

# HAZARDOUS WASTE MANAGEMENT

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## **A. INTRODUCTION**

**H**azardous wastes are generated by a wide range of businesses in Southern California, from printers and auto shops to large oil refineries and electronics manufacturers. Historically, many of these wastes were disposed along with ordinary garbage, and sent either to municipal landfills or into the sewer and through the local wastewater treatment plant. In the 1970s, the dangers of these practices became quite evident. Contamination of the water supply attributed to hazardous waste disposal around Love Canal, New York grabbed significant media attention and prompted both public concern and legislative action.

The detrimental effects of improper hazardous waste management has become painfully well-known in Southern California. Major groundwater aquifers, relied upon by thousands of residents for drinking water, are now threatened with contamination from "volatile organic chemicals," which resulted from past waste management practices. PCBs and heavy metals disposed of through the publicly owned sewer system have resulted in contaminated fish and habitat in the region's oceans. In addition, local businesses and governments have expended considerable resources in attempting to remediate these problems.

Significant efforts have been initiated in the past 20 years at the federal, state, regional, and local level to ensure that such mismanagement does not occur in the future. The major thrust of this effort, in addition to cleaning up contamination from past practices, was to create a stringent regulatory system that would govern how hazardous wastes are to be managed and, most importantly, disposed of. This system of federal, state, and local laws requires generators of hazardous waste to keep careful track of the waste they generate and to send their wastes to specified types of waste management facilities where the wastes can be either recycled, treated (to reduce its hazardous characteristics) or disposed of in an environmentally safe manner. The type of recycling, treatment, or disposal required by law varies according to the type of waste.

One of the most critical factors in making this management system effective is to ensure enough capacity exists among the regional waste management facilities to provide the appropriate recycling, treatment, or disposal of the region's wastes. Without this capacity, hazardous wastes will be disposed of improperly, or will have to be transported long distances to receive proper treatment or disposal. The transportation of hazardous wastes long distances poses significant health and safety risks.

This chapter assesses the amount of current and future hazardous waste capacity in the region and is intended to help local governments plan for the development of new capacity, if needed. In addition, this chapter also assesses whether an equitable distribution of waste management facilities exists among Southern California counties and, if not, how such a distribution can occur.

The region's Hazardous Waste Plan, of which this chapter is a summary, was prepared under the direction of the Southern California Hazardous Waste Management Authority (SCHWMA). SCHWMA is a joint powers authority whose board comprised elected officials from the six county SCAG region as well as Santa Barbara and San Diego counties. Thus, this plan covers Santa Barbara and San Diego counties in addition to the SCAG region. SCHWMA completed its final Regional Hazardous Waste Management Plan (the "1989 Plan") in July 1989. This chapter and accompanying documentation constitutes an update to the 1989 Plan. It uses data on 1990 patterns of waste generation and management in the region and projects waste generation and management capacity requirements to 2010.

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## **B. PURPOSE**

This chapter is designed to assist the region's counties and cities, the regional councils of government, and the state, in their individual efforts to plan for current and future hazardous waste management requirements. It is also intended to provide the informational basis for further cooperation and dialogue among the citizens, businesses, and governments of the region and state in addressing what are collective concerns and needs for ensuring both economic viability, and safe hazardous waste management in Southern California.

## **C GOALS**

The hazardous waste chapter has two primary goals. They are the following:

- To promote the following waste management hierarchy for hazardous wastes:
  1. Waste Reduction.
  2. Recycling and Reuse.
  3. Safe Disposal.
- To ensure adequate, appropriate, and environmentally safe waste management capacity in the region.

While the first goal, encouraging waste reduction, is perhaps the most important hazardous waste management priority in the region, the analysis and policies in this chapter focus primarily on the second goal, ensuring adequate, appropriate, and environmentally safe waste management capacity in the region. This is because regional cooperation and decision-making are most critical in the area of facility siting and it is where regional planning is most important. Thus, while SCAG and SCHWMA recognize the importance of hazardous waste minimization, and such policies are included in the regional hazardous waste plan, it is the capacity issue that is at the center of this chapter.

