CITY OF DAVIS

HOUSEHOLD HAZARDOUS WASTE ELEMENT

APRIL 1992

91-263

RECYCLED

TABLE OF CONTENTS

APPENDICES

SECTION 1

INTRODUCTION

Household hazardous waste (HHW) is waste that results from products purchased by the general public for household use that may pose a hazard to human health or the environment. Examples include paints, solvents, cleaners, bleaches, pesticides, used motor oil, batteries, chemicals for pool and hobby use, and similar products with toxic properties. The statutory definition of HHW from the California Code of Regulations follows (Title 14, Chapter 9, Section 18720):

> "Household hazardous wastes" are those wastes resulting from products purchased by the general public for household use which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial known or potential hazard to human health or the environment when improperly treated, disposed, or otherwise managed.

Improper disposal of HHW such as pouring it down the drain, pouring it on the ground, or throwing it in the garbage can result in disruption of wastewater systems, damage to environmentally sensitive groundwater, or injury to sanitation workers. For these reasons the State of California is requiring communities to inform citizens of the problems these products pose and to provide them with an opportunity for their proper disposal.

If there were only a few households disposing of HHW, it would not be much of a problem. But there are over 11 million households in the State of California, and the total accumulation of HHW is significant. Without reducing the amount of HHW in the waste stream, the concentration of toxic constituents would increase because of the reduction of other solid waste. Additionally, municipal landfills (Class III) are prohibited from accepting any form of hazardous waste. Much the way sewer systems and sanitary landfills were introduced to address health needs of other eras, household hazardous waste management programs are addressing the needs of today.

California State law has been actively addressing these issues. Assembly Bill 939 (AB 939) addressed reduction of solid wastes entering State landfills and required a Household Hazardous Waste Component within the Source Reduction and Recycling Element (SRRE). Because of the significance of HHW beyond its small percentage of the total waste stream, AB 2707 elevated that component to a separate Household Hazardous Waste Element (HHWE). Other recent legislation has allowed "small quantity commercial source" participation in HHW collection programs (AB 2641), and AB 2597 has encouraged the collection of recyclable HHW. These latter three bills all took effect January 1, 1991.

This Household Hazardous Waste Element is being prepared under the proposed regulations required by AB 2707. The California Integrated Waste Management Board (CIWMB) has

issued draft regulations for Title 14, Chapter 9, Articles 6.3 and 7 of the California Code of Regulations, pertaining to the preparation of HHWE's. These regulations are subject to change prior to final approval, which could result in changes to this HHWE.

The City should be aware of the following statutory requirements and criteria of AB 2707 (Section 41802 of the Public Resources Code):

1. The CIWMB (the Board) must approve or disapprove the City's HHWE within 120 days of receiving it.

2. The Board shall not disapprove the HHWE if the City preparing the element demonstrates that the following requirements will be complied with:

   a. The City will use feasible methods to properly reduce, collect, recycle, treat, and dispose of HHW generated within its jurisdiction.

   b. The City will devote reasonable expenditures to safe reduction, collection, recycling, treatment, and disposal of HHW.

   c. The City will make all reasonable efforts to inform the public of, and encourage participation in, the HHW program.

   d. The HHW collection program is available for use by all households within the jurisdiction of the City.

3. The Board will approve or disapprove the City's HHWE based on (1) the geographic size and population of the City and (2) the quantity of HHW generated within the City. A City may be exempt from the requirements set out above if the City can convince the Board that compliance is not feasible due to the small size of the City and the small quantity of waste generated within the City.

4. Not less frequently than every two years, the Board shall review the City's HHWE, and if the Board finds that the City has failed to implement the HHWE, the Board shall issue an Order of Compliance with a specific schedule for compliance (Section 41825 of the Public Resources Code)

The focus of AB 2707 and the format of this HHWE deals with the solution of the HHW problem from a local and regional perspective. The City of Davis feels that this HHWE is also an appropriate forum to point out the possibilities for solutions implemented through higher levels of government involvement. Specifically, funding support could be facilitated through the imposition of advance disposal or recycling fees paid at the point-of-purchase on products that should not be disposed of in the municipal waste stream. It makes more

economic sense for these costs to be born by the consumer of the product rather than by the taxpayer and society as a whole. An alternate approach might involve regulating the toxicity of products when less toxic alternatives are available, although the advance disposal fee could use market forces to achieve the same objectives by giving less toxic products a competitive advantage through exemption from the fee. In order for such an advance disposal fee to work it would have to be implemented on a state or federal level to keep consumers from taking their business to the adjacent community. The collected fees would form a pool of funds that would be distributed to communities with HHW collection programs, similar to the distribution of AB 2448 grants by the CIWMB. Another example of successful State involvement in the management of HHW are California's statutes encouraging the recycling of lead-acid batteries, used motor oil and other recyclable HHW through both public and private channels.

Programs that involve the handling, storage, transportation, and disposal of hazardous waste expose the operator of the program to legal liability for polluting the environment. The U. S. District Court for the Central District of California ruled on December 4, 1990 that municipalities are not exempt from Superfund liability for contamination caused by HHW originating from their jurisdictions just because HHW is excluded from regulation by the Resource Conservation and Recovery Act (RCRA). This ruling is based on a suit against 29 municipalities in Los Angeles County that were sued for their contribution to the contamination of a landfill based on the fact that their garbage included HHW. It is likely that the existence of a HHW management program to divert the HHW from the waste stream will reduce a jurisdiction's potential liability in similar circumstances.

This case also opens the possibility that the City could be a liable party if the Class I (hazardous waste) landfill that received the HHW from their HHW management program were to become a Superfund site. This is mentioned to emphasize the importance for a jurisdiction to understand hazardous waste management laws such as RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), and to understand the implications of responsibility these laws have for the City as a generator of hazardous waste. It is important that manifesting procedures are followed closely to confirm that any disposed of HHW arrives at its intended destination.

For purposes of monitoring and evaluation it is important that each community categorize its HHW in a similar fashion. The CIWMB has chosen the following categories for record keeping purposes:

* **Flammable** - Flammable wastes include fuels, oils, solvents, thinners, aerosols, paints, solvent-based polishes, solvent-based adhesives, etc.

* **Pesticides** - Pesticides are poisons and include insecticides, herbicides, fungicides, rodenticides, etc.

* **Corrosives** - Corrosives are acids and bases and include ammonia-based cleaners, caustic sodas, oven cleaners, drain openers, lye, and acids, both oxidizing and non-oxidizing.

* **Oxidizers** - Oxidizers include bleach, peroxides, pool chlorine, etc., but do not include oxidizing acids.

* **Miscellaneous** - Miscellaneous includes batteries (lead-acid and dry cell) and mercury.

The Department of Toxic Substances Control (DTSC) is in the process of streamlining the permit process for HHW collection alternatives by implementing permit-by-rule (PBR). PBR would substitute the issuance of a permit with a procedure in which the operator of a collection program would maintain complete documentation of compliance with appropriate regulations. An application would still be submitted to the DTSC prior to implementation, and DTSC would have a specified period of time to approve or deny the application, or require more information.

SECTION 2

GOALS AND OBJECTIVES

It is the purpose of this HHWE to identify, evaluate, and select a household hazardous waste management program for the City of Davis that will:

* Eliminate illegal HHW disposal in the municipal solid waste stream and the environment through an integrated HHW management program that includes source reduction, public education, HHW collection, and municipal solid waste stream monitoring.

* Divert HHW from the municipal solid waste stream with a collection program that is convenient for area residents and will ensure the safe recycling or disposal of the collected waste.

* Minimize the amount of collected waste sent to hazardous waste (Class I) landfills through a HHW management hierarchy of reduction, reuse, recycling, and treatment or incineration programs whenever financially feasible.

* Reduce the amount of HHW generated by residents (source reduction) by encouraging the use of less toxic or nontoxic alternatives to toxic household products.

* Maximize the success of the program through an educational program that keeps the public informed of the need for the proper use and disposal of household toxic products, and of their disposal options, including the option of using up the product or giving it away to someone who can use it.

* Minimize the City's legal liability for environmental pollution by managing a legally sound HHW program in a competent and responsible manner. Proper monitoring and evaluation of the program is crucial in this regard.

Program objectives are identified for the short-term planning period and the medium-term planning period. The short-term planning period runs from January 1, 1991 to January 1, 1995. The medium-term planning period runs from January 1, 1995 to January 1, 2000.

Short-Term Planning Period

The above goals will be met by meeting the following objectives during the short-term planning period:

* Increase the annual participation by City residents in HHW collection programs through the short-term planning period.

* Work with the County in planning a dedicated HHW collection site

* Increase local options for the collection of recyclable HHW

* Implement a public education program that encourages the use of nontoxic or less toxic alternatives to toxic household products, and includes a component for the public school system to ensure long-term results

* Implement a monitoring program that maximizes the safety and integrity of all collection programs available to City residents

* Apply for grants to implement a pilot program for collection of small quantity commercial source hazardous waste

Medium-Term Planning Period

The objectives for the medium-term planning period will include the following:

* Increase the proportion of first-time participants and decrease the proportion of repeat participants in HHW collection events as a measure of success of source reduction programs. Fiscal year 1992-93 will serve as a benchmark for comparison and improvement should be noted by late 1996.

* Work with the County in planning a permanent HHW collection facility

* Refine collection programs implemented during short-term planning period

* Continue educational and monitoring programs implemented during the short-term planning period

* Consider small quantity commercial source participation in any locally run collection program

SECTION 3

EXISTING CONDITIONS

Residents of the City of Davis currently have the option of participating in periodic collection events that are held on a regular basis at a familiar and convenient location within town. These events are held at Davis Waste Removal's material recovery facility. During the fiscal year 1990-91, six events were held there. Two of the HHW drop-off events were co-sponsored by the City and County and were open to all Yolo County residents. Three HHW drop-off events and one paint drop-off were sponsored by the City and open to City residents only. Davis residents also had the option to participate in two additional events open to all County residents that were held in Woodland and West Sacramento.

City residents have two options to drop off recyclable HHW. Used motor oil is collected on an ongoing basis at the aforementioned material recovery facility in Davis, and used motor oil and spent lead-acid batteries are collected at the Yolo County Central Landfill, about two miles outside of town. The latex paint, used motor oil, and spent lead-acid batteries that are collected are recycled. Oil-based paint and solvents are incinerated in a fuel-blending program, and aerosols are incinerated out of state. The remaining wastes are landfilled in a Class I landfill.

Residents of the City are kept informed of upcoming collection events through a multi-faceted education program. Notification of periodic events is made by placing two or more advertisements in the local newspaper one to two weeks prior to each event. The paper features a weekly column written by the City's recycling coordinator, and HHW collection events are mentioned beforehand. Brochures and flyers are distributed at City events such as the yearly Street Fair, Fourth of July festivities, and Public Works Day. The Yolo County Department of Public Works has recently begun publication of "Garbage Talk," a quarterly newsletter that addresses HHW, recycling, and other solid waste issues. Source reduction is addressed by distribution of "Household Hazardous Waste Wheels" or the ."Household Hazardous Products" brochure from the Department of Toxic Substances Control (DTSC) at HHW collection events. Participants at the HHW collection events are requested to fill out a HHW questionnaire.

There are approximately 18,148 households in the City of Davis. Based on the Waste Generation Study, approximately 78 tons per year of HHW are disposed of by residential sources in the City. The annual disposal rate for the residential and commercial sectors combined is approximately 84 tons. The latter figure represents 0.7 percent of the municipal waste stream. Approximately 27 tons of HHW were dropped off by Davis residents at periodic drop-off events sponsored by the City and the County during fiscal year 1990-91. An additional 67 tons of used motor oil were dropped off at Davis Waste Removal's yard, for a total of 94 tons per year of HHW diverted by Davis residents.

There are several ways that HHW can be illegally disposed of, including disposal in the waste stream, pouring down storm drains and sinks, or pouring in streambeds or roadside. At least a couple of times a year the City Department of Public Works must clean used motor oil contamination from storm drain catch-basins. The only quantifiable estimate of illegal HHW disposal is the amount disposed of in the municipal solid waste stream, or 84 tons per year by residents of the Unincorporated Area according to the Waste Generation Study.

A hazardous waste exclusion program is in effect at the Yolo County Central Landfill where the City of Davis's refuse is ultimately disposed. Signs are posted at the entrance to the landfill indicating acceptable and nonacceptable wastes. A load-checking program randomly selects five loads per week for thorough inspection at the working face. All of the landfill's clients are subject to inspection, and trucks may be selected at any hour or day that the landfill is open. When hazardous waste is discovered that can be traced to its generator, the generator is notified to retrieve it. If the type of waste is unknown, the County Department of Environmental Health is notified for identification. If the generator cannot be identified, the County provides proper recycling or disposal. HHW that is discovered is disposed of by the County's HHW collection program.

