Hazardous Waste Generation and Treatment Trends

San Francisco Bay Area 2008 and 2009 Manifest Data

Bay Area Hazardous Waste Management Facility Allocation Committee

Approved
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Executive Summary and Recommendations

This report presents the biennial analysis of the Bay Area's hazardous waste generation and treatment trends based upon manifest data compiled by the California Department of Toxic Substances Control (DTSC). It focuses on waste manifests from 2008 and 2009. Although the total hazardous wastes generated in the nine county Bay Area in 2008 and 2009 were greater than in the previous two years, the "industrial wastes," those counted according to the Committee's allocation formula, were lower in 2008 and 2009 than in previous years. The decrease may reflect the continued slump in our economy. In addition, DTSC has consolidated categories in their database thus reducing the potential for double counting wastes.

Since 2003, when ABAG's Hazardous Waste Facility Allocation Committee requested an in-depth look at the region's hazardous waste treatment capacity, a number of treatment facilities have closed or are expected to close in the near future. It is not surprising, then, that the number of wastes treated locally continues to decline (as the number of wastes treated outside the nine-county Bay Area rises). San Mateo's Romic, a long time large solvent treatment facility in East Palo Alto, has closed. ABAG has no information that the Bay Area's generators are having difficulty finding treatment facilities for hazardous wastes.

The report highlights the challenges and solutions associated with household hazardous waste management (HHW) programs. HHW programs face an increasing burden to safely manage hazardous materials as common household products are being banned from landfill. If long-term solutions are not developed, the HHW management challenges for local governments will only worsen. The report identifies environmentally preferable purchasing (EPP), extended producer responsibility (EPR), and green chemistry (GC) efforts that offer solutions to the challenge. ABAG staff outreach to local CUPA agencies suggests that they are interested in learning more about the potential hazards of current universal waste management practices.

In keeping with the Committee's tradition of promoting actions that obviate the need to site a new hazardous waste treatment facility in the Bay Area, ABAG staff and Technical Advisory Committee (TAC) members recommend the following actions for consideration:

- Continue discussions with DTSC staff regarding pollution prevention initiatives (such as the Green Business Program) and their Green Chemistry Initiative.
- Work with DTSC, the Department of Resources Recycling and Recovery (CalRecycle), and the California Product Stewardship Council (CPSC) on

development/ dissemination of information, tools and resources for local governments related to Environmentally Preferable Purchasing (EPP), Extended Producer Responsibility (EPR), and related topics.

- Work with TAC and others to motivate/assist local jurisdictions interested in implementing EPP programs; schedule presentations to the Committee and ABAG Executive Board on a variety of EPP topics, and host additional trainings in FY 2010/11.
- Track household hazardous waste streams on a more regular basis for emerging / evolving waste streams, such as nano-wastes and batteries.
- Continue to monitor legislation pertinent to hazardous waste issues, and, when appropriate, seek support from ABAG's Legislation & Governmental Organizations Committee and Executive Board.
- Meet with TAC prior to development of next Hazardous Waste report to discuss how it can be improved. Analyze the 2010 and 2011 Hazardous Waste Manifest data in 2012 (or when available from DTSC).

History of Committee

The Bay Area Hazardous Waste Management Facility Allocation Committee was established under a Memorandum of Understanding (MOU) in 1990 following the passage of AB 2948 (Tanner). The legislation, which assumed that hazardous wastes would increase statewide with a commensurate demand for additional treatment facilities, required that local governments plan to meet this demand locally. The committee sought to develop and implement a regional approach for siting treatment facilities. The MOU required that each county be represented by two locally elected officials, one to represent the county and one to represent the cities within the county. In 1993/94, the nine Bay Area counties approved an Inter-Jurisdictional Agreement establishing a Fair Share Capacity Allocation Formula (Formula) and initial county hazardous waste facility allocations. The plan assigned responsibility for planning to fill the regional capacity deficit among the counties based upon their relative contributions to that deficit.

The 1991 county allocations approved by the Committee and incorporated into the IJA were based upon projections for the year 2000. In other words, in 1991, ABAG projected how much, and what types of wastes would be generated throughout the Bay Area in 2000, given certain assumptions about economic growth and waste generation practices. There is no statutory or regulatory requirement for Bay Area counties to review or reformulate the assumptions underlying the county allocation formula. However, the Committee agreed that ongoing monitoring of annual hazardous waste

generation and treatment data provides valuable information counties and the region can use to guide pollution prevention, waste management, planning and other activities.

In May 2000, the Bay Area Hazardous Waste Management Facility Allocation Committee was reconstituted to allow a more flexible structure. The Committee is now an ad hoc Committee of ABAG. Committee members may be elected officials or staff from participating counties and cities or their designees. The ABAG Executive Board approves the Committee's recommendations. Under the restructuring, the Technical Advisory Committee (TAC) was reformulated into two TACs, one of which focuses primarily on hazardous waste data analysis and related activities. The second TAC helps guide the Bay Area Green Business Program. All TAC members also participate in development of pollution prevention and source reduction recommendations.

Evolution of Formula

At the outset, ABAG staff developed a Formula based upon projected need for hazardous waste treatment capacity by the year 2000. The Formula looked at potential industrial growth, potential increases in hazardous waste that would accompany the growth, and potential increases in treatment capacity anticipated by existing facilities. The guiding Fair Share principle of the Formula was that counties that had the largest gap between treatment capacity and hazardous wastes generated would be assigned the most problematic facilities to site: i.e. hazardous waste incinerators or landfills. Counties with a smaller treatment gap would be assigned more benign treatment types: primarily recycling facilities.

Throughout the 1990s, the Committee monitored the actual fluctuation in hazardous waste generation. As is shown in Figure 1 (page 13), manufacturing jobs increased each year between 1994 and 1998. Beginning in 2001, manufacturing jobs declined until 2005 when they began to level out. These trends do not appear to correlate with hazardous waste generation. It is likely that changes in hazardous waste generation are related to changes in manifests and also to how DTSC has categorized wastes over time.

Aware that hazardous waste generation was not rising, and unsure of trends in hazardous waste treatment capacity, the Committee authorized ABAG staff to survey regional Treatment, Storage and Disposal facilities (TSDs) to refine and update information on local treatment trends. Staff was also directed to recommend changes to the Formula as an outgrowth of the research. In July 2004, Committee staff prepared a memo outlining the proposed changes to the Formula. The Committee approved the changes and directed staff to "pilot test" the Formula using the 2002 hazardous waste

data provided by the State. In October 2005, the committee reviewed and was satisfied with the results of the 2003 data analysis using the revised Formula.