These goals are closely linked to the overall goals of the Plan. Waste reduction, recycling, and safe disposal are consistent with the regional goal of providing a healthy and environmentally sound quality of life. In addition, adequate waste management capacity in the region ensures that businesses that produce hazardous wastes have access to available waste management facilities, and is thus integral to economic growth in the region.

## **D. MAJOR FINDINGS**

The analysis of current and future waste generation and waste management capacity in Southern California which serves as the basis for this plan resulted in several significant findings. These findings reveal a dynamic hazardous waste management system in the region with dramatic changes in certain types of waste generation and in the waste management industry. These findings can be summarized as follows:

- The amount of hazardous waste sent to be managed off-site increased by 20 percent between 1986 and 1990.
- Excluding contaminated soils (which increased significantly in 1990 due primarily to a single large oil spill), total waste generation increased by only 2 percent between 1986 and 1990.
- In addition to contaminated soils, the major waste category showing the largest increase was waste oil, which increased nearly 60 percent. This large increase is likely due to regulatory restrictions on waste oil and increasing public awareness of proper waste oil disposal methods, rather than to new, increased generation of waste oil.

- Some categories of wastes showed marked decreases during this period, including metal-containing liquids (69 percent decrease), non-metallic inorganic liquids (down 55 percent), dye and paint sludges and resins (down 54 percent), non-metallic inorganic sludges (down 38 percent), PCBs and dioxins (down 25 percent), and non-halogenated solvents (down 19 percent).
- Many waste management facilities in the region appear to be closing, due perhaps to increasing regulatory requirements, liability concerns, and the general economic downturn.
- The region continues to lack sufficient capacity to safely manage the total amount of waste generated and must rely on management facilities out of the region and out of the state.
- The region is projected to require a substantial number of new facilities for waste oil recovery. In addition, to manage the waste generated within the region, one large incinerator is needed. Finally, existing residual repository capacity will likely be exhausted by 2010 and, therefore, additional residual capacity is necessary.
- A number of new facilities (and expansions at existing facilities) are proposed for the region, which would significantly reduce the region's capacity shortfall, as well as, perhaps, the fair share obligation of individual counties. However, until such facilities are actually approved and operating, they cannot be relied upon for planning purposes.
- Several issues that are difficult to predict may affect the need to increase hazardous waste management capacity in the region. These include new restrictions on the land disposal of hazardous wastes, increased waste shipments from Mexico due to the North American Free Trade Agreement, and restrictions on the interstate transportation of hazardous waste.

These findings reveal a consolidation in the waste management industry as smaller waste management facilities leave the business and larger, regional facilities, provide the bulk of the waste management capacity. It also underscores the need for regional cooperation in fostering the development of needed facilities and providing for an equitable distribution of new facilities. These issues are addressed in the policies and action plan of the Regional Hazardous Waste Management Plan.

## **E BACKGROUND ON THE TANNER PLANNING PROCESS**

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In 1986, California enacted legislation providing the opportunity for each county, as well as four regions within the state, to prepare a comprehensive analysis of its hazardous waste management issues, problems, and needs. Assembly Bill 2948 (Tanner), recognized the need to minimize uncertainty and fear about what to do with hazardous wastes produced as byproducts of the production of goods and services upon which the region's quality of life has come to depend. Safe management is critical to protect public health, the environment, and also future economic growth. This legislation built upon the efforts and experience in Southern California since the beginning of the 1980s to work cooperatively in addressing regional hazardous waste management siting concerns.

The need for the development of county and regional plans, to a large degree, was triggered by state and federal laws that mandated the phase-out of land disposal (i.e., disposal in landfills) of untreated hazardous wastes by the 1990s. Therefore, to rationally direct the development of new hazardous waste transfer stations, recycling and treatment facilities, or residual repositories as they become necessary for the region's hazardous wastes, each plan

provides comprehensive siting criteria for modern hazardous waste management facilities, as well as policies and objectives to direct further planning for future hazardous waste management needs.

## **E HAZARDOUS WASTE GENERATION IN SOUTHERN CALIFORNIA- 1990**

More than 20,000 separate businesses shipped more than 1 million tons of hazardous waste to be managed off-site in 1990. These shipments went to one of 1,400 facilities in and outside of the region. These facilities include transfer stations, recyclers, treatment facilities, and disposal sites.

