	7.0%	\$49.83	96.83	1,846,661.94	4,244,007.08
Spokane	193,512	33,838	17.5%	\$17.31	29.56	1,492,095.07	2,269,155.07
Stevens	19,521	428	2.2%	\$91.41	187.81	80,385.00	307,439.00
Thurston	101,293	16,200	16.0%	\$47.42	43.09	698,080.34	1,246,275.42
Wahkiakum	2,027	Inc. w/ Cowlitz	Inc. w/Cowlitz	Inc. w/ Cowlitz	Inc. w/ Cowlitz	Inc. w/ Cowlitz	Inc. w/ Cowlitz
Walla Walla	23,032	1,909	8.3%	\$76.06	53.40	101,934.10	157,331.10
Whatcom	87,094	7,168	8.2%	\$52.00	53.87	386,110.15	824,993.38
Whitman	18,565	1,146	6.2%	\$40.37	42.15	48,301.00	71,958.00
Yakima	84,368	2,454	2.9%	\$105.76	132.42	324,958.23	1,535,026.83
STATEWIDE	2,764,018	227,952	8.2%	\$46.66	74.8	17,065,716.20	32,284,241.87

* Average of last 3 years

Household Hazardous Waste (HHW)

Participants per Housing Unit

Counties that exhibit ten percent or higher of participants per housing unit are either performing excellent public education to encourage the 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 was 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 of scale both in quantities received and in disposition options. Also, there are differences in service levels of the basic program, accounting differences, and errors. This data does, however, provide an idea of what is possible and an incentive to contact those counties that appear to operate efficiently.

HHW Pounds per Participant

The average pounds collected statewide per participant for HHW was 74.6.

Table 6.6 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for, 2005, 2006, and 2007. Statewide, HHW pounds per participant collected was 2.62 pounds.

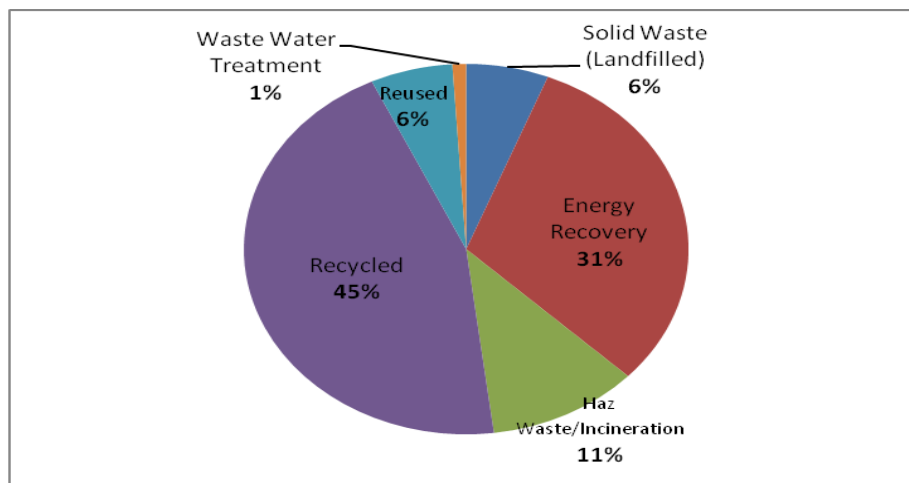
Table 6.6
High Collections of HHW (no Used Oil Sites) Pounds per Capita
by County in 2005-2007

HHW 2005			HHW 2006			HHW 2007		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Island	50-100K	5.51	Klickitat	<50K	5.35	Pend Oreille	<50K	6.85
Pend Oreille	<50K	5.42	Pend Oreille	<50K	5.18	Klickitat	<50K	6.26
Thurston	>100K	5.41	Clark	>100K	4.89	Skagit	>100K	4.42
Asotin	<50K	4.63	Island	50-100K	4.87	Skamania	<50K	4.21
Spokane	>100K	4.51	Kittitas	<50K	4.36	Clark	>100K	4.16

HHW Disposition

Figure 6.3 shows the final disposition of all HHW collected throughout Washington State.

