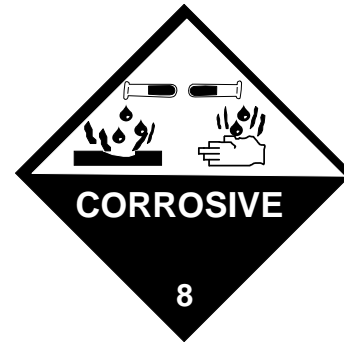
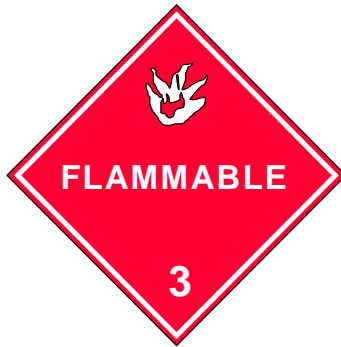


Chapter VII Moderate Risk Waste Management

YEAR: 2003



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) 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 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

MRW FACTOIDS

- Total MRW collection in 2003 was over 29 million pounds.
- The average amount of HHW disposed by the 8.4% of all households that used a HHW collection event or fixed facility was almost 85 pounds.
- The counties that had the most CESQG waste per capita were Yakima, Whatcom and Grays Harbor.
- The counties that collected the most used oil per Housing Unit were Columbia, Mason, Skamania, Cowlitz, and Stevens.
- The counties that had the largest percentage of participation per housing unit at HHW events or facilities were Klickitat, Mason, Pend Oreille, Spokane, and Thurston.
- The three categories of waste type that increased the most in amounts collected are Flammable Poison Gas, Oil with PCB’s, and CRT’s.

recycling of MRW. While the bulk of material collected continues to be HHW, CESQG collection programs have increased. Currently there are twentyone public MRW programs that collect CESQG waste, sixteen at fixed facilities.

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 & disposal Assistance, MRW public education, MRW enforcement and HHW collection.

Accuracy of Data Collection

Ecology has created and circulate a standard reporting form to all MRW programs; however, the reported data can vary depending on a program's collection process, how the data is reported, and how the reported data is interpreted.

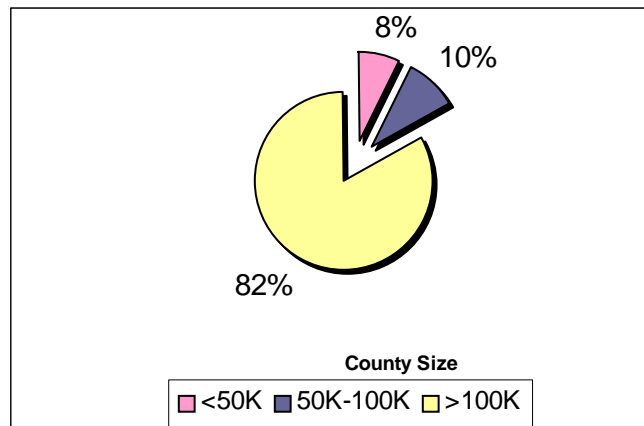
For the 2003 reporting year only a couple counties had no activity. In addition, not every program reported all the required information. The most common omissions were program costs and participation numbers. This report will note key areas where there is unusual data or anomalies.

Year 2003 Data

This year's report focuses on year 2003 data with some comparisons to the data published in previous year's reports. In an attempt 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 thousand 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. All programs are required to provide individual MRW reports. 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). King County data is segregated from Seattle data. 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, 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. Collection services for CESQG's continue to expand statewide. For 2003, there are sixteen fixed facilities accepting material from CESQG's and there were 4 collection events providing collection services for CESQG's.

**Table 7.1
Individual County Population by Size**

<50K		50K-100K		>100K	
Adams	16,600	Chelan	67,900	Benton	151,600
Asotin	20,600	Clallam	65,300	Clark	372,300
Columbia	4,100	Cowlitz	94,900	King*	1,207,400
Douglas	33,600	Grant	77,100	Kitsap	237,000
Ferry	7,300	Grays H	68,800	Pierce	733,700
Franklin	53,600	Island	74,000	Skagit	106,700
Garfield	2,400	Lewis	70,400	Snohomish	637,500
Jefferson	26,700	Walla Walla	55,800	Spokane	428,600
Kittitas	35,200			Thurston	214,800
Klickitat	19,300			Whatcom	174,500
Lincoln	10,100	50K-100K total	574,200	Yakima	226,000
Mason	50,200				
Okanogan	39,600				
Pacific	20,900			Seattle*	571,900
Pend Oreille	11,800			>100K total	5,062,000
San Juan	14,800				
Skamania	9,900				
Stevens	40,600				
Wahkiakum	3,800				
Whitman	41,000				
<50K total	462,000				
<ul style="list-style-type: none"> King excludes Seattle 					