Waste oil was the single largest type of waste generated in the region, accounting for nearly 400,000 tons or about 44 percent of the total amount of waste generated (*see* Figure 13-1). Other "miscellaneous wastes" such as asbestos-containing wastes accounted for the second largest percentage (22 percent). Oily sludges and solvents were the next biggest categories (8 and 6 percent respectively).

The 1990 data suggest an overall 20 percent increase in waste generation from 1986. However, much of this increase is due to contaminated soils attributable primarily to a large oil spill. Excluding the oil spill, a non-recurring waste in that it is not the result of an on-going economic activity, the growth is minimal, about 2 percent. Thus, the expected recurring waste stream changed only slightly in total tons during the four years. However, this small change overall masks significant changes in individual wastes streams. Waste oil increased by almost 60 percent alone. So striking a change may in large measure reflect an increase in the use of manifests for waste oil management, instead of actual growth in waste oil generation. As smaller generators are brought into the regulatory system and made aware of requirements for recycling and proper tracking of this waste stream, such an increase would be expected. Thus, much of the growth between 1986 and 1990 may represent growth in the use of registered waste haulers and recycling facilities for this waste. Setting these two waste streams (contaminated soil and waste oil) aside, the data suggest a decline in generation of wastes shipped off-site by some 20 percent.

## **G. HAZARDOUS WASTE MANAGEMENT IN SOUTHERN CALIFORNIA- 1990**

The region's generators of hazardous waste shipped their wastes to more than 1,400 different waste management facilities in 1990. Some 138 of these facilities were located within the eight counties in Southern California, while the balance were located elsewhere in the state or in other states. Thirty-eight percent of waste generated in the region was managed in the region, 42 percent was managed in California but outside the region, and 20 percent was managed out of state (*see* Figure 13-2).

Figure 13-1

### Generation of Hazardous Waste in Southern California in 1990

(for recurring wastes sent offsite)

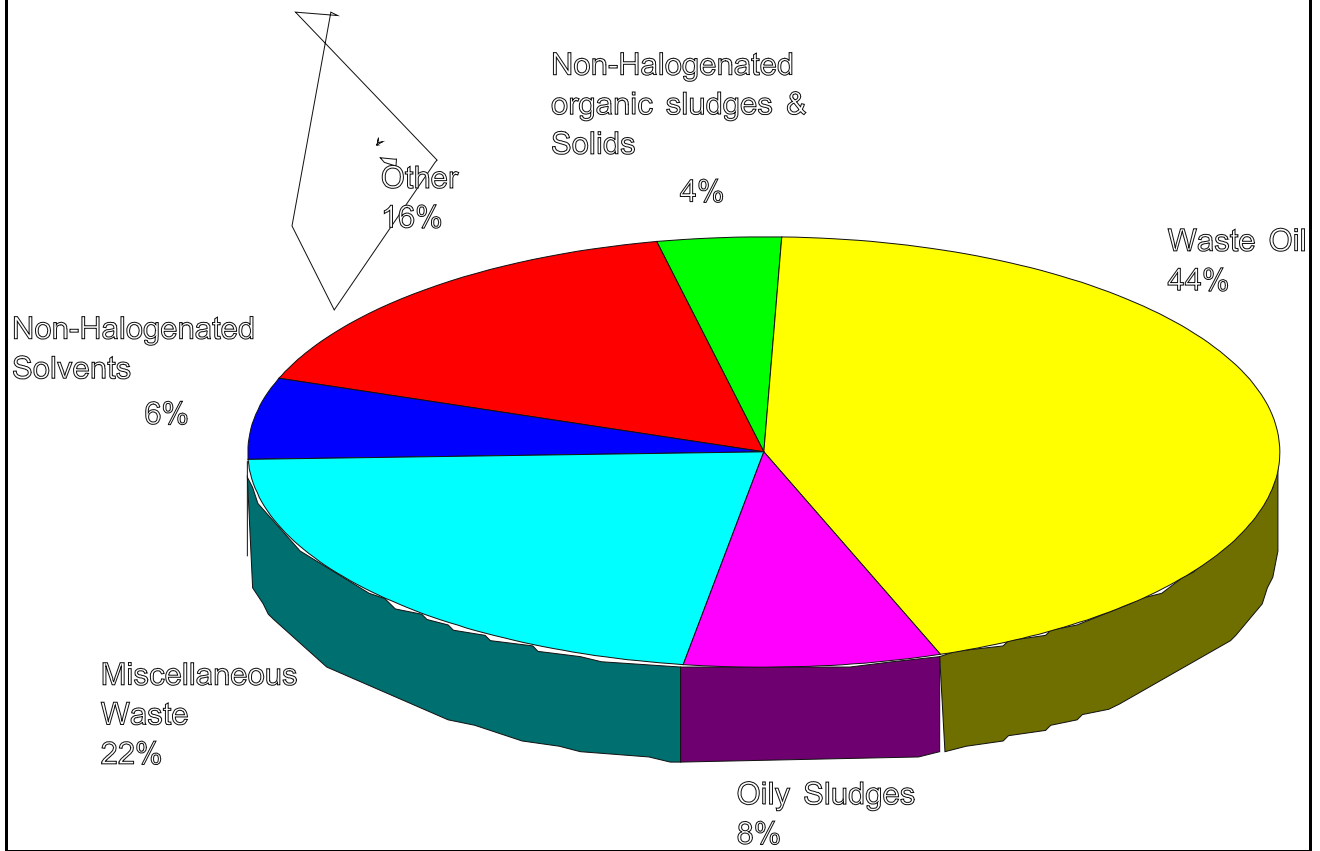
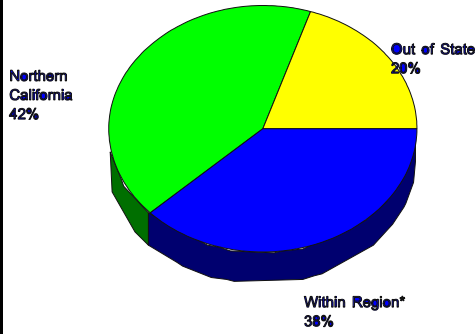


