

Chapter VII Moderate Risk Waste Management

YEAR: 2004



The term “Moderate Risk Waste” 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 considered waste that was generated in the home, while CESQG is small quantities of business or non-household waste. Both HHW and CESQG waste are exempt from hazardous waste regulations.

MRW FACTOIDS

- Total MRW collection in 2004 was over 37 million pounds.
- The average amount of HHW disposed per participant was 116.83 pounds, and per capita was 2.83 pounds.
- Over 3.8 percent of Washington residents used a fixed facility or collection event to remove hazardous waste from their household, however, this calculates to ten (10%) percent of all households.
- The counties that had the most CESQG waste per capita were Yakima, King, Grays Harbor, Asotin, and Whatcom.
- The counties that collected the most used oil per Housing Unit were Mason, Yakima, Skamania, Kittitas, Stevens, and Cowlitz.
- The four categories of waste type that increased the most in amounts collected from 2003 are Other, Flammable Solids, CRT’s, and Electronics.
- Eighty-eight percent (88%) of all HHW was recycled or used for energy recovery.

MRW collections started in the early 1980’s primarily as HHW-only events, also known as “round-ups.”

These events usually transpired 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, satellite facilities, and tailgate events. These efforts resulted in a larger number of customers served, decreased costs, and increased reuse and recycling of MRW.

Funding

The 1988 Model Toxics Control Act in Washington State provides a large part of the funding, through the Coordinated Prevention Grant (CPG) program for public MRW programs. Funds are used to meet the planning and implementation requirements for local hazardous waste MRW programs in each local jurisdiction.

By 1991 all local governments in the State of Washington had submitted MRW plans. Aspects included in every local MRW plan are 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 are required to provide individual MRW reports. Only one county failed to report for 2004.

Pend Orielle County did have a collection program during 2004. However, they failed to report their data. To maintain county and state accuracy, their 2003 data was carried over.

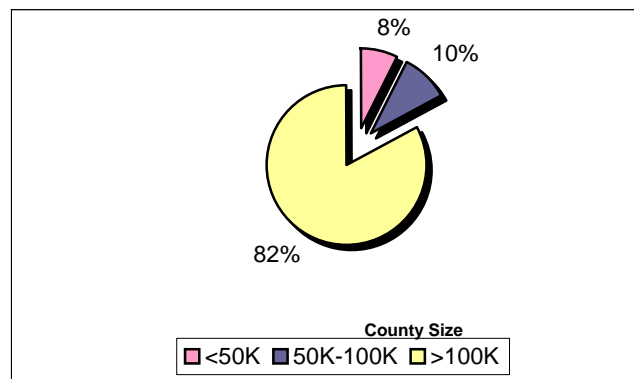
Lincoln County has experienced limited quantities and has stored their moderate risk waste, so they have limited HHW quantities, participation numbers, and costs to report. In addition, Klickitat County's participation number and Pacific County's HHW quantity number is suspect and has not been verified.

Year 2004 Data

This year's report focuses on 2004 data with some comparisons to the data published in previous year's 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 7.1 and Table 7.1 indicates a distinction between counties with a population of less than 50 thousand, 50 to 100 thousand, and populations greater than 100 thousand.

Figure 7.1
Percent of State Population by County Size



In Washington State there are 42 programs that manage MRW. These programs include all 39 counties. King County generates four reports: King County Waste Mobile and Used Oil Collection System, Seattle Solid Waste Utility (HHW), Port of Seattle (HHW), and Seattle City Light (CESQG).

Many HHW collection systems are approaching stability. Most of the state is now serviced with permanent fixed facilities. Only Chelan, Clallam, Douglas, Ferry, Garfield, Grant, and Wahkiakum counties do not have fixed facilities. Garfield residents use the facility in Asotin County and Cowlitz County conducts a mobile unit in Wahkiakum County. Clallam, Chelan, Douglas, Grant, and Skamania counties conduct collection events but may convert to fixed facilities in the future. Clallam County has begun its planning stage for a new facility.