Figure 6.3 –
HHW Final Disposition



Conditionally Exempt Small Quantity Generator (CESQG)

Twenty local MRW programs collect CESQG waste from the public. Counties that sponsor CESQG waste collections are:

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

Yakima County was responsible for over 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 of 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 2007 were:

- Yakima
- Whatcom
- Lewis
- Cowlitz
- Chelan

Table 6.7 shows the total amount of CESQG waste collected publicly and privately by each county. When both public and private collection numbers are taken into account, the top five counties for CESQG collections per capita in 2007 were:

- Franklin
- Whatcom
- Spokane
- Snohomish
- King

Table 6.7
Washington State Public and Private CESQG Collections for 2007 by County

County	Publicly Collected CESQG Waste in Pounds	Privately Collected CESQG Waste in Pounds	Total CESQG Waste Collected in Pounds	CESQG Pounds Collected/Capita
Adams	0.00	1,654.00	1,654.00	0.09
Asotin	3,813.32	2,645.00	6,458.32	0.30
Benton	40,577.03	11,737.00	52,314.03	0.32
Chelan	25,971.00	24,121.00	50,092.00	0.70
Clallam	0.00	79,718.00	79,718.00	1.16
Clark	0.00	102,897.19	102,897.19	0.25
Columbia	0.00	942.00	942.00	0.23
Cowlitz	38,683.01	16,910.00	55,593.01	0.57
Douglas	1,750.00	1,781.00	3,531.00	0.10
Ferry	0.00	1,467.00	1,467.00	0.19
Franklin	0.00	419,484.00	419,484.00	6.22
Garfield	0.00	98.00	98.00	0.04
Grant	331.00	14,967.00	15,298.00	0.19
Grays Harbor	17,777.04	63,372.20	81,149.24	1.15
Island	26,819.79	29,755.00	56,574.79	0.72
Jefferson	5,829.02	27,893.00	33,722.02	1.18

COUNTY	HOUSING UNITS	HHW Participants	% Participant / Housing Units	HHW Cost / Participant
King	0.00	2,441,494.09	2,441,494.09	1.31
Kitsap	82,904.32	223,224.00	306,128.32	1.25
Kittitas*	0.00	2,818.00	2,818.00	0.07
Klickitat	0.00	208.00	208.00	0.01
Lewis	31,948.35	58,556.00	90,504.35	1.22
Lincoln	0.00	3,396.00	3,396.00	0.33
Mason	0.00	45,575.00	45,575.00	0.83
Okanogan	2,383.00	3,777.00	6,160.00	0.15
Pacific	606.00	98.00	704.00	0.03
Pend Oreille	0.00	1,027.00	1,027.00	0.08
Pierce	0.00	823,804.00	823,804.00	1.04
San Juan*	0.00	0.00	0.00	0.00
Skagit	12,413.00	187,859.00	200,272.00	1.74
Skamania	0.00	130.00	130.00	0.01
Snohomish	179,735.14	777,114.03	956,849.17	1.39
Spokane	0.00	774,060.00	774,060.00	1.72
Stevens	0.00	6,454.00	6,454.00	0.15
Thurston	22,891.08	225,907.00	248,798.08	1.05
Wahkiakum	0.00	0.00	0.00	0.00
Walla Walla	0.00	2,263.00	2,263.00	0.04
Whatcom	86,038.23	265,797.00	351,835.23	1.87
Whitman	0.00	7,703.00	7,703.00	0.18
Yakima	177,799.60	11,101.00	188,900.60	0.81
Antifreeze^	271,825	0.00	271,825	
Oil Filters^	146,523	0.00	146,523	
Totals	1,176,617.93	6,661,806.51	7,838,424.44**	(avg.) 1.14

* Kittitas and San Juan Counties do have publicly sponsored CESQG programs, but were unable to separate pounds collected from HHW.

^ These wastes were collected at various county locations and generator status is impossible to know for certain. In order to stay consistent with past reports, these numbers are included with the CESQG numbers.

** This total in Table 6.7 and 6.8 does not match the total in Table 6.2 because the CESQG number in Table 6.2 does not include used oil numbers and these Tables do.

Table 6.8 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 2007 were:

- Antifreeze
- Flammable Liquids
- Oil-Base Paint
- Contaminated Oil
- Latex Paint

Table 6.8
Washington State Public and Private CESQG Collections for 2007 by Waste Type