Beginning in September 2005, US EPA required that all states use a revised manifest. Among the changes were requirements to use new treatment codes for each waste. Given that the change occurred in the middle of a calendar year, neither DTSC nor ABAG staff had a high level of confidence about the accuracy of the 2005 data. When ABAG staff examined the 2005 data and presented it to the committee, it was noted that the total amount generated in the nine-county Bay Area was significantly less than most years. DTSC responded that it had not received as many manifests as anticipated in a timely manner and that the upload system had not worked as well as hoped. At the October 2007 meeting, the committee directed staff to review the 2006 and 2007 data together and to run the formula on the 2007 data.

ABAG staff followed the procedures developed in 2004 as updated for the last report in 2009. As outlined in the procedures at the end of this document, several treatment categories are "deselected" from the analysis to avoid double counting of wastes. These include: fuel blending prior to recovery at another site, microencapsulation prior to disposal at another site, and storage, bulking and/or transfer off-site with no treatment. The procedures memo attached to the end of this document will be modified accordingly for future years.

Hazardous Waste Data

The raw data used in the Fair Share Capacity Allocation Formula comes from hazardous waste manifests. Under the Resource Conservation and Recovery Act (RCRA), hazardous wastes must be tracked "from cradle to grave." The manifest provides this tracking. Each time a generator ships a waste off-site, the generator must mail California Environmental Protection Agency (CAL-EPA) Department of Toxic Substances Control (DTSC) a manifest detailing the amount going off-site, who is taking the waste, and to where. DTSC compiles all the manifests in a statewide database. This information is provided annually to ABAG.

ABAG extracts the information for each county, providing it with an electronic version of every manifest sent from a generator in that county during the year. ABAG also provides each county with an annual compilation of the amount of waste received by its TSDs. TAC members are given the opportunity to review the data before ABAG uses it in the Formula, and to analyze the amounts and types of wastes being generated and managed throughout the Bay Area over time.

Historically, TAC and Committee members have sought to better understand various portions of the total hazardous waste stream. Some of these have included household hazardous wastes, and one-time wastes such as asbestos and contaminated soil (which are not included in the Formula). Many questions have also arisen about the contributions of TSDs to the overall waste stream since the treatment of hazardous wastes often produces by-products (sludges, ash) that are still hazardous wastes and need further offsite treatment or long-term disposal. Indeed, Bay Area TSDs are the largest hazardous waste "generators" in the region.

The amount of waste received at each Bay Area TSD is of interest because the definition of "capacity" is imprecise. There is no state agency that puts a ceiling on the amount that a treatment facility can process in a year. The treatment facility "capacity" estimates used in the 1991 ABAG staff report were based upon estimates of facility throughput. The treatment facility "capacity" estimates used now are based on the 2003 survey data. Some treatment facilities are regulated by Air Quality Management District Permits, which may limit capacity.

Hazardous Waste Generation and Treatment Trends 2008 & 2009

This section provides an overview of any changes reflected in the 2008 and 2009 data in hazardous waste treatment trends or generator profiles in each county around the Bay. The counties are listed in alphabetical order. The following section, which begins on page 10, discusses the regional picture, including trends over time.

Alameda County

Alameda County has considerable hazardous waste treatment capacity between Evergreen Oil in the City of Newark and AERC of Hayward. The treatment capacity for Tanner planning purposes for Alameda County is 99,280 tons. As noted previously, however, "TSD capacity" is an imprecise concept. Evergreen and all the other regional TSDs have "capacity" that exceeds the actual amounts of wastes that they treat.

Alameda County's largest generators in 2008 and 2009, shown in the table on page 6, are Evergreen Oil & Evergreen Environmental Services. Evergreen has been the largest generator historically. The City of Alameda Fire Department appears as a large generator for the first time. In March of 2009 the vacant hospital at FISC (Navy Fleet Industrial Supply Center) was destroyed by fire and the cleanup resulted in the disposal of over 3,000 tons of inorganic waste.[1] The NUMMI plant closed this year, but Toyota has established a partnership with Tesla to manufacture electric cars at the plant.

[1] http://www.ci.alameda.ca.us/news/0904_hospital_fire.html

Alameda County Treatment Storage & Disposal Facilities	Treatment Method	Tons Processed in 2009
AERC COM INC	Metals Recovery	1
EVERGREEN ENVIRONMENTAL SERVICES	Fuel Blending Prior To Energy Recovery At Another Site	3
	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Etc	24
EVERGREEN OIL INC	Deep well Or Underground Injection	11
	Discharge To Sewer/POTW Or NPDES	11,618
	Fuel Blending Prior To Energy Recovery At Another Site	1,580
	Incineration--Thermal Destruction Other Than Use As A Fuel	48
	Landfill Or Surface Impoundment That Will Be Closed As Landfill	20
	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Etc	66,649

Alameda County Large Generators	(Tons)	
	2008	2009
Evergreen Environmental Services	27,673	24,500
Evergreen Oil Inc	6,391	8,716
Lam Research Corp	1,566	
New United Motor Manufacturing Inc (NUMMI)	1,465	
Solyndra Inc	2,783	
City Of Alameda Fire Dept		3,198
Aramark Uniform Services		1,058
Waste Oil Recovery Systems Inc		1,007

Alameda County is exempt from the siting of additional hazardous waste facilities under the Tanner planning process because its current capacity to treat hazardous wastes (99,280 tons) exceeds the amount of hazardous wastes generated collectively within the county (52,404 tons in 2008; 50,787 tons in 2009).

Contra Costa County

Although Contra Costa County has two transfer stations – Ecology Control and Veolia Environmental – the county has no TSDs counted for Tanner planning purposes. The county's largest generators are shown in the table below. The quantity that Contra Costa generators shipped has fluctuated considerably between 2002 and 2007 (Table 2). In 2005/2006 the variation may be due to the conversion from the old to the new manifests. The average tonnage in Contra Costa between 2002 and 2009 is 56,132 tons. In 2008, the total exported hazardous waste for treatment was only slightly above the average (57,849 tons), while in 2009 the exports were below average (48,865 tons).

Contra Costa County Large Generators	(Tons)	
	2008	2009
Tesoro Refining & Marketing Co.	15,474	12,223
Shell Oil Products/Us Martinez Refinery	12,176	9,102
Avon Remediation Team		7,371
Conoco Phillips	3,942	5,474
Conoco Phillips The Carbon Plant	2,871	1,299
Cherokee Simeon Venture I LLC	1,564	
Chevron Products Co	4,659	2,341
Molino Enterprises Inc DBA JM Enterprise	2,443	
The Dow Chemical Company	3,634	2,884
Henkel Co-Aerospace Group	1,115	

Under the Fair Share Formula, Contra Costa may be selected as a site for a hazardous waste treatment facility. The county has no hazardous waste treatment facilities and exported 48,865 tons of hazardous waste in 2009 for treatment.