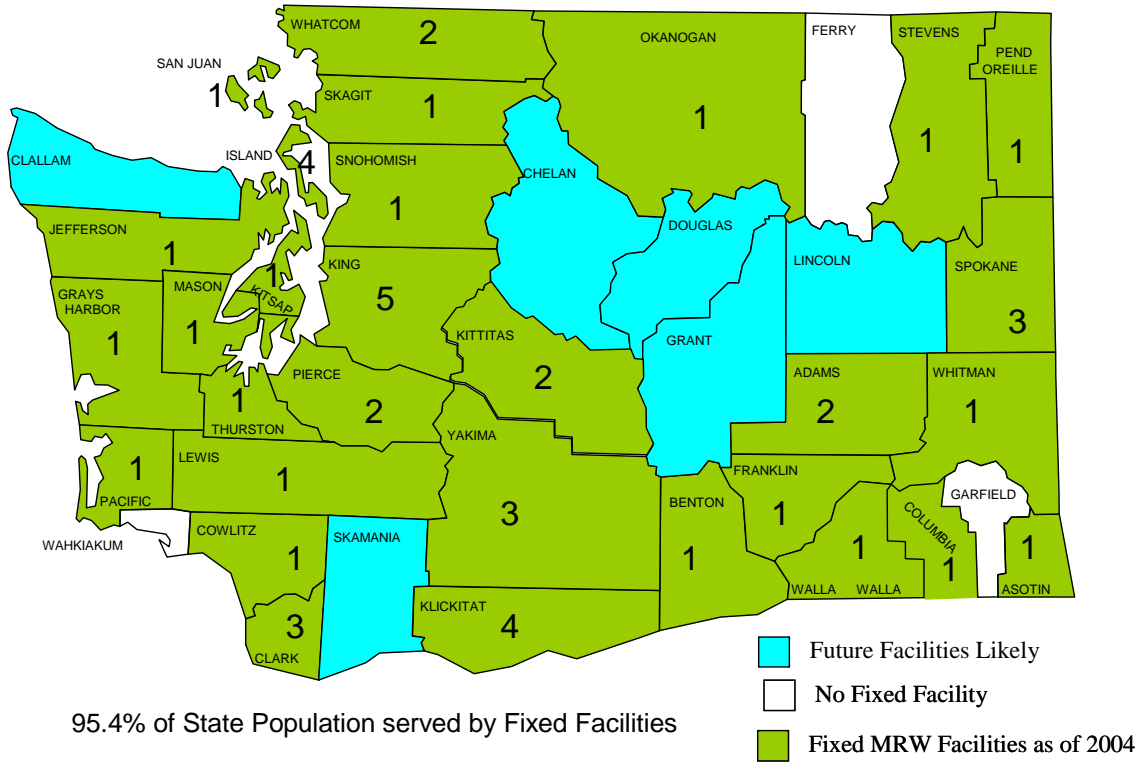
Collection services for CESQG's continue to expand statewide. For 2004, there are 18 fixed facilities and four collection events providing collection services for CESQG's.

**Table 7.1
Individual County Population by Size**

<50K		50K-100K		>100K	
Adams	16,596	Chelan	67,987	Benton	155,991
Asotin	20,831	Clallam	67,867	Clark	392,403
Columbia	4,187	Cowlitz	96,189	King *	1,207,400
Douglas	34,427	Grant	79,981	Kitsap	239,138
Ferry	7,565	Grays H	70,338	Pierce	745,411
Franklin	53,600	Island	79,293	Skagit	111,064
Garfield	2,311	Lewis	71,539	Snohomish	644,274
Jefferson	28,110	Walla Walla	57,354	Spokane	435,644
Kittitas	35,721	50K-100K total	590,548	Thurston	224,673
Klickitat	19,855			Whatcom	180,167
Lincoln	10,412			Yakima	229,094
Mason	53,637				
Okanogan	39,444			Seattle *	571,900
Pacific	21,246			>100K total	5,137,159
Pend Oreille	12,474			* King excludes Seattle	
San Juan	15,190				
Skamania	10,549				
Stevens	41,310				
Wahkiakum	3,755				
Whitman	40,146				
<50K total	471,366			State Total	6,199,073

Figure 7.2 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.