In most cases, when the generator of the waste is identified and the infraction appears to be a result of carelessness, the generator is given a warning and provided with educational material. If the dumping is determined to be either malicious or intentional, the offender is prosecuted. A recent example of this involved a trucking company that attempted to dump ten 5-gallon containers of formaldehyde at the landfill. An employee had warned the company that this was illegal, but an attempt was made to conceal the chemical with other debris. The landfill was notified by the employee, the waste was discovered during unloading, and the trucking company was prosecuted by the District Attorney's office. A hazardous waste management firm was called to properly dispose of the formaldehyde.

Another aspect of the landfill's hazardous waste exclusion program is predisposal evaluation. In this case a client will have potential waste analyzed prior to disposal to determine its toxicity. Soils and sludges of questionable appropriateness are regularly analyzed prior to disposal, and clients that drop these off on an ongoing basis must have samples analyzed frequently enough to represent a valid statistical sample.

All fire fighters and waste haulers undergo annual training on the recognition and proper handling of hazardous waste, and HHW that is discovered during the curbside collection of refuse is left behind and tagged with instructions for proper disposal at HHW collection events.

SECTION 4

EVALUATION OF ALTERNATIVES

The purpose of this section is to provide a decision-making apparatus for designing an integrated HHW management program. For each component needed for a successful program, a series of workable alternatives are presented to facilitate selection by the City. Each alternative is evaluated by a series of criteria such as its effectiveness, ease of implementation and cost, etc. For the most part, the basis for these evaluations are similar programs operated in other parts of the state. This section is divided into subsections corresponding to those components needed for a successful program, which are listed below. Education and public information preferred alternatives are found in Section 8.3.

* Recyclable HHW alternatives
* Collection alternatives
* Monitoring alternatives

4.1 RECYCLABLE HHW ALTERNATIVES

The California Integrated Waste Management Board (CIWMB) recognizes the importance of recycling in diverting solid waste from the landfill; instead of being a waste, it becomes a raw material. The recycling of HHW has the added advantage of removing hazardous wastes from the waste stream and the environment. To facilitate the collection of recyclable HHW, the State of California has enacted legislation (AB 2597), that eliminates the need for Department of Toxic Substances Control (DTSC) permits for HHW collection programs that target specific categories of recyclable HHW. Those categories include:

* Latex paint
* Used motor oil
* Used antifreeze
* Spent lead-acid batteries
* Small household batteries

In order to qualify for the permit exemptions, no other HHW may be received and handled other than those listed above, and all HHW collected must be transported to a recycling facility. For this reason, these will be the only types of recyclable HHW to be considered for the collection alternatives listed below that focus on recyclable HHW. It is also recommended that small household batteries not be included in any program for recyclables that the City of Davis plans to undertake. There is no proven and available recycling technology for the majority of household batteries, including the alkaline types; therefore, their collection could jeopardize the status of the program.

Criteria for evaluating the above recyclable HHW alternatives will be considered in the first four collection alternatives for recyclable HHW that follow.

4.2 COLLECTION ALTERNATIVES

Household hazardous waste collection can be handled on different jurisdictional levels; municipal, regional, or county-wide. Planning on a lower jurisdictional level means more local control. Convenience for the public is also increased due to shorter travel distances and more familiarity with drop-off sites. Planning on a more local level also requires less coordination of government agencies, which means programs can be developed with shorter lead times; however, hazardous waste management can be an expensive service to provide. Involvement of higher jurisdictional levels may be necessary to provide required fiscal resources and some economy of scale. Participation within a larger geographic area can be helpful from the standpoint of public education by making the subject more interesting to mainstream media.

This HHWE considers nine HHW collection alternatives for diverting hazardous waste from the waste stream. The alternatives are listed in the order of appropriateness for immediate implementation. This usually corresponds to a more local level of planning and control. Those alternatives that would require more extensive planning and coordination are listed towards the end of the list. The nine collection alternatives follow:

* Curbside collection of used motor oil
* Point-of-purchase collection of recyclable HHW
* Periodic collection days for recyclable HHW
* Expanded collection of recyclable HHW
* Temporary HHW collection facility
* Permanent HHW collection facility
* Small quantity commercial source participation
* A mobile facility visiting temporary collection sites
* Door-to-door HHW collection

Laws regulating transportation of HHW to collection events should be noted at this time. California residents are allowed to transport up to 50 pounds or 5 gallons of HHW without a hazardous waste manifest, as long as they are the generator of the waste and it is being transported for recycling or proper disposal. Exceptions to this law include some items considered to be recyclable HHW. Up to 20 gallons of used motor oil can be transported at one time, providing the maximum container size is 5 gallons. Transportation of ten or fewer lead-acid batteries is unregulated.

Collection Alternative 1. Curbside Collection of Used Motor Oil

This collection alternative consists of adding used motor oil to the materials collected by a curbside recycling program. Residents would leave their used motor oil from do-it-yourself automotive maintenance projects at the curb with their other recyclables on pickup days. Containers for the used oil could either be supplied by the participant or the operator of the program. In some jurisdictions participants supply their own well-sealed plastic containers, which must be disposed of as a hazardous waste after use. Other programs supply reusable containers when requested by participants. When a full container is picked up, an empty container is left in its place. Curbside collection of used oil has proven to be a cost-effective means of diverting HHW from the waste stream for communities with a curbside recycling programs.

This alternative may be adaptable for collection of other recyclable HHW as well. The primary concern for the operator would be the utilization of suitable containers to protect the public and their pets from the toxic constituents of the collected materials. The increased toxicity associated with nonrecyclable HHW such as oxidizers, pesticides, and corrosives would make their collection overly hazardous. Storage and disposal considerations also exceed those of recyclable HHW.

Effectiveness

The ongoing regular collection schedule of a curbside collection program adds to the effectiveness of this alternative. Used motor oil usually makes up the majority of HHW collected by communities with both periodic drop-off days (Collection Alternative 5) and curbside collection of used motor oil. The City of Sunnyvale, with approximately 40,000 households, collected 34,000 gallons of oil through its curbside collection program in 1990, or about 0.85 gallons per household. The City of Davis collected 17,785 gallons of oil at their ongoing drop-off at the Davis Waste Removal yard, or 0.98 gallons per household. It is not likely that implementing this alternative could significantly improve on existing levels of waste oil recycling.

Hazards

Hazards exist in the handling of used motor oil and other recyclable HHW. Spilled oil should be treated as a hazardous waste. Hazards can be minimized by the use of the proper containers. Brief external exposure to human skin is usually not harmful if washed with soap and water.

Ability to Accommodate Change

This collection alternative is able to accommodate changing conditions because used motor oil is a small percentage of the total amount of recyclables that are collected.

Consequences on Waste Stream Composition
Implementation of this alternative would result in less used motor oil entering the waste stream.

Ability to be Implemented
As an additional material to be added to an existing curbside program, this alternative could be implemented within six months.

Need for Facilities
For an existing curbside program, a storage tank with secondary containment would be necessary at the material sorting facility. Program administrators or operators may decide that uniform containers would minimize hazards or facilitate implementation, in which case suitable containers would be distributed to those who requested them.

Consistency with Local Policies, Plans and Ordinances
Section 252.50.15 of the Health and Safety Code exempts curbside collection of used motor oil from the requirements of hazardous waste storage.

Institutional Barriers to Implementation
Liability would be assumed by the franchising agency or hauler.

Costs
A 1,000-gallon double-walled steel storage tank costs about $5,000. Disposable containers designed for used oil collection cost about $1.00 each. One gallon HDPE milk containers with screw caps are available for about $0.21 each and can be used three or four times, but two containers are usually necessary since most automotive crankcases contain more than one gallon of oil. The extra time for the collectors to pickup and empty the used oil is estimated to cost an additional $10,000 per year. Container costs are estimated at $2,000 per year using the HDPE milk containers.

Market Availability
A market exists for used motor oil, and its value fluctuates with market conditions. Sometimes municipal recycling programs are paid for the oil collected and sometimes must pay to have it taken away. Favorable terms are sometimes dependent on the operator accepting responsibility for proper disposal of a contaminated load. In general, addition of used motor oil to a residential recycling program is revenue neutral.

Collection Alternative 2. Point-of-Purchase Collection of Recyclable HHW

There are a number of variations of this alternative, depending on the material being collected and on whether the participation of the retailer is mandatory or voluntary. Two specific examples follow, but other variations would also be possible. In one example, service station

operators would be required to accept used motor oil from the public for a minimum charge. The service stations would also be required to submit a plan for the proper handling, storage, and recycling of the collected oil. In the other example, purchasers of latex paint would be able to return their leftover paint for recycling to the store at which it was purchased. This example is based on a proposed state law (AB 2178), and participation by the retailer would be voluntary. Participation could result in a competitive advantage for a participating retailer, encouraging other retailers to follow suit.

Another variation of this alternative is an existing condition throughout the State of California. The State requires retailers of new lead-acid batteries to accept spent batteries as trade-ins.

Effectiveness

With proper education, consumers have shown a willingness to participate in recycling programs. Collection of recyclable HHW has proven to be an efficient means of diverting HHW from the waste stream. Familiar locations and the regular hours that retail outlets are open should make this a convenient alternative for the public, and to help make it an effective collection alternative. It is unlikely that utilizing service stations to collect used oil from do-it-yourselfers would significantly improve on the City's existing used oil collection.

Hazards

Hazards exist in the public's handling and transportation of even small quantities of HHW. Educational materials should emphasize the need for safe handling and transportation procedures. Retail outlets would be handling the same materials that they handle on a daily basis, so hazardous conditions in the stores should not increase.

Ability to Accommodate Change

Used oil collection at a service station would be utilizing facilities and techniques already in use. Changes in amounts of oil being collected would be dealt with by increased collection by oil recyclers. Retailer collection of latex paint for recycling would involve more of a change in current operating procedures. The retailer might be overwhelmed by increasing amounts of paint brought in for recycling, either by insufficient storage space or inadequate recycling capacity.

Consequences on Waste Stream Composition

This alternative would result in a reduction of HHW entering the waste stream.

Ability to be Implemented

This alternative could be implemented during the short-term planning period. Implementation time could be less than a year.

Need for Facilities

This alternative would utilize existing facilities.

Consistency with Local Policies, Plans and Ordinances
The ability for paint retailers to accept leftover latex paint may be dependent on legislation exempting the retailers from hazardous waste storage regulations. Such a variance exists for used oil recycling programs.

Institutional Barriers to Implementation
Institutional barriers to implementation are not apparent at this time.

Costs
Businesses involved in implementing this alternative would be expected to charge for the services offered.

Market Availability
Market availability is the responsibility of the participating retailers with this alternative. Markets exist for recyclable HHW and are examined in more detail in subsequent collection alternatives for recyclable HHW (Collection Alternatives 3 and 4).

Collection Alternative 3. Periodic Collection Days for Recyclable HHW

On a well-publicized date, residents are urged to bring their recyclable HHW such as used motor oil, latex paint, and spent lead-acid batteries to a temporary location where it is collected by County employees, community volunteers, and employees of the recycling companies involved. At the end of the day, the collected HHW is removed by the recyclers. For promotional purposes, this event could be referred to as a "Roundup for Recyclables," or "Bop Drop" (batteries, oil, paint).

Effectiveness
In terms of the gross weight of HHW collected, this is a moderately effective means of collection. The primary limitation to its effectiveness is its periodic nature. Used motor oil, spent lead-acid batteries, and latex paint often make up a majority of all HHW collected at HHW collection events held in other parts of the state. Disposal options are not provided for more toxic wastes, such as solvents, pesticides and corrosives, that would remain a potential hazard in area households.

The effectiveness of this alternative depends on the frequency of events and the level of public awareness. Regularly scheduled events held at predictable times have more potential to for lasting impact than single day "media events."

Hazards
Hazards exist in the handling and transportation of even small quantities of HHW. For recyclable HHW, lead-acid batteries represent the biggest hazard to the handler due to the possibility of an acid spill. Educational materials should emphasize the safe handling and

transportation of HHW to the collection site. Relative to other types of HHW, this type of program presents a low level of hazard because of the relatively low toxicity of the wastes collected.

Lead-acid batteries that are cracked or missing caps are a particular hazard. They should only be handled with rubber gloves, and should be stored in a double thickness plastic bag. Recycled latex paint may have a higher concentration of mercury than the latest formulations. For that reason it is appropriate for exterior use only.

Ability to Accommodate Change

Periodic collection days are readily able to accommodate change because of their inherent flexibility. No permanent facilities or staffing are necessary, and changes in markets or regulations could be accommodated by adding to or deleting the types of waste collected.

Consequences on Waste Stream Composition

A slight increase in empty paint cans disposed of in the landfill might occur. A reduction of lead-acid batteries, latex paint, and used motor oil from the municipal waste stream would result.

Ability to be Implemented

This alternative can be implemented in the short-term planning period, within a few months.