Marin County

Marin has one counted Treatment Storage and Disposal Facility, Photo Waste Recycling, and no industries that generate over 1,000 tons per year of hazardous waste. Photo waste processors such as Photo Waste Recycling, Inc. are not regulated by a full TSD permit and are not listed in the DTSC publication, "California Commercial Office Hazardous Waste Facilities." Historically, the Committee has considered Photo Waste Recycling, Inc.'s capacity to be 895 tons. In 2009, it processed 358 tons of waste. Marin County is exempt from the siting of additional hazardous waste facilities under the Tanner planning process because its current capacity to treat hazardous wastes exceeds the amount of hazardous wastes generated collectively within the county (477 tons).

Napa County

Napa County has no Treatment Storage and Disposal Facilities and no generators that generate over 1,000 tons per year of hazardous waste. The total hazardous wastes generated in Napa in 2009 were 154 tons: under the Fair Share Formula, the county may be considered for siting of a hazardous waste treatment facility.

San Francisco City and County

San Francisco has no Treatment Storage and Disposal Facilities. In 2008, there were no large generators. In 2009, PG&E disposed of 2,911 tons of hazardous waste from the Hunters Point Power Plant. In addition, there were 2,710 tons of hazardous wastes generated by the former naval shipyard at Hunters Point. The total hazardous wastes generated in San Francisco in 2009 were 8,845 tons: Under the Fair Share Formula, the county may be considered for siting of a hazardous waste treatment facility. The trend

seen in the past 5 years of large quantities of lead wastes from cleanups (e.g., the Presidio) seems to have ended.

San Mateo County

Since the inception of the Hazardous Waste Management Committee, San Mateo has had two large Treatment Storage and Disposal Facilities – Romic Environmental and Merry X-Ray. In 2007, DTSC ordered Romic to stop operations, eliminate inventory, and develop a closure plan. In 2009, a small amount of waste appears to have been treated at the site, most likely associated with clean-up operations. Merry X-Ray treated a small amount of waste in 2009. Clean Harbors Environmental Services operates a facility at the Port of Redwood City, however in 2009 treatment, storage, bulking, and/or transfer is the only method listed, so it is not counted in the Fair Share Formula. California Radiographics, located in San Carlos, may not have been in business when 2003 survey was conducted. In 2009, the facility treated 2,391 tons of waste.

San Mateo County Treatment Storage & Disposal Facilities	Treatment Method	Tons Processed in 2009
California Radiographics Inc	Metals Recovery	40
Merry X-Ray Chemical Corporation	Metals Recovery	14
Romic Environmental Technologies Corp.	Recycle	4

San Mateo County Large Generators	(Tons)	
	2008	2009
Romic Environmental Technologies Corp.		2,059
Clean Harbors Environmental Services Inc Port Of Redwood City	2,381	2,569
All Petroleum Recovery Service LLC	1,375	1,287

Clean Harbors was the largest generator (2,569) in San Mateo County in 2008. The clean-up at Romic also generated over 2,000 tons in 2009.

As predicted in the last report, 2007 was the last year that San Mateo County was exempt from the siting of additional hazardous waste facilities under the Tanner planning. Its current capacity to treat hazardous wastes (2,500 tons) is exceeded by the amount of hazardous wastes generated (8,202 tons).

Santa Clara County

Santa Clara County has six Treatment Storage and Disposal Facilities that have been noted in previous reports: Clear Harbors, Xstrata (formerly Noranda), ECS Refining, Metech, J&B, and Wit Refining. These facilities collectively provide the region with

234,208 tons of recycling capacity. Santa Clara County has a transfer station, Alviso Oil/Clearwater Environmental. The amount of wastes treated by each Santa Clara County facility is shown below.

Santa Clara County Treatment Storage & Disposal Facilities	Treatment Method	Tons Processed in 2009
Clean Harbors San Jose LLC	Other Chemical Precipitation With Or Without Pre-Treatment	4,254
	Discharge To Sewer/POTW Or NPDES	2,850
	Landfill Or Surface Impoundment That Will Be Closed As Landfill	7
	Solvents Recovery	2
	Incineration--Thermal Destruction Other Than Use As A Fuel	1
ECS Refining (DBA)	Metals Recovery	541
	Sludge Treatment And/Or Dewatering	1
J&B Enterprises	Metals Recovery	92
Metech International	Other Treatment	39
	Metals Recovery	3
Wit Sales & Refining	Metals Recovery	3
Xstrata Recycling Inc	Metals Recovery	102

The largest generator in Santa Clara County is Clean Harbors, a Treatment, Storage, and Disposal Facility. Industrial large generators are United Technologies, NASA-Ames and Infiniti Circuits. The City of Palo Alto, which treats inorganic solid wastes generated by Clean Harbors, is the only publically owned treatment works (POTW) that was a large generator in the Bay Area in 2008 and 2009. The Alviso Oil/Clearwater Santa Clara Co facility closed in Feb 2009. Most of this waste is routed to Clearwater's Silver Springs, Nevada plant for processing now.

Santa Clara County Large Generators	(Tons)	
	2008	2009
Clean Harbors San Jose LLC	11,436	11,325
Clean Harbors San Jose, Rail Spur	12,459	8,593
United Technologies PW Space Propulsion	7,189	
Infiniti Circuits Manufacturing		3,436
City Of Palo Alto/Water Quality Control Plant	1,752	1,652
NASA-Ames Research Center		1,567

Santa Clara County is exempt from the siting of additional hazardous waste facilities under the Tanner planning process because its current capacity to treat hazardous wastes (234,208 tons) exceeds the amount of hazardous wastes generated collectively within the county (40,224 tons).

Solano County

Solano County has no Treatment Storage and Disposal Facilities counted for Tanner planning purposes; however it has waste processing stations, Recology Hay Road landfill (Norcal) and D/K Dixon transfer station. Solano has a number of companies that generated over 1,000 tons of hazardous wastes in 2008 and 2009. These include one environmental/waste disposal company, D/K Dixon, and two industrial large generators, Valero Refining and Genentech. In the past, Fremouw Environmental and Maximum Oil Company have been large generators, but in 2008 and 2009 they transferred most of their waste oil off-site to treatment facilities in Yolo County (Ramos Environmental Services and Evergreen Oil).

Solano County Large Generators	(Tons)	
	2008	2009
D K Dixon	25,479	31,236
Valero Refining Company	2,722	2,063
Genentech Inc	2,579	1,129

The total hazardous wastes generated in Solano in 2009 were 39,251 tons: under the Fair Share Formula, the county may be considered for siting of a hazardous waste treatment facility.

Sonoma County

Sonoma County has no counted Treatment Storage and Disposal Facilities. However, the county does have a transfer station, Safety- Kleen. The Aidlin Geothermal Power Plant and the Geysers Power Company are the county's large generators. In 2008, two power plants exported over 3,000 tons of hazardous waste. In 2009, only the Geysers was a large generator with 2,225 tons of waste. The total hazardous wastes generated in Sonoma in 2009 were 4,219 tons. Under the Fair Share Formula, the county may be considered for siting of a hazardous waste treatment facility.