Figure 7.2
50 MRW Facilities as of 2004



MRW COLLECTED

As shown in Table 7.2, Washington collected over 22 million pounds of HHW, 12.4 million pounds of used oil (UO) from collection sites, and over 2.4 million pounds of CESQG waste, for a total of over 37 million pounds of MRW during 2004. Both HHW and CESQG have increased from previous years. Most significant is the increase of CESQG, however, this is largely due to more accurate reporting from King County. This could increase much more if Pierce and Spokane counties started a program of collecting CESQG.

Table 7.2
Total Pounds Per Waste Category for 1999, 2000, 2001, 2002, 2003, & 2004

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	22.3M	12.4M	2.4M	37.1M

Collection by Waste Category and Type

As shown in Table 7.3, the dominant types of MRW collected in 2004 were non-contaminated used oil, latex and oil-based paint, lead acid batteries, and flammable liquids. These totals include used oil collected at all collection sites. These five specific waste types accounted for 84% of the estimated 37.1 million pounds of MRW collected in 2004. These are the same top five HHW types as in 1999, 2000, 2001, 2002, and 2003.

Table 7.4 provides summary information on total pounds of MRW collected from HHW and CESQG categories by waste types.

Table 7.3
Six Dominant MRW Waste Types Collected in 2003

WASTE TYPE	TOTAL LBS
Oil Non-Contaminated	12,357,886
Latex Paint	8,620,880
Oil based Paint	5,007,478
Lead Acid Batteries	2,862,717
Flammable Liquids	2,417,101
TOTAL	31, 266,062

Table 7.4
Total Pounds of MRW Collected by Waste Category

WASTE TYPE	HHW	CESQG	TOTAL
Acids	262,659	30,120	292,779
(Lead) Acid Batteries	2,834,645	28,072	2,862,717
Antifreeze	515,474	135,045	650,519
Bases	178,471	32,839	211,310
Bases, Aerosols	1,237	5	1,242
Electronic	406,529	5,771	412,300
CRT's	458,011	37,540	495,551
Chlorinated Solvents	9,012	1,051	10,063
Nicad / NIMH / Lithium	42,297	3,500	45,797
Dry Cell Batteries	234,955	5,641	240,596
Flammable Solids	321,678	11,880	333,558
Flammable Liquids	2,026,504	390,597	2,417,101
Flammable Liquids, Aerosols	40,179	6,090	46,269
Flammable Liquids Poison	124,659	14,887	139,546
Flammable Liquid Poison, Aerosols	9,866	324	10,190
Flammable Gas	243,170	2,507	245,677
Flammable Gas Poison	1,172	15,277	16,449
Flammable Gas Poison, Aerosols	77,342	2,353	79,695
Latex Paint	7,700,740	90,081	7,790,821

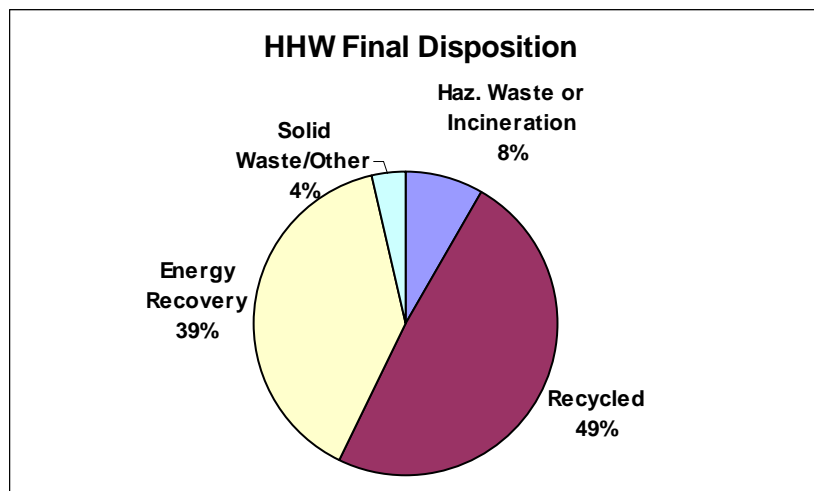
WASTE TYPE	HHW	CESQG	TOTAL
Latex Paint, Contaminated	830,059	0	830,059
Mercury	1,165	561	1,726
Oil-Based Paint	4,773,298	234,180	5,007,478
Oil Contaminated	111,701	27,806	139,507
Oil Filters	91,167	1,101	92,268
Oil Filters Crushed	3,307	37,041	40,348
Oil Non-Contaminated	3,540,762	393,201	3,933,963
Oil Non-Contaminated Off-site *	8,423,923	0	8,423,923
Oil with Chlorides	2,013	0	2,013
Oil with PCBs	6,654	3,319	9,973
Other Dangerous Waste	426,634	1,252,662	1,679,296
Organic Peroxides	1,557	18	1,575
Oxidizers	47,664	2,477	50,141
Pesticide / Poison Liquid	545,999	31,732	577,731
Pesticide / Poison Solid	89,483	8,172	97,655
Reactives	4,257	1,156	5,413
MRW TOTAL	34,227,243	2,806,765	37,034,008