Need for Facilities

No permanent facilities are needed. A large open paved area with good potential for efficient traffic flow will be needed to conduct the event.

Consistency with Local Policies, Plans, and Ordinances

The latex paint that arrives in gallon containers must be "bulked," or transferred to 55-gallon drums for transport to the recycler. The empty cans must be allowed to dry before they can be deposited in the local landfill, which may present a conflict with the Yolo/Solano Air Pollution Control District (APCD). Since the major latex paint recycler requires the municipality to accept the return of the recycled paint collected, local policy requiring the purchase of recycled latex paint for municipal projects could facilitate the implementation of this alternative.

Institutional Barriers to Implementation

Liability would be assumed by the implementing agency or the recyclers.

Costs

A one day event should cost the County about $3,500. This figure is based on a price estimate by a contractor who would supply 6 laborers for 9 hours at $35 per worker-hour, $2,000; and an estimated 450 gallons of paint collected (1.5 gallons of paint for each of the approximately 300 participating households that typically participate in Yolo County events), at $3.00 per gallon for recycling and transportation, $1,350; and miscellaneous expenses, $150.

Market Availability

The market for spent lead-acid batteries and used motor oil is well established. Spent lead-acid batteries are worth about $1.00 each. The value of used motor oil fluctuates with market conditions; sometimes municipal recycling programs are paid for the oil that is collected and sometimes must pay to have it taken away. Favorable terms are sometimes dependent on accepting liability for proper disposal of a contaminated load (as a hazardous waste at great expense).

At least three companies in California are involved in recycling latex paint and willing to expand their involvement (Appendix I). One company is a HHW management firm that recycles latex paint that is collected at events where they are the contractor. They then market the paint themselves. The other two companies recycle paint collected by HHW collection programs and usually require the sponsor to accept the return of the recycled paint. Local paint manufacturing companies should be contacted to see if they would be interested in participating in this emerging field. Recycling costs are generally less than $3.00 per gallon, but transportation, container, and dilution policies can all affect the final cost. If the recycler only accepts the best collected paint for recycling, then the unacceptable paint must be disposed of as a hazardous waste. This can either increase the cost of the program or jeopardize the program's permit-free status accorded by AB 2597, since not all the material collected is recycled.

Markets exist in California for the recycling of silver oxide, and to a lesser extent, mercuric oxide button style batteries. Differentiation of different types of button style batteries can only be determined by minute markings on the back, which makes separation difficult. Rechargeable nickel cadmium (nicad) batteries are recycled in Europe, but nicads are often built into the appliance and are difficult to remove. The other types of household batteries have no recycling value at this time, other than that of scrap metal in the Far East, where eventual environmental liabilities are uncertain.

Collection Alternative 4. Expanded Collection of Recyclable HHW

Davis residents may currently drop off used motor oil at the Davis Waste Removal yard in town or may drop off used motor oil and lead-acid batteries at the Yolo County Central Landfill at any hour the landfill is open. This alternative calls for adding used antifreeze to the list of recyclable HHW that is accepted at the landfill during operating hours. Additionally, leftover latex paint would be accepted by appointment during limited hours that would allow for material monitoring by trained staff. This alternative would require an increase in facilities and staff time. A storage tank for the anti-freeze and a storage shed for the latex paint would have to be added to the current waste oil storage tank and battery storage shed.

Additional staff time would be necessary to monitor the latex paint. The monitoring would be necessary to confirm that it is latex paint and not oil-based paint. By inadvertently accepting

oil-based paint the landfill would be jeopardizing its permit-free status accorded by AB 2597 and be subjected to the higher costs of hazardous waste disposal rather than recycling. If oil-based paint were brought in by mistake, the client would be informed of the schedule of HHW collections and asked to bring it back at one of those times. Staff time would not be used for the consolidation, or bulking, of the latex paint from its original, small containers into 55-gallon drums for transportation to the paint recycler. Instead, consolidation would be done during the next HHW collection event by the hazardous waste contractor. The collection events would be at the same location as latex paint collection and storage; the YCCL.

Effectiveness

In terms of the gross weight of HHW collected, this is an effective means of collection. Used motor oil, spent lead-acid batteries, and latex paint often make up a majority of all HHW collected by HHW collection programs held in other parts of the state. The fact that it is an ongoing program with a regular schedule of collection adds to its effectiveness.

Hazards

Hazards exist in the handling and transportation of even small quantities of HHW. For recyclable HHW, lead-acid batteries represent the biggest hazard to the handler due to the possibility of an acid spill. Educational materials should emphasize the safe handling and transportation of HHW to the collection site. Relative to other types of HHW, this type of program presents a low level of hazard because of the relatively low toxicity of the wastes collected. However, disposal options are not provided for more toxic HHW, such as pesticides and corrosives, that would remain a potential hazard in area homes.

Lead-acid batteries that are cracked or missing caps are a particular hazard. They should only be handled with rubber gloves, and should be stored in a double thickness plastic bag. Recycled latex paint may have a higher concentration of mercury than the latest formulations. For that reason it is appropriate for exterior use only.

Ability to Accommodate Change

This alternative is a bit less flexible because of its need for permanent storage facilities. A staffing commitment on a regular basis would also be needed, but the hours of collection could be altered to accommodate changes in public demand or budgetary constraints.

Consequences on Waste Stream Composition

A slight increase in empty paint cans disposed of in the landfill might occur. Reduction of lead-acid batteries, latex paint, used motor oil, and antifreeze from the municipal waste stream would result.

Ability to be Implemented

Additional materials could be added to existing the program in the short-term planning period.

Need for Facilities

A storage tank that meets state and local code would be necessary for the antifreeze. A double-walled polyethylene tank of 100- to 200-gallons would be ideal, but a weather-protected 55-gallon drum in a secondary containment vessel my be adequate on an interim basis. A storage shed is necessary to provide security and secondary containment for the paint. Sufficient paved area for access by the public and the recyclers' collection trucks must also be available.

Consistency with Local Policies, Plans, and Ordinances

The latex paint that arrives in gallon containers may have to be "bulked," or transferred to 55-gallon drums for transport to the recycler. The empty cans must be allowed to dry before they can be deposited in the local landfill or be shipped for recycling, and this may present a conflict with the Yolo/Solano Air Pollution Control District (APCD). A local policy requiring the purchase of recycled latex paint for municipal projects could facilitate the implementation of this alternative.

Institutional Barriers to Implementation

Liability would be assumed by the implementing agency or vendor. The increased costs involved could create opposition by taxpayers or agencies.

Costs

Capital costs would be about $4,000. Facility needs include one prefabricated steel storage shed, $3,000; and one 210-gallon tank for antifreeze, $700.

Operating costs of this alternative are estimated to be between $9,000 and $14,000 per year. Labor cost estimates are based on 5 employee-hours a week. Using a base pay rate of $13.00 per hour including benefits, this amounts to $3,500 per year. Administrative costs are estimated to be $1,200, based on one week's compensation per year for the Waste Reduction/Recycling Coordinator ($29 per hour including benefits and overhead). Paint processing and other recycling costs are estimated to be between $4,000 and $9,000 per year. The former figure is arrived at by assuming that approximately as much latex paint will be collected by this program as the amount collected by the County sponsored collection events during fiscal year 1990-91. The latter figure assumes that half as much latex paint will be dropped off as used motor oil at the recycling center at the landfill during fiscal year 1990-91.

Market Availability

Markets are available for recyclable HHW and are covered in detail under Market Availability for Collection Alternative 3. The Yolo County hierarchy of HHW waste disposal requires that all recyclable HHW be recycled.

Collection Alternative 5. Temporary HHW Collection Facility

The City of Davis and Yolo County have been co-sponsoring periodic collection events since 1985. While these types of events are included in draft PBR regulations for temporary household hazardous waste collection facilities (THHWCF), this alternative examines the selection of a dedicated location and regular schedule for county-wide HHW collection events. All types of HHW would continue to be collected, and a licensed hazardous waste management firm would be retained to provide the necessary level of expertise and trained personnel (Appendix I). Collected HHW would not be stored at the site, but would be removed for recycling, destruction, or disposal at the end of each event along with load-check hazardous waste from the County's hazardous waste exclusion program.

The site for this temporary HHW collection facility would be at a proposed recycling storage facility at the Yolo County Central Landfill (YCCL). This is envisioned as a 60- by 70-foot enclosed steel structure with a concrete floor that could also be used as a temporary HHW collection facility. Unloading HHW from participants' cars, sorting, bulking, and lab packing would take place in designated, covered areas. Full drums would be segregated from other activities for storage prior to loading into trucks.

It is likely that seven HHW collection events per year will be scheduled. This would allow collection during consecutive months during spring and fall, when participation at HHW collection events is typically high. During the rest of the year there would be a maximum of two months between collection events. Permit-by-rule regulations permit a site to be utilized for up to two days collection once per calendar month.

Members of the public would drive to the facility at the YCCL, and after they filling out a short questionnaire, their wastes would be removed by trained personnel. Manifests would be completed during consolidation and lab packing to identify the contents of the drums in case of an emergency during transport, and to create a "paper trail" to ensure the safe disposition of the wastes. *Draft regulations drawn up by the DTSC limit the use of one site to two* consecutive days of collection once per calendar month.

The vendor contracted to run the collection events will also manage hazardous wastes pulled from the waste stream and stored as a part of the County's hazardous waste exclusion program. This load-check waste will be consolidated, lab packed, and shipped by the hazardous waste management firm concurrently with the HHW collection events.

Effectiveness

This alternative would provide the public with an increased number of regularly scheduled opportunities to drop off their HHW. The increased scheduling convenience should improve program effectiveness. This alternative provides the public with the opportunity to dispose of their HHW safely, to keep it out of the landfill, and to reduce the risks of long-term storage and improper disposal of HHW.

Hazards

The types of HHW handled at these events are more hazardous than those handled in the collection days for recyclables. When these materials are handled correctly by a licensed hazardous waste management firm, the hazard to the public is very low. The public's maximum exposure to hazard is during handling and transportation to the collection site. Publicity materials should emphasize safe handling and transportation procedures. The removal of the more toxic wastes from the waste stream, and their removal from homes, will result in a net reduction of hazards.

Ability to Accommodate Change

Since the structure considered for this alternative would have another primary use, HHW collection activities could be moved to a permanent facility built as a part of a future material recovery facility (MRF) at another location in the future.

Consequences on Waste Stream Composition

A reduction of hazardous wastes in the municipal waste stream would result.

Ability to be Implemented

This alternative could be implemented in about a year, well within the short-term planning period.

Need for Facilities

A permanent facility is not required by this alternative, but the recycling storage facility that is planned for the landfill would offer weather protection for participants and staff. The recycling storage facility is envisioned as a 60- by 70-foot enclosed steel structure with a concrete floor that could also be used as a temporary HHW collection facility. Unloading HHW from participants' cars, sorting, bulking, and lab packing would take place in designated, covered areas. Full drums would be segregated from other activities for storage prior to loading into trucks.

Consistency with Local Policies, Plans, and Ordinances

Draft permit-by-rule (PBR) regulations have been developed by the DTSC to facilitate implementation of temporary HHW collection facilities. The program operator will submit a permit-by-rule notification form to the DTSC at least 45 days prior to collection events. The County's General Plan permits additional land uses at the landfill that are not harmful to the continued operation of the landfill. Such additional uses require a Conditional Land Use Permit from the County.

Institutional Barriers to Implementation

The County's Hazardous Waste Management Plan acknowledges the need for a HHW management program. This alternative represents an improvement over existing conditions in Yolo County and is therefore unlikely to encounter institutional resistance. This alternative is

more expensive to implement than the current program which might create some opposition, however.

Costs

The City of Davis operated three City-only events during fiscal year 1990-91 for approximately $55,000. The County's cost to operate four HHW collection events for all County residents during the same period was $112,000. Both figures include contract costs and administrative expenses. The base cost for the County to operate seven collection events could therefore be assumed to be about $167,000. If the Davis events were open to all County residents, participation and costs could be assumed to be about 10 percent higher. Approximately 10 percent as much load-checking hazardous waste was collected in 1991 as HHW at county-sponsored events. To cover increased participation because all events will be open all County residents and to cover the disposal of load check wastes, the basic cost should be increased by about 10 percent to $184,000.

Market Availability

Markets are available for recyclable HHW, and the Yolo County hierarchy of HHW disposal requires that all recyclable HHW be recycled.

Collection Alternative 6. Permanent HHW Collection Facility

Yolo County's Hazardous Waste Management Plan recommends that the County begin the process of establishing a permanent HHW collection facility (PHHWCF). A PHHWCF consists of a permanent facility open during regularly scheduled hours that provides residents of the community the opportunity to drop-off their HHW. It also provides the operator with facilities to safely store the collected HHW. This storage capability offers the opportunity to maximize disposal options and thereby increase operating efficiency. Its permanent nature means that once the public becomes familiar with its existence, they know that it can be used again in the future. Yolo County is considering siting a MRF at the landfill during the medium-term planning period. A permanent HHW collection facility would likely to be included as a part of the facility. A permanent facility could be used as a "hub" in conjunction with other collection alternatives as a part of a "hub and satellite" system.