The Regional Picture, 2008 and 2009

This section moves from the county scale to the regional. The committee is interested in knowing whether local industries are implementing less wasteful chemical usage practices, whether industries are declining, or whether other information about industries can be drawn from hazardous waste manifest data. Tables 1 through 3 (on page 12) show the total tons of hazardous waste generated in the region, the total tons of industrial wastes generated in the region, and the total tons of waste treated in the region. Figure 1 (on page 14) shows total industrial wastes associated with manufacturing jobs.

In 2009, waste generators in the nine counties of the Bay Area manifested 702,182 tons of hazardous waste for off-site treatment. In total the Bay Area generated 201,122 tons (about 29 percent) of "industrial wastes" in 2009. The rest of the wastes were one time wastes such as asbestos or contaminated soils, or they were wastes sent to transfer stations and/or bulking facilities (and thus, if included, would result in double counting). For example, in 2009 there was a large soil clean-up project (225,000 tons of contaminated soil) at an elementary school in Solano County (Vacaville).

The most common wastes generated in 2009 from the Bay Area are listed in Table 4. The largest category of wastes was waste oil and mixed oil (63,672 tons). These wastes were shipped from nearly 400 generators around the Bay Area. Most of the oil generated in the Bay Area was sent to Evergreen Environmental Services in Alameda County (Newark).

The second largest category of hazardous wastes was inorganic solids (43,309 tons) from over 700 sources. Over 95 percent of the solids were shipped to hazardous waste disposal facilities in Kings County or Kern County. The top five Bay Area generators were Shell Oil (Martinez), Conoco Phillips (Rodeo), City of Alameda Fire Department, and Clean Harbors (San Jose).

Sludges, solvent mixtures, and organic solids each constitute over 10,000 tons of hazardous waste. Tesoro Refinery in Martinez generates the largest amount of sludge and organic solids, both of which were shipped to Kern County. Clean Harbors in San Jose and Redwood City generated the most solvent mixtures, all of which was incinerated out of state. It is likely that much of the wastes shipped from Clean Harbors came from generators outside of the Bay Area and were bulked and/or minimally treated in San Jose before shipment.

Of the 201,122 tons of industrial wastes generated by the Bay Area in 2009, roughly 20 percent (40,930 tons) was treated in the Bay Area, 60 percent (119,926 tons) treated in California, and 20 percent (40,266 tons) treated out of state. The quantity of wastes treated in the Bay Area has declined each year since 2004 (Table 3). The closure of Romic is the primary cause of the precipitous decline beginning in 2007.

Los Angeles County received 47,211 tons of hazardous waste from the Bay Area, most of that going to DeMenno/Kerdoon (which accepts the residuals from oil refineries and / or waste oil recyclers such as Evergreen and processes the oil residuals into asphalt products and bunker oil). Over 34,800 tons of wastes were shipped to Chemical Waste Management in Kings County (a Class 1 Facility that can accept all hazardous wastes).

Just over 37,400 tons were shipped to Clean Harbors Buttonwillow Facility in Kern County (also a Chemical Waste Management company that accepts Class 2 wastes which are largely contaminated soils, construction debris, etc.). The largest amount of wastes treated outside of California went to a Clean Harbors facility in Utah (just over 9,400 tons). Nevada received over 8,400 tons from the Bay Area, most of it destined for a US Ecology Inc facility.

Based upon the manifest data alone, it is hard to conclude whether industrial wastes are increasing or decreasing.[2] The average industrial wastes in the dataset prepared for the committee is 284,614 tons of industrial waste for the nine-county Bay Area. Using that as a reference point, industrial waste generation for 2008 and 2009 would be below average years. Industrial manufacturing jobs in industry in the Bay Area have remained relatively consistent since 2003, after they peaked in 2000. There is little correspondence in trend lines between 1990 and 2007 between industrial hazardous waste generation and manufacturing jobs. DTSC has published no studies that correlate the up- and downturns of hazardous waste generation to either specific industrial changes, economic conditions, or even regulatory changes.

[2] While DTSC has maintained the manifest database since the late 1980s, the quality of the data is variable. Currently, the data entry is 99.95% accurate as DTSC uses a "double blind" key entry procedure. However, the hazardous waste manifests commonly have errors because facilities' staff complete the form incompletely or miscode data fields. DTSC does not correct these errors. Committee members are among few people outside of DTSC interested in reviewing the data, which means there is not a high demand for DTSC to troubleshoot problems. It should also be noted that hazardous wastes treated on-site are not manifested, and are therefore not part of the database. Nor are wastes that entered into manifests printed by other states (even if the wastes originate in California).

Table 1. Total Hazardous Wastes Generated in Bay Area (Tons)

	ALAMEDA	CONTRA COSTA	MARIN	NAPA	SAN FRANCISCO	SAN MATEO	SANTA CLARA	SOLANO	SONOMA	TOTAL
1994	96,176	130,376	2,546	2,536	99,242	113,442	86,390	23,952	7,993	**562,653**
2002	175,779	84,378	3,918	1,134	103,617	33,296	145,904	35,228	23,990	**607,244**
2003	130,968	97,927	5,985	1,627	102,072	37,732	105,303	35,374	11,774	**528,762**
2004	180,108	95,769	6,042	1,623	98,764	97,781	104,232	48,100	15,003	**647,422**
2005	178,026	76,201	5,807	1,702	282,202	55,417	121,486	50,212	9,728	**780,781**
2006	128,343	147,130	3,244	1,182	25,829	49,570	79,490	62,779	8,338	**505,904**
2007	130,320	84,068	4,222	1,120	124,994	41,759	125,310	45,982	10,381	**568,156**
2008	183,850	117,046	10,530	803	101,474	19,758	127,379	53,533	10,610	**624,983**
2009	158,944	82,221	4,068	1,245	73,092	17,594	74,804	284,105	6,109	**702,182**

Beginning in 2006, manifests with County, waste type, or TSD process unknown have not been included

Table 2. Total "Counted" Hazardous Wastes Generated in the Bay Area (Tons)[1]

	ALAMEDA	CONTRA COSTA	MARIN	NAPA	SAN FRANCISCO	SAN MATEO	SANTA CLARA	SOLANO	SONOMA	TOTAL
1994	59,109	44,224	1,316	2,128	14,805	100,939	66,743	18,714	6,849	**314,828**
2002	91,221	48,384	1,187	696	9,509	22,038	111,512	21,683	6,628	**312,858**
2003	36,401	29,688	1,439	347	9,328	9,962	54,230	20,300	2,602	**164,296**
2004	91,348	61,622	1,358	633	14,391	37,822	69,781	26,718	4,665	**308,339**
2005	69,251	39,311	961	725	69,748	26,190	62,979	15,967	4,477	**289,611**
2006	72,859	113,557	1,486	628	7,613	36,248	58,623	45,997	4,382	**341,395**
2007	55,429	49,783	389	183	49,924	8,472	80,567	34,339	7,986	**287,072**
2008	52,404	57,849	403	160	4,747	6,809	46,828	36,177	5,454	**210,831**
2009	50,787	48,865	477	154	8,945	8,202	40,224	39,251	4,219	**201,122**

[1]Excludes asbestos wastes and contaminated soil. Also excludes wastes sent under manifest to a transfer station, fuel blending facility, storage bulking facility, and/or micro-encapsulation facility prior to disposal.