* Used oil collection sites other than a collection facility or event

Disposition of MRW Waste

The disposition of moderate risk waste is generally well managed. Most MRW is recycled or used for energy recovery. Very little is considered safe for solid waste disposal and only 8% of all HHW is disposed at a hazardous waste landfill or incinerator. See Figure 7.3 for final disposition of MRW between recycled, energy recovery, hazardous waste landfill or incineration, and solid waste disposal.

Figure 7.3



MRW Data

Table 7.5 shows various data by county. This information can be used to evaluate efficiencies within each county by comparing percentage of participants per housing units and costs and HHW lbs. 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 7.5
Various 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	6,020	350	6%	\$20.61	22.5	7,875	41,205
Asotin	9,311	1,009	11%	\$50.49	91.83	92,656	102,632
Benton	59,745	5,319	9%	\$47.55	62.47	477,700	573,598
Chelan	31,429	613	2%	\$105.40	87.78	70,987	161,370
Clallam	31,976	1,072	3%	\$57.63	71.49	65,779	238,732
Clark	146,072	7,202	5%	\$47.39	272.59	1,270,850	1,945,112
Columbia	2,096	3	1%	\$236.33	36	108	8,248
Cowlitz	40,157	1,712	4%	\$66.63	66.63	263,730	612,690
Douglas	13,517	425	3%	\$60.63	82.35	32,171	93,663
Ferry	3,919	24	1%	\$155.50	51.71	1,241	2,676
Franklin	17,776	179	1%	\$57.50	69.25	12,396	147,520
Garfield	1,296	12	1%	\$54.67	61.25	735	735
Grant	30,418	641	2%	\$99.27	95.83	120,196	170,577
Grays Harbor	33,211	1,473	4%	\$109.89	57.09	97,403	282,837
Island	34,452	2,926	8%	\$59.11	77.90	238,744	435,930
Jefferson	14,965	1,197	8%	\$46.35	42.90	60,008	129,613
King	494,530	63,078	13%	\$48.38	179.79	11,340,494	15,354,207
Seattle	280,883	15,867	6%	\$80.89	80.81	1,282,239	1,282,239
Kitsap	96,635	5,938	6%	\$100.90	124.06	595,473	1,111,691
Kittitas	17,385	783	5%	\$161.54	296.21	231,934	273,084
Klickitat	9,138	8,888	97%	\$5.30	8.8	78,230	128,661
Lewis	30,948	1,495	5%	\$56.75	102.20	149,038	410,515
Lincoln	5,461	121	2%	\$.29	47.3	5,723	5,723
Mason	26,842	4,176	16%	\$24.56	10.98	112,733	809,089
Okanogan	19,733	369	2%	\$99.64	206.04	22,144	49,185
Pacific	14,280	180	1%	\$287.51	1,623	292,093	363,895
Pend Oreille	6,932	PNR	0%	CNR	28.27*	43,928*	62,865*
Pierce	294,010	30,261	10%	\$13.00	59.62	1,756,348	1,981,092
San Juan	10,519	286	3%	\$.59	261.21	47,068	90,383
Skagit	44,946	2,895	6%	\$50.20	137.14	397,027	568,016
Skamania	4,816	138	3%	\$95.70	135.58	21,184	70,448
Snohomish	251,998	16,142	6%	\$36.51	108.2	3,993,909	4,110,357
Spokane	182,298	34,201	19%	\$7.28	26.6	1,066,777	1,710,577
Stevens	18,341	513	3%	\$73.61	97.83	66,887	232,647
Thurston	91,543	10,375	11%	\$41.07	74.43	592,601	1,050,363
Wahkiakum	1,869	39	2%	\$42.51	28.83	1,124	10,604