Figure 13-2

**Location of Facilities  
Receiving Hazardous Waste from Region—1990**



\* Includes San Diego and Santa Barbara Counties in addition to the SCAG Region

It is important to note that much of the hazardous wastes generated in the region are shipped directly from a generator to a management facility for final disposition. (Management facilities are commonly referred to as "treatment, storage, disposal and recycling facilities" or TSDRs). Many wastes are sent first to transfer stations. Other wastes are "created" by TSDRs because they collect wastes (primarily waste oils and solvents) from small generators in a "milk-run" and become the generator of record under the state manifest system. The waste generated in the region was managed in a variety of ways. Forty percent of the waste was recycled, 40 percent was managed in a landfill, while 3 percent was sent to a surface impoundment and 3 percent was treated in tanks. Other treatment methods, including incineration, neutralization, and injection wells were also used, but less frequently.

## **H PROJECTIONS OF FUTURE HAZARDOUS WASTE GENERATION IN SOUTHERN CALIFORNIA**

The projections of future hazardous waste generation in this plan are based on employment projections as an indication of industrial activity and, hence, waste generation. Industry-specific projections, such as those based on individual Standard Industrial Codes, are not used because the information was not available on a sufficient proportion of the generators. Thus, for each county, the following formula is used to project hazardous waste generation in 2010.

$$\frac{1990 \text{ Generation}}{\text{Actual Employment in 1990}} \times \text{Projected Employment in 2010}$$

This projection provides the most conservative (i.e., "worst case") scenario in that it assumes that the many efforts industries are making to reduce their hazardous waste generation will be unsuccessful (i.e., it assumes that the rate of hazardous waste generation per unit of industrial or commercial activity remains constant during the 20-year period). Two additional estimates or scenarios of future waste generation were generated by factoring in the potential success of waste reduction efforts by industry. Thus, the analysis evaluated various alternative scenarios of the effectiveness of current efforts by industries to reduce their generation of hazardous wastes.