Waste Type	Public Collections	Private Collections	Totals
Antifreeze	283,477.00	4,905,568.00	5,189,045.00
Flammable Liquids	81,761.00	821,162.00	902,923.00
Other DW	21,487.00	540,747.00	562,234.00
Paint - oil base	234,609.00	60,708.00	295,317.00
Used Oil - contaminated	217.00	129,002.00	129,219.00
Paint - latex	87,454.00	8,498.00	95,952.00
Used Oil - non-contaminated	71,445.00	0.00	71,445.00
CRT's	32,463.00	30,928.00	63,391.00
Paint - oil base -contaminated	0.00	58,895.00	58,895.00
Non-Regulated Liquids	40,288.00	16,004.00	56,292.00
Paint - latex contaminated	34,509.00	17,710.00	52,219.00
Batteries-auto lead acid	32,334.00	9,516.00	41,850.00
Acids	14,075.00	10,209.00	24,284.00
Flammable Solids	6,247.00	17,983.00	24,230.00
Bases	17,422.00	5,198.00	22,620.00
Batteries-alkaline/carbon	10,390.00	5,030.00	15,420.00
Aerosols	6,031.00	6,042.00	12,073.00
Photo/Silver Fixer	9,408.00	1,882.00	11,290.00
Pesticides - Poison/Solids	6,708.00	4,057.00	10,765.00
Electronics	8,007.00	1,000.00	9,007.00
Oil w/ Chlorides/PCB's	5,867.00	1,622.00	7,489.00
Flammable Liquid Poison	5,917.00	825.00	6,742.00
Pesticides - Poison/Liquid	5,185.00	1,120.00	6,305.00
Batteries-Nicad/Lithium	1,853.00	2,409.00	4,262.00
Oxidizers	2,465.40	1,177.00	3,642.40
Oil Filters	149,625.00	20.00	149,645.00
Chlorinated solvents	847.00	2153.00	3,000.00
Batteries Small Lead Acid	2,337.00	0.00	2,337.00
Reactives	1,187.00	573.00	1,760.00
Flammable Butane/Propane	1,297.00	0.00	1,297.00
Mercury Collections	1,194.53	32.51	1,227.04
Acids - Aerosols	132.00	983.00	1,115.00
Organic Peroxides	16.00	753.00	769.00
Bases - Aerosols	363.00	0.00	363.00
Totals	758,269.93	6,661,806.51	7,838,424.44

* Note Approximately 66 percent of all CESQG wastes collected comes from the collection of Antifreeze

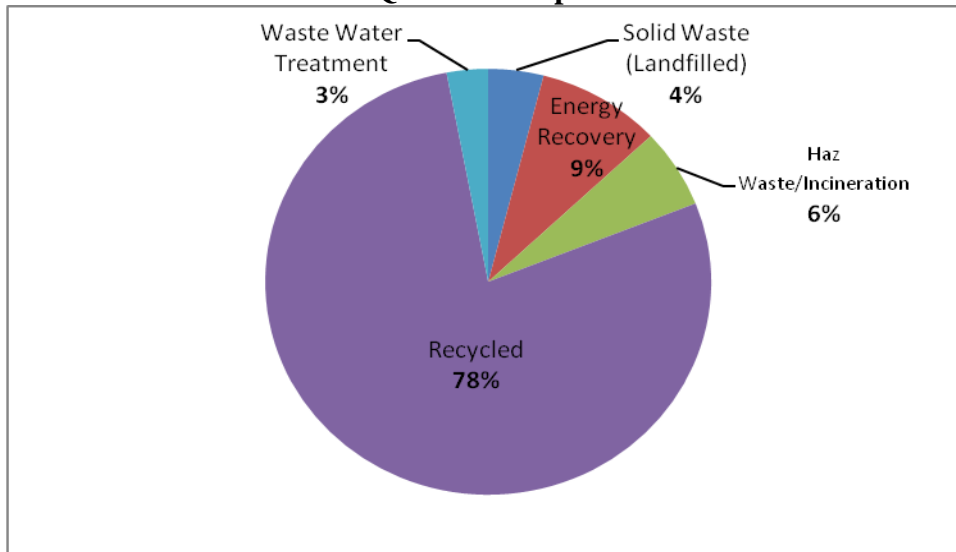
As shown in Table 6.8 (discounting the waste type “Other”), the dominant four types of CESQG waste collected in 2007 were antifreeze, flammable liquids, oil-based paint, and latex paint. These totals include wastes publicly and privately collected.

CESQG Disposition

Eight-seven percent of all CESQG moderate risk waste was either recycled or used for energy recovery. See Figure 6.4 for the complete disposition of CESQG wastes. The biggest difference between final dispositions of HHW and CESQG wastes lie in the amount of waste recycled.

Seventy-eight percent of CESQG waste was recycled while 45 percent of HHW was disposed of via the same method. Also significant, is the nine percent of CESQG waste used for energy recovery while 31 percent of HHW waste was disposed of in the same manner.