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	21,671	1,772	8%	\$83.66	47.30	147,632	147,632
Whatcom	78,880	5,797	7%	\$44.63	168.02	341,662	469,581
Whitman	17,176	3,330	19%	\$12.13	27.66	60,764	60,764
Yakima	81,666	2,050	3%	\$139.36	96.68	312,615	1,702,139
STATEWIDE	2,578,860	208,791	8.4%	N/A	116.83	22,262,558	37,034,008

PNR = Participants Not Reported

CNR = Costs Not Reported

* Pend Oreille County numbers are carried over from 2003

HHW Data

Participants Per Housing Unit

Counties that exhibit 10% or higher of participants per housing unit either are performing excellent public education to encourage the use of facilities or events, and/or have very convenient locations for their collection facilities. The participation number and rate for Klickitat County is suspect and could not be confirmed.

Cost Per Participant

This is a difficult statistic to compare because of the many variables in program costs. Some programs record every cost either 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 provide a vision 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 almost 117.

Table 7.6 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for 2002, 2003, and 2004. It is noteworthy that both King and Snohomish counties have large collections per capita. Pacific County collected 292,093 pounds of HHW with only 180 participants, which calculates out to an average collection of 1,623 pounds per participant, or 13.75 pounds per capita. Obviously, this number is suspect and could not be verified.

Table 7.6
High Collections of HHW (no UO Sites) Pounds Per Capita by County in 2002-2004

HHW 2002			HHW 2003			HHW 2004		
County	Size	Lbs / Capita	County	Size	Lbs /Capita	County	Size	Lbs /Capita
Island	50K-100K	9.04	Thurston	>100K	17.65	Pacific	<50K	13.75
Whatcom	>100K	5.25	Kittitas	<50K	12.18	King	<100K	9.39
San Juan	<50K	4.69	Whatcom	>100K	5.21	Kittitas	<50K	6.49
Yakima	>100K	4.46	Klickitat	<50K	4.51	Snohomish	<100K	6.20
Skagit	>100K	4.24	Cowlitz/Skagit	>50K & >100K	4.44	Asotin	<50K	4.45

CESQG

There are 22 local MRW programs that collect CESQG waste from the public. Counties that sponsor CESQG waste collections are Asotin, Benton, Clark, Chelan, Clallam, Cowlitz, Douglas, Grant, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Skagit, Skamania, Snohomish, Thurston, Whatcom, and Yakima. Also included in CESQG waste totals for year 2004 are data from Philip Services. Philip Services primarily serves CESQG's in three counties: King, Pierce, and Clark. The top five counties that collected the most CESQG material per capita were Yakima, Whatcom, Grays Harbor, Asotin, and Cowlitz. Yakima County collected over 49% of the total statewide volume of CESQG waste. This is largely due to Yakima County's policy of not charging businesses to dispose or recycle their waste.

As shown in Table 7.7 (discounting the waste type "Other Dangerous Wastes") the dominant four types of CESQG waste collected in 2003 were non-contaminated oil, flammable liquids, oil based paint, and antifreeze. Forty-eight (48%) percent of all CESQG moderate risk waste was either recycled or used for energy recovery. Only 4% was incinerated or sent to a hazardous waste landfill.

**Table 7.7
CESQG by Waste Type Collected in 2003 (top 25 types)**

Waste Type	Total lbs CESQG
Oil Non-Contaminated	392,961
Flammable Liquids	390,597
Oil based Paint	234,180
Antifreeze	135,045
Latex Paint	90,081
CRT's	37,540
Oil Filters	37,041
Bases	32,839
Pesticide/Poison Liquid	31,732
Acids	30,120
Lead-Acid Batteries	28,072
Oil-based paint, Contaminated	27,806
Flammable Gas Poison	15,277
Flammable Liquids Poison	14,887
Flammable Solids	11,880
Reactives	8,172
Flammable Liquid Aerosols	6,090
Electronic	5,771
Batteries, Dry Cell	4,056
Nicad / NIMH / Lithium Batteries	3,500
PCB Oils	3,319
Flammable Gas	2,507
Oxidizers	2,477
Flammable Gas Poison, Aerosols	2,353
Reactives	1,156
All Other	1,252,662
TOTALS	2,806,766

Used Oil Sites

In 2004, total reported used oil collection at facilities and collection sites yielded 12,357,886 pounds. Used oil collection by county population is starting to show consistency with the top producers over the last few years. See Table 7.8 for the six counties with the highest collections in pounds per capita by county size for 2002, 2003 and 2004.