Table 3. Total "Counted" Hazardous Wastes Treated Inside the Bay Area versus Outside the Bay Area (Tons)

	1994	2004	2005	2006	2007	2008	2009
Industrial Waste Generated in Bay Area	317,721	308,339	289,611	351,490	305,594	210,831	201,122
Industrial Waste Treated in Bay Area	114,154	100,847	81,533	94,342	51,650	43,324	40,930
Industrial Waste Treated Outside Bay Area	203,567	207,492	208,078	257,148	253,944	167,507	160,192

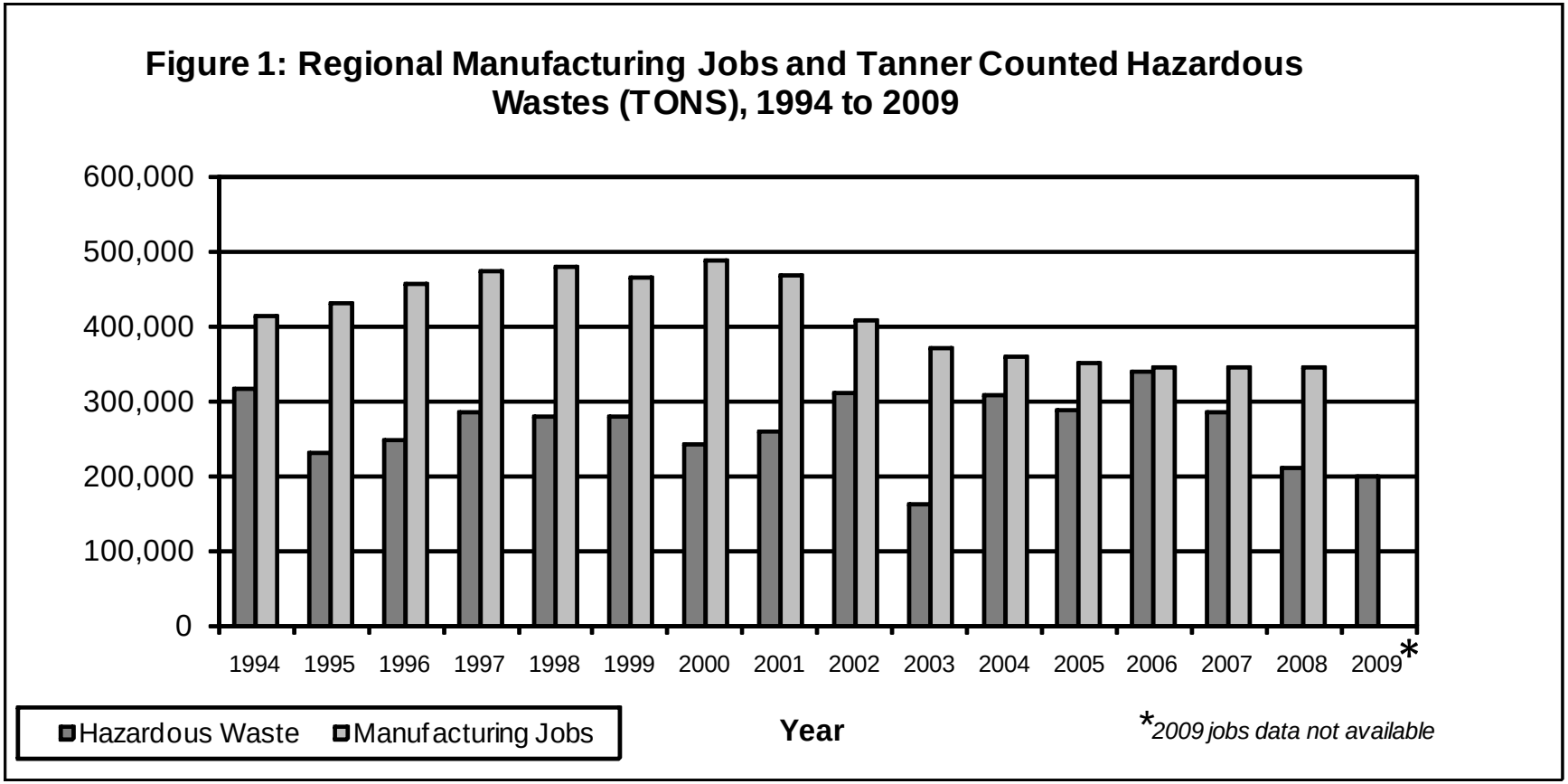
Figure 1: Regional Manufacturing Jobs and Tanner Counted Hazardous Wastes (TONS), 1994 to 2009
600,000
500,000
400,000
300,000
200,000
100,000
0
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009*
Hazardous Waste
Manufacturing Jobs
Year
*2009 jobs data not available

Table 4. 2009 Counted Wastes (over 2,000 tons)	
Waste Type	**Tons**
Waste oil and mixed oil	63,672
Other inorganic solid waste	43,310
Unspecified sludge waste	13,987
Unspecified solvent mixture	12,457
Other organic solids	11,821
Unspecified oil-containing waste	8,657
Unspecified aqueous solution	6,110
Aqueous solution with total organic residues 10 percent or more	4,759
Polychlorinated biphenyls and material containing PCBs	4,655
Metal sludge (see 121)	4,284
Aqueous solution with total organic residues less than 10 percent	2,866
Aqueous solution with metals (< restricted levels and see 121)	2,390
Off-specification, aged or surplus inorganics	2,333

Fair Share Formula

Table 5 presents the Fair Share Formula results for the nine Bay Area Counties in 2009. Overall the region had a treatment capacity surplus of 135,761 tons. Three counties had capacity surpluses: Alameda, Marin, and Santa Clara. Contra Costa and Solano counties have large deficits (over 30,000 tons). San Francisco, San Mateo, Marin, and Sonoma counties have modest deficits (under 10,000 tons). The closure of Romic has brought San Mateo County from a surplus to a deficit. In September 2009, Romic completed Phase I Cleanup.[3] Phase II Cleanup investigations are underway; USEPA is now the lead agency and recently completed an innovative pilot study to evaluate the environmental footprint of three remedial alternatives.[4]

While the Bay Area's TSDs show an excess of capacity to treat the wastes generated within the nine Bay Area counties, the treatment processes locally available do not match the treatment processes needed for locally generated wastes. Therefore, many tons of hazardous waste are treated either elsewhere in California or elsewhere in the US (Table 3 above).