The California Code of Regulations Section 18751.3 requires that new and existing multi-use solid waste and hazardous waste facilities be considered as possible locations for a permanent HHW collection facility. Siting a permanent HHW facility at a solid waste facility could offer several advantages to the community in siting a HHW facility. One is that the County General Plan allows compatible land use at the landfill and acknowledges the possible issuance of a Conditional Use Permit for a HHW facility. Another advantage is that by using a site that is already marked for waste management, opposition to the siting process should be reduced. And finally, by providing the public with a multi-use facility, residents could drop off HHW on the same trip with other cleanup debris, thereby increasing convenience.

This alternative would involve the securing of the necessary state and local permits to allow the collection and the temporary storage of collected HHW at the site of a proposed MRF located at the Yolo County Central Landfill. Facilities would have to provide for the safe storage of hazardous waste. Utilization of modular hazardous waste storage sheds would add flexibility to siting options. Being able to store collected HHW on-site would increase the flexibility of the program. Need for a contractor would then be limited to transportation and disposal of the collected wastes and offer the County the possibility of increased operating efficiency.

Effectiveness

A permanent HHW facility is an effective means of diverting HHW from the waste stream. Maximizing convenience to the public encourages repeat visits, which in turn maximizes effectiveness. Participation levels and effectiveness tends to decrease as travel distance increases.

Hazards

This type of facility is designed for maximum safety, which minimizes on-site hazardous conditions. This alternative is an effective means of reducing improperly disposed of HHW, which means a net reduction of hazard for the community. The public's maximum exposure to hazard is during handling and transportation to the collection site. Publicity materials should emphasize safe handling and transportation procedures.

Ability to Accommodate Change

By varying staffing levels and hours of operation, an operator can efficiently meet public demand. A permanent facility offers flexibility in its ability to act as a storage facility for other collection alternatives (Alternatives 7, 8, and 9).

The possibility exists that once the high levels of HHW currently stored in area homes are collected and public habits are altered to use less toxic products, a permanent facility would lose its effectiveness. If this were prove to be the case, the program could switch its emphasis from residentially generated HHW to small quantity commercially generated waste (Collection Alternative 7).

Consequences on Waste Stream Composition

A marked reduction in HHW entering the waste stream would result from implementing this alternative. If the facility is located at a transfer station or material recovery facility, HHW that is discovered through a hazardous waste exclusion program can be diverted to the HHW facility.

Ability to be Implemented

Minimum implementation would be about three years, but because of the need for permits, facilities, and multi-jurisdictional coordination, this alternative would be considered for the medium-term planning period.

Need for Facilities

To safely and legally store all types of HHW, a permanent facility is necessary. The facility would have to have separate bays to provide for the segregation of incompatible chemical groups and other considerations that will be specified in the permit-by-rule regulations for permanent HHW facilities that the DTSC will be drafting. There must be sufficient area surrounding the facility for the smooth flow of traffic.

Consistency with Local Policies, Plans, and Ordinances

Section 15 page 15-5 of County's Hazardous Waste Management Plan recommends that Yolo County begin the process of establishing a permanent HHW collection facility. Permit-by-rule regulations will ultimately determine the level of state permitting required. A County Conditional Use Permit would be required, as well as compliance with the California Environmental Quality Act (CEQA). Under some circumstances this type of facility could encounter local opposition and/or require an Environmental Impact Report (EIR).

Institutional Barriers to Implementation

Yolo County may require insurance coverages in excess of State mandates. These insurance coverages address workers compensation, comprehensive general liability, automobile liability, and environmental impairment liability. Permit-by-rule minimum insurance requirements are not likely to differ from current insurance requirements for a permanent HHW facility which require $1,000,000 liability coverage per incident and $2,000,000 aggregate coverage per year.

Costs

Capital costs to retrofit an existing 2,400-square-foot steel building in San Francisco were approximately $300,000 in 1988. The operating budget to serve 7,500 participating households was $560,000 in 1989, for a cost of about $75 per participating household. A 2,800-square-foot facility with a 160-drum capacity designed to serve Yuba and Sutter Counties cost in excess of $300,000 in 1990, with an operating budget of $176,000 per year. While costs are substantial, operating costs compare favorably to a few HHW collection days per year. Storage capabilities permit efficient bulking and lab packing, which are helpful in controlling disposal costs.

The needs of Yolo County could be fulfilled with a smaller facility than those mentioned above. It could be operated for an estimated $250,000 to $300,000 per year. Capital costs amortized over 20 years would be $29,500 per year for a $200,000 facility with $50,000 development and CEQA compliance costs at 10 percent interest. Staffing would be about $90,000 per year for a chemist/manager and a technician and $120,000 to 180,000 per year operating and disposal costs.

Market Availability

Storage capabilities of a permanent facility allow for maximizing potential of market conditions. Markets are available for recyclable HHW, and the Yolo County hierarchy of HHW disposal requires that all recyclable HHW be recycled.

Collection Alternative 7. Small Quantity Commercial Source Participation

As defined by AB 2641, a "small quantity commercial source" is a business (commercial or agricultural) that generates 220 pounds a month or less of hazardous waste (HW). Although they are exempt from some regulations, they still must test, properly store, treat, and manifest their waste. Rather than sustain the expense of dealing with a licensed hazardous waste management firm, many of these businesses are improperly disposing of their waste.

This alternative could be incorporated into a periodic drop-off program, or be an extension of a permanent or "limited" HHW facility. If incorporated into a periodic program, a separate collection date should be dedicated to these sources for reasons explained below under Consistency with Local Policies, Plans, and Ordinances. Incorporated as part of a permanent facility, this alternative provides a means to increase the facility's usefulness. In either case, it could offer the jurisdiction an opportunity to divert large quantities of hazardous waste from the waste stream with little or no additional cost through the use of a fee structure.

In the past, participation by small businesses in community HHW programs was expressly forbidden by law. The recent passage of AB 2641 now gives a municipality the option of accepting such hazardous wastes. If the program operator were to accept wastes from small businesses, the operator should charge a fee, since waste disposal is a business expense for the participant. But a relatively low fee and increased convenience for the business would help encourage compliance.

The possibility exists for commercial participation to overwhelm a program intended for residential use. A limiting factor for that problem is the state law that limits unmanifested transportation of hazardous waste to 5 gallons of a liquid or 50 pounds of a solid (note exceptions near the bottom of page 9). By limiting the amount of waste that can be brought to this collection program at one time, the program's capacity is not overextended. This limitation also makes the program most advantageous for the very small quantity sources for whom a commercial alternative would be prohibitively expensive.

Effectiveness

In other community HHW programs that have accepted commercial wastes, the number of participants has been small compared to the number of households, but the amount of waste collected has been substantial. The large amount of waste collected indicates that the program can be very effective in removing toxics from the waste stream. This is an alternative that could be added at a later date if diversion goals are not being met.

Hazards

More hazardous waste would be handled than in other alternatives, resulting in an increase in hazards. This would be less applicable if a permanent facility were utilized. By separating collection of residential and commercial wastes, potential exposure to the public would be minimized. As in other drop-off events, handling and transportation to the collection site is an area that requires particular caution. Also, the reduction of improperly disposed wastes would represent a net reduction of hazard.

Ability to Accommodate Change

Because this option is basically an administrative variation of other alternatives, it could be altered or cancelled without major consequences.

Consequences on Waste Stream Composition

This alternative should further reduce hazardous waste from entering the waste stream.

Ability to be Implemented

If this alternative is part of a drop-off program, it could be implemented during the short-term planning period. If the alternative is incorporated into a permanent HHW facility program, it would likely be part of the medium-term planning period due to permitting and facility requirements. Implementation of this alternative would be most appropriate as a part of the County's proposed permanent facility during the medium-term planning period, which would give staff time to devote the attention that the alternative would require.

Need for Facilities

A permanent facility is not necessary for this alternative to be implemented, but a permanent HHW facility would increase the safety and ease of implementation for this type of program.

Consistency with Local Policies, Plans, and Ordinances

Current interpretation of hazardous waste transportation laws indicates there may be a need to keep residential and commercial programs separate to prevent the combined waste stream from falling under jurisdiction of the Resource Conservation and Recovery Act (RCRA). If a fee is charged for the commercial program, but not the HHW program, it makes administrative sense to keep the two programs separate. One way of doing that in a drop-off program would be to dedicate some of the drop-off days to businesses only.

Institutional Barriers to Implementation

No institutional barriers to implementation are noted at this time.

Costs

A charge to the participants should be made per gallon of liquid waste and per pound of solid waste, so that the City does not sustain a net cost to run the program. For nonrecyclable wastes these costs might be in the neighborhood of $2 to $4 per pound, or $10 to $40 per

gallon. Differing types of hazardous waste have differing disposal costs, which should be reflected in the fee schedule.

Market Availability

Market availability would have little effect on the success of this alternative. Markets are available for recyclable HHW.

Collection Alternative 8. A Mobile Facility Visiting Temporary Collection Sites

The purpose of this alternative is to increase accessibility for the public by increasing the convenience of finding or getting to the collection sites. Mobile facilities visit several collection sites within a large geographic area on a rotating basis. Two basic variations of this alternative exist. In one variation the operator consolidates and lab packs the collected HHW at the end of the event for transportation to recycling or disposal facilities. The other variation uses a permanent facility as a hub to utilize the permanent facility's storage advantages. Mobile drop-off sites would require facilities that could be rotated from site to site. Riverside County's program is an example of this collection alternative.

Mobile facilities vary in their complexity. Riverside County uses a van conversion, a county pickup with a hydraulic lift, and a compartmentalized roll-off bin for temporary storage of HHW. Weather protection consists of sun shades only; the facility closes in the event of rain. San Mateo County utilizes a 40-foot trailer to transport collection materials to the temporary sites and for overnight storage of collected HHW. King County, Washington, uses a large van and a mobile office. The van is used for storage of portable weather protection for two separate areas, 55-gallon drums, secondary containment, portable fencing, absorbent, and protective clothing. A portable electric generator, and portable toilets are also part of the facility. The mobile office is used for administrative purposes and for analyzing unknowns.

Effectiveness

By increasing accessibility to the public, the percentage of participating households should increase, thereby increasing effectiveness. The effectiveness could be affected by the final DTSC regulations involving mobile facilities. Draft DTSC regulations consider mobile facilities "temporary facilities" and limit the acceptance of HHW to two consecutive days at one time. Such a short collection period could limit the effectiveness of this alternative. DTSC is developing regulations specific to mobile facilities which would allow for longer periods of collection. The closeness of the proposed facility at the Yolo County Central Landfill would nullify any convenience advantages of a mobile facility for residents of Davis.

Hazards

A relatively short storage time limits the possibility of public exposure. The public's maximum exposure to hazard is during handling and transportation of HHW to the collection site. Publicity materials should emphasize safe handling and transportation procedures.

Ability to Accommodate Change

Being able to change collection sites makes this alternative flexible and open to changing conditions.

Consequences on Waste Stream Composition

Increased public participation should mean fewer hazardous wastes going into the waste stream.

Ability to be Implemented

This alternative requires a level of planning, procurement, and permitting that suggests a lead time in excess of a year. This suggests possible implementation during the short-term planning period.

Need for Facilities

Mobile HHW collection facilities would be necessary for this alternative. Riverside County uses a modified roll-off box that has been compartmentalized, explosion proofed, equipped with false floors with secondary containment sumps, and an external safety shower/eye-wash. A van conversion with a table and sink is used for administrative purposes and for testing unknowns, as well as for storage of protective clothing and equipment. A pickup with a hydraulic lift (permitted for transporting hazardous waste) is used for moving 55-gallon drums at the drop-off site as well as occasionally picking up HHW from the homebound.

Consistency with Local Policies, Plans, and Ordinances

No conflicts with local policy are noted at this time.

Institutional Barriers to Implementation

No institutional barriers exist, but implementation would require multi-jurisdictional permitting, cooperation, and coordination.

Costs

Riverside County, with a population of approximately one million residents, is currently operating with an insufficient budget of $450,000 per year. The vast majority of the budget is spent on disposal costs for the collected HHW. The cost of the modified second-hand roll-off bin was approximately $25,000. The van conversion is a hand-me-down hazardous incident response vehicle, and the pickup is a county vehicle on loan. Three permanent employees are included in the budget, but other employees are "borrowed" from other departments to double or quadruple that number during collection days. The San Mateo program operates on a $300,000 budget.

The cost of mobile facilities may ultimately depend on their definition. Regulations governing the operation of mobile HHW facilities are at present undefined in California. The Department of Toxic Substances Control is aware that mobile facilities are a unique category that require regulations dedicated specifically to them.