MRW COLLECTED

As shown in Table 7.2, Washington collected over 16 million pounds of HHW, 11.7 million pounds of used oil (UO) from collection sites, and over 1.3 million pounds of CESQG waste, for a total of over 29 million pounds of MRW collected during 2003. Although CESQG collection has leveled off, both used oil and HHW have increased moderately.

Table 7.2

Total Pounds per Waste Category for Years 1998, 1999, 2000, 2001, 2002 and 2003

Collection Year	HHW lbs. (no UO)	Used Oil lbs.	CESQG lbs.	Total MRW lbs.
1998	9.6M	9.2	500K	19.3M
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

Collection by Waste Category and Type

As shown in Table 7.3, the dominant types of MRW collected in 2003 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 specific waste types accounted for 91% of the estimated 29.0 million pounds of MRW collected in 2003. These are the same top five HHW types as in 1998, 1999, 2000, 2001 and 2002. Table 7.4 provides summary information on total pounds of MRW collected from HHW and CESQG categories by waste types.

Table 7.3

MRW Six Dominant Waste Types Collected in 2003

Waste Type	Total Lbs.
Oil Non-contaminated	12,056,418
Oil Based Paint	4,806,257
Latex Paint	4,241,293
Lead Acid Batteries	2,390,580
Flammable Liquids	1,702,373
Latex Paint, contaminated	1,092,040
Total	26,288,961

Table 7.4

Total Pounds of MRW Collected by Waste Category

Waste Type	HHW	CESQG	Total
Acids	168,053	19,265	187,318
Lead Acid Batteries	2,347,063	43,517	2,390,580
Antifreeze	518,559	138,210	656,769
Bases	159,876	22,741	182,617
Bases, aerosols	2,655	1	2,656
Electronic	62,695	17,986	80,681
CRT's	60,622	123,372	183,994
Chlorinated Solvents	16,736	2,420	19,156
N/NIMH.Lith	41,940	2,393	44,333
Dry Cell Batteries	217,969	4,056	222,025
Flammable Solids	26,136	8,787	34,923
Flammable Liquids	1,666,618	135,755	1,802,373
Flammable Liquids, aerosols	48,802	4,813	53,615
Flammable Liquids Poison	121,519	4,462	125,981
Flammable Liq. Pois., aerosols	42,730	935	43,665
Flammable Gas	102,683	2,122	104,805
Flammable Gas Poison	3,692	2,269	5,961
Flammable Gas Pois., aerosols	14,315	28	14,343
Latex Paint	4,156,338	84,955	4,241,293
Latex Paint, contaminated	1,091,776	264	1,092,040

Waste Type	HHW	CESQG	TOTAL
Oil-Based Paint	4,575,311	230,946	4,806,257
Oil Contaminated	89,892	30,374	120,266
Oil Filters	14,764	44,741	59,505
Oil Filters Crushed	1,012		1,012
Oil Non-Contaminated	2,097,513	307,230	2,404,743
Oil Non-Contaminated Off-site*	9,651,675		9,651,675
Oil with Chlorides	1,722	6,954	8,676
Oil with PCBs			18,385
	15,133	3,252	
Other Dangerous Waste	30,162	52,769	82,931
Organic Peroxides	2,498	68	2,566
Oxidizers	33,401		35,677
		2,276	
Mercury.	2,709	43	2,752
	323,407	11,587	334,994
Pesticide/Poison Liq			
Pesticide/Poison Sol	116,047	6,450	122,497
Reactives	1,500	373	1,873
MRW TOTAL	27,804,984	1,315,413	29,120,397

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

Figure 7.5 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 7.5
49 MRW Facilities as of
2003