## **I FUTURE HAZARDOUS WASTE MANAGEMENT CAPACITY**

In comparing projected waste generation to current waste management capacity, the region appears to have adequate capacity for most types of recycling and treatment methods. However, shortfalls in capacity currently exist and will continue to exist in the area of oil recovery and incineration, regardless of whether businesses are able to reduce waste generation by 10 percent or 25 percent. For example, under the 10 percent waste reduction scenario, this analysis estimates that the region will have a capacity shortfall of 70,970 tons for wastes that are required by law to be incinerated. These wastes will have to be transported outside the region or outside the state for proper treatment. In addition, the region is projected to have a shortfall in residuals repository capacity by the year 2010, although the region's currently operating residual repository may expand capacity by then, and several current proposals exist for new residual repositories.

This analysis also shows the distribution of capacity among the counties in Southern California and the current disparity in disposal capacity that exists. In several important waste disposal areas, some counties are providing the bulk of the hazardous waste capacity for the region. For example, Imperial County supplies most of the capacity for waste stabilization in the region. These differences in waste capacity among counties may, in fact, make environmental and economic sense for the region. It represents an increase in large regional facilities,

which reduces the total number of facilities needed in the region and limits the environmental impacts of these facilities. However, such disparities raise questions regarding whether certain counties are providing their "fair share" of the region's waste management capacity.

Several hazardous waste management facilities have been proposed for development in Southern California. These facilities, if approved, would provide considerable additional capacity for the region, particularly in the area of residuals repositories. However, the facility siting process is a long and arduous one, with no guarantee of success. While the proposed facilities may assist the region in meeting its capacity needs, additional regional cooperation and attention toward siting environmentally safe facilities may be necessary.

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## **J REGIONAL HAZARDOUS WASTE POLICIES**

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Several important regional policies arise from an analysis of waste generation in the region. The most critical are regional policies in the areas of waste reduction, fair share, and siting new facilities.

### **1. FAIR SHARE**

The idea of fair share has been central to regional hazardous waste management planning since the inception of the Southern California Hazardous Waste Management Authority. Essentially, the fair share concept asserts that every county in the region should accept responsibility for the management of hazardous wastes in the region in an amount proportional to the hazardous wastes generated within the city or county. The concept does not necessarily mean that each county must have facilities within its borders to manage all of the wastes it generates. The private market will likely direct facility development in certain areas. Furthermore, each jurisdiction may not generate enough of a specific type of waste to need an entire waste management facility for that waste. However, the fair share concept encourages counties that are "net exporters" of hazardous waste at least reach agreements with importing counties regarding intra-county waste disposal.

For each waste treatment category in which there exists a shortage of capacity in the region, this plan uses a formula to determine each county's "fair share" responsibility for providing this needed capacity. Thus, this plan includes fair share "allocations" in the area of oil recovery, incineration, and residuals repositories, the three treatment categories in which regional shortages are projected. These allocations are summarized in Table 13-1.

### **2. SITING NEW FACILITIES**

Hazardous waste management, unlike municipal waste, is primarily a private-sector market. Waste produced by industry is collected, transported, stored, treated, and disposed of by private-sector entities. Thus, governmental action to promote or direct the siting of new facilities must recognize the market-driven nature of the hazardous waste management business.

Despite the private nature of the hazardous waste business, regional governmental cooperation in siting new facilities is important. Such cooperation can help ensure that facility siting decisions are made in the most equitable, environmental, and economically responsible manner.

Table 13-1

**COUNTY FAIR SHARE OBLIGATIONS TO MEET  
2010 DEMAND FOR WASTE CAPACITY**

<u>Region</u> <sup>3</sup>	<u>Fair Share Obligation</u> <sup>1</sup> (Tons per Year)	<u>Facility Implications</u> <sup>2</sup>	
Oil Recovery	195,716	5.6	Inci
Residual Repositories	389,229	1.0	
<u>Imperial</u>			
Oil Recovery	1,957	0.1	
Incineration	107	0.0	
Residuals Repositories	750	0.0	
<u>Los Angeles</u>			
Oil Recovery	0	0.0	
Incineration	37,000	0.6	
Residuals Repositories	222,362	1.5	
<u>Orange</u>			
Oil Recovery	19,180	0.5	
Incineration	6,242	0.1	
Residuals Repositories	39,176	0.3	
<u>Riverside</u>			
Oil Recovery	8,612	0.2	
Incineration	5,869	0.1	
Residuals Repositories	10,102	0.1	

<sup>1</sup>The fair share obligation is equal to the county's share of the total waste capacity shortfall for the region in each treatment category.