Higher costs for educating the public might be construed as being necessary to keep the public informed of the mobile facility's schedule. Any increase in those expenses would most likely be money well spent in keeping the issue of HHW disposal before the public eye.

Market Availability
Market availability would have little effect on this alternative. Markets are available for recyclable HHW collected.

Collection Alternative 9. Door-to-Door HHW Collection

This service would supplement other programs, and would be offered infrequently. Door-to-door collection would require trained hazardous waste personnel stopping at the homes of people who had phoned in their request for service in advance. It would require a DTSC approved vehicle with a crew of two who would remove the wastes from peoples homes and pack them for safe transportation to a consolidation site. Ideally, this consolidation site would be a permanent facility, but could be a HHW drop-off event or a mobile drop-off site. The City of Los Angeles is initiating a pilot program for this type of service, utilizing city employees and city-owned vehicles. Private waste management firms are also investigating the possibility of offering this type of service. This program would be especially helpful to the homebound.

Effectiveness
Door-to-door collection is the only alternative that does not require the participant to drive to a remote site to drop off their HHW. Therefore, it would be capable of collecting HHW that would otherwise be left uncollected and would be effective in diverting hazardous waste from the waste stream.

4.3 MONITORING ALTERNATIVES

Criteria applicable to all monitoring alternatives will be addressed after the descriptions. The following monitoring alternatives will be considered for inclusion in the City's HHW management plan:

* Monitoring the waste stream for HHW
* Ongoing evaluation of HHW program
* Waste characterization study

Monitoring Alternative 1. Monitoring the Waste Stream for HHW

Monitoring the waste stream for HHW is an existing condition in the City of Davis. A hazardous waste exclusion program is in effect at the Yolo County Central Landfill, which includes client awareness and random load inspections at the working face. Curbside

monitoring for HHW is also an existing condition for the City of Davis. Sanitation workers and fire fighters are given annual training on recognition and proper handling of hazardous waste.

Monitoring Alternative 2. Ongoing Evaluation of HHW Program

Accurate records of the amounts of HHW collected by the collection program will have to be kept in order to evaluate the success of meeting diversion goals. Form CIWMB-303 (Appendix B) must be used when compiling this information. In addition to the categorization of HHW, this form includes the number of pounds or gallons collected, not just the number of drums shipped. From this information tons per year can be calculated, the unit of measurement used in the Waste Generation Study. Deficiencies in meeting the intended goals can result in modifications of the public education or collection components of the HHW management plan. The County will keep track of the residency of participants in all county-wide programs and the results will be reported to the Cities.

Monitoring Alternative 3. Waste Characterization Study

Another means of monitoring the effectiveness of the HHW management program would be to conduct a waste characterization study. A waste characterization study is similar to the Waste Generation Study that provides the basis for the SRRE but is limited in scope to focus on specific areas, in this case HHW. Selected loads of refuse could be sampled to determine the proportion and type of HHW present. This information would indicate the effectiveness of a HHW program, and could be used to suggest specific areas in which improvement is needed.

4.4.1 Evaluation of Monitoring Alternatives

The following criteria address the alternatives described above:

Effectiveness

Monitoring the waste stream for HHW is a somewhat effective means of diverting HHW. If the generator can be identified and the HHW returned, a powerful lesson could be taught. However, identifying the generator of HHW in a commingled residential waste stream at the landfill is nearly impossible. The effectiveness is then limited to diverting the small quantities of HHW that are discovered and by demonstrating a commitment to excluding hazardous waste from the landfill.

A monitoring and evaluation program is necessary to see that goals are being met. Without one, the effectiveness of the program could not be quantified.

Categorizing HHW (as in form CIWMB-303) would increase the usefulness of a waste characterization study as a HHW monitoring tool.

Hazards

Some hazards exist for those conducting waste characterization studies and load-checking for hazardous waste. Hazards are minimized through proper training. Minimum hazards exist for workers who are trained in proper handling procedures for HHW.

Ability to Accommodate Change

These alternatives could be changed easily if conditions change.

Consequences on Waste Stream Composition

Monitoring the waste stream for HHW, proper evaluation of the HHW management program, or a waste characterization study would result in the reduction of hazardous waste entering the landfill.

Ability to be Implemented

These alternatives could be implemented in the short-term planning period and should continue through the medium-term planning period.

Need for Facilities

No new facilities are needed for these alternatives.

Consistency with Local Policies, Plans and Ordinances

No conflicts with local policies are noted at this time.

Institutional Barriers to Implementation

No institutional barriers are noted at this time.

Costs

The cost of evaluating the HHW program would be equal to about two weeks of salary for the program coordinator ($3,000). A waste characterization study that examines HHW only would cost between $6,000 and $12,000.

Market Availability

Market availability has no effect on monitoring alternatives.

SECTION 5

SELECTION OF PROGRAMS

This section of the HHWE will outline the alternatives selected to form an integrated HHW management program for the City of Davis, and explain why they were selected. The success of a collection plan for HHW depends on the simultaneous implementation of public education and monitoring plans to form an integrated program. Preferred education and public information alternatives and their implementation are discussed in Sections 8.3 and 8.4 of this HHWE. The selection of programs was based on the criteria for evaluation presented in the previous section.

Cost-effectiveness and improvement of existing conditions were of particular importance in the selection of a program for the short-term planning period. Selection of a program for the medium-term planning period was based on continuity with short-term programs and consistency with the County's Hazardous Waste Management Plan.

5.1 SELECTED COLLECTION PROGRAMS

The proposed collection programs for City residents will address both recyclable and nonrecyclable HHW on an ongoing basis. Programs for the collection of recyclable HHW at the Yolo County Central Landfill will be expanded. Davis residents are able to drop off their nonrecyclable HHW through the existing periodic collection program operated by the City and the County, which will continue operations through the spring of 1992. When the County changes its drop-off program to periodic collections at the landfill, The City of Davis will join that program. For the medium-term planning period, the City of Davis will elect to become a part of the County operated permanent facility planned for the Yolo County Central Landfill. This program is a combination of the following collection alternatives from Section 4 of this HHWE:

*	Collection alternative 2	Point-of-purchase collection of HHW
*	Collection alternative 3 & 4	Expanded collection of recyclable HHW
*	Collection alternative 5	Temporary HHW collection facility
*	Collection alternative 6	Permanent HHW collection facility

Point-of-Purchase Collection of Recyclable HHW

To a limited degree, this alternative is an existing condition in the City of Davis. Currently, four automotive service centers in town accept either used motor oil, lead-acid batteries, or used anti-freeze from the public (Appendix A). Until the Yolo County Central Landfill begins accepting used antifreeze in 1993, the two service stations that accept this material provide City residents their only opportunity to have it properly recycled, so City HHW educational material will emphasis this opportunity for its citizens.

The City of Davis is particularly interested in retail paint stores accepting leftover latex paint. The passage of AB 2178 would reduce resistance for retailers to provide this service for their customers by clearly offering exemption from hazardous waste storage regulations for the storage of leftover latex paint prior to its transportation to the manufacturer for recycling.

Expanded Collection of Recyclable HHW

In addition to Davis residents' current opportunity to drop off used motor oil at the Davis Waste Removal yard and used motor oil and spent lead-acid batteries at the YCCL, two of the collection alternatives evaluated in this element have been selected for implementation to improve the collection of recyclable HHW in Yolo County. Two alternatives of approximately the same estimated cost of implementation were chosen for implementation by the County to provide for maximum flexibility in meeting program goals and maintaining regulatory compliance. Collection Alternative 3, periodic collection days for recyclable HHW (bop-drops), was chosen for initial implementation at the YCCL, with a possible change to Collection Alternative 4, expanded collection of HHW at the landfill to include latex paint. In either case, storage facilities for used antifreeze will be added to the recycling center at the YCCL for the public to drop off used antifreeze during the landfill's operating hours.

Bop-drops were chosen as a complement to the next selected alternative, a temporary HHW collection facility (THHWCF). The County was considering implementing the maximum number of collection events allowed under THHWCF permit-by-rule regulations, but examining data from other jurisdictions that went to 12 collection events per year suggested that from a cost-effective standpoint, 12 collection events might not be the optimum number. Instead, six or seven collection events per year appeared to offer more effectiveness per dollar. Bop-drops were selected as an alternate collection event for those months that a temporary HHW collection event for all types of HHW is not scheduled.

The City and the County recognize that the collection of latex paint requires monitoring to prevent the accidental collection of oil-based paint which would jeopardize the regulatory advantages that the collection of recyclable HHW offers. The ongoing monitoring of latex paint collection could present personnel and training requirements that the County would find difficult to meet. Bop-drops were selected to increase the collection of latex paint from the public by a program that could be supervised by a licensed hazardous waste management firm on a periodic basis. The County's tentative schedule for HHW collection calls for 7 THHWCF events and 5 bop-drops per year.

The biggest potential disadvantage of bop-drops foreseen by the County could be confusion by the public who might confuse a bop-drop with a collection event for all types of HHW. If this were to occur the confused participant would then be asked to bring back their nonrecyclable HHW to the next THHWCF event. Educational materials will make every effort to clarify the difference between the two types of collection events. If this proves to be a continuing

problem, the County will consider collecting latex paint at their recycling center at the landfill on an ongoing by-appointment basis.

Regardless of which collection alternative the County ultimately implements for the collection of latex paint, storage facilities will be added for the public to drop off used antifreeze at the recycling center at the landfill. These storage facilities are likely to be a double-walled polyethylene storage tank, but it is possible that a weather-protected 55-gallon drum in a secondary containment vessel will be used on an interim basis to determine public demand. If the County decides to collect latex paint at the recycling center, a ventilated storage shed with secondary containment will be purchase for that purpose. The shed would be used to store the paint in the containers in which it was brought to the landfill. Consolidation into 55-gallon drums for transportation to the recycler would be done by the licensed hazardous waste management firm during THHWCF events. A permitted tank exists at the landfill for the storage of used motor oil. Spent lead-acid batteries are stored in a hazardous materials storage shed on pallets and will continue to be stored in this manner.

The current collection program for recyclable HHW at the recycling center at the YCCL collected 34.4 tons of used oil and 28.2 tons of lead-acid batteries during fiscal year 1990-91. The level of used oil collection should continue to grow with improved public education, but the level of spent lead-acid battery collection should fall because of the State-mandated program that requires retailers to offer cash trade-ins when selling new batteries. The bop-drops are projected to collect about 450 gallons of leftover latex paint per event, or 2,225 gallons per year. A limited HHW facility in Pacheco collects a little less than half as much leftover latex paint as it does used motor oil. On that basis, Collection Alternative 4 could be expected to collect about 17 tons of latex paint, or about 3,100 gallons per year. Used antifreeze has been collected at a rate of about 10 percent of the latex paint. Three-hundred and ten gallons per year could be expect to be collected on that basis.

A latex paint recycler in Sacramento has begun a pilot marketing program for paint recycled by HHW programs. Documentation is being prepared to certify the quality of the product which could lead to government or other large-scale procurement. The success of this program could lead to reduced paint recycling costs for the Yolo County program.

The anticipated end-uses of the recyclable material collected by these two programs could conceivably end up in the local community. In California, the majority of used motor oil that is collected is re-refined into lubricating oil. The major ingredient of spent lead-acid batteries is lead and lead compounds. These are resmelted for the manufacture of new batteries. The plastic cases are recycled for secondary uses and the acid neutralized. Used antifreeze is redistilled for use as antifreeze. The latex paint is reprocessed and returned to the community for local use.

Temporary HHW Collection Facility

The City of Davis and Yolo County have been co-sponsoring periodic collection events since 1985. Currently, events open to all County residents are held twice a year in Davis, and once a year in both West Sacramento and Woodland, and it is likely that this schedule will be continued through spring of 1992. While these types of events are included in draft PBR regulations for temporary household hazardous waste collection facilities (THHWCF), this selected alternative calls for the selection of a dedicated location and regular schedule for county-wide HHW collection events implemented by the Yolo County Department of Public Works. All types of HHW would continue to be collected, and a licensed hazardous waste management firm would be retained to provide the necessary level of expertise and trained personnel (Appendix I). Collected HHW would not be stored at the site, but would be removed for recycling, destruction, or disposal at the end of each event along with load-check hazardous waste from the County's hazardous waste exclusion program.

The site for this temporary HHW collection facility would be at a proposed recycling storage facility at the Yolo County Central Landfill (Figure 5-1). This is envisioned as a 60- by 70-foot enclosed steel structure with a concrete floor that could also be used as a temporary HHW collection facility. Unloading HHW from participants' cars, sorting, bulking, and lab packing would take place in designated, covered areas. Full drums would be segregated from other activities prior to loading into trucks.

It is likely that seven HHW collection events per year will be scheduled. This would allow collection during consecutive months during spring and fall, when participation at HHW collection events is typically high. During the rest of the year there would be a maximum of two months between collection events. Permit-by-rule regulations permit a site to be utilized for up to two days collection once per calendar month.