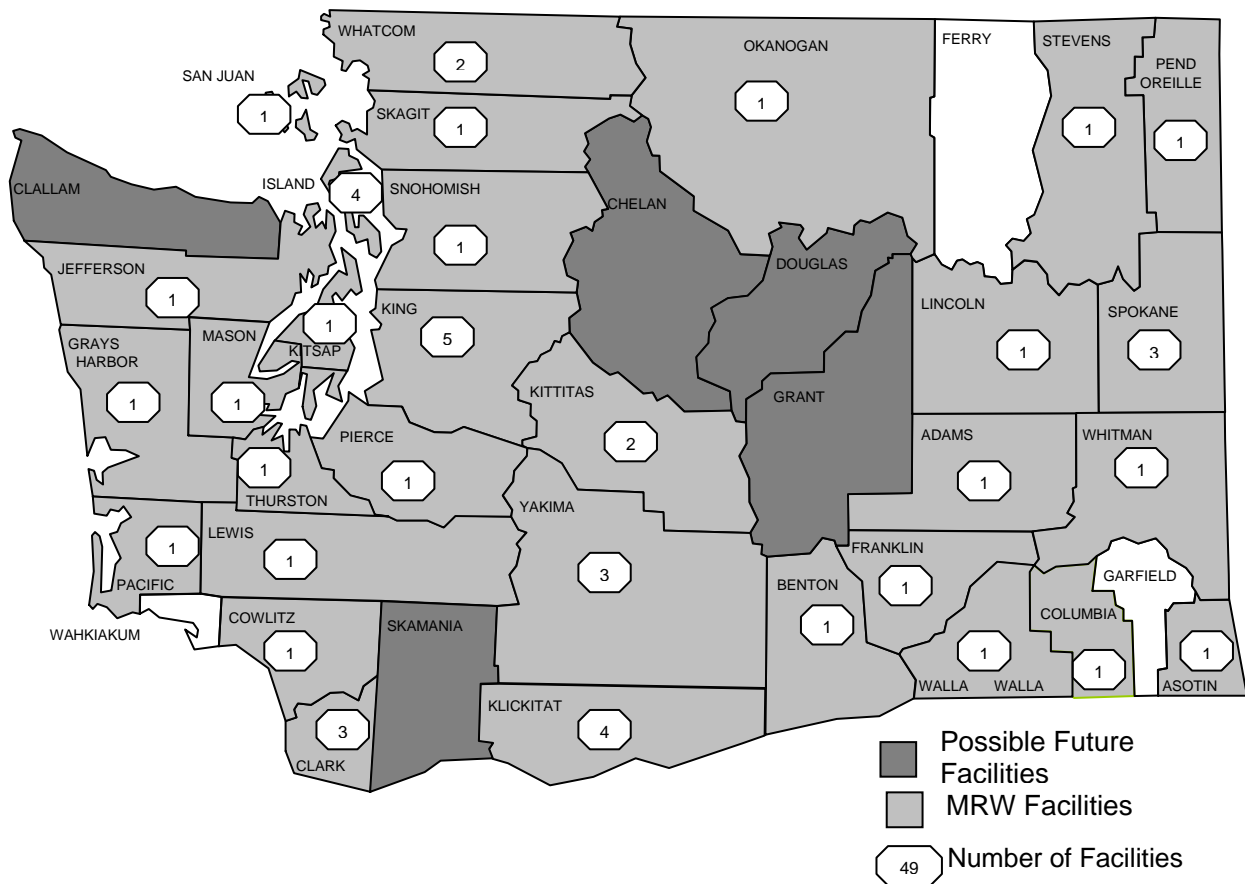


Table 7.6 shows various data by county. This information can be used to evaluate efficiencies within each county by comparing costs per participant and percentage of participants per housing units*.