**Table 7.8
Used–Oil High Collection Counties, Pounds Per Capita by County Size
Collected at Facilities and Used Oil Collection Sites**

Used Oil Sites - 2002			Used Oil Sites - 2003			Used Oil Sites - 2004		
County	Size	Lbs / Capita	County	Size	Lbs / Capita	County	Size	Lbs / Capita
Columbia	<50K	17.6	Columbia	<50K	17.6	Mason	50K-100K	13.0
Adams	<50K	12.3	Mason	50K-100K	11.9	Yakima	>100K	4.9
Stevens	<50K	4	Skamania	<50K	5.6	Skamania	<50K	4.7
Skamania	<50K	3.9	San Juan	<50K	4.9	Kittitas	50K-100K	4.2
Pacific	<50K	3.8	Stevens	<50K	3.8	Stevens	<50K	4.0
Kittitas	50K-100K	3.6	Pacific	<50K	3.8	Cowlitz	50K-100K	3.6

Statewide Level of Service

The US Census Bureau reports that as of 2004 there were an estimated 2,579,311 Housing Units¹ in Washington State. MRW Annual Reports revealed there were 234,052 participants. Only Columbia and Pend Oreille counties did not provide participation numbers at their facilities or collection events. 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 (Spokane is the exception). The actual number of households served is larger also because some participants counted at events or by facilities bring HHW from multiple households. The actual number of households served can be estimated by adding 10% to the participant values for an estimated 257,457 households served in 2004. This number represents 10% of all households in Washington State. This is an increase from the 8.9%, 6.8%, and 6.1% of 2003, 2002, and 2001 respectively, and also an increase from 2000 and 2001 when an estimated 7.8% and 6.6% respectively of Washington households were served.

Trends in Collection

As fixed facilities continue to gain popularity, the number of collection events is decreasing. Some programs are eliminating collection events altogether or using hybrid mobile collection systems. Reasons for this shift include: increased cost of collection

¹ This information was downloaded from Website <http://quickfacts.census.gov/hunits/states/53cty.html>

events per amount of waste collected, fixed facilities providing a sense of permanence and normality to the collection of MRW, and increased operation efficiencies with fixed facilities including the option of having an efficient location to conduct a collection service for CESQG's.

New Waste Streams

MRW collection programs are well established statewide. Although the 2004 annual reports did not identify any new waste types, "Other" became the highest quantity waste type indicating a need to identify what wastes are not fitting into the established categories on the report.

Used electronics continues to be an area of concern. Components in a number of electrical and electronic products are known to contain one or more of the following substances: mercury, lead, cadmium, embedded batteries, and polychlorinated biphenyls (PCBs).

Improved technology leads to better electronic products. And as more people become financially able to obtain these popular commodities, disposal of the leftovers as well as their components becomes a concern for the Department of Ecology and local solid waste managers. For example, in the European Union an estimated four percent of their municipal solid waste stream is electronics, other electrical devices, and appliances as of 1999.

Ecology began collecting data on this waste stream in 2001, and in one year (2002 vs. 2003) it more than doubled. In 2004 it has more than tripled over 2003 totals. In 2003, electronics and CRT's were the 16th highest quantity waste type. In 2004 that status moved up to 6th. This report shows a significant shift of electronic and CRT's collection came from households instead of from businesses, as reported in 2003. We expect this waste stream to increase as more attention to this waste type filters down to the public.

Annual Reporting

Local programs are required to submit MRW report forms annually. For the past few years, Ecology has requested annual reports be submitted by March 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. This data is translated into the information contained in this chapter and is specifically designed to be useful to those who operate or work MRW programs within Washington State.