Members of the public would drive to the facility at the YCCL, and after filling out a short questionnaire, their wastes would be removed by trained personnel. Manifests would be completed during consolidation and lab packing to identify the contents of the drums in case of an emergency during transport, and to create a "paper trail" to ensure the safe disposition of the wastes.

The vendor contracted to run the collection events will also manage hazardous wastes pulled from the waste stream and stored as a part of the County's hazardous waste exclusion program. This load-check waste will be consolidated, lab packed, and shipped by the hazardous waste management firm concurrently with the HHW collection events. The load-check waste is stored in shipping containers modified for hazardous waste storage. These storage facilities may be used as a part of the permanent HHW collection facility when that alternative is implemented during the medium-term planning period.

The four HHW collection events that were opened to all Yolo County residents during fiscal year 1990-91 resulted in the collection of about 40 tons of HHW. Three other events were open only to residents of the City of Davis which resulted in approximately 19 additional tons of HHW being collected. The seven total events resulted in the collection of approximately 59 tons of HHW being collected. This new collection program is expected to collect approximately 60 to 65 tons of HHW per year. The types of HHW collected are expected to be similar to that collected by the county-wide events: approximately 20 percent latex paint, 14 percent oil-based paint, 8 percent bulk solvents, 2 percent aerosols, 20 percent used motor oil, 13 percent lead-acid batteries, and 24 percent other types of waste for lab pack.

Some usable materials that are collected are redistributed through a materials exchange swap table. Participants in the materials exchange are required to sign a Release and Indemnity Agreement (Appendix C). Reused materials have included usable paint, garden supplies and unopened cans of motor oil. This is a new program and has not yet proven to have a large cost-saving impact; but reuse is ingrained.

Collected materials will be disposed of in a number of ways. Oil-based paints and solvents are most likely to be shipped to alternative fuel-blending programs for incineration. Aerosols are most likely to be shipped out of state for incineration. Corrosives, pesticides and other poisons will either be incinerated or buried in Class I hazardous waste landfills. Recyclable HHW that is collected will be recycled by the same methods described in the previous selected alternative.

Permanent HHW Collection Facility

The Yolo County Department of Public Works and Transportation, lead enforcement agency for operations at the YCCL, envisions construction of a material recovery facility (MRF) and permanent HHW collection facility at the landfill during the medium-term planning period. The permanent HHW collection facility would be used for storage of HHW discovered at the MRF as well as that collected from the public during scheduled collection hours. The County's Hazardous Waste Management Plan recommends the construction of a permanent HHW collection facility, and the County's General Plan acknowledges the appropriateness of utilizing the landfill site for compatible uses such as these through issuance of a Conditional Use Permit. The permanent HHW facility would be open to all County residents.

Prior to construction of the MRF, hazardous waste storage sheds will be purchased by the County for the storage of HHW that is pulled from the waste stream as a part of the landfill's hazardous waste exclusion program. Consolidation of that waste for recycling and disposal will be coordinated with the drop off of HHW by County residents at the temporary facility described above. These load-check hazardous waste storage sheds may then be incorporated into the new permanent facility at the MRF, thereby minimizing duplication when switching from a temporary to a permanent HHW facility.

Storage facilities should have sufficient capacity to make transporting collected drums to disposal facilities an efficient proposition. Shipping full drums in a full truck is an example of this efficiency. This threshold of efficiency is likely to be a storage capacity in the neighborhood of 100 drums or more. The facility would need separate bays or sheds to segregate incompatible chemicals and would require secondary containment sumps. A fire prevention system and safety wash would also have to be a part of the facility, as well as an area for administrative details and testing unknown chemicals. Disposal methods would be the same as for the temporary HHW collection facility described above.

The breakdown of HHW collected by type is likely to be similar to the breakdown described above for the temporary facility. One difference may be an increase in the proportion of leftover latex paint and a decrease in leftover oil-based paint as changes in the marketplace move in that direction. The quantities of HHW to be collected will be dependent on the collection schedule that is adopted by the program operator. When the program is initiated it is likely that the operators will stick with the schedule of the temporary facility while operations are fine-tuned. In that case, quantities of HHW collected would be similar to those described above for the temporary facility. Levels of participation would be expected to increase with increased awareness created by the education program, and operating hours would likely need to increase to accommodate increased demand.

5.2 SELECTED MONITORING PROGRAM

The existing hazardous waste monitoring that is in effect at the Yolo County Central Landfill will be continued. Curbside monitoring for HHW is an existing condition for the City of Davis and will continue to be implemented as well.

The basis of record keeping for the Davis HHW program will be form CIWMB-303. This will enable the collected HHW to be categorized in a manner consistent with other jurisdictions around the state. It will also keep track of the material collected in units (pounds and gallons) that are convertible to tons per year, the units of the Waste Generation Study. The County will keep track of the residency of participants in all county-wide programs and the results will be reported to the Cities. Using these records the City will evaluate the effectiveness of the program in meeting diversion goals. Deficiencies in meeting the intended goals will result in modifications of the public education or collection components of the HHW management plan.

SECTION 6

PROGRAM IMPLEMENTATION

Program development and administration for City programs will be the responsibility of the City's Department of Public Works. City administered programs will be funded by existing garbage rates Program development and administration for County programs will be the responsibility of the County's Department of Public Works and Transportation. Funding for the County administered programs will be funded by an increase in tipping fees. The funding requirements for each of the selected programs are shown in Section 9, Funding, Table 9-1. If a City program or any portion of that program is contracted to a vendor, that vendor will be under supervision of the Assistant to the Public Works Director, who has the responsibilities of implementing the HHW program.

Tables 6-1 through 6-4 show timelines for the implementation tasks necessary for selected programs through the medium-term planning period.

Table 6-1. Implementation Tasks for Expanded Collection of Recyclable HHW

Tasks	Completion Date	Responsible Entity	Funding Source
Design program site, facilities, schedule, personnel	5/92	County Dept. of Public Works	Tipping fees
Provide recommendation	6/92	County Dept. of Public Works	
Approve funding	7/92	Board of Supervisors	
Coordinate publicity program	7/92	County Dept. of Public Works	
Implement program	1/93, ongoing	County Dept. of Public Works	
Ongoing monitoring	1/93, ongoing	County Dept. of Public Works	

Table 6-2. Implementation Tasks for Temporary HHW Collection Facility

Tasks	Completion Date	Responsible Entity	Funding Source
Continue current program	Through 1992	County Dept of Public Works	Tipping fees/Cities' contribution
Design coordination of HW exclusion program and HHW collection program	5/92	County Dept of Public Works	Tipping fees
specify HW storage facilities	5/92	County Dept of Public Works	
specify site development at landfill	5/92	County Dept of Public Works	
Provide recommendation	5/92	County Dept of Public Works	
Approve funding	7/92	Board of Supervisors	
order HW storage facilities	7/92	County Dept of Public Works	
improve site at landfill	12/92	County Dept of Public Works	
Implement HHW collection at landfill	3/93	County DPW/Vendor	
Ongoing monitoring	3/93	County DPW/Vendor	

Table 6-3. Implementation Table for Monitoring and Evaluation

Tasks	Completion Date	Responsible Entity	Funding Source
Curbside monitoring for HHW			
collector training	6/92	Franchised Waste Hauler	Tipping fees
program implementation	6/92, ongoing	Franchised Waste Hauler	Tipping fees
Program monitoring			
Quantification of recyclables collected	1/93, ongoing	County Dept. of Public Works	Tipping fees
City participation in County program	1/92, ongoing	County Dept. of Public Works	
Annual report	2/93, ongoing	County Dept. of Public Works	Tipping fees

Table 6-4. Implementation Tasks for Permanent HHW Collection Facility

Tasks	Completion Date	Responsible Entity	Funding Source
Study feasibility of expanded operations	3/94	County Dept of Public Works	Tipping fees
Provide recommendation	3/95	County Dept of Public Works	
Approve funding	6/95	Board of Supervisors	
Submit PBR ap. for permanent facility	7/95	County Dept of Public Works	
Fulfil CEQA requirements	7/96	County Dept of Public Works	
Hire staff	9/96	County Dept of Public Works	
Implement regular collection events	12/96, ongoing	County Dept of Public Works/ Permanent facility staff	
Ongoing monitoring	12/96, ongoing	County Dept of Public Works/ Permanent facility staff	

SECTION 7

MONITORING AND EVALUATION

Through monitoring and evaluation, the City of Davis can determine the success of their HHW management program. Total HHW diverted is determined by using form CIWMB-303 to find the quantity of HHW collected by the various collection programs. For this form to be of value, it must be accurately filled out by those conducting the collection programs. It is extremely important that accurate estimates are made of the actual amount of HHW deposited in each drum. The actual amount of hazardous waste that is lab packed in a drum varies greatly, and accurate estimates of HHW diversion cannot be determined by only knowing the number of drums shipped from a collection program. (Lab packing is the process of safely packing many smaller containers of hazardous waste into a larger container, usually a 55-gallon drum. All wastes in a drum must be of the same hazard class, and the smaller containers are separated and protected by sufficient vermiculite to absorb all of the liquid wastes in the drum).

To be consistent with the Waste Generation Study, the amount of HHW collected is converted to tons per year. This is achieved by adding the total number of pounds of HHW collected during the year and dividing by 2000. Pounds of liquids are determined by multiplying the number of gallons listed on form CIWMB-303 by the number of pounds per gallon of the particular liquid (for instance, used oil weighs about 7.5 pounds per gallon; latex paint weighs about 11 pounds per gallon). If the City is unable to meet the goals and objectives stated in Section 2 of this HHWE, it will act on one or more of the following:

* Increase the level of public education and information

* Increase the operating hours of the recyclables collection

* Conduct a waste characterization study to redefine the amount of HHW currently being disposed of in the landfill and to determine types of HHW to target for increased diversion

* Implement an alternative collection program such as small commercial source participation

The Department of Public Works will be responsible for keeping track of program success. The County will keep track of the residency of participants in all county-wide programs and the results will be reported to the Cities. Records will be kept for the amount of HHW collected at each collection event, and summarized into monthly totals. These monthly totals will then be utilized to prepare periodic reports which will be available for review by other municipal agencies. Evaluation of the program will take place on an annual basis.

One criteria for success of the program will be a continued increased proportion of the number of first-time participants from the City in the county-wide HHW collection program. Another criteria would be a decrease in HHW discovered in municipal solid waste stream monitoring programs. Deficiencies in meeting the intended goals would result in the implementation of one or more of the above modifications of the public education or collection programs.

SECTION 8

PUBLIC EDUCATION AND INFORMATION

The Public Education and Information section of this HHWE will consist of the following subsections: Objectives, Existing Programs, Preferred Alternatives, Program Implementation, and Monitoring and Evaluation.

8.1 OBJECTIVES

The City will develop a public education and information component for their HHW management program that will accomplish the following objectives:

* Create an awareness among City residents of the problems that toxic household products pose.

* Reduce the amount of HHW generated (source reduction) by encouraging the use of less-toxic or non-toxic alternatives to toxic household products.

* Inform the public of the City's HHW management program and encourage public participation in the program.

The City of Davis will develop a public education program designed to keep the public informed of the proper use and disposal of toxic household products. The program will highlight the dangers of improper disposal of HHW, such as pouring it down the drain, pouring it on the ground, or throwing it in the garbage. Such actions can result in disruption of wastewater systems, damage to environmentally sensitive groundwater, or injury to sanitation workers.

An alternative to disposal is for the consumer to use up the product according to directions on the label. The empty container can then be safely disposed of in the garbage. Likewise, paint cans containing only dried remnants can be safely disposed of in the garbage. Eliminating these containers from HHW collection programs helps to control the cost of the program, and should be a part of the educational campaign.

Source reduction, in terms of HHW, is the substitution of non-toxic products for toxic ones. The American public will be asked to change some of their long-established habits.

The City's public education efforts will target grade school students and do-it-yourself homeowners and automobile owners. Grade school students will be targeted because of their interaction with their families. Do-it-yourselfers will be targeted because activities of this type appear to be responsible for a large percentage of the HHW waste stream. They will be

targeted by offering information on the City's HHW management program at home improvement and auto parts stores that cater to these community audiences.

Publicizing HHW collection programs and encouraging the public to participate is a major objective of the public education program. In addition to the dates, locations, and times of the events, this information should include the types of wastes that will and will not be accepted and should mention the maximum quantities that can be transported according to state law. The need for safe handling and transportation to collection sites must also be emphasized.