*** 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 7.6

Various Data by County

COUNTY	HOUSING UNITS*	HHW Participants	% Participant /Housing Unit	HHW Cost /Participant	HHW lbs. /Participant	HHW Ttl. lbs.	HHW,SQG, and Used Oil Ttl. lbs.
Adams	6,020	PNR		CNR		8,343	27,630
Asotin	9,311	946	10.2%	\$53.85	92.25	87,265	93,297
Benton	59,745	7,299	12.2%	\$34.65	62.47	456,003	502,748
Chelan	31,429	735	2.3%	\$94.43	87.78	64,519	124,951
Clallam	31,976	795	2.5%	\$73.96	71.49	56,832	353,541
Clark	146,072	5,153	3.5%	\$63.54	277.98	1,404,656	2,166,534
Columbia	2,096	285	13.6%	CNR	44.22	12,604	84,870
Cowlitz	40,157	1,457	3.6%	\$80.85	289.79	422,223	806,481
Douglas	13,517	389	2.9%	\$70.65	116.31	45,244	106,081
Ferry	3,919	PNR		CNR		1,031	1,531
Franklin	17,776	PNR		CNR		1,593	142,637
Garfield	1,296	4	0.3%	CNR	31.25	125	127
Grant	30,418	540	1.8%	\$91.50	95.83	51,748	84,654
Grays Harbor	33,211	1,580	4.8%	\$99.86	57.09	90,205	379,273
Island	34,452	3,071	8.9%	\$53.66	77.90	239,244	426,912
Jefferson	14,965	1,054	7.0%	\$102.94	42.90	45,214	131,505
King	494,530	27,705	5.6%	\$79.32	79.24	2,195,306	4,701,056
Seattle	280,883	15867	5.6%	\$80.89	81.17	1,282,239	1,282,239
Kitsap	96,635	5,679	5.9%	\$107.91	124.46	706,782	1,184,389
Kittitas	17,385	PNR		CNR		428,897	486,526
Klickitat	9,138	8,576	93.8%	5.17	10.14	86,957	138,343
Lewis	30,948	1353	4.4%	\$56.20	102.20	138,277	377,926
Lincoln	5,461	PNR		CNR		1,000	1,000
Mason	26,842	8,137	30.3%	\$10.25	10.98	89,341	684,353
Okanogan	19,733	334	1.7%	218.86	206.04	68,819	97,478
Pacific	14,280	222	1.6%	30.43	64.00	14,207	93,404
Pend Oreille	6,932	1,554	22.4%	\$274.88	28.27	43,928	62,865
Pierce	294,010	28,535	9.7%	\$13.59	59.62	1,701,246	1,840,860
San Juan	10,519	229	2.2%	\$132.37	261.21	59,818	136,457
Skagit	44,946	2,632	5.9%	\$47.58	179.82	473,289	645,121
Skamania	4,816	125	2.6%	112.40	135.58	16,948	70,180
Snohomish	251,998	16,072	6.4%	\$34.18	102.12	1,641,252	3,355,345
Spokane	182,298	38,500	21.1%	\$2.90	26.60	1,023,985	1,684,435
Stevens	18,341	637	3.5%	\$57.51	97.83	62,316	217,938
Thurston	91,543	17,499	19.1%	\$40.24	216.65	3,791,117	4,228,963
Wahkiakum	1,869	32	1.7%	\$29.94	78.13	2,500	11,232
Walla Walla	21,671	1,671	7.7%	\$86.11	47.30	79,035	136,119
Whatcom	78,880	5,410	6.9%	\$36.97	168.02	908,984	1,053,505
Whitman	17,176	1,529	8.9%	\$23.43	27.66	42,295	42,295
Yakima	81,666	3,185	3.9%	\$92.79	96.68	307,922	1,496,708
Statewide	2,578,860	208,791	8.4%	N/A	84.83	18,153,309	29,120,395

P N R: Participants not reported C N R: Costs not reported

HHW

Participants per Housing Unit

Counties that exhibit 10% or higher of participants per housing unit either are performing excellent public education to encourage use of facilities or events, and/or have very convenient locations of their collection facilities.

Cost per Participant

Although there could be many variables to determining the cost per participant, including average quantity received within that county to a basic level of program cost and relatively few participants. 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 collections was almost 85.

Table 7.7 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for 2001, 2002, and 2003.

**Table 7.7
High Collections of HHW (no UO Sites) Pounds Per Capita
by County in 2001-2003**

HHW 2001			HHW 2002			HHW 2003		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Cowlitz	50K-100K	9.46	Island	50K-100K	6.04	Thurston	>100K	17.65
Pend Oreille	<50K	7.16	Whatcom	>100K	5.25	Kittitas	<50K	12.18
Mason	<50K	6.26	San Juan	<50K	4.69	Whatcom	>100K	5.21
King	>100K	4.65	Yakima	>100K	4.46	Klickitat	<50K	4.51
Whatcom	>100K	4.62	Skagit	>100K	4.24	Cowlitz & Skagit	>50K >100K	4.44

Data

There were five counties, who did not submit complete data on their reports. Adams, Ferry, Franklin, Kittitas, and Lincoln did not submit participation numbers. Adams, Columbia, Ferry, Franklin, Garfield, Kittitas, and Lincoln counties did not submit their program costs.