[3] *Update on the Phase I Closure of the former Romic facility in East Palo Alto*, DTSC, Fact Sheet, October 2009. http://www.dtsc.ca.gov/HazardousWaste/Projects/upload/Romic_FS_Closure_1009.pdf

[4] *Estimating the Environmental Footprint at a Corrective Action Clean-up*. Karen Scheuermann, US EPA Region 9. http://www.epa.gov/region9/waste/romic-eastpaloalto/pdf/Romic-Green-Remediation-Pilot-Study-NARPM.pdf

Table 5. Tanner Formula Using TSD Capacities From 2003 Study

County	TSD Capacity	Tons Generated 2009	Surplus/Deficit	Ranking
Alameda	99,280	50,787	48,493	exempt
Contra Costa	0	48,865	-48,865	treatment/disposal
Marin	895	477	418	exempt
Napa	0	154	-154	recycling
San Francisco	0	8,945	-8,945	recycling
San Mateo	2,500	8,202	-5,702	recycling
Santa Clara	234,208	40,224	193,984	exempt
Solano	0	39,251	-39,251	treatment/disposal
Sonoma	0	4,219	-4,219	recycling
TOTAL	**336,883**	**201,122**	**135,761**	

The prohibitive costs of siting a new hazardous waste treatment facility (including land, facility design, and construction and permitting) make it unlikely that a new facility will open in the nine-county Bay Area. However, Evergreen Oil has expanded its recycling capacity. Because of the current economic climate, the facility will not bring the additional capacity online until demand for it rises.[5] Should ABAG staff or Technical Advisory Committee members receive notice that a company is trying to site a hazardous waste treatment facility in the Bay Area, the Committee will be apprised of this.

Update on Waste Management Issues – Challenges and Solutions

Since the passage of Tanner 20 years ago, the management of certain types of hazardous waste that are not covered by the legislation is placing a sharply increasing burden on local governments. Statewide, household hazardous waste (HHW) programs are the primary disposal option for residents and small businesses for an expanding list of common household products. In 2006, California banned "universal waste" (UW) products (e.g., fluorescent lamps, alkaline batteries, and electronic products) from landfill disposal. The projected volume of these wastes alone will far exceed the financial and physical capacity of local HHW programs.[6] For example, in Santa Clara County costs could double each year to comply with the 2006 UW landfill ban.[6] Figure 2 illustrates the burgeoning volume of universal waste in California.

[5] Phone conversation Jennifer Krebs with Gary Colbert, President Evergreen Oil, Feb 19, 2009

[6] *The Road to Product Stewardship: Local Government as Catalysts*. Rob D'Arcy, Department of Environmental Health, County of Santa Clara, October 2009.

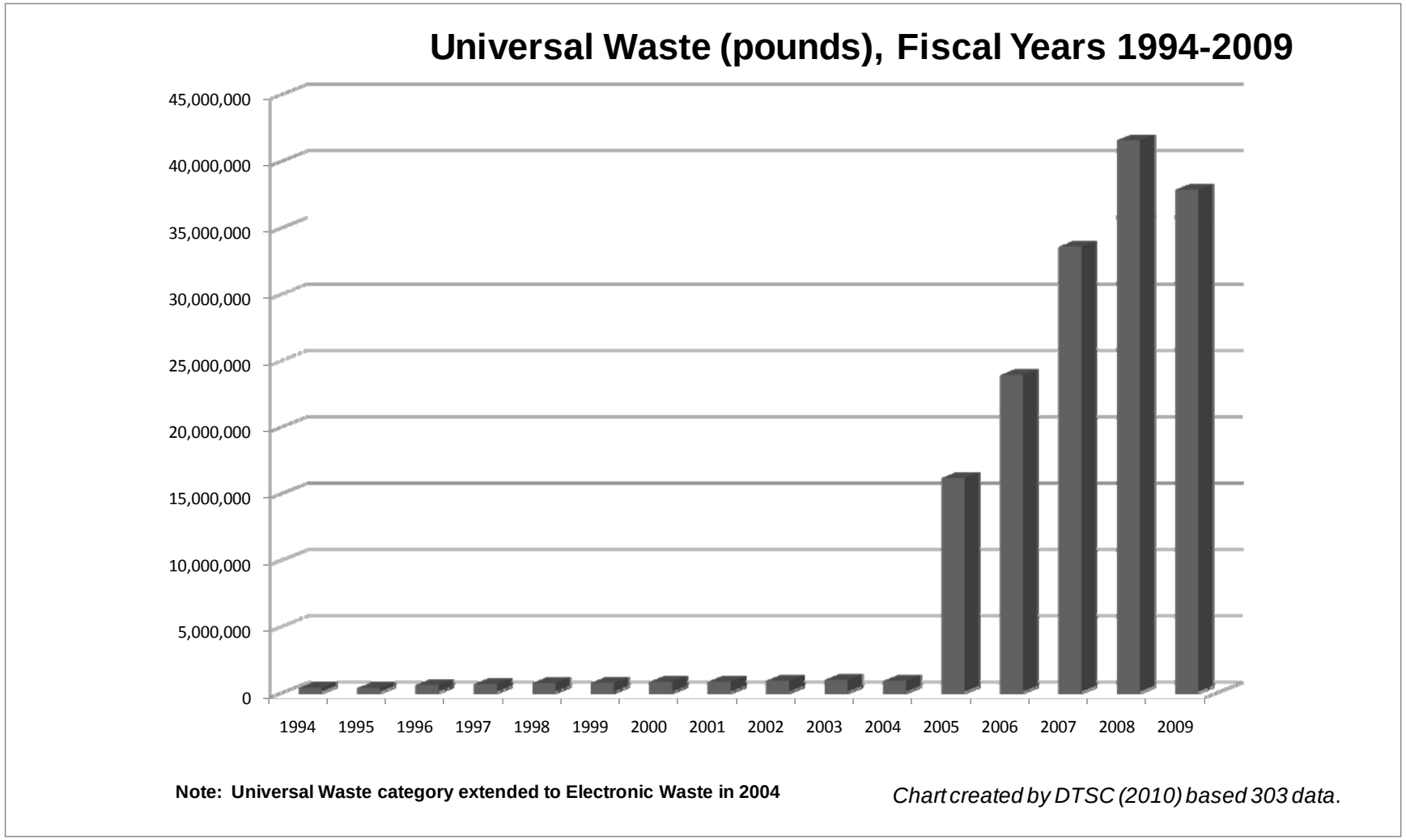

Figure 2: Universal Waste Collected by California HHW Programs

The HHW volume problem is compounded by emerging waste streams including medical wastes (sharps and pharmaceuticals). Sharps were banned from recycling and trash receptacles in 2008. Santa Clara County estimates that their HHW program historically has received only about 1.5 percent of the sharps generated.[6] Pharmaceuticals are particularly troublesome as HHW staff cannot legally take possession of controlled substances. Nonetheless, the Santa Clara County HHW program collected over 7,450 pounds in FY 2008.[6]