8.2 EXISTING PROGRAMS

Residents of the City are kept informed of upcoming collection events through a multi-faceted education program. Notification of periodic events is made by placing two or more advertisements in the local paper one or two weeks prior to each event. The paper features a weekly column written by the City's recycling coordinator, and mention of HHW collection events are mentioned beforehand. Brochures and flyers are distributed at City events such as the yearly street fair, fourth of July festivities, and Public Works Day. Source reduction is addressed by distribution of "Household Hazardous Waste Wheels" or the "Household Hazardous Products" brochure from the Department of Toxic Substances Control (DTSC) at HHW collection events. Participants at the HHW collection events are requested to fill out a survey with questions on recycling and source reduction as well as HHW.

8.3 PREFERRED ALTERNATIVES

The following nine public education alternatives will be considered for Davis's HHW management program. Criteria applicable to all of the education alternatives will appear after the descriptions.

* Original Printed Material
* Use of Existing Source Reduction Material
* Use of Existing Video Productions
* Establishment of a School Curriculum
* Awards Program for Local Businesses
* Media Releases
* Direct Mail
* Utility Bill Announcements
* Shelf Displays at Point-of-Purchase
* HHW Hotline

Education Alternative 1. Original Printed Material

Printed material comes in an infinite variety of forms and provides an indispensable element in any educational campaign. General information about HHW that is applicable to all

jurisdictions is a valuable resource in a multi-faceted approach, because it helps to provide an awareness of HHW; but, even more important is original material printed specifically about the program developed for the City of Davis.

The key piece could either be a newsletter format or a brochure that works both as an effective mailer and as a poster. The newsletter would include other topics in addition to HHW and could be distributed quarterly. The Yolo County Department of Public Works is in the process of developing "Garbage Talk," a quarterly newsletter that meets this description. As a variation of this alternative, a brochure could be mailed to every household once a year, distributed to new arrivals, posted on various public bulletin boards, and distributed to school children to take home to discuss with their families. While the overall layout of the piece might remain consistent year-to-year, a new version should be printed each year in a different color to reflect changes in the program and to reinforce previous mailings. Simpler flyers could also be prepared with announcements of periodic collection events.

Cost estimates of the materials include development and printing costs. The cost to the HHW management program would be about the same for a newsletter or brochure. Based on a brochure with development and printing costs of $0.40 each, 19,000 copies would cost $7,600. The advantage of the newsletter approach would that a schedule of events would not have to be prepared a year in advance. An additional $3,000 is budgeted for the production of flyers to publicize collection events.

Education Alternative 2. Use of Existing Source Reduction Material

A wide variety of professionally produced source reduction material is available for communities to incorporate into their public education campaigns (Appendix A). The "Household Hazardous Waste Wheel," a colorful and useful reference for alternatives to toxic products, costs governments between $1.15 and $1.50 each, depending on quantity. A comprehensive source reduction resource is a 40-page booklet entitled "Making the Switch" that is available to local governments for $1.00 when purchased in quantity. Currently, the CIWMB is offering free color source reduction flyers. Likewise, DTSC has a colorful brochure that is available free of charge for municipalities to use as a part of a HHW management program.

The City of Davis does take advantage of this opportunity to receive source reduction material free of charge from the State. When requested while the supply still lasts, the material can be utilized for distribution in the future.

The cost of requesting these source reduction materials would be about $500 for administrative time and expenses. Postage for the CIWMB flyers would be covered by the utility bills, and the DTSC brochures would be distributed at collection events.

Education Alternative 3. Distribution of Existing Video Productions

At one point early in the development of the HHW education and public information program HHW, videotapes could be purchased for presentation to schools and civic groups. Suitable tapes have been produced by Grass Valley Productions, the Cities of Hercules and Pinole in Contra Costa County, and The League of Women Voters. Costs range from $20 to $60 per tape. Five-hundred dollars is budgeted for videotape procurement.

Education Alternative 4. Establishment of a School Curriculum

The Davis Unified School District will select and implement educational programs for all elementary grades. Particular emphasis will be given to grades 4 through 6. Children of this age are able to understand abstract concepts and are beginning to play an increasingly important role as a member of their family. Useful material has been prepared on this subject by agencies such as DTSC and nonprofit organizations, but material specific to the City's program should be prepared and utilized as well. The budget for this alternative is estimated at $5,000 per year. This cost is estimated on the preparation of a solid waste curriculum being developed for $20,000, and the HHW program assuming 25 percent of the cost.

Education Alternative 5 . Awards Program for Local Businesses

Several of these public education alternatives could have their costs offset by encouraging local businesses to provide sponsorship. Examples include media advertising, printing of materials, or providing expertise. This participation would be recognized by the presentation of awards to those firms providing exemplary levels of support. Such an awards program would be a newsworthy story for the local media. This alternative is budgeted at $4,000 per year.

Education Alternative 6. Media Releases

In addition to the paid advertising space in the local newspaper, the program coordinator will produce and transmit appropriate press releases to all media throughout the County regarding various aspects of the HHW program. Expenses for this alternative are budgeted at $500 for the preparation of a media packet and miscellaneous expenses.

Education Alternative 7. Direct Mail

Direct mail has a unique ability to target every household in the community with an eye-catching brochure in a timely fashion. For budgetary purposes two mailings each year are proposed. The cost of bulk rate mail for a governmental agency depends on the size and weight of the piece mailed. An average cost of $0.20 per piece is a likely average. The budget is $3,600 per year based on the mailing of one piece to each household. This represents either the mailing of one brochure per year dedicated to HHW, or one quarter of the cost of a quarterly newsletter dedicated to solid waste issues.

Education Alternative 8. Utility Bill Announcements

Garbage bills for the City of Davis are postcards with no place for inserts. There is room for a brief announcement printed on the bill itself. This space has been used to announce upcoming HHW drop-offs in the past and can be utilized again in the future. Because of conflicting priorities and limited space this cannot be counted on.

Education Alternative 9. Shelf Displays at Point-of-Purchase

The City could encourage retailers of toxic household products to post notification of the environmental problems that the product poses on the shelf at point-of-purchase. Cost of developing and implementing this alternative is estimated to require $4,000 of staff time. Since it is perceived as a voluntary program, costs would continue on a yearly basis to encourage expanded participation.

Education Alternative 10. HHW Hotline

Provide a telephone number dedicated to the public's questions about HHW or other solid waste issues. The person answering the phone should be familiar with the HHW program and know who to contact if unable to answer a question. No new personnel is required. This program is budgeted for less than $500 per year for the line and service.

8.3.1 Evaluation of Public Education Alternatives

The following criteria address the public education alternatives described above:

Effectiveness
In general, the effectiveness of public education campaigns is proportionate to the amount of money spent on them.

Hazards
There are no hazards associated with public education alternatives.

Ability to Accommodate Change
Public education campaigns can easily be changed to accommodate changing conditions.

Consequences on Waste Stream Composition
An effective campaign will result in reduced HHW entering the waste stream.

Ability to be Implemented
These alternatives can be implemented in the short-term planning period and should be an ongoing part of any HHW management program.

Need for Facilities
No facilities are needed to implement these alternatives.

Consistency with Local Policies, Plans, and Ordinances
No conflicts with local policies are noted at this time.

Institutional Barriers to Implementation
No institutional barriers to implementation are noted at this time.

Costs
An effective educational campaign for the City is estimated to cost $30,000 per year. This is based on implementation of each of the alternatives listed above.

Market Availability
Market availability does not apply to these alternatives.

8.4 PROGRAM IMPLEMENTATION

The City of Davis will adopt a public education program that encompasses elements of all the public education alternatives discussed in Section 4.3 of this HHWE. Program administrators will play a key role in determining the final shape of the City's education program. The overall approach is to create an awareness on the part of the public of the problems that toxic household products pose, which will help stimulate demand for the City's collection programs.

The public education program will include development of a school curriculum, direct mail, utility bill inserts, point-of-purchase displays, direct distribution of source reduction material, awards programs, and a telephone hotline to answer questions on HHW and other source reduction and recycling matters. An important component of the program would involve the public schools. Presentations by solid waste and environmental health officials should lead to classroom discussions relating to the developing curriculum. The direct mail campaign should utilize original material that applies specifically to the program developed for the City of Davis.

Table 8-1 shows the tasks, timeline, responsible agency, and funding source for the preferred alternatives for the City of Davis' HHW education program.

Table 8-1. Implementation Table for the City's Education and Public Information Program

Tasks	Completion Date	Responsible Entity	Funding Source
Prepare original printed material	6/92	City Dept. of Public Works	Rate Structure
Procure source reduction material	Completed	City Dept. of Public Works	
Procure videotapes	6/92	City Dept. of Public Works	
Prepare school curriculum	9/92, ongoing	School District	
Implement curriculum	9/92, ongoing	School District	
Distribute media releases	Current, ongoing	City Dept. of Public Works	
Mail brochures	12/92	City Dept. of Public Works	
Establish HHW hotline	6/92	County Dept. of Public Works	Tipping fees

8.5 MONITORING AND EVALUATION

Success in meeting diversion goals is also dependent on a high level of public awareness. The success of the public education component of the HHW in creating that awareness should also be monitored. A random telephone survey of County residents will be conducted annually to determine the level of public awareness of the HHW management program. Deficiencies will be addressed by modifying the public education program.

SECTION 9

FUNDING

In addition to primary and secondary funding sources to be identified for the implementation of the City's HHW management program, the City of Davis feel that this HHWE is an appropriate forum to recommend funding alternatives implemented at the State level. An advance-disposal fee could be charged at the point-of-purchase for items that cannot be disposed of in the municipal waste stream. This would create a funding pool which would be distributed to local jurisdictions to finance HHW management programs.

9.1 Funding Sources

The education and public information program and curbside monitoring for HHW for Davis residents will be funded by existing garbage rates. County-wide HHW collection and the hazardous waste exclusion program at the YCCL will be funded by tipping fees. These funding mechanisms are detailed below.

9.1.1 City Programs

City administered programs are and will continue to be funded by existing garbage rates. For fiscal year 1990-91 the City's franchise waste hauler, Davis Waste Removal, paid contract invoices totaling approximately $58,400 for the City's share of HHW collection events. The contract invoices for the three City-sponsored events totalled $42,367.12 and the City's share of the two events co-sponsored with the County was $15,994.30, all of which were paid for by the waste hauler from billed revenues. The City estimates its administrative expenses for the City-sponsored events at approximately $11,500. These figures indicate a historical funding level for the City's HHW collection program of approximately $69,900.

Starting in fiscal year 1992-93, County-wide HHW collection will be provided at the Yolo County Central Landfill, administered by the County DPW, and paid for by tipping fees. The garbage rate revenues that historically have been used for City HHW collection programs will be used to fund an expanded HHW education program and other expanded services. The County is proposing a $10 per ton increase in tipping fees to pay for landfill improvements and HHWE/SRRE programs. The City, in consultation with its franchised waste hauler, believes that a garbage rate increase of $1.40 per household per month will be necessary to offset the planned $10 per ton increase in tipping fees. Because of the high environmental awareness of City officials and citizens, such an increase in garbage rates is politically feasible.

9.1.2 County Programs

Yolo County's HHW management program is funded through the Sanitation Enterprise Fund which receives its revenue from tipping fees imposed at the Yolo County Central Landfill and

the Esparto Convenience Center. Funding for the County's share of periodic HHW collection events in Davis, Woodland and West Sacramento through fiscal year 1991-92, the hazardous waste exclusion program, and existing HHW education programs are funded through existing tipping fees. Funding for an expanded HHW management program will be paid for through the Sanitation Enterprise Fund as well. The County Department of Public Works and Transportation has proposed an increase in tipping fees from $20 to $30 per ton to pay for improvements at the landfill as well as SRRE/HHWE programs. Approximately $0.50 of that $10 increase will be dedicated to increased HHW management program costs (Table 9-1). An increase in tipping fees would require approval by the Board of Supervisors. Secondary funding includes reimbursement in part through grants issued by the CIWMB.

Table 9-2 shows the estimated costs of the County's HHW management program through the short-term planning period. Estimated program costs are divided by the projected number of tons of refuse disposed for the same time period to determine the cost of the program per ton of refuse disposed. The difference between the projected costs per ton of future programs and current costs per ton give an indication of what proportion of a proposed tipping fee increase will be needed to provide adequate funding for future HHW programs. The projected disposal tonnages are estimates by the Yolo County Department of Public Works and Transportation and include AB 939 diversion, population and industrial growth, including potential industrial development by MacMillen-Bloedel in fiscal year 1994-95. If that development has not occurred by then the needed increase in tipping fees would be approximately $0.50 per ton over current levels.

9.2 Cost Estimates for Selected Programs

Table 9-1 shows the estimated costs for the City's HHW program for each fiscal year of the short-term planning period. Table 9-2 shows the estimated costs for the County's HHW program for each fiscal year of the short-term planning period.