<sup>2</sup>Facility implications given for "large" facilities (oil recovery--35,000 tons annual capacity; incineration--65,000 tons annual capacity; residuals repositories--150,000 tons annual capacity).

<sup>3</sup>Includes San Diego and Santa Barbara Counties in addition to the SCAG region.

Table 13-1 (cont'd)

**COUNTY FAIR SHARE OBLIGATIONS TO MEET  
2010 DEMAND FOR WASTE CAPACITY**

(CONT'D)

	Fair Share Obligation (Tons per Year)	<u>Facility Implications</u>
<u>San Bernardino</u>		
Oil Recovery	84,158	2.4
Incineration	4,577	0.1
Residuals Repositories	61,065	0.4
<u>San Diego</u>		
Oil Recovery	72,415	2.1
Incineration	5,868	0.1
Residuals Repositories	45,541	0.3
<u>Santa Barbara</u>		
Oil Recovery	3,914	0.1
Incineration	2,152	0.0
Residuals Repositories	3,943	0.0
<u>Ventura</u>		
Oil Recovery	5,480	0.2
Incineration	2,152	0.0
Residuals Repositories	6,260	0.0

First, regional cooperation can help ensure that counties coordinate their approaches to siting criteria to avoid one county's policies from being significantly more restrictive than another county's policies, thereby leading to inequitable siting decisions. Second, through regional cooperation, general areas for facility development that meet regional needs can be identified.

### **3. WASTE REDUCTION**

Waste reduction goals and programs are included in each of the county plans. SCHWMA, as a regional agency, can play a positive role in implementing these plans. Regional activities will include:

- Supporting strategies that give priority to waste reduction;
- Assisting in information sharing, intergovernmental coordination, and public advocacy;
- Developing a standard definition and reporting format for waste reduction in the region;
- Monitoring county waste reduction efforts; and
- Facilitating intergovernmental cooperation in waste reduction among local government, department of toxic substances control, special purpose agencies, and military institutions.

### **K INTEGRATION OF HAZARDOUS WASTE MANAGEMENT WITH OTHER REGIONAL ISSUES**

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The safe management of hazardous wastes in the region is linked with several other issues covered in the Plan. These links include:

- Water Supply and Quality and Hazardous Waste Management. The most direct link between this chapter and other sections of the RCPG is in the area of water resources and water quality. Providing a safe system of hazardous waste management in the region reduces the likelihood of future groundwater and surface contamination through improper and/or illegal disposal of hazardous wastes. Such protection is critical to ensuring adequate long-term supplies of water to the region as local groundwater and surface water is projected to provide a significant portion of the potable water from the region.
- Open Space and Hazardous Waste Management. The development of needed new facilities in the region will have implications for open space planning in the region. In particular, the siting of new regional hazardous waste management facilities in the desert portions of the region will affect plans for open space preservation in those areas.
- Economic Growth and Hazardous Waste Management. Providing adequate hazardous waste management facilities in the region can reduce waste management and waste transportation costs for area businesses, thereby reducing operating costs.
- Transportation and Hazardous Waste Management. Hazardous waste management is related to transportation in several ways. First, the lack of waste management capacity for some waste categories results in the transportation of hazardous wastes long distances, thereby increasing the risks associated

with such transportation as well as the potential liability of waste generators. The development of needed capacity as described in this chapter will reduce such transportation. Second, the transportation sector is itself a major generator of hazardous wastes. In particular, the generation of used oil, including used motor oils, is directly attributable to transportation. Increases in transportation in the region will increase the generation of used oils which already suffers from a lack of adequate recycling capacity.

- Air Quality and Hazardous Waste Management. There are air quality implications associated with many waste management technologies. In particular, the need for incineration capacity in the region raises air quality issues because of the emissions associated with this technology.