The HHW data in the Tanner database does not reflect the total volume of HHW with which local agencies must contend. Each year jurisdictions that collect HHW must report the amount of waste collected and the method of management to DTSC. The report forms are CIMWB 303a (lead agencies) and 303b (non-lead agencies). This data is more comprehensive than the HHW data reported under Tanner as it includes other non-manifested wastes (e.g., latex paint and universal waste) that are transported under bills of lading. For example in the Tanner database, HHW in Alameda County in 2008 is 391 tons, while form 303a HHW is reported as 1,338 tons.

Other emerging wastes of concern include solar panels and nanotechnology. Although solar panels are not yet banned from landfills, they contain components that are banned from disposal. Santa Clara County has already received solar panels at an HHW collection event.[6] Nanotechnology is of concern because of the potential for common household products to contain hazardous substances in nanoform. There is uncertainty as to how hazardous waste regulations (RCRA and CERCLA) will apply. One study identified over 500 consumer products already containing nanomaterials including sunscreens, cosmetics, stain-free clothing, paints, inks and computer processers.[7] If products containing nanomaterials are banned from landfills it could have a significant impact on HHW programs.

With the passage of each new law, local governments must perform additional outreach to residents, train their operators to safely handle the waste, and ensure the waste is disposed of properly. For example, in 2009, the Federal Department of Transportation issued rules requiring that each battery be individually taped prior to shipment[8]. Santa Clara County has estimated that an additional full-time staff is needed to comply with

[7] Where Does the Nano Go? End of Life Regulation of Nanotechnologies, 2007. Woodrow Wilson International Center for Scholars. http://www.nanotechproject.org/file_download/files/NanoEnd-of-Life_Pen10.pdf

[8] Only chemically compatible battery types can be packed together. Terminal protection (e.g., taping) is required to prevent short circuiting. Spent 1.5-volt and 9-volt alkaline dry cell batteries and 6-volt zinc carbon batteries are exempt.

this requirement.[1] HHW managers also have liability and safety concerns over wastes after they leaves the collection sites. An example of what can go wrong is exemplified by a four-alarm industrial fire that broke out on March 10, 2009 at an electronic waste recycling and processing business (ECS Refining) in Santa Clara.[9] Similar fires have been reported at this facility in 1990 and 2007.

If long-term solutions are not developed, the HHW management challenges for local governments will only worsen. HHW programs serve on average less than 7 percent of households in a given jurisdiction and are reported to collect only a fraction of targeted products that are in use.[1] A recent study in Alameda County found that between 1995 and 2008 the mass of HHW waste improperly disposed of in municipal landfills had doubled.[10] The fact that hazardous waste is still going to municipal landfill indicates that public education efforts must be broadened. Yet, as the public becomes increasingly aware of proper disposal, the HHW burden to local governments will only increase.

In California and in the Bay Area, actions are being taken to shift the burden of disposal back to those that design, manufacture, and sell products. This shift encompasses environmentally preferable purchasing (EPP), extended producer responsibility (EPR), and green chemistry (GC). At the regional level, the Hazardous Waste Committee is taking the lead in promoting EPP to ABAG members and other agencies through workshops. A workshop, held in March 2009 at ABAG, helped local governments identify products that are less toxic, have longer lives, use less energy, and can be returned to their manufacturer. Two additional workshops are planned, one on October 20, 2010 and another in 2011. ABAG is requiring that Bay Area Green Businesses have written EPP policies, manage universal waste properly, use less toxic cleaning products, avoid antibacterial hand soap, and control pests with integrated pest management.

ABAG is also educating decision makers about Extended Producer Responsibility (EPR). ABAG's Executive Board hosted a presentation from the Director of the California Product Stewardship Council. The Board approved a staff recommendation

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[9] *4-Alarm Fire in Electronic Waste Recycling Plant is Similar to 2007 Blaze.* Carolyn Schuk, The Santa Clara Weekly, March 17, 2010, http://scw.tearn.com/2010/03/4-alarm-fire-in-electronic-waste.html .

[10] *Alameda County Waste Characterization Study*. StopWaste.org, June 2009. The study is based on over 2,000 physical and visual samples collected in 2008 from Alameda County landfills. The results were compared with previous studies conducted in 1995 and 2000. Overall, the study found a 24 percent decline in the waste stream, by weight, in the past eight years. However, during that same time period household hazardous waste found in county landfills has more than doubled. In 2008, household hazardous waste constituted one percent of the total waste stream by weight.

to communicate with all Bay Area cities and counties about EPR. As a result ABAG's President sent letters to all jurisdictions in December 2008 encouraging them to:

1. **Adopt Extended Producer Responsibility resolutions and policies**. The transition to product stewardship is hastened when local governments issue ordinances or resolutions declaring their desire to phase out the provision of end-of-life product management services at no cost to the makers of toxic and disposable products.[4] The California Product Stewardship Council reports that 8 counties, 38 cities and a number of special districts within the Bay Area have adopted EPR ordinances or policies.[11] or examples of local ordinances, see http://www.caproductstewardship.org/local/epr_resolutions.htm.

2. **Support Extended Producer Responsibility legislation.** In 2010, an EPR Bill (AB 2193), was introduced by Assemblyman Chesbro (North Coast). The bill advanced through Appropriations, but failed to obtain a simple majority on the assembly floor on June 2, 2010.[12] Three other bills, which cover product stewardship for carpet, architectural paint recycling and reduction of copper in brake pads passed the legislature this year.

During the last two legislative sessions, the Hazardous Waste Committee heard regular updates on proposed EPR legislation. The Committee's recommendations were conveyed to ABAG's Legislation & Governmental Organizations Committee, and subsequently to the Executive Board who endorsed them. ABAG was on record in support of every EPR bill in 2010.

Thanks to our longstanding partnership with DTSC, the Committee has heard early and often about the State's Green Chemistry (GC) program. The California Product Stewardship Council describes GC as "a systematic scientific and engineering approach to reduce the use of hazardous chemicals and the generation of toxic wastes by changing how we design, manufacture, and use chemicals in processes and products".[13] ABAG staff will continue to track the state's GC efforts and report to the Committee as they unfold. In the meantime, by promoting EPP and EPR to ABAG members and Green Businesses we are doing our part to encourage the production of greener products.