Table 9-1. City of Davis HHW Program Cost Estimates, Short-Term Planning Period, 1991-1995 [1]

Program	Fiscal Year 1991-92	Fiscal Year 1992-93	Fiscal Year 1993-94	Fiscal Year 1994-95
City's HHW collection program	$54,000			
City's contribution to County program	$16,000			
Education and public information		$30,000 [2]	$31,000 [3]	$32,000 [3]
Monitoring	$3,000	$3,100	$3,200	$3,300
Total City HHW program costs	$73,000	$33,100	$34,200	$35,300
Historic revenues available	$73,000	$73,000	$73,000	$73,000

[1] Including 3 % annual inflation rounded to nearest $100

Table 9-2. Yolo County HHW Program Cost Estimates, Short-Term Planning Period [1]

Program	Fiscal Year 1991-92	Fiscal Year 1992-93	Fiscal Year 1993-94	Fiscal Year 1994-95
Periodic collection days	$112,000			
Expanded collection of recyclable HHW		$17,500	$18,000	$18,600
Temporary HHW collection facility		$184,000	$189,500	$195,200
Education and public information	$5,000	$7,000	$10,000	$15,000
Monitoring	$16,000	$16,500	$17,000	$17,500
Total	$133,000	$225,000	$234,500	$246,300
Tons of refuse disposed at YCCL [2]	213,368	212,916	216,824	276,878
Cost per ton of garbage disposed	$0.62	$1.06	$1.08	$0.89
Needed increase in tipping fee [3]	$0.00	$0.44	$0.46	$0.27

1 Including 3% annual inflation rounded to nearest $100

2 Yolo County DPW (accounting for AB 939 diversion; population and industrial growth)

3 Increase over FY 91-92 levels

SECTION 10

RESPONSE TO COMMENTS

In accordance with Section 18780 of the Guidelines, the City of Davis has responded to comments received, completed the necessary revisions, and prepared a final draft of the City of Davis HHWE. To facilitate the reader's ability to understand the revisions that have been incorporated into the documents, the City has prepared this Section.

Regarding the City of Davis HHWE, formal comments were received from the California Integrated Waste Management Board (CIWMB). All comments received have been reviewed and appropriate response provided. Where necessary, text revisions to the document have been made. Informational comments are noted and areas of divergent opinion receive a valid explanation.

It must be realized that political processes remain dynamic while documents such as an HHWE must choose a point in time and become static. The intent of these documents is to provide the City of Davis, Yolo County, and the CIWMB a baseline from which programs may be implemented, success evaluated, and programs modified as required. There may be issues that cannot be resolved because the data is not currently available and will not be available until the programs commence operation. As information is developed, it will enter the decision-making process and provide opportunities for the documents to be used pro-actively throughout the life of the project.

10.1 STATE'S GENERAL COMMENTS

CIWMB

The Final Element should accomplish the following: identify time specific and quantifiable objectives; and provide a more thorough discussion of why preferred program alternatives were selected and how those programs will achieve specified goals and objectives.

CITY

Time specific and quantifiable objectives have been added and a more thorough discussion of why alternatives were selected are included in the final draft HHWE. Additionally, the final draft more accurately reflects the latest plans for a regional HHW collection program operated by the Yolo County Department of Public Works.

10.2 STATE'S SPECIFIC COMMENTS

I. Objectives

CIWMB

Please address the following comments in the Final Element:

> It does not appear that the specified objectives are time specific and quantifiable as require by CCR Section 18751.1. HHW Program alternatives should be selected based on their ability for achieving specified goals and objectives.
>
> Since it is illegal to dispose HHW in solid waste landfills, local governments should set goals and objectives to eliminate HHW from solid waste landfills.

CITY

The objectives have been quantified by specifying an expected increase in the proportion of first-time participation by City households. A goal to eliminate HHW from the landfill has also been added.

II. Existing Conditions

CIWMB

Please address the following comments in the Final Element:

> While the Draft Element provides an estimate of the amount of HHW disposed at landfills, it does not provide a discussion of any known illegal dumping problems. The final element should include such a discussion as required by CCR Section 18751.2(c). Typical illegal disposal problems include roadside dumping and disposal down storm drains or sinks. Possible sources of information to assess this problem include complaints to the Environmental Health or Public Works Departments regarding illegal disposal sites or roadside dumping.

CITY

A discussion of the City's awareness of the problem of illegal dumping of HHW has been added to the final draft.

III. Evaluation of Alternatives

CIWMB

Please address the following comments in the Final Element:

> To support the selection of the preferred alternatives Board staff recommend that a matrix, based on evaluation criteria, be used in evaluating each alternative. The matrix can be based either on a numeric ranking or on a ranking of high, medium or low. In addition to the rating of each alternative based on the evaluation criteria, the matrix should also contain an overall rating of each alternative, and the community audiences to be targeted in the public education and information program.

CITY

The evaluation process utilizing mandated criteria is a valuable decision-making tool for calling a myriad of factors to the attention of the decision makers. But trying to attach a quantitative value to each criteria and adding up the total for each alternative as the basis for a decision would fail to give proper weight to external considerations and would be overly restrictive to the decision-making process. Additionally, creating a matrix after the fact seems somewhat counterproductive. Reasons why the selected alternatives were selected were stated in the preliminary draft.

IV. Selection of HHW Program

CIWMB

Pursuant to CCR section 18751.4(a)(1), the Final Element should contain a discussion which demonstrates that preferred alternatives will adequately serve the City's needs for the environmentally safe and economically efficient collection, treatment, recycling and disposal of HHW generated.

CITY

CCR section 18751.4 (a)(1) requires that a selection of programs be based on waste generation study data and the evaluation of alternatives section of this HHWE. Unfortunately, waste generation study regulations do not call for a breakdown of HHW by waste type, thereby limiting its effectiveness as a tool for planning a HHW management program. The evaluation of alternatives show that the selected programs are reasonable choices. Additional considerations for program selection include consistency with effective existing conditions and consistency with the County's Hazardous Waste Management Plan.

V. Monitoring and Evaluation

CIWMB

Please address the following comments in the Final Element:

> This section should summarize the qualitative and quantitative criteria by which the success of the HHW section shall be measured (CCR Section 18751.8(c)).
>
> Board staff recommend that the City also track the amount of HHW that is being disposed at the Central Landfill as method of monitoring the success of its programs.

CITY

The description of criteria for evaluation has been incorporated into new text describing the annual evaluation report. The City will monitor HHW discovered as a part of the County's load-checking program, but feels that this is more a measure of the diligence of County staff than of HHW disposal. An additional waste generation study in the future will be considered by City and County staff.

VI. Education and Public Information

CIWMB

Please address the following comments in the Final Element:

This Public Information and Education section should contain an implementation schedule as required by CCR Section 18751.7(d). The schedule should indicate the key tasks for implementing each program alternative, the agency or party responsible for implementing each alternative, and the community audiences to be targeted in the public education and information program.

CITY

Targeted community audiences have been added to Section 8.1. Table 6-3 has been moved from Section 6, Program Implementation, to Section 8 and renumbered as Table 8-1.

VII. Funding

CIWMB

This section does not provide an adequate breakdown of program costs and revenue sources to cover those costs. To meet the requirements of CCR Section 18751.8, please address the following comments in the Final Element:

> Program Planning Costs - It does not appear that the funding component includes cost estimates for program planning and development as required by CCR Section 18751.8(a). This information should be included in the Final Element and revenue sources needed to cover this cost should also be identified.

CITY

The Temporary HHW Collection Facility is the selected HHW collection alternative for implementation through the short-term planning period. Planning and development costs for this alternative were spent in fiscal year 1991-92. Since the County is the sponsor of the program, the bulk of planning expenses were incurred by the County, and were paid for through the Sanitation Enterprise Fund described in Section 9 of the final draft. The County spent approximately $22,000 on planning and development; $12,000 on consultant's fees and $10,000 staff time. The City of Davis DPW staff was also involved in consultations involving approximately $1,000 to $2,000 of staff time.

CIWMB

> Revenue Sources - This section does not adequately demonstrate that there are sufficient funds available to cover the cost of program development and implementation. Specifically, it is not stated if sufficient revenues can be generated through existing or increased garbage collection rates. Consequently, the Final Element will need to state what increase in rates may be necessary to pay the costs of the HHW program, and discuss any difficulties in assessing the increased fee. In addition, the Final Element should clearly demonstrate that the collection rate is adequate for covering the cost of program development and implementation (CCR Section 18751.8(a)).

CITY

The City believes that Section 9 now shows that sufficient revenues have been demonstrated to implement the programs selected in this element. The City's historical level of funding for HHW collection programs from current garbage rates will be more than sufficient to fund the City's planned expansion of education programs since the County has assumed the funding burden for HHW collection.

The City, in consultation with its franchised waste hauler, believes that a rate increase of $1.40 per household per month will be necessary to offset the planned $10 per ton increase in tipping fees. Because of the high environmental awareness of City officials and citizens, such an increase in garbage rates is politically feasible.

The City believes that tables 9-1 and 9-2 in the final draft demonstrate adequate revenues for all programs selected in this element.

CIWMB

> Contingency Funding - As required by CCR Section 18751.8(b)(2), the Final Element should identify contingency funding sources. In addition, Board staff recommend that the Final Element should include a discussion of the ease of implementing the preferred contingency measures.

CITY

The City feels that its historic commitment to funding exemplary HHW programs demonstrates its ability to fund a City program with reduced revenue requirements. The County has discussed the possibility of user fees and grant monies as possible revenue sources if preferred income sources prove inadequate.

CIWMB

> Summary Table - Table 9-1 should reflect the total revenues that will be generated by the collections fees. The total amount collected should offset HHW Program costs. Identification of revenues should reflect what portion of the amount collected is dedicated toward the HHW Program, since other programs may be funded through the garbage collection fees.

CITY

In the final draft, Table 9-1 demonstrates that current garbage rates provide sufficient funds for a reduced City role in a regional HHW management program. Table 9-2 demonstrates that there will be sufficient new revenues for an expanded County role in the proposed regional program. Though the County Department of Public Works proposes a $10 per ton increase in tipping fees for landfill improvements and AB 939 programs, only about $0.50 of that is designated for HHW management programs.

APPENDIX A

Private service stations, auto repair shops, and auto dismantlers in the City of Davis that collect recyclable HHW from the public are listed below.

Bonoca's 1944 Anderson Road. 758-2900	Used motor oil
Davis Radiator 965 Olive 753-7304	Used antifreeze
El Macero Chevron Chiles and Mace 753-3352	Used motor oil Spent lead-acid batteries Used antifreeze
Johnny's Service 965 Olive 756-4840	Used motor oil

APPENDIX B

A partial list of businesses and agencies who can be of help in developing a HHW management program follows:

Source Reduction Materials

"Household Hazardous Waste Wheel"
Environmental Hazards Management Institute
P.O. Box 932
Durham, NH 03824
603-868-1547

"Making the Switch - Alternatives to Using Toxic Chemicals in the Home"
Golden Empire Health Planning Center, contact:
The Local Government Commission
909 12th Street, Room 205
Sacramento, CA 95814
916-448-1198

"Hazardous Household Products"
California Department of Toxic Substances Control
Education and Information Unit
916-322-0476

"The Hazards of Household Wastes"
California Integrated Waste Management Board
1020 Ninth Street, Suite 300
Sacramento, CA 95814
916-322-8748

Household Hazardous Waste Management Firms

American Environmental Management
11855 White Rock Road
Rancho Cordova, CA 95742
916-985-6666

Chemical Waste Management, Inc.
4227 Technology Drive
Fremont, CA 94538
510-651-2964

AETC
19410 Cabot Boulevard
Hayward, CA 94545
510-782-7000

All Chemical Disposal Company
945 Berryessa Road, Suite C-4
San Jose, CA 95133
408-453-1660

Disposal Control Service, Inc.
884 Freeport
Sparks, NV 89431
702-331-9400

U.S. Pollution Control
731-M North Market Boulevard
Sacramento, CA 95834
916-921-2202

Laidlaw Environmental Services
4501 Pacheco Boulevard
Martinez, CA 94533
510-372-4800

Household HazWaste
1609-A Regatta Lane
San Jose, CA 95112
408-441-0241

Greenfield Environmental
5964 LaPlace Court
Carlsbad, CA 92008
619-431-5500

Recycling Research and Development
23785 Cabot Lane #323
Hayward, CA 94545
510-785-0985

Rollins Environmental Services
3777 Spinnaker Court
Fremont, CA 94538
510-226-1680

Burlington Environmental Services, Inc.
Chempro Division
95-B Gilman Street
Berkeley, CA 94710
510-524-9372

MSE Environmental, Inc.
1250-H Avenida Acaso
Camarillo, CA 93012
805-987-0217

North State Environmental
P.O. Box 5624
South San Francisco, CA 94083-5624

Latex Paint Recyclers

Mason Paint Company
Sacramento, California
Contact: John Mason or Ray Julian
916-922-9311

Major Paint Company
P.O. Box 2868
Torrance, CA 90509
213-542-7701

Household HazWaste
1609-A Regatta Lane
San Jose, CA 95112
408-441-0241

APPENDIX C

A copy of form CIWMB-303 follows.