CESQG

There are twenty-one 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 2003 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 counties. 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 the dominant four types of CESQG waste collected in 2003 were non-contaminated oil, oil based paint, antifreeze and flammable liquids.

Table 7.7

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

Waste Type	Total lbs. CESQG
Oil Non-Contaminated	307,230
Oil based Paint	230,946
Antifreeze	138,210
Flammable Liquids	135,755
CRT's	123,372
Latex Paint	84,955
Oil Filters	44,741
Lead Acid Batteries	43,517
Latex Paint, contamin.	30,374
Bases	22,741
Acids	19,265
Electronics	17,986
Pesticide/Poison Liq.	11,587
Flammable Solids	8,787

Oil w/Chlorides	6,954
Pesticide Poison, solid	6,450
Flammable liquid aero	4,813
Flammable liq poison	4,462
Batteries, Dry Cell	4,056
Oil with PCB's	3,252
Chlorinated Solvents	2,420
N/NIMH/Lith Batteries	2,393
Oxidizers	2,276
Flam. Gas Poison	2,269
Flammable Gas	2,122
All Other	54,480
TOTALS	1,315,413

Used Oil Sites

In 2003, reported used oil collection sites yielded 11,749,188 pounds of used oil. Used oil collection by county size showed variability in pounds per capita. For example, Both Columbia and Adams Counties had unusually high used oil collection, yet had very low numbers for HHW collection. This may be explained by the combination of a low population county and a high incidence of farming activity. See Table 7.8 for the six counties with the highest collections in pounds per capita by county size for 2001, 2002 and 2003.

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 - 2001			Used Oil Sites - 2002			Used Oil Sites - 2003		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Mason	<50K	4.0	Columbia	<50K	17.6	Columbia	<50K	17.6
Stevens	<50K	4.0	Adams	<50K	12.3	Mason	50K-100K	11.9
King	>100K	3.9	Stevens	<50K	4.0	Skamania	<50K	5.6
Cowlitz	50K-100K	3.5	Skamania	<50K	3.9	San Juan	<50K	4.9
Skamania	<50K	3.2	Pacific	<50K	3.8	Stevens	<50K	3.8
San Juan	<50K	3.0	Kittitas	50K-100K	3.6	Pacific	<50K	3.8

Statewide Level of Service

The US Census Bureau reports that as of 2003 there were an estimated 2,578,860 Housing Units¹ in Washington State. MRW Annual Reports revealed there were 208,791 participants. Adams, Ferry, Franklin, Kittitas, and Lincoln 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). Also because some participants that are counted at events or by facilities bring HHW from multiple households and the number of participants at the counties listed above where they were not counted, the number of households served can be estimated by adding ten percent to the participant values for an estimated 229,670 households served in 2003. This number represents 8.9% of all households in Washington State. This is an increase from the 6.8 and 6.1% of 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 numbers of collection events are decreasing. Some programs are eliminating collection events altogether or using hybrid mobile collection systems. Reasons for this shift include: increased cost of collection 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.

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

New Waste Streams

MRW collection programs are well established statewide. Many of these programs are exploring management of various other components of municipal solid waste. Mercury-containing lamps and electronic wastes are two of these emerging waste types.

There is a need to pay attention to the collection of mercury waste streams. Fluorescent and high intensity lamps contain small amounts of mercury. There will be an estimated 35 tons of mercury discharged into the atmosphere from the 550 million lamps currently in use by Americans (Greskovich 1997).

Used electronics are also 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).

As technology continues to lead 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 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. By the year 2010, predictions for this waste sub-stream will double (Ecology 1999). We started data on this waste stream in 2001, and in one year (2002 vs 2003) it has more than doubled, further, we expect this waste stream to increase as more collection facilities collect this waste type.

Annual Reporting

Local programs are required to submit MRW report forms annually. For the past few years, Ecology has requested annual reports be received by March for 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, 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.