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[11] California Product Stewardship Council. http://www.calpsc.org/policies/local/index.html. Data as of August 5, 2010.
[12] Californians Against Waste. http://www.cawrecycles.org/issues/current_legislation/ab2139_10. Accessed September 10, 2010.
[13] California Product Stewardship Council. http://www.calpsc.org/policies/green_chemistry.html. Accessed September 10, 2010

Given this background, the Committee and ABAG staff plans to stay the course of providing EPP workshops, supporting EPR and other relevant legislation, and tracking the GC progress. The Green Business standards will be reviewed periodically to ensure that they reflect the most current EPP, EPR and GC information and practices.

An example of action at the county level is the Santa Clara County Retail-Take-It Back Partner Program. This program is a small step in the direction of shifting the burden of hazardous waste disposal to manufacturers. The program enables residents to drop-off used batteries and fluorescent lamps at convenient retail locations. These retailers have been trained by the County on how to safely collect and manage the materials. The County picks up and transports the waste to prepare it for recycling. The County's data on fluorescent lamps shows that "residents prefer to take their lamps back to the place they bought them".[6] The HHW program has not yet been able to get retailers (except Orchard Supply Hardware) to assume the cost of recycling.

Status of Outreach to Certified Unified Program Agencies (CUPAs)

At the recommendation of the TAC, ABAG staff conferred with CUPAs to explore how data and reports that ABAG develops for the Committee might be useful in their local pollution prevention activities. In addition, we asked CUPAs whether they would like to review the Tanner data or the draft report. As part of this outreach work, Jennifer Krebs provided a presentation detailing the scope of this report and ongoing hazardous waste analytical efforts of ABAG at the California CUPA Forum (Bay Area Region) on July 8, 2010.

In Contra Costa, Marin, Napa, San Francisco, and San Mateo Counties there is just one countywide CUPA. However, in Santa Clara, Alameda, and Sonoma counties, many cities have CUPA's. In those three cases staff confirmed that the county CUPA staff would be appropriate point of contact. In August, ABAG staff communicated with CUPA staff, particularly on those CUPAs that are not represented on the TAC, to solicit their feedback on this report. Based on the feedback received from Alameda and Santa Clara Counties, there does not appear to be any need or interest to review the Tanner data, but there is interest in learning more about the potential hazards of current universal waste management practices.

Conclusions and Recommendations

The Committee has monitored Bay Area hazardous waste trends since 1989. Review and analysis of this information provides the Committee an opportunity to step back

and look at trends in the area of hazardous waste and consider how best to direct source reduction and pollution prevention activities.

In keeping with the Committee's tradition of promoting actions that obviate the need to site a new hazardous waste treatment facility in the Bay Area, ABAG staff and TAC members recommend the following actions for consideration:

- Continue discussions with DTSC staff regarding pollution prevention initiatives (such as the Green Business Program) and their Green Chemistry Initiative.
- Work with DTSC, the Department of Resources Recycling and Recovery (CalRecycle), and the California Product Stewardship Council (CPSC) on development / dissemination of information, tools and resources for local governments related to Environmentally Preferable Purchasing (EPP), Extended Producer Responsibility (EPR), and related topics.
- Work with TAC and others to motivate/assist local jurisdictions interested in implementing EPP programs, host presentations to the Committee and ABAG Executive Board, and host trainings in FY 2010/11.
- Track household hazardous waste streams on a more regular basis for emerging / evolving waste streams, such as nano-wastes and batteries.
- Continue to monitor legislation pertinent to hazardous waste issues, and, when appropriate, seek support from ABAG's Legislation & Governmental Organizations Committee and Executive Board.
- Meet with TAC prior to development of next Hazardous Waste report to discuss how it can be improved. Analyze the 2010 and 2011 Hazardous Waste Manifest data in 2012 (or when available from DTSC).

Changes to July 2004 Memo Noted in RED and GREEN

July, 2004

Memo: To Hazardous Waste Management Committee

From: Jennifer Krebs, Sr. Environmental Planner

Re: Updated Tanner Formula – Results of Pilot Test

Following direction received in the April 2003 Hazardous Waste Management Committee meeting, staff modified the Tanner formula based upon the recommendations in the TSD report and "pilot tested" it using the 2002 hazardous waste generator information. This memo outlines the new formula, which is simpler and more transparent than the formula it replaces, and provides the results of the pilot test. The committee's Technical Advisory Committee (TAC) received the formula for review prior to the July 2004 Committee meeting.

The steps involved in the revised formula are as follows:

1) BEFORE RUNNING THE FORMULA: Sort the annual hazardous waste manifest data (compiled by and received from the state) in Microsoft Access. Produce tables for each county of the hazardous wastes generated within the county. Have the counties review the data for problems. County TAC members are responsible for determining if wastes attributed to their county are inaccurate (i.e., if a generator or TSD mis-coded data). After TAC approval, produce tables that display total hazardous wastes generated by county, and by the region. (The 2002 tables were approved at the April 2004 HW Committee meeting.)

2) Produce the table for the ranking formula which is voted upon by the committee. Arrange the data in an Excel table into the following sequential columns:

- County
- TSD disposal method
- Waste type
- Tons

3) In the Excel table, uncheck the following wastes and treatment processes to remove them from the "counted" wastes total.

- Wastes*:
    - Asbestos
    - Blank
    - Contaminated Soil
    - Invalid Waste Code

- TSD processes*:
    - Blank
    - Transfer Station
    - Invalid
    - Storage, Bulking
    - Storage Container
    - Microencapsulation prior to disposal at another site
    - Fuel Blending prior to disposal at another site

The remaining table is a table of total counted hazardous wastes, by treatment type, for a given year. This table includes waste oil. For a number of years, the formula did not include waste oil due to concerns about double counting. In the analysis conducted as part of the TSD project, staff and TAC determined that if waste oil that goes to a transfer station is excluded from the formula, some amount of double counting has been removed. Per the direction of the HW Committee, waste oil is now a counted hazardous waste treated like all other counted wastes.

4) Produce a final table for the Committee: Copy the results of each county's total counted hazardous waste into another table and subtract each county's treatment capacity. The result is the county's hazardous waste surplus or deficit in a given year, which determines the facility allocation ranking for that particular year. Counties with a treatment deficit will receive assignments for treatment facilities based on the size of the deficit. Counties with surplus treatment capacity will not receive assignments

* In the 2009 report, staff included "discharge to sewer" with the tracked wastes to bring the issue of waste discharges to water to the committee's attention. In subsequent reports, the TAC can advise as to whether or not to count this data.

*** In the 2009 and 2010 report, the Table 1 (Total Hazardous Wastes Generated in the Bay Area) does not include entries with blank fields.**