**Figure 6.4
CESQG Final Disposition**



Collection/Mobile Events

Table 6.9 represents the number of mobile and collection events held statewide in 2006 and 2007. The number of events and amounts collected increased in 2007 from 2006. The amount of waste collected through these types of events was approximately 3.6 million pounds, which is a little over 11 percent of all MRW collected in 2007. Thirty-two mobile events were conducted by the Waste Mobile in King County and these events collected a little over 2 million pounds of MRW.

**Table 6.9
2006 and 2007 Collection/Mobile Event Collection Amounts**

Type of Event	Number of Events		Pounds Collected	
	2006	2007	2006	2007
Mobile	67	63	2,956,141.06	2,963,460.05
Collection	20	51	437,384.80	686,737.72
Totals:	87	114	3,393,525.86	3,650,197.77

Used Oil Sites

In 2007, facilities and collection sites reported collecting a total of 9,776,267 pounds of used oil (contaminated – two percent and non-contaminated – 98 percent). Used oil collection by county population is starting to show consistency with the top producers over the last few years.

See Table 6.10 for the six counties with the highest collections in pounds per capita by county size for 2005, 2006, and 2007.

Table 6.10
Used–Oil High Collection Counties, pounds per capita by county size
collected at facilities and used oil collection sites

Used Oil Sites - 2005			Used Oil Sites - 2006			Used Oil Sites - 2007		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Mason	50K-100K	13.83	Mason	50-100K	10.9	Mason	50-100K	8.1
Garfield	<50K	8.33	Stevens	<50K	5.5	Stevens	<50K	5.1
Island	50K-100K	5.36	San Juan	<50K	3.8	Wahkiakum	<50K	4.1
Stevens	<50K	5.34	Yakima	>100K	3.6	Skamania	<50K	4.0
Skamania	<50K	4.56	Asotin	<50K	3.3	San Juan	<50K	3.8
Yakima	>100K	4.16	Cowlitz	50-100K	3.3	Yakima	>100K	3.6

Statewide Level of Service

The Washington State Office of Financial Management reported that as of 2007 Washington State had an estimated 2,764,018 housing units². MRW Annual Reports revealed there were 227,952 participants. The actual number of households served is larger due to the fact that most used oil 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 250,747 participants served in 2007. This number represents 9.1 percent of all households in Washington State. Table 6.11 shows the percent of participants served statewide since 2001.

²This information was downloaded from Web site <http://www.ofm.wa.gov/>

Table 6.11
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		

Trends in Collection

The majority of counties in Washington State have at least one fixed facility. Of the six counties without a fixed facility, four have plans for one in the future. The number of collection events held in 2007 increased from 87 in 2006 to 114 in 2007. As the population grows, collection events can be a useful strategy to reach residents inconveniently located from the counties fixed facility. It may be time for counties to start thinking about adding fixed facilities in areas to better serve their growing populations because:

- Collection events per amount of waste collected are more expensive.
- Fixed facilities provide a sense of permanence and normality to the collection of MRW.
- Increased operation efficiencies with fixed facilities (including the option of having an efficient location to conduct a collection service for CESQG's).
- Fixed facilities can easily provide a reuse or materials exchange area, which also help lower management costs.

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 electronics recycling bill and other work is currently underway for latex paint and compact fluorescent lights. Product stewardship principles have also guided the 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, non-profit organizations, waste haulers and recyclers that offer convenient options for recycling certain products that should not be disposed of in the trash.”

The Take it Back Network is a voluntary program on the part of businesses. Due to this arrangement it can be difficult to get data on the total amount of materials brought back to the businesses.

Emerging Waste Streams

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

Electronics

Components in a number of electrical and electronic products contain one or more of the following substances:

- Mercury
- Lead
- Cadmium
- Embedded batteries
- Polychlorinated biphenyls (PCBs)

The electronics recycling bill should ease the burden of this high volume/high cost waste for local governments once it is up and operating by January 2009. (See *Chapter II Partnering for the Environment* for more details about the electronics recycling program.)

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

Pharmaceuticals

Pharmaceutical wastes have been drawing more and more attention from state and local governments. A USGS Reconnaissance Study in 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 waste water.

In 2005, fifty-three million prescriptions were filled in Washington State. A 2006 King County Survey found that only 33 percent of people will use up all their medication. This leaves a substantial amount of pharmaceutical waste to be managed. 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.

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 was collected.

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



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.

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 many 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).

